

PLEASE NOTE! THIS IS PARALLEL PUBLISHED VERSION /
SELF-ARCHIVED VERSION OF THE OF THE ORIGINAL ARTICLE

This is an electronic reprint of the original article.
This version *may* differ from the original in pagination and typographic detail.

Author(s): Kella, Kaisa; Hyvönen, Katriina; Pylvänäinen, Päivi; Muotka, Joonas

Title: Dance movement therapy for depressed clients : Profiles of the level and changes in depression

Year: 2021

Version: Published version

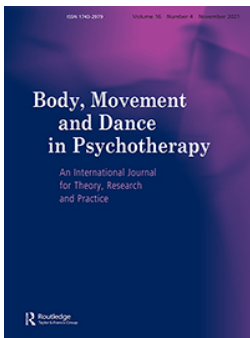
Copyright: © 2021 the Authors

License: CC BY-NC-ND 4.0

License url: <https://creativecommons.org/licenses/by-nc-nd/4.0/>

Please cite the original version:

Kella, K., Hyvönen, K., Pylvänäinen, P., & Muotka, J. (2021). Dance movement therapy for depressed clients : Profiles of the level and changes in depression. *Body, Movement and Dance in Psychotherapy: An International Journal for Theory, Research and Practice*.
<https://doi.org/10.1080/17432979.2021.1927188>



Body, Movement and Dance in Psychotherapy

An International Journal for Theory, Research and Practice

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/tbmd20>

Dance movement therapy for depressed clients: Profiles of the level and changes in depression

Kaisa Kella, Katriina Hyvönen, Päivi Pylvänäinen & Joonas Muotka

To cite this article: Kaisa Kella, Katriina Hyvönen, Päivi Pylvänäinen & Joonas Muotka (2021): Dance movement therapy for depressed clients: Profiles of the level and changes in depression, *Body, Movement and Dance in Psychotherapy*, DOI: [10.1080/17432979.2021.1927188](https://doi.org/10.1080/17432979.2021.1927188)

To link to this article: <https://doi.org/10.1080/17432979.2021.1927188>



© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 02 Jun 2021.



Submit your article to this journal [↗](#)



Article views: 1726







View related articles [↗](#)



View Crossmark data [↗](#)

Dance movement therapy for depressed clients: Profiles of the level and changes in depression

Kaisa Kella ^a, Katriina Hyvönen ^b, Päivi Pylvänäinen ^c
and Joonas Muotka ^a

^aDepartment of Psychology, University of Jyväskylä, Jyväskylä, Finland; ^bInstitute of Rehabilitation, JAMK University of Applied Sciences, Jyväskylä, Finland; ^cMood Disorder Clinic, Tampere University Hospital Psychiatric Unit, Tampere, Finland

ABSTRACT

This research identified participant profiles in level and changes in depression among working age (18–64 years old) clients ($N = 137$) diagnosed with depression, who participated in a 20-session dance movement therapy (DMT) intervention. Using Latent Profile Analysis *Mild, sharply reducing depression* (9%), *Mild, reducing depression* (58%) and *Severe, reducing depression* (33%) profiles were established, using Beck Depression Inventory scores gathered at pre-intervention, post-intervention, and follow-up points. At the pre-intervention point, being in full-time work was related to the *Mild, sharply reducing depression* profile. Being on a disability pension, having a history of one's own or a close person's substance abuse, a more fearful attachment style, and deficiencies in mindfulness skills were related to the *Severe, reducing depression* profile. All participants benefited from the short-term DMT intervention, which may offer a good outcome for patients with less complex depression, whereas those with more complicated symptomology may require longer treatment.

ARTICLE HISTORY Received 8 December 2020; Accepted 23 April 2021

KEYWORDS Dance movement therapy; depression; participant profiles; attachment style; mindfulness

Introduction

Depression is a global public health concern. The recurrent nature of depression and the reduced function it typically causes in sufferers, leads it to be considered, 'the single largest contributor to global disability' (World Health Organization, 2017, p. 5). In Finland, in 2019, approximately one third of retirements onto disability pension were due to mental health disorders, and depression has long been the single most common mental disorder leading to this (Finnish Centre for Pensions, 2020).

The aetiology of depression can be complex, and depression effects a person as a whole on the levels of body, affect, and cognitive processing,

CONTACT Kaisa Kella  kaisa.p.kella@jyu.fi  Department of Psychology, University of Jyväskylä, Jyväskylä, Finland

© 2021 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.
This is an Open Access article distributed under the terms of the Creative Commons Attribution-NonCommercial-NoDerivatives License (<http://creativecommons.org/licenses/by-nc-nd/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited, and is not altered, transformed, or built upon in any way.

as well as relationally (Hammen & Watkins, 2008). There is a need to find cost-effective, easily accessible forms of treatment for a variety of depression patients in addition to options that already exist.

Dance movement therapy (DMT) represents an experiential form of therapy that incorporates physical engagement, and emotional and social exploration. It is defined as a form of body-oriented, creative psychotherapy that aims to strengthen emotional, cognitive, physical, social and spiritual integration (Association for Dance Movement Psychotherapy UK, n.d.). Contributions from neuroscience have reinforced the theoretical foundation for DMT (Berrol, 2016), by providing evidence of how body-mind connections emerge at the neurobiological level (Cozolino, 2014; Porges, 2011; Schore, 2014; Siegel, 2007). Positive outcomes of DMT interventions in the treatment of depression have already been documented (Karkou et al., 2019), but it is necessary to continue to investigate the potential of DMT as a treatment for depression.

