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Mindful Self-Compassion and Music Therapy as a Resource for Individuals with Chronic Pain:

A Mixed-Methods Feasibility Study

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Abstract

Introduction: Treatment for individuals living with chronic pain often aims to shift patients from helplessness to resourcefulness, fostering self-efficacy. This study tested the feasibility of integrating Mindful Self-Compassion (MSC) techniques into music therapy (MT) and explored their potential effects on pain experience, acceptance, and self-compassion.
Method: In a convergent parallel mixed-methods feasibility study, adults with chronic pain attended weekly individual MT sessions. Quantitative measures included the Self-Compassion Scale (SCS), Chronic Pain Acceptance Questionnaire, and a Numeric Rating Scale (NRS) for pain, assessed at baseline and post-therapy. Focused interviews provided qualitative data, analyzed thematically, according to Braun and Clarke (2006, 2021). Pre- and post-results were compared using descriptive and non-parametric statistics.
Results: Feasibility in terms of recruitment could be shown, with some challenges in retention and compliance, with eight participants (n = 8) completing the whole study. Qualitative findings highlighted the value of MT, with participants reporting moments of

[1] **Correction notice**: In the original article, the author order was listed incorrectly. The original author order was: Russo, Haslbeck, & Ronel. The corrected order is: Russo, Ronel, & Haslbeck. Author order has been corrected to reflect author contributions [9 March 2026].

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self-care, refocusing, and exploring their pain and emotions with a validating and accepting attitude. While no substantial changes were observed in the SCS or pain perception, there was a tendency for increased pain acceptance. **Discussion:** This study was the first to integrate MSC within MT. Despite the small sample size, feasibility was demonstrated. Although generalizability is limited, these findings may offer a foundation for future research on combining MSC and MT for chronic pain management.

Keywords: music therapy; chronic pain; self-compassion; mindfulness; pain reduction; pain acceptance

Introduction

The prevalence of people living with chronic pain is increasing, and the need for treatment possibilities is rising (Bachmann et al., 2015; Cohen et al., 2021; European Pain Federation, 2024; Pickering et al., 2025; Rice et al., 2016). In the scope of a bio-psycho-social framework, people living with chronic pain not only are affected in their physical domains but also experience difficulties in their self-perception, relationship with self and others, and quality of life (Bushnell et al., 2013; Hoffmann, 1997; Raja et al., 2020). Studies show insecure attachment styles may be a predictor of increased pain-related fears, stress-induced hyperalgesia, reduced pain threshold, hypervigilance to pain, poor pain coping, negative appraisal of pain, and increased pain perception and disability (Davies et al., 2009; Egle, 2016; Landa et al., 2012; Rivat et al., 2007; Stamp et al., 2024; van Vliet et al., 2021; Wahl et al., 2014). Treatment is geared towards biological, social, interactional, cognitive, emotional, and spiritual determinants of chronic pain. Increased challenges within any of these domains are associated with worse outcomes, including impaired quality of life (Hoffmann, 1997; Landa et al., 2012; Potthoff et al., 2025; Rinaudo et al., 2025; Wahl et al., 2014). Individualized acceptance-based therapy approaches offer the potential for successful therapy outcomes. A central notion in acceptance-based therapies is to encourage people living with chronic pain to establish an accepting attitude towards their thoughts and feelings rather than directly challenging them (Germer, 2009). The perspective of individualized versus standardized care addresses the interplay of the complex mechanisms in chronic pain (Crawford et al., 2014; Flor & Turk, 2011; Hillecke et al., 2005; Nöcker-Ribaupierre, 2008). Individualized care can aim at possible therapeutic goals and focus on, for example, the improvement of subjective well-being, self-efficacy, lifestyle changes, a sense of control over the aversive stimuli, and changing beliefs about helplessness, transitioning from passivity to resourcefulness and increasing the ability to function, regardless of pain (Császár et al., 2014; Flor & Turk, 2011; Tan et al., 2025; Wormit et al., 2008).

In the past decades, Buddhist principles have found their way into research and have become widely integrated into contemporary clinical and preventative practices (Anderssen-Reuster, 2013; Brown & Ryan, 2003; Kabat-Zinn, 1982; Neff, 2011; Williams & Kabat-Zinn, 2011). The cultural and religious origins of these principles are essential to recognize (Brown, 2016; Purser & Milillo, 2015; Williams & Kabat-Zinn, 2011). The term mindfulness is an umbrella concept for diverse and multi-layered Buddhist practices and teachings (Brown, 2016; Cannon, 2016; Desmond, 2016; Gethin, 2015; Hanh, 2016), many of which entered Western therapeutic contexts through processes of colonization, globalization, and the secular appropriation of ancient spiritual traditions (Cannon, 2016; Sherrell & Simmer-Brown, 2017). Although figures such as Kabat-Zinn (1982, 1994) intentionally framed mindfulness through a secular lens, the contemporary use of these practices reflects a significant departure from their Buddhist roots (Purer & Milillo, 2015; Ţhānissaro, 2012). Acknowledging the contextualization of their origins and history

provides a more culturally informed understanding of how mindfulness-based approaches are adapted, translated, and used in Euro-American clinical and preventive settings (Carmody, 2015). This reflexive awareness enhances ethical responsibility to situate such practices within their broader historical and cultural contexts (Davis & Thompson, 2014).

The concept of self-compassion for individuals suffering from chronic pain has been examined in different clinical contexts (Baxter & Sirois, 2025; Costa & Pinto-Gouveia, 2013; Gillett et al., 2025; Lanzaro et al., 2021; Torrijos-Zarcero et al., 2021; Vowles et al., 2014; Wren et al., 2012). The Mindful Self-Compassion (MSC) model encompasses three components. The first is fostering a kind attitude toward adversities (Neff, 2011; Reisch, 2002; Torrijos-Zarcero et al., 2021; Wren et al., 2012). In this component, *self-kindness* entails an individual learning how to turn inward to give oneself unconditional acceptance, warmth, and comfort towards a difficult aspect of one's life versus self-judgment, often observed in chronic pain conditions (Neff, 2011; Reisch, 2002). The second component, *common humanity*, involves adopting the belief that one's suffering is universal and part of the shared human experience of isolation, which is widespread in chronic pain sufferers due to decreased activity and the loneliness inherent in experiencing pain (Flor & Turk, 2011). The third component is *mindfulness*, which involves being aware of the present moment and experiencing all liked and disliked aspects of the experience versus over-identification (Brown & Ryan, 2003; Cusens et al., 2010). Over-identification with being a pain-patient is a common condition, as it may become part of an individual's identity and purpose (Costa & Pinto-Gouveia, 2013; Desmond, 2016; Neff, 2009). MSC has not been proven to be effective in lowering psychopathology compared to other active control conditions. However, it can be considered a modifiable psychological characteristic during the process of therapy (Wilson et al., 2019).

