



30 (5) 2021

Feasibility of emotion-regulating improvisational music therapy for young adult students with depressive symptoms: A process evaluation

Sonja Aalbers, Annemieke Vink, Martina de Witte, Kim Pattiselanno, Marinus Spreen & Susan van Hooren

To cite this article: Sonja Aalbers, Annemieke Vink, Martina de Witte, Kim Pattiselanno, Marinus Spreen & Susan van Hooren (2021): Feasibility of emotion-regulating improvisational music therapy for young adult students with depressive symptoms: A process evaluation, Nordic Journal of Music Therapy, DOI: [10.1080/08098131.2021.1934088](https://doi.org/10.1080/08098131.2021.1934088)

To link to this article: <https://doi.org/10.1080/08098131.2021.1934088>



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



Published online: 26 Jul 2021.



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



Article views: 1060



View related articles [↗](#)



View Crossmark data [↗](#)

Feasibility of emotion-regulating improvisational music therapy for young adult students with depressive symptoms: A process evaluation

Sonja Aalbers^{ a,b,c}, Annemieke Vink^d, Martina de Witte^{ c,e,f}, Kim Pattiselanno^a, Marinus Spreen^a and Susan van Hooren^{b,c,g}

^aAcademy of Health and Social Studies, Arts Therapies, Music Therapy, NHL Stenden University of Applied Sciences, Leeuwarden, The Netherlands; ^bPsychology, Open University of the Netherlands, Heerlen, The Netherlands; ^cResearch Centre for the Arts Therapies, Heerlen, The Netherlands; ^dMusic Therapy Department, ArtEZ University of the Arts, Academy of Music, Enschede, The Netherlands; ^eArts Therapies, HAN University of Applied Sciences, Nijmegen, The Netherlands; ^fUniversity of Amsterdam, Amsterdam, The Netherlands; ^gZuyd University of Applied Sciences, the Netherlands, Heerlen, The Netherlands

ABSTRACT

Introduction: Depression can be a serious problem in young adult students. There is a need to implement and monitor prevention interventions for these students. Emotion-regulating improvisational music therapy (EIMT) was developed to prevent depression. The purpose of this study was to evaluate the feasibility of EIMT for use in practice for young adult students with depressive symptoms in a university context.

Method: A process evaluation was conducted embedded in a larger research project. Eleven students, three music therapists and five referrers were interviewed. The music therapists also completed evaluation forms. Data were collected concerning client attendance, treatment integrity, musical components used to synchronise, and experiences with EIMT and referral.

Results: Client attendance (90%) and treatment integrity were evaluated to be sufficient (therapist adherence 83%; competence 84%). The music therapists used mostly rhythm to synchronise (38 of 99 times). The students and music therapists reported that EIMT and its elements evoked changes in all emotion regulation components. The students reported that synchronisation elicited meaningful experiences of expressing joy, feeling heard, feeling joy and bodily responses of relaxation. The music therapists found the manual useful for applying EIMT. The student counsellors experienced EIMT as an appropriate way to support students due to its preventive character.

Discussion: EIMT appears to be a feasible means of evoking changes in emotion regulation components in young adult students with depressive symptoms in a university context. More studies are needed to create a more nuanced and evidence-based understanding of the feasibility of EIMT, processes of change and treatment integrity.

ARTICLE HISTORY Received 8 April 2020; Accepted 5 May 2021

KEYWORDS young adult students; process evaluation; emotion-regulating improvisational music therapy (EIMT); synchronisation; depressive symptoms; emotion regulation

CONTACT Sonja Aalbers  sonja.aalbers@stenden.com  Academy of Health and Social Studies, Arts Therapies, Music Therapy, NHL Stenden University of Applied Sciences, Rengerslaan 8-10, Leeuwarden, DD 8917, The Netherlands

© 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.

Introduction

Depression is the most prevalent mental illness worldwide (Vos et al., 2015) with a peak rate of onset in young adulthood between 18 and 25 years (Breedvelt et al., 2018). Depression is often seriously impairing (Kessler et al., 2009) and may adversely affect the academic performance of students (Andrews & Wilding, 2004). Difficulties in emotion regulation (ER) are often identified as an important risk factor for developing a major depressive disorder (MDD; Berking et al., 2014). Emotion regulation is a broad and complex concept (Gross, 2014). It is critical to adaptive functioning and refers to the ability to identify, experience, modulate and express emotions (Bryant, 2015). The Component Process Model (CPM) of Scherer (2009) may be helpful as a theoretical framework to explain the ER process. According to this model, emotion is seen as a biopsychosocial phenomenon involving a dynamic and coordinated response of five components, i.e. expression, feeling, bodily response, appraisal and action tendency (Scherer, 2005, 2009, 2013, 2015). Processes in ER consist of coordinated changes in these components over time. To prevent MDD in university settings, indicated preventive programmes focusing on ER are needed. Commonly indicated preventive programmes for students are often based on cognitive therapy (Breedvelt et al., 2018; Conley et al., 2017). However, not all students can express their thoughts and feelings verbally. For them, it is important to offer alternative interventions (Aalbers et al., 2019; Werner-Seidler et al., 2017).

Such an alternative intervention may be improvisational music therapy. Young adults frequently use music in everyday life to regulate their emotions (Juslin, 2019), to reduce stress (de Witte, Spruit et al., 2020) and to evoke emotions (Koelsch, 2015). Music therapists are trained to use music in their therapeutic relationship to evoke change. Many music therapists consider ER to be a potential benefit of music therapy (Marik & Stegemann, 2016). A recent Cochrane review showed that music therapy decreased depressive symptoms, reduced anxiety and improved functioning (Aalbers, Fusar-Poli et al., 2017). Recently, the first author developed an improvisational music therapy programme to improve ER and prevent depression in students, called emotion-regulating improvisational music therapy (EIMT; Aalbers et al., 2019). EIMT was designed to be used in practice for young adults with depressive symptoms (Aalbers et al., 2019). The programme was offered to young adult students with depressive symptoms. Since EIMT had not been applied before, there was a lack of insight into the feasibility of EIMT (Bowen et al., 2009; van Yperen et al., 2017). A process evaluation may help to solve this problem as it explores the way in which a programme is implemented and experienced (Moore et al., 2015). Process evaluations in music therapy have been used before (Van Bruggen-Rufi et al., 2017). The main purpose of this study was to evaluate the feasibility of EIMT for use in practice for young adult students with depressive symptoms in a university context.

Method

Design

The process evaluation was embedded in a multiple-case study design (Gustafsson, 2017; Kazdin, 2011) in which students were followed to study the effect of EIMT. In the effect study, depressive symptoms, ER and affect of the participating students were monitored (Aalbers et al., 2020). The process evaluation focused on different aspects of

applying EIMT, i.e. (a) client attendance, (b) treatment integrity, (c) musical components used to synchronise, and (d) experiences with EIMT and referral. The Medical Research Council (MRC) guidance was followed as a framework to make decisions for planning, design, analysis and reporting of the process evaluation. No changes took place to outcomes after the study had started (Moore et al., 2015). A Dutch version of the protocol is available.

Participants

Eleven female students ($M_{\text{age}} = 23.45$, $SD = 3.33$) completed the programme and were included in the process evaluation. They met the inclusion criteria of the effect study (Aalbers et al., 2020), i.e. being a student at NHL Stenden University of Applied Sciences, having depressive symptoms (Inventory of Depressive Symptomatology Self Report $IDS\text{-}SR > 13$; Rush et al., 1986, 1996), being aged between 18 and 40 years and Dutch speaking. All were white females of Dutch and German origin and received EIMT for free. Three female music therapists performed the EIMT programme. Two were music therapy trainees who received extensive EIMT training of 10 two-hour workshops before they were allowed to conduct EIMT. One was an experienced and certified Master-trained music therapist who developed and performed the training and programme in the dual role of researcher and therapist (Hay-Smith et al., 2016). Five student counsellors referred students to EIMT.