This study used a person-centred approach (Bergman & Lund, 2015) and aimed to identify subgroups among participants in a 10-week, twice a week, DMT group intervention, on the basis of the level of their depression symptoms before, after and three months after the intervention. Employing Latent Profile Analysis (LPA) it is possible to identify distinct participant profiles, categorised so as to be as homogenous as possible within each profile, and as heterogeneous as possible between profiles in terms of depression symptoms. This kind of person-centred approach is meaningful, since, in reality, clients' symptoms vary considerably in level at the commencement of group interventions, and there is also variation in the extent to which individuals benefit from an intervention. As the participants represented a demographically and aetiologically heterogeneous group (see Tables 1 and 2), we further investigated differences between the subgroups, to find out which types of participants were more likely to benefit from the intervention. This knowledge is relevant when making treatment plans and offering treatment options to individuals. More detailed information about the progression of the subgroups would also help to improve the intervention and to understand the mechanisms underlying the effects of DMT more deeply.

Five earlier studies have investigated the effect of group-form DMT on depression. These studies had varying intervention periods and frequency of sessions, and samples consisted of adolescent girls and working-age adults (Jeong et al., 2005; Pulkanen et al., 2014; Pylvänäinen et al., 2015; Röhrich et al., 2013; Stewart et al., 1994). All studies showed a decrease in depression scores during the intervention period, or on the intervention days. A recent meta-analysis, which only took into account studies with controlled designs and pre- and post-treatment testing, demonstrated strong support for the effectiveness of DMT in alleviating depression (Karkou et al., 2019).

Preliminary results of the present study concerning the effects of the treatment were included in the meta-analysis by Karkou et al. (2019), and detailed findings regarding the reduction of depression among this group of participants were reported by Hyvönen et al. (2020).

Possible connections between demographics, depression characteristics, or other pre-intervention variables, and the outcomes of DMT intervention have not, thus far, been subjected to closer examination. The studies mentioned above clearly presented baseline data of their samples, but not much examination of that data was made in relation to outcomes. In the sample used by Pylvänäinen et al. (2015), the effects of DMT tended to be slightly more positive with patients who were not using antidepressant medication than with patients who were. Röhrich et al. (2013) mentioned a negative correlation between attended sessions and the sum scores of depression symptoms after therapy, which may indicate the relevance of participant commitment to therapy.

A fearful attachment style, in particular, has been recognised to be related to depression (Carnelley et al., 1994). The assumption in DMT is that working on one's own bodily connections and explorations through relational movement enables the processing of relationships one has with one's self and others. Significant increases in a secure attachment style have been reported as an outcome of DMT intervention (Punkanen et al., 2014). In the study by Pylvänäinen and Lappalainen (2018), participants reported improved social interaction – better tolerance of other people, more courage to approach others, being more active in social situations and a more positive experience of peer support after a DMT group intervention for depressed patients.

Mindfulness is an embedded, inherent element of DMT practice (Tantia, 2014). It is, subsequently, relevant to study the connection between a client's mindfulness skills and the improvement in their depression symptoms. From Kabat-Zinn (2003): 'an operational working definition of mindfulness is: the awareness that emerges through paying attention on purpose, in the present moment, and non-judgementally to the unfolding of experience moment by moment' (p. 145). Recently Gu et al. (2020) showed that a higher level of overall mindfulness skills was related to less severe symptoms among adults with recurrent depression. Of the separate domains of mindfulness, acting with awareness and non-judging have been related to lower levels of depression among clinical and non-clinical samples (Baer et al., 2006, 2008; Gu et al., 2020), and, in addition, the mindfulness facet of non-reactivity has been shown to correlate negatively with depressive symptoms (Bohlmeijer et al., 2011).

The research questions of this study were as follows:

(1) Can distinct participant profiles be determined by the level of depression symptoms at pre-intervention, post-intervention and follow-up points?

(2) How would differences in demographics (age, education, occupational status, living arrangements), pre-intervention depression-related characteristics (use of medication, previous depressive episodes, self-reported causes of depression, other treatment), attachment styles, or mindfulness facets relate to each identified participant profile?

Due to the exploratory nature of person-centred analyses, we could not set firm hypotheses regarding the number of profiles or their respective levels of depression. However, as we aimed to include a heterogeneous sample of clients in the DMT intervention, we expected to find more than one profile.

Methods

Recruitment and DMT treatment procedure

This research was funded by the Social Insurance Institution of Finland, and the research protocol was approved by the Ethical Committee of the Central Finland Health Care District (Dnro 8 U/2016). Recruitment of participants was carried out between March and September 2017. Therapists informed the communal mental health care providers, student health care and other organisations offering mental health services in their cities about the possibility to participate in the DMT groups to be used in the study. Recruitment was further enhanced with newspaper advertising in several cities.