Moreover, MSC may be associated with acceptance (Costa & Pinto-Gouveia, 2011, 2013). Acceptance-based modalities such as Acceptance and Commitment Therapy approaches have been studied in:

- lowering pain intensity (Tan et al., 2025; Vowles et al., 2014);
- lessening feelings of anxiety (Feliu-Soler et al., 2018; Veehof et al., 2016);
- lessening feelings of depression (Costa & Pinto-Gouveia, 2011);
- lessening feelings of avoidance (Crombez et al., 2012; McCracken et al., 2004; McCracken & Eccleston, 2005; McCracken & Yang, 2006; Viane et al., 2003);
- decreasing physical and psychological disability (Dahl et al., 2005; Wicksell et al., 2010); and
- providing more daily activity, increased psychological flexibility, and better functionality in work status (Costa & Pinto-Gouveia, 2011; McCracken & Eccleston, 2005).

The acceptance process has been a good asset in the treatment of chronic pain and a possible prerequisite for therapeutic change (Costa & Pinto-Gouveia, 2011; Dahl et al., 2005; Davey et al., 2020; McCracken & Eccleston, 2005; McCracken & Vowles, 2014; Prevedini et al., 2011; Ruiz, 2010; Wicksell et al., 2010).

A variety of stimuli in the environment can modify pain perception. Music is used in pain management throughout the medical field based on its analgesic effects (Ayoub et al., 2005; Bradt et al., 2015; Bradt et al., 2024; Chen et al., 2025; Kühlmann et al., 2018; Lunde et al., 2019; Mitchell & MacDonald, 2006; Sihvonen et al., 2022; Taylor, 2010). Systematic reviews disclose various studies using diverging music interventions (Chen et al., 2025; Garza-Villarreal et al., 2017; Lee, 2016). Clinical trials evaluating music interventions for chronic pain suggest a variety of benefits, such as a decrease in pain perception (Metzner et al., 2022; Richard-Lalonde et al., 2020) and a decrease in anxiety and depression (Garza-Villarreal et al., 2017; Lee, 2016).

Receptive music therapy (MT) techniques, which involve listening to preferred live or recorded music, are associated with short-term pain reduction and relaxation (Glomb et al., 2022; Guétin et al., 2012; Hillecke et al., 2005; Metzner et al., 2022; Moreno, 2004). The distracting hypothesis suggests that music listening diverts attention away from pain stimuli (Bradt, 2010; Garza-Villarreal et al., 2014; Garza-Villarreal, 2017; Hanser & Mandel, 2012; Koelsch & Bradt, 2025; Lunde et al., 2019; Mandel, 1996). Taylor (2010) adds that music affects pain perception by influencing the somatosensory cortex. Research shows tension increases pain perception, while relaxation can reduce it (Moreno, 2004). Hillecke et al. (2005) note that music as diversion offers short-term relief by competing with the focus on pain. Several studies suggest listening to preferred music or live music performed by a music therapist reduces pain, as shown by visual analog scales (Guétin et al., 2012; Hillecke et al., 2005).

However, from a multimodal perspective on chronic pain, there may be more clinical goals to consider for therapy than only distraction (Loewy, 2019). Due to the multimodal complexity of chronic pain, the distraction theory, and using music as therapy, may not address the long-term therapy goals for people living with chronic pain. MT may facilitate comfort and relaxation, sensory stimulation, and mood enhancement. It may also serve as a means for providing choice and control, as an outlet for self-expression, as a method for cognitive reframing, and as a vehicle for social support (Bacher, 2014; Bradt et al., 2015; Bradt et al., 2024; Dileo & Bradt, 1999; Hillecke et al., 2005; Tan et al., 2025; Wormit et al., 2008). Entrainment, a manualized and specialized MT approach for treating chronic pain, may address emotional regulation by providing relief from pain and offering a mode of expression for the pain experience, helping people living with chronic pain feel supported and accompanied (Dileo & Bradt, 1999; Metzner, 2012; Metzner et al., 2022). McWilliams (2015), for example, stated the expression of pain can indicate attachment styles. The relationship with the therapist may be an important factor in treatment, and, consequently, the goal ought to be to reduce dependency and strengthen autonomy. Bacher (2014) further ascribed music making as a catalyst in the relationship between patient and therapist. In the act of active music making, patients can observe and experience their patterns of intersubjective interaction, potentially leading to synchronization and attunement with the music therapist (Bacher, 2014; De Backer & Sutton, 2014). This can ultimately support increasing psychological flexibility (Hillecke et al., 2005).

Aim of the Study

The purpose of this clinical feasibility study was to investigate the integration of MSC techniques within a MT context for people living with chronic pain. Given the complex and multidimensional nature of chronic pain, the study aimed to explore whether MSC, when delivered through MT, could support pain acceptance and perception. MT, known for its non-verbal and analgesic qualities, offers an alternative outlet that may complement the cognitive and emotional components of MSC. Specifically, the study aimed to evaluate the feasibility of recruitment, retention, and compliance rates; explore patients' subjective experiences of self-compassion, pain acceptance, and pain perception; and assess the feasibility and therapeutic value of combining these approaches. Additional objectives included identifying methodological considerations and implications to inform the design of future studies.

Method

Epoché

This study stems from the first author's long engagement and practice with Buddhist teachings, first introduced to her by Buster Williams (a jazz musician) and later deepened through clinical training with a Buddhist monk in New Orleans (Desmond, 2016). The parable of the "second arrow," which highlights how self-denial, self-judgment, or shame can intensify suffering, became a guiding lens in her work with patients living with chronic pain (Dahl et al., 2005; Hanh & Kapleau, 2005; Holder, 2006). In this clinical context, she observed that patients often show great empathy toward others but struggle to direct compassion toward themselves. Rooted in a compassionate, process-oriented view of music therapy, this research study aimed to support patients in softening the impact of the "second arrow." The first author is a board-certified music therapist and graduated from an MSC course.

Design

A convergent parallel design was chosen with a mixed-methods feasibility study to explore possible quantitative trends and qualitative insights into the participants' experiences of the intervention.

Ethics Statement

The study was conducted in compliance with the Declaration of Helsinki and adhered to Good Clinical Practice guidelines. The patients/participants provided their informed consent to participate in the study. The Ethics Committee Zurich, Switzerland, has reviewed the proposal.