Description of the programme – EIMT

EIMT aimed to improve ER and reduce depressive symptoms in 10 weekly sessions lasting 60 minutes each (Aalbers et al., 2020, 2019). EIMT followed the CPM (Scherer, 2005, 2009, 2013, 2015) as a theoretical framework to explain the ER process and to address ER throughout the programme. EIMT focused on the five ER components of the CPM, i.e. expression, feeling, bodily response, appraisal and action tendency. EIMT was also based on person-centred psychotherapy and was provided face-to-face in individual sessions by a music therapist. The manual describes a certain degree of flexibility to adapt to the needs of each individual from moment to moment. The music therapist used the music therapy synchronisation technique (Aalbers et al., 2019; Bruscia, 1987), verbal reflection and ER-card to address the five components of ER. The ER-card visualised ER processes and referred to the five ER components. The synchronisation technique was used as a mirroring technique, performing what the student does simultaneously, timing so that their actions tended to synchronise (Bruscia, 1987) without the interference of talking. The music therapist used musical components in line with the client's musical improvisation, e.g. rhythm or melody, to synchronise the client's musical improvisation and to evoke changes in ER. The music therapist was allowed to make choices concerning the level of precision using musical components such as pulse or dynamic (Aalbers et al., 2019; Bruscia, 1987). Both student and therapist improvised on instruments, i.e. cello, marimba or djembe. The music therapist invited the student to choose an instrument and mirrored the student's instrument choice. The music therapist deliberately waited to allow the student to initiate the musical improvisation, search for sounds and musical forms, and take control over its musical expression. Thereafter, the music therapist synchronised the student's play to attune and emotionally resonate and may have

desynchronised with one musical element (e.g. rhythm) and resynchronised with another (e.g. dynamic) like when the participant initiated louder play. The music therapist stopped playing when the student did and did not initiate change or bring closure. Then, the music therapist invited the participant to reflect on meaningful experiences, asking what the student had experienced and encouraging verbal expression on ER components. The programme consisted of three phases. The first phase (three sessions) focused on assessing healthy and unhealthy ER and formulating a music therapy plan together. In the second phase (five sessions), the emphasis shifted to experiencing and changing ER components. Phase three (two sessions) was designed to maintain healthy ER in daily life, evaluating and saying goodbye. To increase adherence, students were given the ER-card to take home at the start of EIMT and the music therapist and student came up with homework and discussed the homework at each session. Each session was phased, i.e. welcome, discuss homework, improvisation, reflection, improvisation, reflection, come up with homework and short evaluation of the session. EIMT took place in an accessible music room in the university building with sufficient levels of privacy and few ambient sounds.

Procedure

The referral procedure was as follows. When students talked about depressive symptoms during a student-counselling session, the student counsellor informed students about programmes, including EIMT. Students who were interested in EIMT were screened for eligibility by the principal researcher. Students recently diagnosed with MDD were excluded. To ensure treatment integrity, in addition to training all music therapists received supervision and worked with the manual. The certified supervisor was a qualified and experienced music therapist, trained in EIMT, but did not conduct EIMT. During the EIMT phase, after each EIMT session music therapists registered client attendance and the most frequently used musical component to synchronise. After sessions 3, 7 and 10, therapists reported on treatment integrity. During the follow-up phase, a week after finishing EIMT, each student was interviewed by an independent and experienced interviewer. At the end of the study, the same interviewer interviewed the music therapists and the principal researcher interviewed the student counsellors. Data were collected from October 2018 to August 2019 at NHL Stenden University of Applied Sciences in Leeuwarden, The Netherlands. [Figure 1](#) depicts the procedural diagram of data collection.

Data collection

To evaluate client attendance and musical components used to synchronise, the EIMT-Evaluation Form (EIMT-EF) was used. This self-report questionnaire was adapted from a musical observation guide of Kurstjens (2009) to report (a) whether a student attended the session, (b) arrived on time, including minutes too late and reason, (c) left early, including minutes remaining and reason, and (d) most frequently used musical component to synchronise in the session, i.e. shape, sound (including harmony), dynamics, rhythm (including tempo, pulse, metrum) or melody. Music therapists completed the EIMT-EF after each session.

To evaluate treatment integrity, the EIMT-Treatment Integrity Measure (EIMT-TIM) was developed (Boendermaker & Goense, 2017) to measure therapist adherence

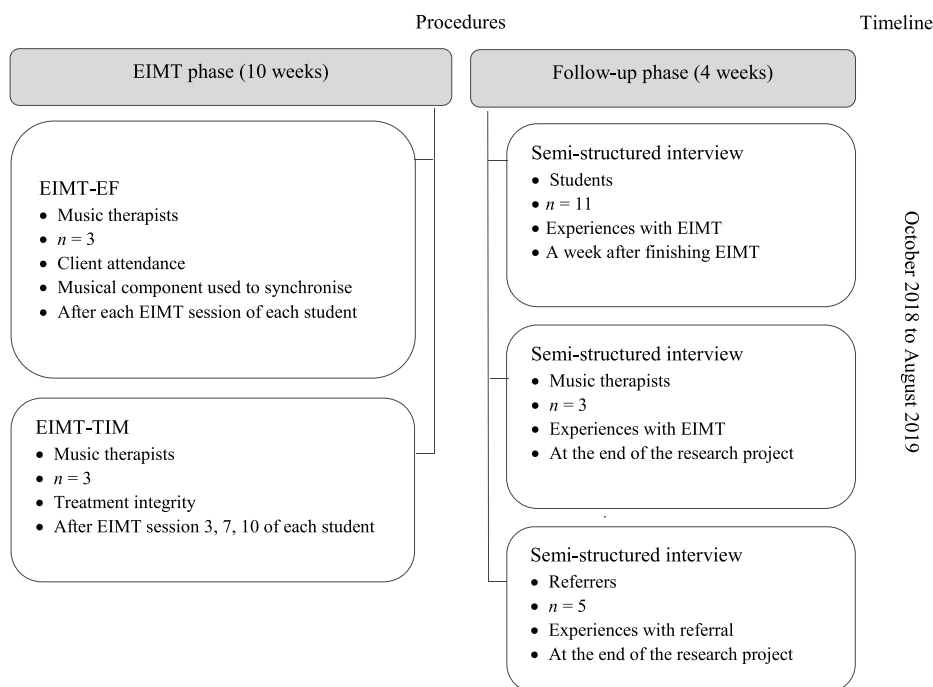


Figure 1. Procedural diagram for collecting data for the process evaluation EIMT = Emotion-regulating improvisational music therapy; EIMT-EF = EIMT Evaluation Form; EIMT-TIM = EIMT Treatment Integrity Measure; n = number of participants.

and competence. This self-report questionnaire consisted of 16 questions covering seven dimensions of EIMT: apply EIMT, synchronisation, djembe, marimba, cello, reflection and ER-card for ER purposes. Seven related questions to adherence such as “To what extent did you apply EIMT as planned?” were scored on a 0–100% scale, where 0 = “not conducted as planned” and 100 = “fully conducted as planned”. Seven questions related to competence such as “To what extent did you feel competent to apply EIMT as planned” assessed the same dimensions of EIMT and were also scored on a 0–100% scale, where 0 = “not competent” and 100 = “fully competent”. The two remaining questions were open: “what added” and “when added” to EIMT. The music therapists completed the EIMT-TIM after each session 3, 7 and 10.