The inclusion criteria for participation in the research were a depression diagnosis, an impaired ability to work or study because of depression, an assessment made by a health care professional that a therapy intervention could help a participant to work or study, and a three months period of assessment or treatment for depression. The physical ability to get down on the floor and get up again unassisted was also required, as well as a willingness to work with movement and verbal interaction as part of a group. Exclusion criteria were active suicidal ideation, psychotic symptoms, substance abuse problems, and pain that restricted everyday functioning. In total, 235 screening interviews were conducted by phone, and 157 participants were recruited. All participants could continue to receive treatment as usual, including individual or group counselling, and could use their medication as prescribed. DMT groups were free of charge for the participants.

Of the 157 recruited participants, 109 were randomised to either intervention or control groups. Participants in control groups also received DMT once all measurements had been completed for the intervention groups. Non-randomised groups ($n = 43$) were formed when there were not enough participants in the same city for randomisation. A separate group for people on work disability pension ($n = 5$)

was established in one city. Altogether 23 therapy groups were arranged in 11 cities in Finland, led by 12 therapists.

Data was collected with an electronic survey, which asked questions about participants' demographic details, their depression and treatment, and questionnaires related to psychological well-being, depression symptoms, work capability, mindfulness and attachment style. An electronic link to the online survey was emailed to all participants to complete at the pre-intervention point (T1), the post-intervention point (T2) and 3 months later (T3).

In the present study, we utilised a combined dataset, consisting of participants who received the intervention at any phase of the study: either as part of the intervention group, as part of the delayed intervention control group, or as part of the non-randomised groups, and who completed a Beck Depression Inventory I (BDI) at any measurement point ($N = 137$). The number of participants who completed a BDI at T1 was 136 (99%), at T2 118 (86%), and at T3 109 (80%).

Participants

Table 1 shows demographic data, and Table 2 the characteristics of the participants' depression and other on-going treatments, collected at T1.

Table 1. Demographic data of participants.

Baseline characteristic	Percentage/mean
Gender (%; female/male)	97.4/2.6
Age in Years (mean)	42.3
Education (%)	
Comprehensive school	5.8
Upper secondary school or vocational education	44.2
Lower academic degree	25.0
Higher academic degree	19.2
Other (e.g., Ph.D., education unfinished)	5.8
Occupational Status (%)	
Full-time work	21.7
Part-time work	12.1
Unemployed	8.3
Disability pension	11.5
Studying	16.6
Other (e.g., sick leave, freelancer, rehabilitative work)	29.9
Living Arrangements (%)	
Lives alone	40.1
Lives with a spouse with no children	17.8
Lives with a spouse and a child/children	14.6
Lives with a child/children	10.8
Other (e.g., living with parents or a friend)	16.6

Table 2. Characteristics of participants' depression and treatment.

Depression characteristic	Percentage
Previous depressive episodes (%; yes/no)	75.0/25.0
Medication (%; yes/no)	58.0/42.0
Self-reported causes of depression (%)	
Problems in close relationships	70.5
Substance abuse, own or someone close	15.4
Traumatisation	52.6
Physical illness	26.3
Problems at work	39.1
Economic problems	34.0
Own thinking and values	51.3
Deterioration of the body and physical condition	39.1
Lack of creativity and self-expression	32.1
Other causes (e.g., loss of someone close, burn-out)	28.8
Other treatment (%)	
Individual sessions every 1–2 week	29.8
Individual sessions every 3–4 week	34.7
Individual sessions every 5 week or less frequently	19.0
Weekly treatment group	10.7
Participation in a leisure-time activity group	26.4

Intervention

Protocols for the intervention were developed by experienced dance movement therapists and based on earlier DMT group interventions for depressed patients (Punkanen et al., 2014; Pylvänäinen et al., 2015). 12 trained dance movement therapists from among the professional members of the Finnish Dance Therapy Association were recruited. They took part in a 10-day training programme, which was a prerequisite for working on the project. The therapists attended clinical supervision groups regularly during intervention delivery periods.

The DMT intervention consisted of 20 sessions, each lasting 75 min, conducted twice a week. Group sizes ranged from 4 to 10 participants. The therapeutic work aimed to promote a feeling of safety at in an individual's body and in group interactions, to enhance body awareness, to foster interaction and dialogue, to encourage exploration of boundaries, to enrich movement experiences and to support the sense of agency in enactment. The main DMT methods used were dance and movement explorations based on improvisation, body awareness exercises, and reflection through drawing, writing and verbalisation.

Outcome measures

In this research BDI scores were the primary measure used to assess the effectiveness of the DMT intervention. This 21-item self-reporting questionnaire is widely used in normal and psychiatric populations and shows high

validity for its psychometric properties (Beck et al., 1988). Each item is scored from 0–3, higher scores reflecting more severe symptoms. A score from 0 to 9 indicates no, or very few, depression symptoms, from 10 to 18 mild depression, from 19 to 29 moderate depression and from 30 to 63 severe depression (Beck et al., 1988). In this study, BDI scores at T1, T2 and T3 were used as the basis for a Latent Profile Analysis (LPA).

A Relationship Questionnaire (RQ2A-D) (Bartholomew & Horowitz, 1991) was used to measure adult attachment style. Participants rate the degree to which each of the attachment patterns resemble their own on a 7-point Likert-type scale. The characterisations of each attachment style in RQ2A-D (secure, fearful-avoidant, preoccupied, dismissive-avoidant) have been validated by interview data, self-concept, and sociability measures (Bartholomew & Horowitz, 1991).