Participants and General Procedure

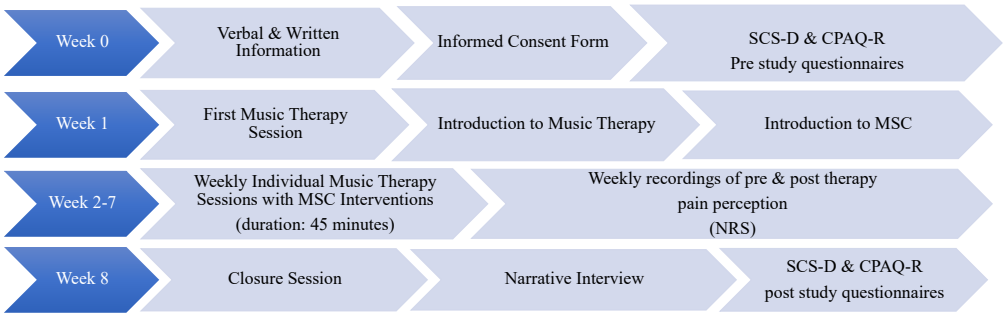
The study was conducted in the Barmelweid clinic, the largest psychotherapeutic-psychosomatic in-patient treatment center in the German-speaking part of Switzerland, with patients hospitalized, in particular, for chronic pain undergoing a multimodal treatment program. Recruitment occurred consecutively upon recommendation and consideration of the inclusion criteria, assessed by the case-leading psychotherapists.

Inclusion criteria were age 18 and older, a primary diagnosis and/or reason for hospitalization due to chronic pain, a minimum stay of eight weeks at the treatment center for the study duration, verbal skills in German, and written consent. Once compliance with inclusion criteria was confirmed, patients were scheduled for an informational meeting session with the music therapist. They were introduced to MT and were informed on the content and procedure of the study verbally and by a written information sheet. Patients were explicitly informed that declining to participate in the study would not result in any disadvantages for them, and they would also receive MT without study participation.

After receiving informed consent, patients were provided two self-reporting pre-study questionnaires, the Self-Compassion Scale (SCS) and Chronic Pain Acceptance Questionnaire-Revised (CPAQ-R), to be filled out before their first session. SCS and CPAQ-R were measured at two time points in the study (pre- and post-treatment). The music therapist evaluated their baseline questionnaire for the SCS and assessed the six subscale components standard to the MSC concept. Treatment plans were designed based on the outcomes of the subscale scores, which determined specific MSC techniques targeting individual treatment needs. Each participant had seven to eight individual MT sessions including MSC interventions. The sessions lasted between 30 to 45 minutes. The

participants' pain perception was assessed directly before and after each therapy session using a numeric rating scale (NRS) with a scale from 0–10. Directly after their last scheduled session, patients were asked to fill out the post-study questionnaires (SCS and CPAQ-R). Interviews were scheduled during their last week at the clinic and within one week of terminating MT treatment. Interviews were conducted by a second music therapist, who was not involved in the treatment process. A flow chart of the chronological sequence of the study is depicted in Figure 1.

Figure 1. Chronological Sequence of Clinical Study.



Description of Music Therapy Interventions

The MT interventions were designed with a music-centered focus. MT methods included active and receptive evidence-based treatment approaches researched in the context of the chronic pain population, such as entrainment (Dileo & Bradt, 1999) and the Heidelberger Model of MT and Chronic Pain (Hillecke et al., 2005; Wormit et al., 2008), which both use active and receptive intervention approaches. They were combined with techniques from the MSC program (Desmond, 2016; Germer, 2009; Neff, 2011). The weekly individual MT sessions did not follow a treatment manual and were semi-structured; this allowed the music therapist to target the MSC components and adhere to the patient's clinical goals and needs and further adhere to their individualized musical assessment. MT methods were adapted to the needs of the clients and, therefore, varied from session to session. The interventions included active interventions, such as free improvisation, singing, vocal work, role play, and movement, and receptive interventions, such as listening to preferred music, live music played by the music therapist, and vibroacoustic treatment with the monochord bed (examples can be found in Appendix A). Three interventions (MSC in daily life, compassionate voice, and dealing with difficult emotions) were administered to all participants, whereas others (soft touch, sentences of kindness, serenity, confronting the inner critic, and giving and receiving compassion) were chosen based on individual indication. A sample of the standardized sequence of the individual MT sessions is illustrated in Table 1.

Table 1. Example Sequence of Individual 45-Minute Music Therapy Sessions.

Procedure	Mindful Self-Compassion (MSC) Intervention	Music Therapy Interventions
1. Patient checks in with Numerical Rating Scale (NRS): Score to assess for pain perception pre-therapy (Interval of 0–10)	N/A	N/A

Procedure	Mindful Self-Compassion (MSC) Intervention	Music Therapy Interventions
2. Music Ritual: Receptive music played by therapist during which the patient was asked to exercise a self-compassion break, a common technique used in MSC (Neff, 2011)	Self-Compassion Break (Neff, 2011)	**Receptive:** Live-played improvisation, Live-played song
3. MSC Interventions in Music Therapy targeting MSC subcomponents (Examples on adaptation in MT available in Appendix A)	MSC in daily life	**Active:** Role Play and Improvisation, Singing, Moving, Music Listening
	Finding the compassionate voice	**Active:** Music Therapy: Singing, Voice Work, Improvisation
	Dealing with difficult emotions	**Receptive:** Imagery & Music **Active:** Improvisation
	Soft touch	**Receptive:** Vibroacoustic instruments (monochord bed), Music & Imagery **Active:** Music & Movement, Singing, Humming
	Sentence of kindness	**Receptive:** Vibroacoustic instruments (monochord bed), Live Improvisation **Active:** Singing
	Finding serenity	**Receptive:** Vibroacoustic instruments (monochord bed)
	Confronting the inner critic	**Active:** Improvisation, Singing, Speaking
	Giving and receiving compassion	**Receptive:** Vibroacoustic instruments (monochord bed), Live Improvisation **Active:** Improvisation, Singing
4. Patient checks out with NRS: Score to assess for pain perception post-therapy (Interval of Likert Scale 0-10)	N/A	N/A

Materials

The MT sessions took place in the MT room at the Barmelweid clinic, equipped with a wide diversity of high-quality instruments and a monochord bed, which is used as a vibroacoustic receptive form of treatment. Instruments were chosen by the patients based on individual preferences and needs. Therapy sessions were recorded for later reference

with the voice memo application on an iPhone 5s and were then exported to separate research hard drives for data security reasons. Following each therapy session, the content was documented descriptively in the hospital's documentation software, SAP Phoenix.