To explore experiences with EIMT and referral, the students were interviewed after EIMT and the music therapists and student counsellors at the end of the study in an individual semi-structured face-to-face interview. Each student was interviewed according to the following topics: improvisation, synchronisation, instruments, verbal reflection, ER-card, homework, dose, EIMT phasing and session phasing, and music therapy room, using open-ended questions, i.e. “How did you experience . . .?”. The music therapists were interviewed on the same topics and about the manual. Student counsellors were interviewed based on their experiences with facilitators, barriers and procedures with referrals. All interviews lasted one hour and were audiotaped.

Ethical considerations

The study was approved by the Medical Ethical Committee of Medical Centre Leeuwarden (RTPO 1036) (Aalbers et al., 2020). Written informed consent was obtained from study participants. Students were allowed to stop EIMT without justification, contact student counsellors during and after EIMT for further support, or start treatment outside the university if needed.

Data analysis

Numerical data on client attendance and treatment integrity were entered into Excel and double-checked. Treatment integrity was analysed and reported at individual and group level (Goense et al., 2018). Treatment integrity was considered sufficient when both therapist adherence and competence reached a percentage of >60% at group level (rule of thumb; Boendermaker & Goense, 2017). Written comments were entered and summarised in Excel to provide additional information (Saunders et al., 2009). To analyse the most frequently used musical components to synchronise, components were entered into Excel, double-checked, encoded and counted. A graph was produced to visualise the results.

Recordings of interviews about experiences with EIMT and referrals were transcribed verbatim, transcripts coded and names removed. Data was processed in MAXQDA 2020 (VERBI Software, 2019). Qualitative data analysis of the interviews involved coding data, i.e. dividing transcripts into small units such as phrases and assigning a label to each unit. The coding label was the exact words of the participant (*in vivo* coding) or small phrases composed by the researcher close to the exact words (Aalbers et al., 2020; Creswell & Plano Clark, 2011). The EIMT elements were used as categories to organise open codings that reflected the theory of ER, both positive and negative experiences. The principal researcher conducted the analysis. Parts of each transcript were randomly double-coded by a member of the research team. The final analysis was checked by an independent researcher and discussed by the research team for consensus. This deductive coding analysis may be seen as a well-structured approach that is useful for summarising key features of data sets (Nowell et al., 2017). This approach was used as we were interested in experiences with ER to capture the feasibility of EIMT.

Results

Client attendance

In total, the 11 students completed 99 of 110 planned sessions. Each student attended at least eight sessions. Across students, the attendance rate for all sessions or part of a session was 90% (Table 1). Reasons students reported for not attending or partly attending a session were sickness (four sessions), headache (one session), forgotten (one session), too tired (one session), intention to quit university (two sessions) and lack of motivation (two of the last planned sessions).

Table 1. Client attendance in EIMT per student and per session

Student	Session										60 minutes (%)	< 60 minutes (%)	No show (%)
	1	2	3	4	5	6	7	8	9	10			
S1	1	1	0	1	1	1	1	1	1	1	90	0	10
S2	0	1	1	1	1	1	1	2	1	1	80	10	10
S3	1	1	1	1	1	0	1	1	2	1	80	10	10
S4	1	1	1	1	0	1	0	1	1	1	80	0	20
S5	1	1	1	1	0	1	1	1	1	1	90	0	10
S6	1	1	1	1	1	1	1	2	1	1	90	10	0
S7	1	1	0	1	0	1	1	2	1	1	70	10	20
S8	1	1	1	1	1	1	1	1	1	2	90	10	0
S9	1	1	1	1	1	1	1	2	2	1	80	20	0
S10	1	2	2	1	1	1	2	2	0	0	40	40	20
S11	1	1	1	1	1	0	1	1	1	1	90	0	10
60 minutes (%)	91	91	73	100	73	82	82	55	73	82	80		
< 60 minutes (%)	0	9	9	0	0	0	9	45	18	9		10	
No show (%)	9	0	18	0	27	18	9	0	9	9			10

Sessions reported 0 = no show, 1 = 60 minutes, 2 = less than 60 minutes.

Treatment integrity

The group of music therapists applied EIMT at an average adherence of 83% according to the manual, which was evaluated as sufficient. Individual therapists showed similar scores (Table 2). Two therapists reported some tailoring to help a student to improvise. One gave technical advice and provided ideas on how to play the cello (session 7) and the other on how to structure playing the marimba (sessions 7 and 8). The music therapists combined two sessions for eight students due to illness or a wish to finish early, without interrupting the EIMT phasing. One therapist had used the ER-card only when the student had needed some support to reflect on ER. The group of therapists felt sufficiently competent (*Mean* = 84%) to apply EIMT. Individual therapists reported similar scores (Table 3).

Most frequently used musical components to synchronise

The music therapists reported that they had used rhythm most frequently as a musical component (38 of 99 times) to synchronise with their students' musical improvisation (Figure 2).

Table 2. Percentage of music therapist self-reported adherence to EIMT elements

EIMT elements	MT1	MT2	MT3	<i>M</i>
EIMT	83	79	87	83.00
Synchronisation	85	94	98	92.33
Instruments	100	89	99	96.00
Cello	100	72	100	90.67
Djembe	100	85	- ^a	n.d.
Marimba	100	91	98	96.33
Reflection	100	84	93	92.33
ER-card	73	33	85	63.67
<i>M</i> (<i>SD</i>)	92.63 (10.74)	78.38 (19.61)	94.29 (6.10)	

MT = music therapist; *M* = mean; ^a = djembe not used in sessions 3, 7 and 10; n.d. = not defined; *SD* = standard deviation.

Table 3. Percentage of music therapist self-reported competence to EIMT elements

EIMT elements	MT1	MT2	MT3	<i>M</i>
EIMT	83	86	83	84.00
Synchronisation	80	95	87	87.33
Instrument	70	83	82	78.33
Cello	65	68	80	71.00
Djembe	90	92	90	90.67
Marimba	60	85	84	76.33
Reflection	88	83	83	84.67
ER-card	93	77	85	85.00
<i>M (SD)</i>	78.63 (12.26)	83.63 (8.42)	84.25 (3.11)	

MT = music therapist; *M* = mean; *SD* = standard deviation.

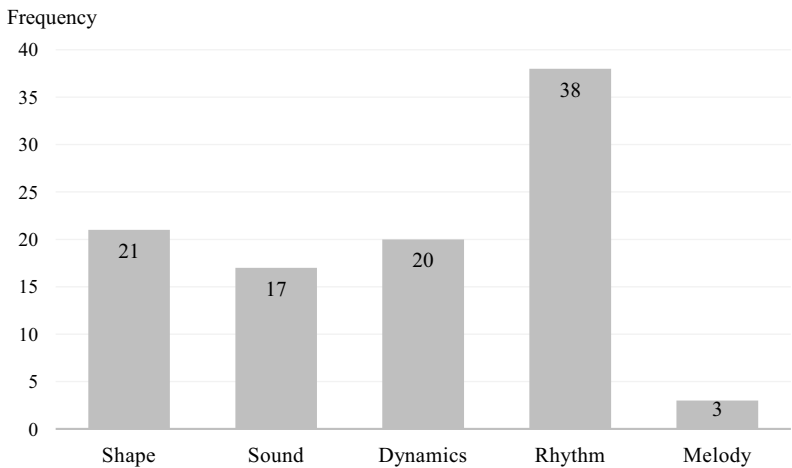


Figure 2. Number of times a musical component was reported by music therapists to sync with the student's musical improvisation

Experiences of students and music therapists with EIMT

Musical improvisation

Most students experienced improvisation as helpful in expressing emotions, to feel, in feeling better or more positive, feeling free, feeling trust that it will be fine, bodily relaxation, letting perfectionism go and accepting what they do. Some felt a bit disappointed that improvisation was the only method.