Mindfulness skills were assessed using the Five Facet Mindfulness Questionnaire (FFMQ) (Baer et al., 2006), which consists of 39 items related to the facets of observing, describing, acting with awareness, non-judging attitude to inner experiences, and non-reactivity to inner experiences. Respondents were asked to rate each item on a 5-point Likert-type scale. The sum of separate facets and the overall sum was calculated. The FFMQ has demonstrated good psychometric properties when tested in meditating and student samples (Baer et al., 2006, 2008), and has been validated using a sample with mild to moderate depression symptoms (Bohlmeijer et al., 2011). In this study attachment style and mindfulness scores were utilised as pre-intervention variables, and only these baseline measures of them were considered in the analysis.

Baseline demographics, the characteristics of participants' depression, and other on-going treatment that were included in the analyses are listed in Tables 1 and 2.

Statistical analysis

Latent Profile Analysis (LPA) was used to identify different subsamples of participants based on their BDI scores. The analysis was performed using the Mplus statistical package (Version 8/8.4), employing a full information maximum likelihood (FIML) estimation method. All available data was used in the analyses and missing data was assumed to be Missing at Random (MAR) (Muthén & Muthén, 2012).

The optimal number of profiles to model was decided based on several fit indices (Jung & Wickrama, 2008). First, the Bayesian Information Criterion (BIC), the Vuong-Lo-Mendell-Rubin test (VLMR), the Lo-Mendell-Rubin test (LMR), and the Bootstrapped Likelihood Ratio Test (BLRT) were calculated. The lower BIC values are, the better the model is. In the VLMR, LMR and BLRT, $p < .05$ indicates that k profiles are more appropriate

Table 3. Models tested during latent profile analysis.

# of Profiles	Log-Likelihood	BIC	VLMR <i>p</i> -value	LMR <i>p</i> -value	BLRT <i>p</i> -value	Entropy	Proportions, <i>n</i> (%)	Classification Probabilities for the Most Likely Latent Class Membership
1	-1315.10	2659.72	–	–	–	–	137 (100%)	
2	-1244.48	2552.92	<.001	<.001	<.001	.853	46 (33.6%) 91 (66.4%)	0.940 0.976
3	-1214.41	2527.21	<.001	<.001	<.001	.891	12 (8.8%) 79 (57.7%) 46 (33.5%)	0.873 0.976 0.962
4	-1199.10	2531.04	.0414	.0451	.250	.864	78 (56.9%) 12 (8.8%) 22 (16.1%) 25 (18.2%)	0.987 0.874 0.889 0.825
5	-1190.60	2548.48	.2874	.2972	1.000	.889	78 (56.9%) 12 (8.8%) 25 (18.2%) 15 (11.0%) 7 (5.1%)	0.987 0.877 0.849 0.962 0.817
6	-1179.03	2559.77	.0363	.0401	.3333	.890	22 (16.1%) 12 (8.8%) 11 (8.0%) 12 (8.8%) 76 (55.4%) 4 (2.9%)	0.806 0.881 0.786 0.997 0.978 0.967

compared to $k - 1$ profiles. Second, a good solution was indicated when there was successful convergence and a high entropy value (range 0–1). The third, and most important, criterion was that the identified profiles were meaningful.

The statistical 3-step method (Asparouhov & Muthén, 2014) was used to analyse the relationships of the LPA profiles with continuous and dichotomous pre-intervention variables, and BDI values at the three measurement points. The association of multicategorical pre-intervention variables with the LPA profiles was analysed with cross tabulation and χ^2 -test in SPSS (version 26).

Results

Identified participant profiles

Table 3 presents the models tested during LPA. The BIC and BLRT values supported the three-profile model. Entropy was highest in this model, and the smallest profile included 8.8% of the participants. Although the VLMR and LMR values supported the four-profile model, the three-profile model best fulfilled the statistical criteria and was therefore selected. Figure 1 presents a visualisation of the three-profile model, using BDI means at T1, T2, and T3.

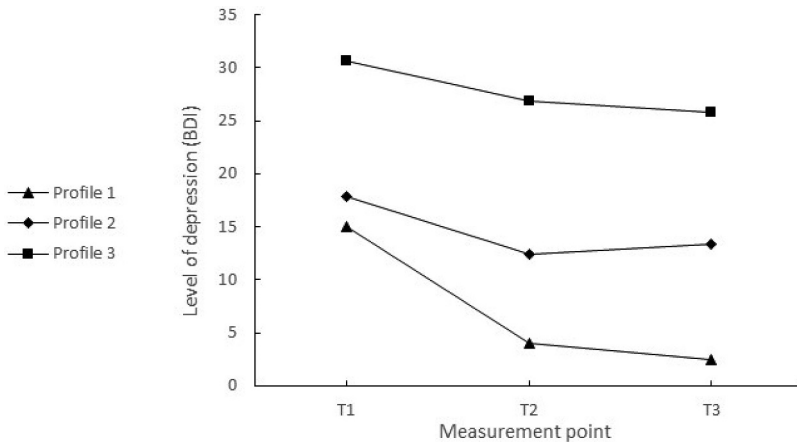


Figure 1. Three-profile model from LPA, showing means of BDI at T1, T2 and T3.