Quantitative Outcome Measurements

The Self-Compassion Scale (SCS & SCS-D)

The German version of the Self-Compassion Scale (SCS-D) was applied (Hupfeld & Ruffieux, 2011). The SCS-D is a self-report inventory consisting of 26 items measuring six distinct components of self-compassion, divided into three positive traits and their corresponding negative counterparts. The items are all ascribed to one of the components of MSC, self-kindness versus self-judgment (e.g., "I try to be loving towards myself when I'm feeling emotional pain"), common humanity versus isolation (e.g., "When I think about my inadequacies, it tends to make me feel more separate and cut off from the rest of the world"), and mindfulness versus over-identification (e.g., "When something upsets me, I try to keep my emotions in balance"). Neff and Germer (2013) suggests a 3-factor model of self-compassion, as each of the six subscales adds up to an overarching self-compassion score and their three subcomponent scores. For data analysis of the subscales, the negative components were coded in reverse. The scores of the six subscales are added up to a total SCS score, with higher results signifying a higher grade of self-compassion. Items are rated on a 5-point Likert scale, ranging from 1 (almost never) to 5 (almost always). A single higher-order factor of self-compassion reveals the valid inter-correlations of the subscales. The German version of the SCS-D was validated by replicating the method of the original form and was assessed as equally reliable and valid (Hupfeld & Ruffieux, 2011).

Chronic Pain Acceptance Questionnaire Revised (CPAQ-R & CPAQ-D)

The Chronic Pain Acceptance Questionnaire Revised (CPAQ-R), developed by McCracken and colleagues (2004), assesses the acceptance of chronic pain, which comprises two subscales. The first subscale, the pain willingness subscale (e.g., "My life is going well, even though I have chronic pain"), has nine items. The second subscale, the activity engagement subscale (e.g., "Keeping my pain level under control takes first priority whenever I'm doing something"), consists of eleven items. A 6-point Likert scale ranging from 0 (never) to 6 (always) is utilized for the 20-item questionnaire. The total score is calculated by adding both subscores. Total CPAQ-R scores range from 0–156, subscale scores of pain willingness range between 0–54, and activity engagement subscale scores range between 0–66, with higher scores indicating higher acceptance. The German version of the CPAQ-R (CPAQ-D) was validated by Nilges and colleagues (2007) and is based on the revised version of McCracken et al.'s original questionnaire (2004). The questionnaire was tested on 150 chronic pain patients based in a pain center in Germany, concluding it is closely related in reliability and validity to the original (Nilges et al., 2007).

Pain intensity

Pain intensity perception is based on subjective experience; a common way to assess pain intensity is through self-report (Anand & Craig, 1996). Visual analog and numeric rating scales (NRS) are widely used in experimental research designs and clinical settings as a pain measurement (Flor & Turk, 2011). NRS was selected as a tool in this study, as it is generally valid and reliable due to its standardized and objective measure of pain intensity and its sensitivity to change, making it helpful in monitoring pain over time (Ferreira-Valente et al., 2011). The NRS enhances a 10-point numeric scale asking for the severity

of pain perception, from 0 (no pain) to 10 (worst pain ever). It is commonly used in research studies, making it accessible for comparison across different populations (Jensen et al., 2015).

Focused interviews

To research the qualitative aspects of this study, the author designed a focused semi-structured interview (Denzin & Lincoln, 2011). The interview consisted of introductory questions that were not assessed because the interview was conducted by a second therapist and served to establish rapport. The focused questions asked about patients' experience and evaluation of the treatment process, methods used, perception of relevance and/or changes in MSC, and chronic pain acceptance in the context of MT. The questions were piloted with colleagues and a patient before they were used in this study (Appendix B). The interviews were conducted by a colleague music therapist on staff, took place at the clinic lasting between 25 and 35 minutes, and were recorded with a Zoom H4n Audio recorder with recordings transferred to a locked research hard drive for data security reasons.

Data Analysis

Quantitative analysis approaches

Since the planned sample size was very small, only descriptive statistics (median, range) were used to explore possible trends within the subjects. A non-parametric Wilcoxon Signed-Rank Test was conducted to test for statistical significance in pre- and post-treatment results. The significance level was assumed to be below 0.05. The statistical analyses were performed using RStudioVersion 2024.04.0+735.

Qualitative data analysis

The focused interviews (Appendix B) were evaluated using a thematic analysis approach as outlined by Braun and Clarke (2006, 2021), particularly recommended for individual case study formats. Following a 6-phase protocol, the interviews were transcribed verbatim and then coded based on the prevalence and commonalities across the interviews, forming subgroups that resulted in a thematic map (Appendix A–C). A code is "the most basic segment, or element, of the raw data or information that can be assessed in a meaningful way regarding the phenomenon" (Braun & Clarke, 2006, p. 18). To ensure scientific rigor, transcripts and formulated codes were continually reviewed and discussed with the supervisor (last author) and team colleagues.

The administration of the thematic analysis model facilitated the extraction of a diversity of themes, emphasizing the importance of transparency, consistency, and explicit explanation of the process. To establish and define what constituted a theme, guidelines from Braun and Clarke (2006, 2021) were applied. The data familiarization process involved listening to the interviews multiple times over the course of weeks to develop an understanding of the patient's mood and overall content. The interviews were then transcribed verbatim. In a second step, the interviews were re-listened to, and initial passages were marked with preliminary codes. Criteria for coding included the prevalence and commonalities of responses among subjects, as well as the relevance and nuances of answers regarding the thesis topic. In a third step, the initial codes were compared and organized on a flipchart, categorized by commonalities to form subgroups of potential themes. The author used a theoretical thematic analysis approach to identify potential themes, focusing on aspects of the data related to the main topics of the study (Chronic

Pain Acceptance and Perception, MSC, MT). In a fourth step, the initial codes and corresponding text passages were assigned to potential themes, forming a "thematic map." The interviews were then re-listened to, and passages were assigned to the analyzed themes. For defining the themes in a fifth step, a latent analysis level was chosen, which "goes beyond the semantic content of the data, and starts to identify or examine the underlying ideas, assumptions, and conceptualizations and ideologies" (Braun & Clarke, 2006, p. 13). This approach involves interpreting the data and linking it to the underlying theory rather than just describing it. Since the interviews were utilized to answer the qualitative aspects of this research, a latent approach was appropriate.

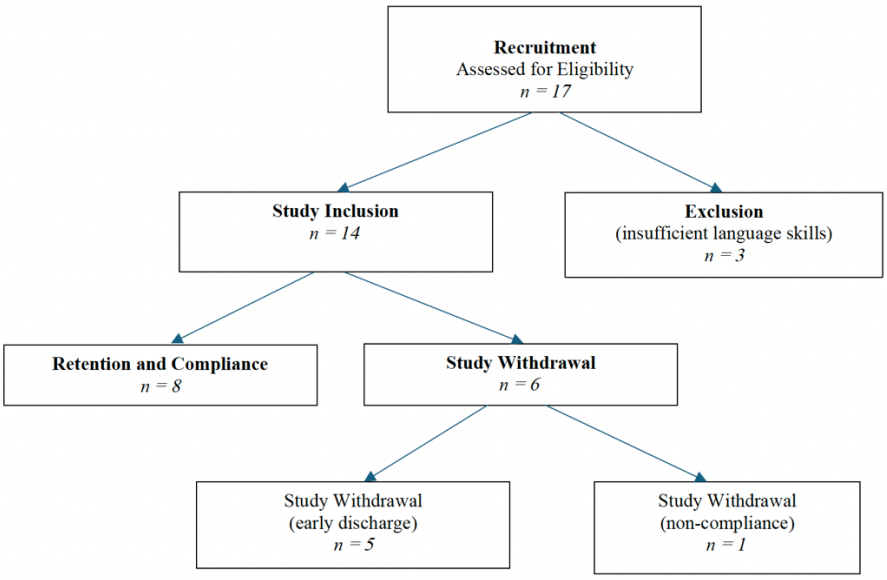
The interviews were conducted, processed, and coded in German. Once all the codes and subthemes were defined, the relevant quotes and themes of the interviews were translated into English.