I found it uh ... quite difficult in the beginning, ... where do you start, ... what should you do ... it was explained, but ... it is a bit new, and there you sit ... what now ... but then you start playing and it will be fine ... (S11)

In the first phase, improvisation also evoked unpleasant experiences, such as feeling stressed or having negative thoughts, such as “I am not able to do this” or “the music should be beautiful”. One student said she decided somewhere along the way that EIMT would not work for her.

I already had decided it doesn't work ... I was not very open ... I had to feel ... it had to help ... It was more in my mind and therefore not helpful. (S10)

The music therapists experienced improvisation as helpful, giving students the opportunity to take control.

Synchronisation

Most students experienced synchronisation as meaningful for expressing joy, to feel, experience fun, feel that someone is there, feel interconnection and attunement, feel touched, experience bodily relaxation, allow feelings and find a way together. Several students felt heard, understood and supported in the background. Several others experienced synchronisation as helpful to be themselves, to be there, to feel in control and tune in.

Sometimes there were moments of playing together where I uh ... felt deeply touched. Cello really touched me very deeply ... she attuned with what I did, as if we could find a way together ... this mirroring and strengthening what she did ... it really touched deeply ... because it strengthened ... I really liked it, though we were very much searching ... I really enjoyed these moments ... feel sad again, very stupid, not stupid ... let me think ... maybe because as if it felt she understood ... without using words, just through music ... this attunement ... it was really beautiful ... mmm ... it touched me ... it still does, I did not know. (S9)

When I play the marimba and she confirms me, my feelings become bigger and it becomes easier to feel what's in me ... it confirms that I can be there and feel what I feel. (S6)

In the first phase of EIMT, several students experienced some unpleasant feelings, such as feeling a bit alone. Some had felt synchronisation meaningful but complex, feeling responsible or experiencing difficulties expressing feelings. Some missed a hold and reported a tendency to draw back.

At first, you don't hear that she plays the same ... you feel a bit alone, but at some point you hear a change in sound, ... she actually plays along with you ... and then, you notice ... she is still there. (S11)

The music therapists experienced the synchronisation technique as helpful and meaningful in attuning and playing along with the student. The technique helped to mirror "what you do is all right" in music, to evoke feelings and action tendencies to act free to improvise. At the start, two therapists were unsure to what extent to synchronise, which they discussed in supervision to find answers.

Musical instruments

The students appreciated the cello and marimba the most. The cello facilitated experiments with sounds, emotional expression and feelings of beauty, feeling connection with oneself, one's own body, the instrument and the other. Several appraised the cello as an instrument with many opportunities, such as playing low, soothing or ominous tones and repeated play of one tone for a longer time on open strings.

... the cello was interesting. What I liked, was to feel the instrument, how uhm ... can I say ... vibrated ... you can feel it. Sometimes, I put my hand on the wood to feel it whilst playing ... that connection I found with the cello was very beautiful. (S3)

The marimba facilitated experiments, e.g. with harmony and sounds, feeling happy or trust and bodily relaxation response. The marimba was positively appraised as

accessible, easy to play and varied with dynamics, rhythm, harmony and warm soothing sounds.

It [playing marimba] made me feel very happy ... that you can play harmony ... I just felt comfortable ... it sounded very happy ... made me feel happy. (S8)

Some liked the djembe, feeling it evoked warm feelings, feeling a connection with the other and bodily relaxation. Several others felt the djembe evoked negative feelings, such as aggression, and had difficulties getting into action with the djembe.

The music therapists positively appraised the cello, noticing that students often chose the cello first. Playing one tone for a longer time evoked positive experiences within students, e.g. playing and listening quietly, expressing sadness, feeling secure and reduced anxiety, feeling the body and clearing up the mind. The music therapists noticed that producing dissonant sounds facilitated expressions of anger or frustration. They appraised both the marimba and djembe as easy for students to play, express emotions, and evoke feelings of success.

Verbal reflection

Most students experienced verbal reflection as helpful to express verbally, become aware of feelings, gain insight into feelings and emotions and become motivated to get into action in EIMT. Reflection also facilitated making plans to use new ER strategies in daily situations.

... helps to put into words and express what you did in music ... sometimes it was difficult to tell what you felt after improvising ... a question helps to better articulate ... how it went, ... what I feel ... how I am. (S7)

At the same time, several students experienced some difficulty with verbally reflecting on subjective feelings, bodily responses, or imagining.

The music therapists evaluated posing reflective questions as helpful. According to them, the suggested questions in the manual encouraged students to express themselves verbally, become aware of feelings, bodily responses, images and thoughts and reappraise situations. Reflection provides a method to bridge to daily life or improvisation and encourages motivation within students to get into action and express themselves in music. Sometimes, therapists experienced difficulties in asking questions repeatedly, e.g. feeling somewhat confused about what questions to pose, which they discussed in supervision to solve the issue.

ER-card

Most students experienced the ER-card as nice and informative, encouraging verbal expression and awareness of feelings. The card helped to appraise and reappraise situations in EIMT and daily situations.

When I told a story what had happened, ... it matched the card, ... it was really a circle, accidentally. It was really nice, because I could understand more easily, having an example, my own experience, I really liked that with the card. (S2)

The music therapists experienced the card as useful, e.g. to ask ER-related questions and encourage students to reflect on ER.

Homework

Most students experienced homework as helpful to express emotions through music, strengthen positive feelings, for bodily relaxation, to feel motivated to get into action and undertake activities, e.g. to listen to or play music, to sing, write, or walk. They liked thinking up homework together with the music therapist. Several students appraised homework as sustainable, being simple and useful to integrate into daily life.

I still do it. . . . something you can do, it is just so simple, nice to put on some music or just enjoy nature sounds outside. That helped a lot. (S5)

The music therapists were positive about homework, e.g. noticing that students practised making or listening to music to regulate emotions at home.

Dose

Most students experience 10 sessions of EIMT as sufficient to work on goals, get to know the music therapist, experience improved ER, or combine it with work and study. Two experienced 10 sessions as too short because they had missed a session. Two students thought that seven or eight sessions would be enough. Most students experienced the frequency of sessions as fine to hold their attention and the duration of sessions as nice.

I can't compare, don't know how it is in other therapies, . . . it was fine . . . enough . . . to combine with other tasks, study tasks, private life. (S4)

The music therapists experienced 10 sessions as helpful to get the essence of ER problems. Some thought the number of sessions could be handled flexibly as they had felt some students did not need all the sessions. The music therapists liked the weekly one-hour sessions, e.g. to make contact, work on tasks, and allow silences while waiting for the students' actions.

Phasing of EIMT and sessions

Most students had experienced the phasing of EIMT as pleasant, natural or functional to work on their ER problems. Some thought the first phase could be longer to get to know each other. Some liked to express and enjoy earlier experiences in the last phase.

I liked it the way it was. . . . it did not have to be different. There was very much space to work with a theme or just follow my own way. (S9)

All students liked the session phasing. They experienced the structure as functional and recognisable. Most students liked the alternating improvising and reflecting.

The music therapists liked the phasing of EIMT. The first phase had a nice structure and the music therapy plan in the third session gave them direction. The five sessions in the middle were evaluated as being sufficient, as were the two sessions in the last phase.

Music therapy room

Several students had thought the music therapy room was nice, small and cozy to work on goals. Some had felt a bit uncomfortable and distracted due to the windows or the green walls.

The music therapists reported that the music therapy room was small, but satisfactory to work on goals. Two had thought the room was a bit too open due to the windows and experienced the walls as being a bit too bright green.

EIMT manual

The music therapists experienced the manual as informative and useful as backup. One therapist wondered during the first session whether she was obligated to use the given suggestions for reflective questions, for which she consulted the developer of EIMT.