Participants in Profile 1 ($n = 12$; 8.8% of total sample) started with varied levels of symptoms from very few symptoms to severe depression. Their mean BDI score was 15.02 ($SD = 12.27$) indicating mild depression. Symptoms decreased to the level of no depression at the post-intervention (a mean decrease of 11.1 points), and had continued to decrease at the three month follow-up. Profile 1 was labelled *Mild, sharply reducing depression*.

Participants in Profiles 2 and 3 had a mean decrease of 3.8–5.4 points in BDI scores from T1 to T2. However, these profiles differed in their T1 BDI scores. Participants in Profile 2 ($n = 79$; 57.7% of total sample) had a mean BDI score of 17.83 ($SD = 4.55$) at T1, which is at the upper end of mild depression (18 points), and their depression symptoms were reduced post-intervention. Therefore, Profile 2 was labelled *Mild, reducing depression*. Participants in Profile 3 ($n = 46$; 33.5% of total sample) reported a mean BDI score of 30.60 ($SD = 6.49$) at T1 which is considered severe depression. Their symptoms were reduced to the level of moderate depression at T2, thus Profile 3 was labelled *Severe, reducing depression*. Symptoms remained at the same level at T3 as they were at T2 in both Profiles 2 and 3. Statistical differences in BDI scores between Profiles at T1, T2, and T3 are shown in [Table 5](#).

Participant profiles related to demographics, depression characteristics, attachment styles and mindfulness facets

As shown in [Tables 4 and 5](#), significant differences were found between the profiles in certain demographics, depression characteristics, attachment

Table 4. Statistical comparison of profiles using demographics and depression characteristics.

Variable	Profile			Statistical test
	Profile 1 n = 12 (8.8%)	Profile 2 n = 79 (57.7%)	Profile 3 n = 46 (33.5%)	
Occupational status	n (%)			28.55**
Full-time work	7 (58.3) ^A	19 (24.1)	4 (8.7) ^B	
Part-time work	1 (8.4)	14 (17.7)	3 (6.5)	
Unemployed	0 (0.0)	5 (6.3)	7 (15.2)	
Disability pension	1 (8.3)	5 (6.3) ^B	10 (21.7) ^A	
Studying	3 (25.0)	11 (13.9)	8 (17.4)	
Something else	0 (0.0) ^B	25 (31.6)	14 (30.4)	
Causes of depression	n (%)			
Close relationship problems	7 (58.3)	57 (72.2)	32 (71.1)	0.97
Substance abuse	0 (0.0)	9 (11.4)	11 (24.4) ^A	6.16*
Traumatisation	6 (50.0)	36 (45.6)	29 (64.4)	4.12
Physical illness	3 (25.0)	19 (24.1)	13 (28.9)	0.36
Problems at work	5 (41.7)	32 (40.5)	14 (31.1)	1.18
Economic problems	2 (16.7)	28 (35.4)	17 (37.8)	1.93
Own thinking and values	5 (41.7)	38 (48.1)	25 (55.6)	1.00
Deterioration of body and physical condition	3 (25.0)	27 (34.2)	19 (42.2)	1.50
Lack of creativity and self-expression	2(16.7)	21(26.6)	18 (40.0)	3.59
Other causes	1(8.3)	24(30.4)	13 (28.9)	2.55

Note. * $p < .05$; ** $p < .01$; *** $p < .001$. ^A This class is over-represented in this profile.

^BThis class is under-presented in this profile.

styles, and mindfulness facets. Working full-time was related to the *mild, sharply reducing* profile, whereas being in receipt of a disability pension, and substance use as a cause of depression were related to the *severe, reducing depression* profile. A higher fearful attachment style score was associated with both the *severe, reducing depression* and the *mild, reducing depression* profiles. Participants in the *severe, reducing depression* profile also had higher dismissing attachment style scores than participants in the *mild, reducing depression* profile. Higher scores in the mindfulness facets of non-judging, non-reactivity, acting with awareness and overall mindfulness, were associated with the profiles of *mild, sharply reducing depression* and *mild, reducing depression*. Other pre-intervention variables were not significantly associated with any of the profiles.

Discussion

The findings of this research offer valuable new insights into DMT intervention in the treatment of depression, by identifying profiles related to participants' symptom progression during and after an intervention. Using a person-centred approach, different symptom profiles among the participants were found. Using LPA, a three-profile model emerged as the best

Table 5. Statistical comparison of profiles using BDI scores, attachment styles and mindfulness facets.