Results

Study Feasibility: Recruitment, Retention, and Compliance

Feasibility in terms of recruitment, retention, and compliance could be shown as depicted in Figure 2. However, retention and compliance were more complicated than anticipated. Over a time span of 10 months, 17 patients were eligible to be approached for participation in the study, of which 14 patients signed an informed consent form. Three patients were excluded during the study screening due to insufficient language skills ($n = 3$). Five patients were excluded from the final sample due to early voluntary and/or involuntary discharge ($n = 5$), and one patient was excluded due to non-compliance with therapy ($n = 1$). Altogether, 47% of the total screened patients were included in the study ($n = 8$) and attended all the MT sessions.

Figure 2. Flowchart Showing Recruitment, Retention, and Compliance.



Sample description

Due to the small sample size, diversity statements are limited. The age range in the group was between 47 and 62 years, with an average age of 52 years. There was $n = 1$ male participant and $n = 7$ female participants. None of the participants had previous experience with MT. All participants had the same primary diagnosis of ICD 10: F45.41 (chronic pain with somatic and psychological features) ($n = 8$), while seven participants

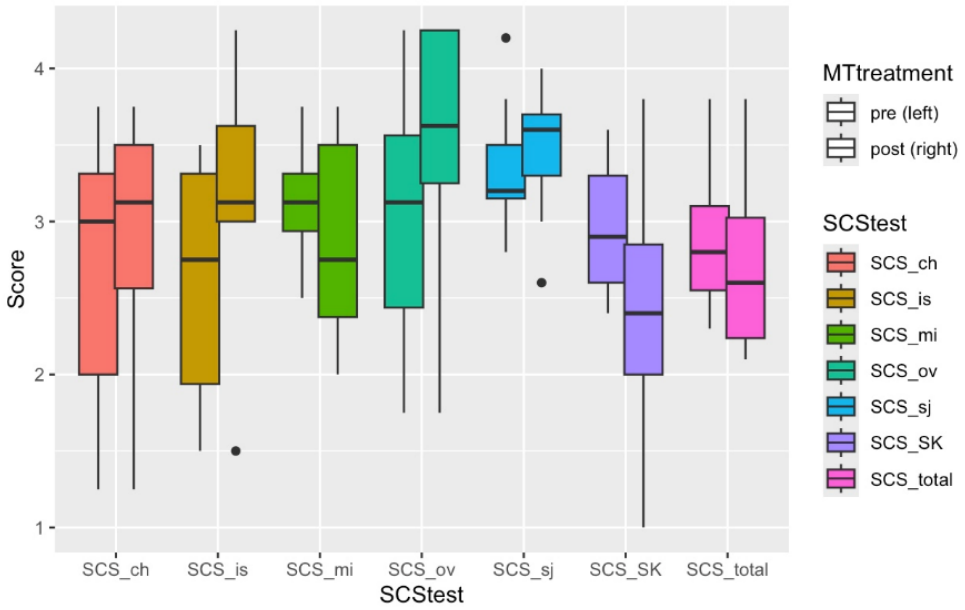
had comorbid psychological diagnoses (e.g., depression, childhood trauma, accentuated personality traits, agoraphobia with panic attacks, obsessive-compulsive-disorder, anxiety disorder, eating disorder). Five of the subjects were married ($n = 5$), while three out of the five reported major marital difficulties ($n = 3$); two were divorced ($n = 2$), and one participant was in a relationship ($n = 1$). The study included participants from diverse ethnic backgrounds; while three were of Swiss nationality ($n = 3$), five participants had other European backgrounds ($n = 5$). The socioeconomic diversity in the sample was distributed equally, as two attended up until mandatory school ($n = 2$), four participants worked in the service and administration industry ($n = 4$), and two participants attended higher education ($n = 2$).

Quantitative Results

Self-Compassion Scale: SCS scores

Overall, the SCS scores show no pre-post difference whether in the total scores (pre-test: median 2.6 [range 2.1–3.8]; post-test: median 2.8 [range 2.3–3.8]; $p = 0.106$), nor in the sub-scores.

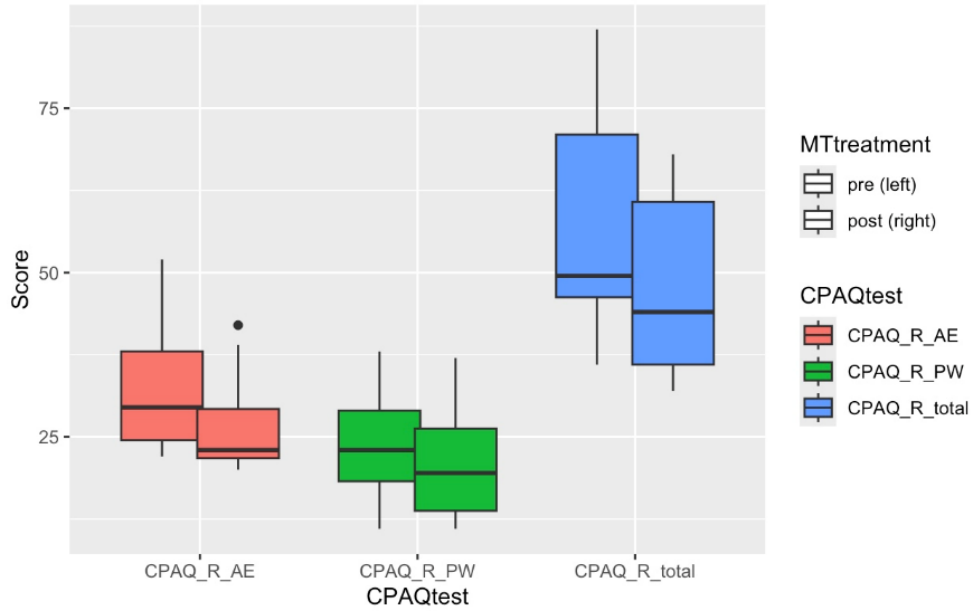
Figure 3. Boxplot Showing Within Subject Self-Compassion Scale (SCS) Scores Pre- & Post-Study.