Experiences of student counsellors with referral

All student counsellors experienced the opportunity to refer to EIMT as positive. They thought that the music in EIMT could motivate students and have a positive effect on ER. Student counsellors experienced EIMT as appropriate in a university setting to support students due to its preventive character. They perceived EIMT as clear, accessible and different from verbal programmes. Student counsellors mentioned that the received EIMT workshop helped them to understand and refer to EIMT. They thought it appropriate in an educational setting that they were the ones to refer students to the programme. They found the banners inviting and the flyers informative and useful for students to initiate contact with the principal researcher. The student counsellors experienced few barriers to referring to EIMT.

Discussion

The main purpose of this process evaluation was to evaluate the feasibility of EIMT for use in practice for young adult students with depressive symptoms in a university context. The objectives were to assess client attendance and treatment integrity, to identify musical components used to synchronise, and to explore experiences with EIMT and referral.

The findings show that the client attendance rate was sufficient. This was in line with earlier findings of Erkkilä et al. (2011), who found a similarly high attendance rate for improvisational music therapy for adults with depression, showing high levels of engagement and sustained involvement. One student had wished to finish early, lacking motivation to attend EIMT. She had been in physical pain for a long time and could not tolerate therapy at the time. In close consultation, the student completed EIMT by combining the last four sessions into two, without interrupting the EIMT phasing.

Treatment integrity of the programme was evaluated as sufficient, i.e. the music therapists applied EIMT according to the manual and felt sufficiently competent to do so. From a broader perspective, music therapy researchers recommend reporting on treatment integrity (Aalbers, Fusar-Poli et al., 2017; Baker et al., 2019; Carr et al., 2017; Erkkilä et al., 2011; de Witte, da Silva Pinho et al., 2020) as it provides insights into

whether the applied programme approximates the intended programme (Pereplechikova, 2011). Although treatment integrity scores differed between the two trainees and the qualified therapist in our study, such variations were not systematic or substantial. Such findings are in line with the found effects of EIMT, showing no differences between the results of the trainees and the qualified therapist (Aalbers et al., 2020).

It is suggested that the presence of a qualified music therapist is needed to conduct music therapy and attune from moment to moment to the clients' needs (Aalbers et al., 2019; Magee, 2020; de Witte, da Silva Pinho et al., 2020). In our study, we found a similar level of treatment integrity between trainees and the qualified music therapist. There may be several reasons for this unanticipated finding. First, the qualified therapist developed the EIMT and the trainees received extensive EIMT training. All worked with the manual, which was perceived as helpful in adhering to EIMT. Monitoring treatment integrity may have encouraged a critical attitude towards adherence. Supervision may have facilitated reflection upon meaningful situations to improve quality of adherence and feelings of competence.

Our findings suggest that music therapy trainees can feasibly apply EIMT with sufficient treatment integrity when they have learnt to conduct EIMT as part of their music therapy training. Qualified music therapists should be able to apply EIMT with sufficient treatment integrity by closely studying the manual (Aalbers et al., 2019) or joining a training. Models in which "students help students" have demonstrated benefits in relation to health and prevention (Kirsch et al., 2014) but raise ethical considerations that must be adequately addressed. In our study, we have addressed the ethical vulnerabilities associated with EIMT's positioning by offering in-depth training and ongoing supervision to ensure that trainees applied and students received the intended programme. Both students and trainees were offered additional support from a student counsellor and the opportunity to start treatment elsewhere, when needed.

The most frequently used musical component to synchronise with the student's musical improvisation was rhythm. de Witte et al. (2020) suggested that synchronising with clients' slow tempo rhythm may result in lower emotional states altering inherent body rhythms. Synchronising faster rhythms may evoke higher emotional states and/or subjective feelings of joy or fear (Brancatisano et al., 2020; Koelsch, 2018). Music therapists have also reported other musical components to synchronise, e.g. sound and dynamics. During interviews, students reported that they experienced low, warm and soothing sounds of the cello or marimba, loudness on djembe and dissonance on cello as meaningful to express, feel, feel bodily, relax, clear up the mind, or feel confronted with withdrawal behaviour. According to the literature, sound and dynamics may induce action tendencies, give rise to affective and bodily responses, both pleasant and unpleasant, and evoke appraisal processes (Koelsch, 2015; Scherer & Zentner, 2001). Evidence suggests that dissonance and complexity in musical improvisation produce neural activation patterns related to ER processes (Moore, 2013). Altogether, more knowledge on the use of musical components and synchronisation is needed to improve its use and impact and to help music therapists make informed decisions on how to synchronise with the clients' improvisation (Moore, 2013). In this study, students were not asked to evaluate musical components to overcome the monitoring burden during sessions. In future studies, it would be relevant to include the participants' perspective and evaluate their experiences with the degree to which they received what was intended for them (Robb et al., 2011).

Regarding experiences with EIMT, the students and music therapists reported that its elements were helpful in evoking or changing ER components. For example, musical improvisation evoked expressing emotions, feelings and feeling better; synchronisation helped to express joy, feel heard and experience bodily relaxation; musical instruments facilitated emotional expression, feelings of beauty and interconnection, feeling one's own body and thinking more positively; verbal reflection encouraged verbal expression, becoming aware of feelings, reappraising situations, making plans to use new ER strategies in daily situations and becoming motivated to get into action; the ER-card encouraged verbal expression, awareness of feelings, reappraising situations in and outside EIMT; homework was helpful to express emotions through music, to strengthen positive feelings, bodily relaxation, and to feel motivated to get into action to practise ER in daily life. These experiences were related to the ER components of the CPM (Aalbers et al., 2019; Scherer, 2009) and are in line with the purpose (Aalbers et al., 2019) and the effects of EIMT (Aalbers et al., 2020). The dose facilitated working on ER goals and experience improved ER. The dose was in line with the dose of improvisational music therapy for children and adolescents with behavioural and emotional problems that was used in a study by Porter et al. (2017) showing a decrease in depressive symptoms. The phasing was experienced as pleasant and functional to work on ER. Students liked the alternating improvising and reflecting. The music therapy room was suitable but could be improved in terms of privacy and use of less intense colours on the walls to avoid distraction or interference from ER processes. The music therapists evaluated the manual as being sufficient to apply EIMT and to use it as a backup. One music therapist experienced some difficulties coping with the given suggestions, which was resolved after consulting the EIMT developer.

Interestingly, almost all students reported meaningful experiences related to synchronisation, e.g. expressing joy, evoking feeling and feeling fun, interconnection, attunement, touching and hearing and experiencing bodily relaxation. These experiences may be related to purposes of synchronisation techniques, e.g. to show support or strengthen client response (Bruscia, 1987). These experiences are in line with empirical evidence showing that when people synchronise in movement with each other during music therapy, this may evoke positive feelings of togetherness and shared intentions, such as "I feel that you feel that I feel". These feelings may also be involved in lowering stress levels (Linnemann et al., 2016; Tarr et al., 2014; Trondalen, 2019; de Witte, da Silva Pinho et al., 2020). This could be explained by the client's initiative to improvise and then, in return, the music therapist listening to the client's music, implicitly recognising when and how to act, communicating in the here and now, from moment to moment in music (Fachner, 2014).

There were some indications that improvisation, synchronisation, musical instruments and dissonant sounds also evoked unpleasant experiences, which sometimes triggered a tendency to withdraw, as known in people with depressive symptoms (Carvalho et al., 2013; Erkkilä, 2016; Koelsch, 2014, 2018). These experiences may be linked to the cultural background of participants, e.g. people may not be used to working with few structures, may not like to play an uncommon instrument, or believe they cannot think up something themselves (Bunt & Stige, 2014; Kim & Whitehead-Pleaux, 2015). Unpleasant experiences may be perceived as a limitation. Therefore, a music therapist could decide to tailor EIMT by introducing other techniques, e.g. tonal centring to contain expressed feelings or provide reassurance to dissolve dissonant feelings (Bruscia, 1987). Nevertheless, depression seems related to emotional

problems including regulating negative feelings (Punkanen, 2011). In Erkkilä et al. (2011) depressed clients seemed to benefit from music therapy to process negative emotions such as fear and anxiety (Fachner et al., 2013). Becoming aware of and allowing unpleasant feelings may be seen as part of the therapy process in order to learn to regulate unpleasant feelings (Erkkilä, 2016). Therefore, music therapists should not hesitate to include these experiences in the process of ER.