Variable	Profile			Statistical test	Pairwise Comparison of Profiles ^a
	Profile 1 n=12 (8.8%)	Profile 2 n=79 (57.7%) mean (SE)	Profile 3 n=46 (33.5%)		
Variables in the LPA (range 0-63)				Wald test df=2	
BDI score at T1	15.02 (3.78)	17.83 (0.57)	30.60 (1.15)	114.39***	1, 2 < 3
BDI score at T2	3.95 (0.91)	12.43 (0.60)	26.80 (1.37)	195.13***	1 < 2 < 3
BDI score at T3	2.49 (0.87)	13.40 (0.68)	25.78 (1.29)	238.90***	1 < 2 < 3
Attachment style ratings (range 1-7)		mean (SE)		test	
Safe	4.41 (0.54)	3.85 (0.19)	3.33 (0.23)	4.76	
Fearful	2.96 (0.59)	4.44 (0.21)	5.05 (0.30)	9.55**	1 < 2, 3
Preoccupied	4.15 (0.67)	4.00 (0.22)	4.57 (0.28)	2.45	
Dismissing	3.12 (0.56)	2.73 (0.19)	3.70 (0.29)	7.11*	2 < 3
Mindfulness facets (range)		mean (SE)			
Observing	27.58 (1.89)	27.35 (0.69)	27.57 (0.72)	0.05	
(8-40)					
Describing	28.15 (1.90)	25.61 (0.79)	23.89 (1.22)	3.64	
(8-40)					
Acting with awareness	23.83 (1.14)	24.19 (0.62)	19.96 (1.03)	12.36**	1, 2 > 3
(8-40)					
Non-judging	30.35 (1.43)	28.08 (0.80)	22.73 (1.14)	20.67***	1, 2 > 3
(8-40)					
Non-reacting	21.00 (0.74)	19.65 (0.55)	16.78 (0.76)	16.49***	1, 2 > 3
(7-35)					
Overall mindfulness	130.82 (4.19)	124.79 (2.10)	111.92 (3.03)	16.60***	1, 2 > 3
(39-195)					

Note. * p < .05, ** p < .01, *** p < .001. ^aThe significance level is <.05.

solution to identify subgroups of participants according to the levels of, and changes in, their depression symptoms. These profiles were labelled *Mild, sharply reducing depression*; *Mild, reducing depression*; and *Severe, reducing depression*, to describe the initial levels of participants' depression and the typical changes that occurred in each profile. We also found demographic information, depression characteristics, attachment styles, and mindfulness skills that were related to these profiles. Based on the findings we can highlight certain characteristics that may affect both recovery from depression and the DMT process.

Participants profiles in relation to demographic and depression characteristics

We observed that participants in the *severe, reducing depression* profile were more likely to be on a disability pension than participants in the two other profiles, a finding that supports the depiction of severe depression as a seriously disabling condition. In contrast, participants in the *mild, sharply reducing depression* profile were more often in full-time work, which likely relates to better work ability. This observation can be partly explained by these participants' lower symptom level at T1. However, the *mild, sharply reducing depression* profile also included participants with moderate or severe depression symptoms at T1, which, following the intervention, decreased to the level of no depression, and had further decreased at the follow-up point. Possible reasons for this sharp decline in symptoms may be that these participants had less complex causes of depression, that the timing of the intervention was particularly appropriate for them, that the treatment modality was particularly suitable for them, or that they had a higher level of commitment to the therapy, and a therapist who could respond particularly well to their needs.

Further confirming the complex nature of severe depression, an individual's own or close person's substance abuse was a more common cause of depression for participants in the *severe, reducing depression* profile, and overall, they reported a wider range of causes of their depression. Additionally, 64% of the participants in this profile mentioned traumatisation as a cause of depression, which was clearly more than in the other two profiles (45.6–50%). The fact that over half of all the participants mentioned traumatisation as a cause of depression demonstrates the importance of safety-building and self-regulation as the central themes of the DMT intervention. In the case of traumatic experiences, the body is often perceived as unsafe, and a gradual approach to the body is required in the process of treatment (Buckley et al., 2018; Tantia, 2014).

Participant profiles in relation to pre-intervention attachment styles and mindfulness facets

Problems in close relationships was the most often reported cause of depression in all profiles (58.3–72.2%). Significantly higher levels of fearful attachment style were reported among participants in the *severe, reducing depression* and *mild, reducing depression* profiles, which may indicate the severity of interpersonal difficulties among these participants. Observably, though not significantly, lower scores in safe attachment style ($p = .093$) among these participants would tend to complement this finding. This result is in line with research suggesting that particularly fearful attachment is related to depression (Carnelley et al., 1994). Participants in the *severe, reducing depression* profile also had higher scores in the dismissing attachment style than participants in the *mild, reducing depression* profile. This finding may also indicate more severe interpersonal problems among participants in the *severe, reducing depression* profile. Almost half of the participants in this profile lived alone (47.8%), and only a few (4.3%) lived with a spouse and a child or children. Although, again, not significantly, these numbers differed from the other profiles, and may imply fewer social interactions in everyday life, a notable observation when discussing interpersonal problems and the loss of emotional attachment in depression.

The relationship between mindfulness facets and the depression levels observed in our results is largely consistent with those of previous studies (Baer et al., 2006; Bohlmeijer et al., 2011; Gu et al., 2020). Higher scores in overall mindfulness and the facets of acting with awareness, non-judging and non-reactivity were associated with a lower baseline level of depression, whereas observing and describing seemed to have no relation to depression levels.

We observed that more fearful attachment was reported in both the *mild, reducing depression* and the *severe, reducing depression* profiles. However, there were differences between these profiles in mindfulness skills, which were at a significantly higher level in the *mild, reducing depression* profile, in line with the findings of aforementioned studies. In the *mild, sharply reducing depression* profile higher mindfulness skills and less fearful attachment style were reported concurrently, which likely have beneficial effects in both symptom reduction and recovery speed.