Chronic Pain Acceptance: CPAQ-R Scores

There was a tendency for higher values in the overall CPAQ-R scores after completion of the MT treatment than before (pre: median 44 [range 32–68]; post: median 49.5 [range 36–87]) with a pre-post difference of $p = 0.014$ (Figure 4). Also, in the two sub-tests of the CPAQ-R, a tendency of increase post-treatment has been shown in Activity Engagement; CPAQ-R_AE Scores (pre: median 23 [range 20–42]; post: median 29.5 [range 22–52]; $p = 0.042$); and in Pain Willigness; CPAQ-R-PW Scores (pre: median 19.5 [range 11–37]; post: median 23 [range 11–38]; $p = 0.014$).

Figure 4. Boxplot Showing Within Subject CPAQ-R Scores Pre- & Post-Study.



Note: Subscales: AE = Activity Engagement: Results score can range from 0–66; PW = Pain Willingness: Results score can range from 0–54.

SCS & CPAQ-R: Individual descriptive results

As the feasibility study's sample size was small ($n = 8$), individual descriptive subject analysis was considered to complement qualitative data in the mixed-method design. On an individual level, for most patients ($n = 6$ of $n = 8$), the total SCS scores showed a slight tendency of an increase post-treatment. For one participant (p_4), scores remained the same; for another participant (p_7), total SCS scores decreased post-treatment (Figure 5). However, all CPAQ-R scores increased in all participants (Figure 6).

Figure 5. Bar Chart Showing Within Subject SCS Scores.

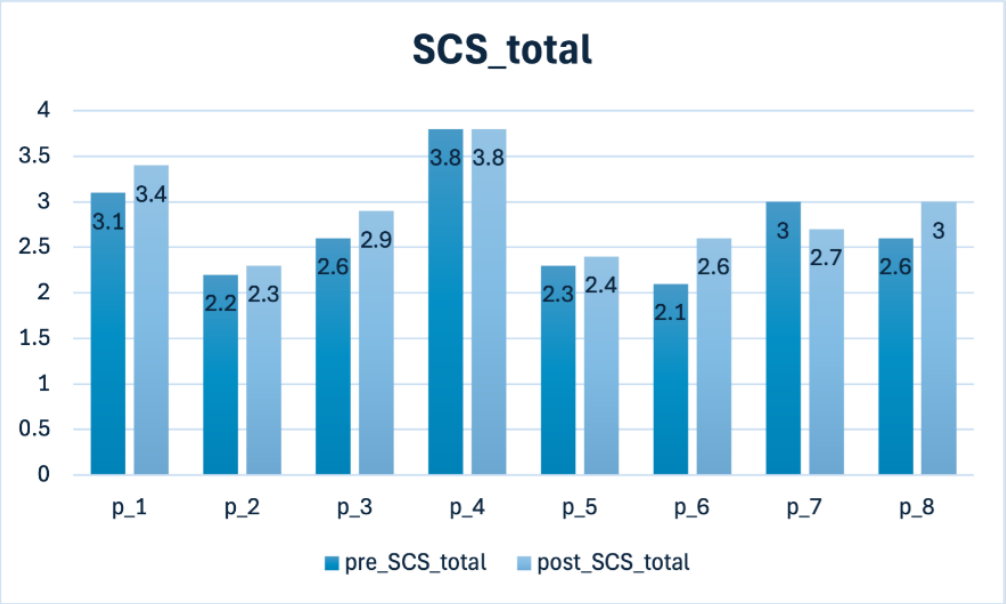
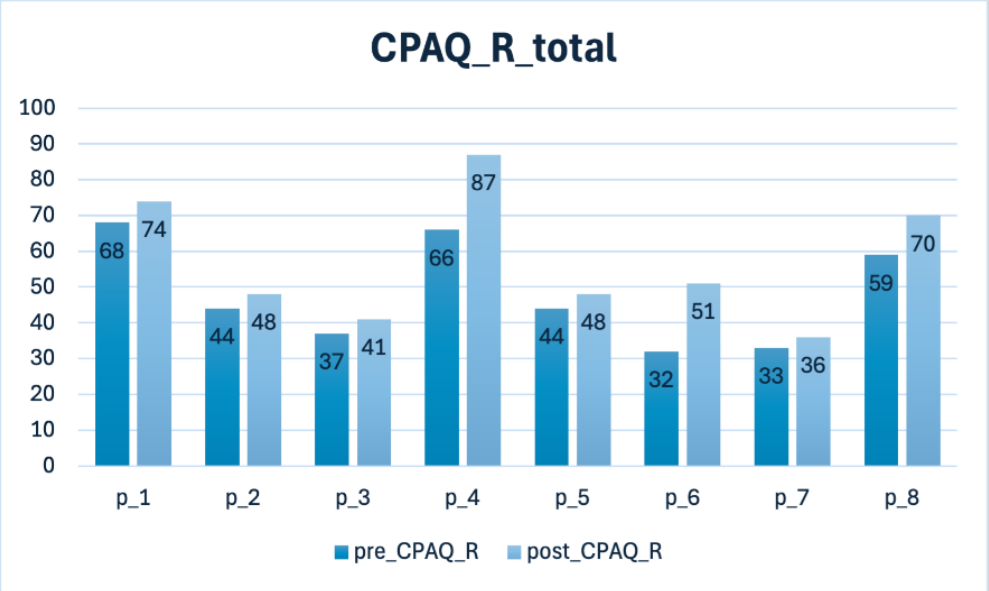


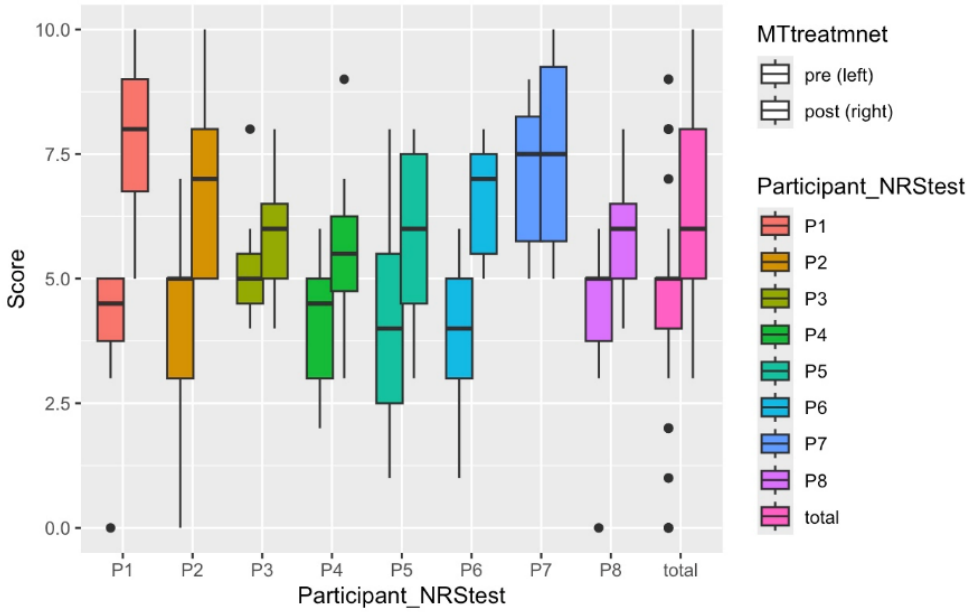
Figure 6. Bar Chart Showing Pre-Post CPAQ-R Scores on an Individual Level.