With respect to experiences with referral, the referrers experienced that referral was encouraged due to the use of music in EIMT, i.e. student counsellors acknowledged that young people use music in everyday life to regulate emotions (Juslin, 2019). Referrers thought that the use of music was experienced as different from talking, lowering the threshold to refer to EIMT. Also, student counsellors experienced EIMT appropriate in a university setting to support students due to its preventive character.

Limitations

Only female students from one site participated in the study. Therefore, it remains unknown how male students experience EIMT. Furthermore, only students that finished EIMT were included. Students who agreed to participate in the multiple-case study but were lost to follow-up were not involved in the EIMT interviews. Their information could have been of added value to gain insight into their experiences with EIMT. Also, one of the participating music therapists (four students; 34 of 99 sessions) was the principal researcher and developer of EIMT. This may have influenced the results on musical components to synchronise, though we did not hypothesise that one musical component would be more important than another. Concerning the monitoring of treatment integrity, self-reporting may have led to less nuanced or socially desirable answers. To complete the fidelity assessment more objectively, it is more common to use video or audio recordings (Baker et al., 2019; Carr et al., 2017). Regarding the qualitative analysis of experiences with EIMT, the procedure used may have caused some risk of viewing data only through the lens of the manual, i.e. organising data according to EIMT elements and theory of ER.

Implications

Further implementation of EIMT is indicated. Ethical vulnerabilities with respect to peer support should be well considered. Publishing the manual and adding illustrations or audio/video material may provide suggestions on what to do while maintaining flexibility to address the needs of clients (Anderson-Ingstrup & Ridder, 2020). Monitoring of treatment integrity and musical components to synchronise needs improvement, which can be assisted by video or audio recording. Using multiple perspectives, music therapists, clients, and their network members may evaluate data (Aalbers, Spreen et al., 2017; Boendermaker & Goense, 2017) and the inclusion of video or audio analysis may lead to a better understanding of what happens in sessions and how this corresponds to people's reports of it (Foubert et al., 2017).

In summary

This study has evaluated the feasibility of EIMT for young adult students with depressive symptoms in a university context. Results suggest that client attendance

and treatment integrity were sufficient. Music therapists used rhythm most frequently as a musical component to synchronise. Both students and music therapists experienced that EIMT evoked change in ER components. Student counsellors experienced EIMT as appropriate in a university setting to support students due to its preventive character. Taking results and limitations into account, EIMT seems feasible to evoke changes in ER in young adult students with depressive symptoms in a university context.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

No funding was received for this study.

Acknowledgments

The authors thank Martine Bootsma for checking the qualitative analysis in MAXQDA files, student counsellors for their referrals and participation in interviews, Ruth E. Freeman (MRCPsych; Maudsley Training Programme, London, U.K.) for providing language help, music therapy trainees for administering EIMT, students who participated in EIMT in this study, Ton Turkenburg for providing EIMT supervision, Jan van der Zwaag for interviewing, and NHL Stenden University of Applied Sciences Leeuwarden, Netherlands for providing us with MAXQDA, musical instruments and for facilitating EIMT implementation.

Notes on contributors

Sonja Aalbers is a research lecturer in systemic N-of-1 case studies, methods of music therapy and intervention development and supervisor of the bachelor's programme in Arts Therapies at NHL Stenden University of Applied Sciences, Academy of Health (Leeuwarden, NL). In partnership with the research group Small n-designs at NHL Stenden, the Dutch National Research Group for Arts Therapies, known as KenVak, and Open University of the Netherlands, she runs a PhD project. Her research focuses on music therapy for depression and emotion-regulating improvisational music therapy (EIMT) for young adults with depressive symptoms.

Annemieke Vink is a research lecturer in the theory of music therapy and research in the bachelor- and (pre)master's programme in music therapy at ArtEZ University of Arts (Enschede, NL). As a researcher, she works for the ArtEZ professorship music-based therapeutic interventions.

Martina de Witte is a research lecturer in the bachelor- and master's programme in music therapy at HAN University of Applied Sciences, Academy of Health and Vitality (Nijmegen, NL), and coordinator of research and innovation at the Department of Arts Therapies. She is a member of the Dutch National Research Group for Arts Therapies, known as KenVaK. In partnership with the University of Amsterdam (NL) and the research group KenVak, she runs a PhD project. Her research focuses on the effects of music therapy on stress regulation.

Kim Pattiselanno is a research lecturer at NHL Stenden University of Applied Sciences (Leeuwarden, NL). Her research and teaching focus on research methodology and youth, and she is currently a member of the research cluster Small n-designs at NHL Stenden, related to the Academies of Social Studies and Health.

Marinus Spreen is a professor at the NHL Stenden University of Applied Sciences, Academies of Social Studies and Health (Leeuwarden, NL). He is head of the research group Small n-designs of NHL Stenden University. His main research focuses on the methodology of single-case studies and small n-designs in social and health studies.

Susan van Hooren is a professor at Zuyd University of Applied Sciences (Heerlen, NL) and Open University of the Netherlands. She is head of the Research Centre of Arts Therapies in the Netherlands, known as KenVaK. During her career, she has combined practice-based research with teaching activities and clinical work. Her research, supervising, and teaching focus on evaluating arts therapeutic interventions and their working factors, resulting in many publications in high-ranking peer-reviewed journals and contributions to national and international conferences.

ORCID

Sonja Aalbers  <http://orcid.org/0000-0003-1539-544X>
 Martina de Witte  <http://orcid.org/0000-0002-6385-9563>