It is plausible that lower mindfulness skills and more fearful attachment style are together linked to more severe depression. A positive outcome of mindfulness is internal composure, which facilitates non-reacting responses to whatever emotions emerge, and promotes constructive engagement with people and situations, and withdrawal from them if necessary (Kass & Trantham, 2013). Neurobiological functioning underlies these processes, as the neural circuits are re-activated, enabling new internal and external

patterns to emerge (Porges, 2011; Siegel, 2007). With more severe and longer-term depression, neurological readjustment will require more time and repetition.

Limitations and conclusions

The current study is unique due to the large number of clients attending the DMT groups, and the use of various therapists in different locations, as well as a wide range of clients in terms of age and background. Participants were mainly female (97,4%). Two out of three of those who retired due to depression in Finland in 2019 were women (Finnish Centre for Pensions, 2020), thus this study responds to the need to understand women`s experiences.

Because this was the first study to focus on identifying subgroups of participants in a DMT intervention, and the characteristics that could be attributed to them, further research with a larger sample is needed to confirm the findings. Particularly in the *mild, sharply reducing depression* profile, the sample size was proportionally small, and conclusions could only be drawn tentatively. Some statistical results, which were close to statistical significance (e.g., findings in relation to safe attachment style) might appear significant in a larger sample. Also, because the follow-up time was relatively short, the long-term effects of the intervention are difficult to ascertain. To further study DMT intervention for depressed clients the integration of multiple methods is suggested. For example, movement observation or other movement-based methods could be incorporated more extensively into research, and also the application of neuroscientific methodology may become relevant in the future.

Our results show that through a short-term DMT intervention it was possible to alleviate depression symptoms among clients with a range of baseline symptom levels. We can tentatively assert that the clients who benefited most had a baseline level of mild depression and had a greater capability for work. More diverse causes of depression, a history of one`s own or a close person`s substance abuse, more fearful attachment style, and deficiencies in the mindfulness facets of non-judging, non-reactivity and acting with awareness, were linked to more severe depression, and reflect a need for longer-term treatment. We suggest that these implications should be taken into account when developing clinical guidelines for the use of DMT in the treatment of depression.

Acknowledgments

We wish to thank all individuals and organizations for the collaboration and commitment that made this study possible.

Disclosure Statement

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

Notes on contributor

Kaisa Kella is a PhD student at the University of Jyväskylä researching dance movement group therapy intervention in the treatment of depression. This article is a part of her doctoral dissertation. She has a Master's Degree in Sport and Health Sciences and she is a trained dance movement therapist.

Katriina Hyvönen, PhD, 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, PhD in Psychology, 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.

Joona Muotka is a University Teacher (MA in statistics) at the Department of Psychology at the University of Jyväskylä. He works on research projects that utilise applied statistics to help solve problems arising in practical research.

ORCID

Kaisa Kella  <http://orcid.org/0000-0002-4529-8037>

Katriina Hyvönen  <http://orcid.org/0000-0003-3493-4138>

Päivi Pylvänäinen  <http://orcid.org/0000-0003-3200-3014>

Joona Muotka  <http://orcid.org/0000-0002-7113-903X>

Data availability statement

The datasets generated for this study are available on request to the corresponding author.

Funding

This article is based on a research project funded by KELA, the Social Insurance Institution of Finland in 2017-2019.

References

- Asparouhov, T., & Muthén, B. (2014). Auxiliary variables in mixture modeling: Three-step approaches using Mplus. *Structural Equation Modeling, 21*(3), 329–341. <https://doi.org/10.1080/10705511.2014.915181>
- Association for Dance Movement Psychotherapy UK (n.d.). *What is dance movement psychotherapy?* <https://admp.org.uk/dance-movement-psychotherapy/what-is-dance-movement-psychotherapy/>