Pain perception: NRS scores

Overall, there was no pre- or post-treatment difference in pain perception over the course of all sessions in all eight participants (pre: median 6 [range 3–10], post: median 5 [range 0–9]; $p = 2.91$) (Figure 7). On an individual level, most participants showed no pre- or post-treatment difference; participants 1, 2, and 6 showed a tendency to a lower pain perception post-treatment (Figure 7).

Figure 7. Boxplot Showing Pain Perception Scores.

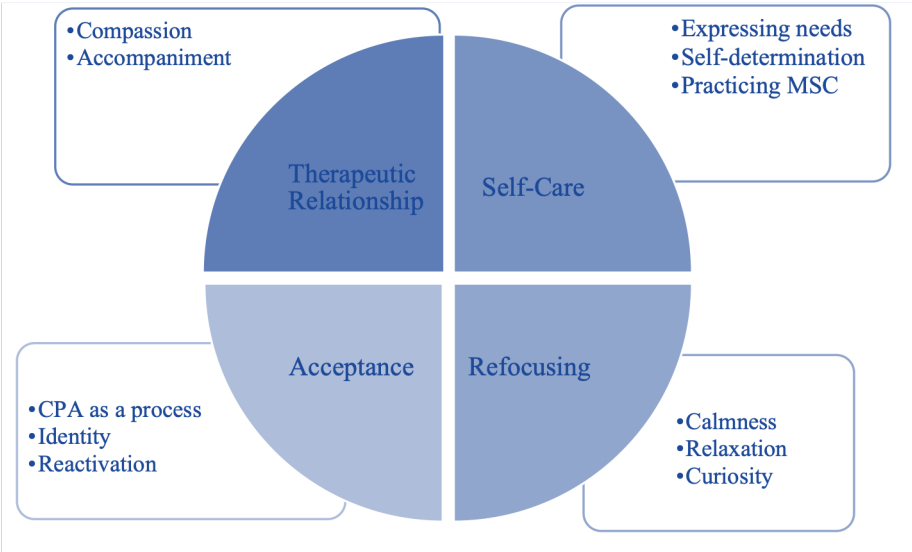


Qualitative Results

MT was a new therapeutic modality for all eight patients, as was the concept of MSC for seven patients. Although the analyses of the interviews showed all participants appreciated the MT intervention, some patients were skeptical at first, evidenced by voicing concerns about not being "musical," and some expressed they stopped listening to music due to

their chronic pain. However, toward the end of the study, all participants voiced a positive evaluation of the treatment. Commonly used phrases to describe MT included aspects of enjoyment, relaxation, and pleasure, and MT being a healing experience. The thematic analysis, derived from the eight focused interviews, resulted in the four themes with their according subthemes: Refocusing, Acceptance, Self-Care, and Therapeutic Relationship (Figure 8).

Figure 8. Visualization of Thematic Analysis: Interplay Between the Themes.



Refocusing

Though during the interview the topic of *refocusing* was not actively addressed, it was a common theme across the data set, divided into subthemes of *relaxation, curiosity,* and *calmness*. Patients reported MT as helpful to forget their pain; this aspect seemed to play an essential part in why participants evaluated it as beneficial.

> *During music therapy, I forgot the pain or paid less attention to it, the pain was not completely gone, but music therapy was something that was just good for me.* (p_6)

> *Music therapy helped me a lot to block out everything, to switch off, so I didn't notice the pain at all.* (p_4)

MT further seemed to evoke curiosity, which acted upon pain perception during treatment. The intervention was perceived as valuable because it was a new experience.

> *In order to block out the pain, it was important to do something completely different.* (p_4)

> *I was allowed to try a lot of new things, which I never had the opportunity in my life, I was so curious [...] because of my pain, I missed out on a lot; I want to experience things despite the pain.* (p_7)

Some patients appeared to benefit from MT under the aspect of "calmness" and "relaxation" and found the music, itself, helped them engage with their pain in a different context.

> *These sounds and vibrations changed my pain and allowed me to learn a different way of dealing with it, it was no longer an enemy and I found this very relaxing.* (p_2)

> *These sounds of the monochord I appreciated due to the moments of silence, relaxation and serenity.* (p_4)

Acceptance

A second theme derived from the analysis was the theme of *acceptance*. The participants were asked what pain acceptance means to them, if they perceived a change pre-and post-treatment, and if MT influenced their chronic pain acceptance. Acceptance as a theme resulted from a latent analytic approach, which goes beyond the semantic content of the data. Though participants were directly asked about acceptance, responses showed commonalities throughout.

All eight participants described chronic pain acceptance as difficult, and six out of the eight stated this was a difficult question to be asked in their situation. One of the sub-themes was summarized as *pain identity*, since pain and/or difficult emotions were often associated as an integral part of their identity. One patient stated that she learned to accept difficult emotions, such as anger.

> *I realized that I have a potential to be aggressive and I was allowed the experience to accept it and that it is ok to have these feelings.* (p_3)

Another patient described her pain as her "twin sister," and, therefore, pain acceptance for this participant was especially difficult.

> *Pain acceptance is hard, I don't accept my pain unfortunately, it is like a twin sister that I live with.* (p_7)

A third participant described that she had difficulties accepting pain but came to accept the psychology of pain.

> *This is really hard for me [...] all I can say is that I realized that the pain does not only come from the body [...] now I accept that the pain can also be triggered through psychological stress.* (p_3)

All the participants described their experience of chronic pain acceptance as a process, some even as a life-long process, resulting in the sub-theme of *chronic pain acceptance as a process.*

> *Pain acceptance is a working process.* (p_1)

> *Pain acceptance is something that, as a pain patient, you're constantly learning [...] I can't just erase the pain but I can learn strategies how to deal with is, or to allow myself to rest [...] it's not easy, it's difficult.* (p_6)

Across the data set, MT was ascribed to have activated and reactivated interests in music listening, singing, and self-confidence, resulting in the sub-theme of *reactivation.* Some participants mentioned an interest in pursuing an instrument, and, for some, MT evoked interest in engaging in music upon discharge from the clinic.