References

- Aalbers, S., Fusar-Poli, L., Freeman, R. E., Spreen, M., Ket, J. C. F., Vink, A. C., Maratos, A., Crawford, M., Chen, X. J., & Gold, C. (2017). Music therapy for depression. *Cochrane Database of Systematic Reviews*. <https://doi.org/10.1002/14651858.CD004517.pub3>
- Aalbers, S., Spreen, M., Bosveld-van Haandel, L., & Bogaerts, S. (2017). Evaluation of client progress in music therapy: An illustration of an N-of-1 design in individual short-term improvisational music therapy with clients with depression. *Nordic Journal of Music Therapy*, 26(3), 256–271. <https://doi.org/10.1080/08098131.2016.1205649>
- Aalbers, S., Spreen, M., Pattiselanno, K., Verboon, P., Vink, A., & van Hooren, S. (2020). Efficacy of Emotion-regulating Improvisational Music Therapy to prevent depression in young adult students with depressive symptoms: A multiple-case study design. *The Arts in Psychotherapy*, 71, 101720. <https://doi.org/10.1016/j.aip.2020.101720>. Article 101720.
- Aalbers, S., Vink, A., Freeman, R. E., Pattiselanno, K., Spreen, M., & Hooren, S. (2019). Development of an improvisational music therapy intervention for young adults with depressive symptoms: An intervention mapping study. *The Arts in Psychotherapy*, 65, 101584. <https://doi.org/10.1016/j.aip.2019.101584>. Article.
- Anderson-Ingstrup, J., & Ridder, H. M. (2020). A Scoping Review and Template Analysis of Manual-Based Complex Interventions in Dementia Care. *Clinical Interventions in Aging*, 15, 363–371. <https://doi.org/10.2147/CIA.S237924>
- Andrews, B., & Wilding, J. M. (2004). The relation of depression and anxiety to life-stress and achievement in students. *British Journal of Psychology*, 95(4), 509–521. <https://doi.org/10.1348/0007126042369802>
- Baker, F. A., Tamplin, J., Clark, I. N., Lee, Y. E. C., Geretsegger, M., & Gold, C. (2019). Treatment fidelity in a music therapy multi-site cluster randomized controlled trial for people living with dementia: The MIDDEL Project Intervention Fidelity Protocol. *Journal of Music Therapy*, 56(2), 125–148. <https://doi.org/10.1093/jmt/thy023>
- Berking, M., Wirtz, C. M., Svaldi, J., & Hofmann, S. G. (2014). Emotion regulation predicts symptoms of depression over five years. *Behaviour Research and Therapy*, 57, 13–20. <https://doi.org/10.1016/j.brat.2014.03.003>
- Boendermaker, L., & Goense, P. (2017). Behandelintegriteit [Treatment integrity]. In T. A. van Yperen, J. W. Veerman, & B. Bijl (Eds.), *Zicht op effectiviteit. Handboek voor resultaatgerichte ontwikkeling van interventies in de jeugdzorg [Insight in effectiveness. Handbook for result-oriented development of interventions in youth care]* (2nd ed., pp. 375–383). Lemniscaat.
- Bowen, D. J., Kreuter, M., Spring, B., Cofta-Woerpel, L., Linnan, L., Weiner, D., Bakken, S., Patrick Kaplan, C., Squiers, L., Fabrizio, C., & Fernandez, M. (2009). How we design feasibility studies. *American Journal of Preventive Medicine*, 36(5), 452–457. <https://doi.org/10.1016/j.amepre.2009.02.002>
- Brancatisano, O., Baird, A., & Thompson, W. F. (2020). Why is music therapeutic for neurological disorders? The Therapeutic Music Capacities Model. *Neuroscience Biobehavioral Reviews*, 112, 600–615. <https://doi.org/10.1016/j.neubiorev.2020.02.008>
- Breedvelt, J. J. F., Kandola, A., Kousoulis, A. A., Brouwer, M. E., Karyotaki, E., Bockting, C. L. H., & Cuijpers, P. (2018). What are the effects of preventative interventions on major depressive disorder

- (MDD) in young adults? A systematic review and meta-analysis of randomized controlled trials. *Journal of Affective Disorders*, 239, 18–29. <https://doi.org/10.1016/j.jad.2018.05.010>
- Bruscia, K. E. (1987). *Improvisational models of music therapy*. Charles C. Thomas.
- Bryant, M. L. (Ed.). (2015). *Handbook of emotion regulation: Process, cognitive effects and social consequences*. Nova Science Publishers.
- Bunt, L., & Stige, B. (2014). *Music therapy: An art beyond words* (2nd ed.). Routledge.
- Carr, C. E., O'Kelly, J., Sandford, S., & Priebe, S. (2017). Feasibility and acceptability of group music therapy vs wait-list control for treatment of patients with long-term depression (the SYNCHRONY trial): Study protocol for a randomised controlled trial. *Trials*, 18(1), 1–15. <https://doi.org/10.1186/s13063-017-1893-8>
- Carvalho, S., Pinto-Gouveia, J., Pimentel, P., Maia, D., Gilbert, P., & Mota-Pereira, J. (2013). Entrapment and defeat perceptions in depressive symptomatology: Through an evolutionary approach. *Psychiatry: Interpersonal and Biological Processes*, 76(1), 53–67. <https://doi.org/10.1521/psyc.2013.76.1.53>
- Conley, C. S., Shapiro, J. B., Kirsch, A. C., & Durlak, J. A. (2017). A meta-analysis of indicated mental health prevention programs for at-risk higher education students. *Journal of Counseling Psychology*, 64(2), 121–140. <https://doi.org/10.1037/cou0000190>
- Creswell, J. W., & Plano Clark, V. L. (2011). *Designing and conducting mixed methods research* (2nd ed.). SAGE.
- de Witte, M., da Silva Pinho, A., Stams, G.-J., Moonen, X., Bos, A., & van Hooren, S. (2020). Music therapy for stress reduction: A systematic review and meta-analysis. *Health Psychology Review*, 1–26. <https://doi.org/10.1080/17437199.2020.1846580>
- de Witte, M., Spruit, A., Van Hooren, S., Moonen, X., & Stams, G.-J. (2020). Effects of music interventions on stress-related outcomes: A systematic review and two meta-analyses. *Health Psychology Review*, 14(2), 294–324. <https://doi.org/10.1080/17437199.2019.1627897>
- Erkkilä, J. (2016). The future of music therapy for persons with depression. In C. Dileo (Ed.), *Envisioning the future for music therapy*. https://www.temple.edu/boyer/academicprograms/music-therapy/documents/ENVISIONING_THE_FUTURE.pdf
- Erkkilä, J., Punkanen, M., Fachner, J., Ala-Ruona, E., Pontio, I., Tervaniemi, M., Vanhala, M., & Gold, C. (2011). Individual music therapy for depression: Randomised controlled trial. *British Journal of Psychiatry*, 199(2), 132–139. <https://doi.org/10.1192/bjp.bp.110.085431>
- Fachner, J. (2014). Communicating change – Meaningful moments, situated cognition and music therapy: A response to North (2014). *Psychology of Music*, 42(6), 791–799. <https://doi.org/10.1177/0305735614547665>
- Fachner, J., Gold, C., & Erkkilä, J. (2013). Music therapy modulates fronto-temporal activity in rest-EEG in depressed clients. *Brain Topography*, 26(2), 338–354. <https://doi.org/10.1007/s10548-012-0254-x>
- Foubert, K., Collins, T., & De Backer, J. (2017). Impaired maintenance of interpersonal synchronization in musical improvisations of patients with borderline personality disorder. *Frontiers in Psychology*, 8, Article 537. <https://doi.org/10.3389/fpsyg.2017.00537>
- Goense, P. B., Boendermaker, L., & van Yperen, T. (2018). Measuring treatment integrity: Use of and experience with measurements in child and youth care organizations. *The Journal of Behavioral Health Services & Research*, 45(3), 469–488. <https://doi.org/10.1007/s11414-018-9600-4>
- Gross, J. J. (Ed.). (2014). *Handbook of emotion regulation* (2nd ed.). The Guilford Press.
- Gustafsson, J. (2017). *Single case studies vs. multiple case studies: A comparative study*. Halmstad University.
- Hay-Smith, E. J. C., Brown, M., Anderson, L., & Treharne, G. J. (2016). Once a clinician, always a clinician: A systematic review to develop a typology of clinician-researcher dual-role experiences in health research with patient-participants. *BMC Medical Research Methodology*, 16(1), Article 95. <https://doi.org/10.1186/s12874-016-0203-6>
- Juslin, P. N. (2019). *Musical emotions explained. Unlocking the secrets of musical affect*. Oxford University Press.
- Kazdin, A. E. (2011). *Single-case research designs. Methods for clinical and applied settings* (2nd ed.). Oxford University Press.
- Kessler, R. C., Aguilar-Gaxiola, S., Alonso, J., Chatterji, S., Lee, S., Ormel, J., Üstün, T. B., & Wang, P. S. (2009). The global burden of mental disorders: An update from the WHO World