- Baer, R. A., Smith, G. T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*(1), 27–45. <https://doi.org/10.1177/1073191105283504>
- Baer, R. A., Smith, G. T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S., Walsh, E., Duggan, D., & Williams, J. M. G. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*(3), 329–342. <https://doi.org/10.1177/1073191107313003>
- Bartholomew, K., & Horowitz, L. M. (1991). Attachment styles among young adults: A test of a four-category model. *Journal of Personality and Social Psychology, 61*(2), 226–244. <https://doi.org/10.1037/0022-3514.61.2.226>
- Beck, A. T., Steer, R. A., & Carbin, M. G. (1988). Psychometric properties of the beck depression inventory: Twenty-five years of evaluation. *Clinical Psychology Review, 8* (1), 77–100. [https://doi.org/10.1016/0272-7358\(88\)90050-5](https://doi.org/10.1016/0272-7358(88)90050-5)
- Bergman, L. R., & Lund, L.-G. (2015). The person-oriented approach: Roots and roads to the future. *Journal for Person-Oriented Research, 1*(1–2), 1–6. <https://doi.org/10.17505/jpor.2015.01>
- Berrol, C. (2016). Reflections on dance/movement therapy and interpersonal neurobiology: The first 50 years. *American Journal of Dance Therapy, 38*(2), 303–310. <https://doi.org/10.1007/s10465-016-9227-z>
- Bohlmeijer, E., Ten Klooster, P. M., Fledderus, M., Veehof, M., & Baer, R. (2011). Psychometric properties of the Five Facet Mindfulness Questionnaire in depressed adults and development of a short form. *Assessment, 18*(3), 308–320. <https://doi.org/10.1177/1073191111408231>
- Buckley, T., Punkanen, M., & Odgen, P. (2018). The role of the body in fostering resilience: A sensorimotor psychotherapy perspective. *Body, Movement and Dance in Psychotherapy, 13*(4), 225–233. <https://doi.org/10.1080/17432979.2018.1467344>
- Carnelley, K. B., Pietromonaco, P. R., & Jaffe, K. (1994). Depression, working models of others, and relationship functioning. *Journal of Personality and Social Psychology, 66* (1), 127–140. <https://doi.org/10.1037/0022-3514.66.1.127>
- Cozolino, L. (2014). *The neuroscience of human relationships: Attachment and the developing social brain* (2nd ed.). W. W. Norton & Company.
- Finnish Centre for Pensions. (2020, April 8). *Mental disorders the most common reason for retirement on a disability pension*. Retrieved April 20, 2020, from <https://www.etk.fi/en/topical-issues/mental-disorders-the-most-common-reason-for-retirement-on-a-disability-pension/>
- Gu, J., Karl, A., Baer, R., Strauss, C., Barnhofer, T., & Crane, C. (2020). Latent profile analysis of the Five Facet Mindfulness Questionnaire in a sample with a history of recurrent depression. *Assessment, 27*(1), 149–163. <https://doi.org/10.1177/1073191117715114>
- Hammen, C., & Watkins, E. (2008). *Depression* (2nd ed.). Psychology Press.
- Hyvönen, K., Pylvänäinen, P., Muotka, J., & Lappalainen, R. (2020). The effects of dance movement therapy in the treatment of depression: A multicenter, randomized controlled trial in Finland. *Frontiers in Psychology, 11*, 1687. <https://doi.org/10.3389/fpsyg.2020.01687>
- Jeong, Y. J., Hong, S. C., Lee, M. S., Park, M., Kim, Y. K., & Suh, C. M. (2005). Dance movement therapy improves emotional responses and modulates neurohormones in adolescents with mild depression. *International Journal of Neuroscience, 115*(12), 1711–1720. <https://doi.org/10.1080/00207450590958574>

- Jung, T., & Wickrama, K. A. S. (2008). An introduction to latent class growth analysis and growth mixture modeling. *Social and Personality Psychology Compass*, 2(1), 302–317. <https://doi.org/10.1111/j.1751-9004.2007.00054.x>
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144–156. <https://doi.org/10.1093/clipsy.bpg016>
- Karkou, V., Aithal, S., Zubala, A., & Meekums, B. (2019). Effectiveness of dance movement therapy in the treatment of adults with depression: A systematic review with meta-analyses. *Frontiers in Psychology*, 10, 936. <https://doi.org/10.3389/fpsyg.2019.00936>
- Kass, J. D., & Trantham, S. M. (2013). Perspectives from clinical neuroscience: Mindfulness and the therapeutic use of the arts. In L. Rappaport (Ed.), *Mindfulness and the arts therapies: Theory and practice* (pp. 220–240). Jessica Kingsley publishers.
- Muthén, L. K., & Muthén, B. O. (2012). *Mplus user's guide* (7th ed.). Muthén and Muthén.
- Porges, S. W. (2011). *The polyvagal theory: Neurophysiological foundations of emotions, attachment, communication, and self-regulation*. W. W. Norton & Company.
- Punkenan, M., Saarikallio, S., & Luck, G. (2014). Emotions in motion: Short-term group form dance/movement therapy in the treatment of depression: A pilot study. *The Arts in Psychotherapy*, 41(5), 493–497. <https://doi.org/10.1016/j.aip.2014.07.001>
- Pylvänäinen, P., & Lappalainen, R. (2018). Change in body image among depressed adult outpatients after a dance movement therapy group treatment. *The Arts in Psychotherapy*, 59, 34–45. <https://doi.org/10.1016/j.aip.2017.10.006>
- Pylvänäinen, P., Muotka, J., & 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. <https://doi.org/10.3389/fpsyg.2015.00980>
- Röhricht, F., Papadopoulos, N., & Priebe, S. (2013). An exploratory randomized controlled trial of body psychotherapy for patients with chronic depression. *Journal of Affective Disorders*, 151(1), 85–91. <https://doi.org/10.1016/j.jad.2013.05.056>
- Schore, A. N. (2014). The right brain is dominant in psychotherapy. *Psychotherapy*, 51(3), 388–397. <https://doi.org/10.1037/a0037083>
- Siegel, D. J. (2007). *The mindful brain: Reflection and attunement in the cultivation of well-being*. W. W. Norton & Company.
- Stewart, N. J., McMullen, L. M., & Rubin, L. D. (1994). Movement therapy with depressed inpatients: A randomized multiple single case design. *Archives of Psychiatric Nursing*, 8(1), 22–29. [https://doi.org/10.1016/0883-9417\(94\)90017-5](https://doi.org/10.1016/0883-9417(94)90017-5)
- Tantia, J. F. (2014). Mindfulness and dance/movement therapy for treating trauma. In L. Rappaport (Ed.), *Mindfulness and the arts therapies: Theory and practice* (pp. 95–106). Jessica Kingsley Publishers.
- World Health Organization. (2017). *Depression and other common mental disorders: Global health estimates*. <https://apps.who.int/iris/bitstream/handle/10665/254610/WHO-MSD-MER-2017.2-eng.pdf>