- Mental Health (WMH) Surveys. *Epidemiologia e Psichiatria Sociale*, 18(1), 23–33. <https://doi.org/10.1017/S1121189X00001421>
- Kim, S. A., & Whitehead-Pleaux, A. (2015). Music therapy and cultural diversity. In B. L. Wheeler (Ed.), *Music therapy handbook* (pp. 51–63). The Guilford Press.
- Kirsch, D. J., Pinder-Amaker, S. L., Morse, C., Ellison, M. L., Doerfler, L. A., & Riba, M. B. (2014). Population-based initiatives in college mental health: Students helping students to overcome obstacles. *Current Psychiatry Reports*, 16(12), Article 525. <https://doi.org/10.1007/s11920-014-0525-1>
- Koelsch, S. (2014). Brain correlates of music-evoked emotions. *Nature Reviews. Neuroscience*, 15(3), 170–180. <https://doi.org/10.1038/nrn3666>
- Koelsch, S. (2015). Music-evoked emotions: Principles, brain correlates, and implications for therapy. *Annals of the New York Academy of Sciences*, 1337(1), 193–201. <https://doi.org/10.1111/nyas.12684>
- Koelsch, S. (2018). Investigating the neural encoding of emotion with music. *Neuron*, 98(6), 1075–1079. <https://doi.org/10.1016/j.neuron.2018.04.029>
- Kurstjens, H. (2009). *Observatieleidraad muzikale componenten*. [Observation guideline musical components]. Unpublished document. University of Utrecht.
- Linnemann, A., Strahler, J., & Nater, U. M. (2016). The stress-reducing effect of music listening varies depending on the social context. *Psychoneuroendocrinology*, 72, 97–105. <https://doi.org/10.1016/j.psyneuen.2016.06.003>
- Magee, W. L. (2020). Why include music therapy in a neuro-rehabilitation team? *Advances in Clinical Neuroscience and Rehabilitation*, 19(2), 10–12. <https://doi.org/10.47795/STUI1319>
- Marik, M., & Stegemann, T. (2016). Introducing a new model of emotion dysregulation with implications for everyday use of music and music therapy. *Musicae Scientiae*, 20(1), 53–67. <https://doi.org/10.1177/1029864915622055>
- Moore, G. F., Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O’Cathain, A., Tinati, T., Wight, D., & Baird, J. Process evaluation of complex interventions: Medical Research Council guidance. (2015). *BMJ*, 350(mar19 6), h1258–h1258. Article 350. <https://doi.org/10.1136/bmj.h1258>
- Moore, K. S. (2013). A systematic review on the neural effects of music on emotion regulation: Implications for music therapy practice. *Journal of Music Therapy*, 50(3), 198–242. <https://doi.org/10.1093/jmt/50.3.198>
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>
- Pereplechikova, F. (2011). On the topic of treatment integrity. *Clinical Psychology: Science and Practice*, 18(2), 148–153. <https://doi.org/10.1111/j.1468-2850.2011.01246.x>
- Porter, S., McConnell, T., McLaughlin, K., Lynn, F., Cardwell, C., Braidon, H.-J., Boylan, J., & Holmes, V., & The Music in Mind Study Group. (2017). Music therapy for children and adolescents with behavioural and emotional problems: A randomised controlled trial. *Journal of Child Psychology and Psychiatry, and Allied Disciplines*, 58(5), 586–594. <https://doi.org/10.1111/jcpp.12656>
- Punkanen, M. (2011). *Improvisational music therapy and perception of emotions in music by people with depression* [Doctoral dissertation, University of Jyväskylä]. Faculty of Humanities of the University of Jyväskylä. <https://jyx.jyu.fi/dspace/bitstream/handle/123456789/27199/9789513943042.pdf>
- Robb, S. L., Burns, D. S., Docherty, S. L., & Haase, J. E. (2011). Ensuring treatment fidelity in a multi-site behavioral intervention study: Implementing NIH behavior change consortium recommendations in the SMART trial. *Psycho-Oncology*, 20(11), 1193–1201. <https://doi.org/10.1002/pon.1845>
- Rush, A. J., Giles, D. E., Schlessner, M. A., Fulton, C. L., Weissenburger, J. E., & Burns, C. T. (1986). The inventory for depressive symptomatology (IDS): Preliminary findings. *Psychiatry Research*, 18(1), 65–87. [https://doi.org/10.1016/0165-1781\(86\)90060-0](https://doi.org/10.1016/0165-1781(86)90060-0)
- Rush, A. J., Gullion, C. M., Basco, M. R., Jarrett, R. B., & Trivedi, M. H. (1996). The inventory of depressive symptomatology (IDS): Psychometric properties. *Psychological Medicine*, 26(3), 477–486. <https://doi.org/10.1017/S0033291700035558>
- Saunders, M., Lewis, P., Thornhill, A., Booij, M., & Verckens, J. P. (2009). *Methoden en technieken van onderzoek*. [Methods and techniques in research] (4th ed.). Pearson Education Benelux.

- Scherer, K. R. (2005). What are emotions? And how can they be measured? *Social Science Information*, 44(4), 695–729. <https://doi.org/10.1177/0539018405058216>
- Scherer, K. R. (2009). The dynamic architecture of emotion: Evidence for the component process model. *Cognition & Emotion*, 23(7), 1307–1351. <https://doi.org/10.1080/02699930902928969>
- Scherer, K. R. (2013). Measuring the meaning of emotion words: A domain-specific componential approach. In J. R. Fontaine, K. R. Scherer, & C. Soriano (Eds.), *Components of emotional meaning. A sourcebook* (pp. 7–30). Cambridge University Press.
- Scherer, K. R. (2015). When and why are emotions disturbed? Suggestions based on theory and data from emotion research. *Emotion Review*, 7(3), 238–249. <https://doi.org/10.1177/1754073915575404>
- Scherer, K. R., & Zentner, M. R. (2001). Emotional effects of music: Production rules. In P. N. Juslin & J. A. Sloboda (Eds.), *Series in affective science. Music and emotion: Theory and research* (pp. 361–392). Oxford University Press.
- Tarr, B., Launay, J., & Dunbar, R. I. (2014). Music and social bonding: self-other merging and neurohormonal mechanisms. *Frontiers in Psychology*, 5. Article 1096. <https://doi.org/10.3389/fpsyg.2014.01096>
- Trondalen, G. (2019). Musical intersubjectivity. *The Arts in Psychotherapy*, 65, 101589. <https://doi.org/10.1016/j.aip.2019.101589>. Article.
- Van Bruggen-Rufi, C. H. M., Hogeboom, M., Vink, A. C., Achterberg, W. P., & Roos, R. A. C. (2017). Process evaluation of a randomized controlled trial studying the effect of music therapy in patients with huntington's disease. *Journal of Memory Disorders and Rehabilitation*, 2(1), 1–11. Article 1005.
- van Yperen, T. A., Veerman, J. W., & Bijl, B. (2017). *Zicht op effectiviteit. Handboek voor resultaatgerichte ontwikkeling van interventies in de jeugdzorg [Insight in effectiveness. Handbook for result-oriented development of interventions in youth care]* (2nd ed.). Ed.. Lemniscaat.
- VERBI Software. (2019). *MAXQDA 2020 [computer software]*. Available from maxqda.com
- Vos, T., Abajobir, A. A., Abbafati, C., Abbas, K. M., Abate, K. H., Abd-Allah, F., Abdulle, A. M., Abebo, T. A., Abera, S. F., Aboyans, V., Abu-Raddad, L. J., Ackerman, I. N., Adamu, A. A., Adetokunboh, O., Afarideh, M., Afshin, A., Agarwal, S., Aggarwal, K., Agrawal, R., Agrawal, A. S., & Murray, C. J. L. (2015). Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990–2013: A systematic analysis for the Global Burden of Disease Study 2013. *Lancet*, 386(9995), 743–800. [https://doi.org/10.1016/S0140-6736\(15\)60692-4](https://doi.org/10.1016/S0140-6736(15)60692-4)
- Werner-Seidler, A., Perry, Y., Calcar, A. L., Newby, J. M., & Christensen, H. (2017). School-based depression and anxiety prevention programs for young people: A systematic review and meta-analysis. *Clinical Psychology Review*, 51, 30–47. <https://doi.org/10.1016/j.cpr.2016.10.005>