> *I couldn't listen to music anymore because of my pain, although music was always very important to me, for me. Music therapy was making it possible to listen to music again and especially when I need it for myself.* (p_8)

> *What I take away from music therapy, I will still think about it a lot and possibly go back to sing in a choir [...] I gave that up because of my pain; rehearsals became too much for me, and it took a toll on me.* (p_6)

Therapeutic relationship

A third theme was summarized under the term *therapeutic relationship.* The participants commented on this aspect, although a related question was not directly addressed.

However, it seemed a commonly valued aspect of the therapy experience for a majority of the patients. Some patients highlighted the demeanor of the therapist and the compassionate atmosphere during therapy, which was summarized under the sub-theme *compassion*.

> *I just experienced the therapist as sensitive and emphatic, she sensed what issues were at hand and also how she also directly named the issues I have in connection with pain.* (p_1)

The aspect of feeling accompanied and feelings of trust towards the therapist were mentioned by some participants, which were summarized under the sub-theme *accompaniment.*

> *Here you are allowed to be [...] to arrive, to take a breath, to be allowed to be here.* (p_2)

> *It's sad that I probably don't have that kind of accompaniment anymore, but I'm big myself now, I've been well guided up to my current point.* (p_1)

A third sub-theme, *self-determination,* under the umbrella of the therapeutic relationship, was participants mentioned having a sense of control during therapy. One patient stated that she appreciated the sense of control given to her. Another patient said she appreciated the "here and now" experience without pressure.

> *I had no idea what music therapy was and I found out it wasn't pressure, I got to have a say[...]and also have some control, it was a great experience.* (p_6)

> *I especially liked that I got to choose what fit in the situation [...] that variety and going with the moment and the situation, just no pressure, that was very important to me.* (p_8)

Self-care

The participants were asked about their perception of self-compassion and if MT influenced them. They were also asked what self-compassion meant to them. Some patients had difficulties explaining the meaning of the word. However, this question was a good indication that MSC, in the context of MT, may have been more experiential than cognitive in nature. The patients often described MT as a place where they could express and follow their needs, and where they were introduced to MSC.

> *Standing up for myself and also saying no has become very important to me, I would never have done that before.* (p_2)

> *MT was an opening experience for me, I realized very quickly when I did something again that didn't suit myself.* (p_1)

Self-care, as a theme, seemed more appropriate since there was a bigger consensus by most participants that through practicing self-compassion, they practiced self-care.

> *I have learned to listen to myself better and to perceive myself better.* (p_2)

> *The music acts as a tool for self-compassion. It is something that I have newly learned about and treating myself compassionately is something that I haven't done for years, I want to keep at it.* (p_8)

Further sub-themes were coded as *expressing needs*, *practicing self-compassion*, and *self-determination*, which emerged out of the questions related to MSC. The patient's evaluation of MT under the aspect of MSC was diverse in nature. Some reported sustainable interest, while one participant expressed aversion towards the concept, and others described specific examples of how they practiced self-compassion during their treatment.

> *I have been sensitized [...] and I have also noticed that it is important for me to bring this into the most diverse situations even in difficult situations.* (p_1)

> *I get good feedback that my self-compassion has changed, my whole being basically [...] I am much calmer.* (p_4)

Feasibility and Therapeutic Value of Combining MSC and MT

In Figure 9, the components of MSC and MT are represented as overlapping circles, illustrating the complementary nature of incorporating MSC interventions in MT. The intersection of the circles indicates the space where patients may gain resources for approaching challenging situations with a self-compassionate countenance. Under the following inherent qualities of MT, the integration of MSC interventions was evaluated as a suitable combination:

- MT is a nonverbal and experiential form of treatment that may lend itself to adapting MSC techniques, as it allows an individual to experience MSC in multiple domains.
- Music as administered in MT may distract from pain due to its analgesic effects, assisting with relaxation. This may reduce an individual's over-identification and pain perception and, due to music's immediacy of effect, further support mindfulness practice.
- MT may assist an individual in emotional expression through active music interventions, where difficult emotions may be expressed and met with self-kindness rather than self-judgment.
- MT may recreate memories of well-being and assist an individual in feeling connected rather than isolated.
- Music may act as a catalyst in creating a compassionate therapy atmosphere, fostering the therapeutic relationship.
- MT treatment may act as a catalyst in increasing flexibility by giving an individual a sense of control and choice based on individual needs and fostering self-compassion.

Figure 9. *Music Therapy and Mindful Self-Compassion as a Resource* (Russo & Haslbeck, 2021).

Discussion

This feasibility study examined a novel multimodal treatment approach for people living with chronic pain, exploring whether integrating MSC techniques into MT is feasible. Feasibility could be shown methodologically. Furthermore, as demonstrated in the qualitative approach, a therapeutic integration of MSC techniques into MT seemed promising to examine in further investigations. On an exemplary single-patient level, a tendency to increase chronic pain acceptance after the treatment was suggested, but no overall pre-post difference in MSC and pain perception was evident.

Integration of Quantitative and Qualitative Findings

The patients' qualitative insights on the positive impact of MT aligned with quantitative findings on the tendency of increased pain acceptance post-therapy in all participants, as the CPAQ-R questionnaire measured activity engagement and pain willingness. Patients shared that MT was a treatment that evoked curiosity. Trying a new form of treatment was mentioned to facilitate pleasure and distraction from pain; being an active agent in the treatment was expressed as valuable. This was observed in patients 6 and 8, who both had a higher increase in acceptance scores, which complements their subjective experience of using music post-treatment as a resource (see Figure 6). Also, in three patients, a tendency for a decrease in pain perception could be assessed (patients 1, 2, and 6; see Figure 4). This aligns with the patients' experiences of having a sense of control in the therapeutic process, experiencing an environment of low pressure, and encountering moments of refocusing during MT.

The quantitative findings of no increase in SCS scores contrast the patients' qualitative descriptions of MT as a place where they could express and follow their needs and were reminded of the importance of self-care. However, on an individual level, six of eight patients showed slightly higher SCS scores post-treatment, whereas Patient 4 did not indicate any change and reported in the qualitative interviews that he was distracted from pain, relaxed, and felt a deep sense of serenity during MT, which might not have changed SCS scores since distraction and relaxation were predominant in his experience. Patient 7 showed even lower post-SCS scores, stating that they (over)identify with chronic pain, is used to living with it, and appreciates the activating part of MT.

These individual differences may have influenced the overall SCS and CPAQ-R scores. One explanation may be that self-compassion might not lead to higher chronic pain acceptance, but rather the opposite; that having an accepting mindset might even be a prerequisite to therapeutically influencing the dimension of self-compassion. Patients in this study all showed an increased acceptance of chronic pain post-treatment; however, others did not show an increase in self-compassion. Quantitative data contrast with the qualitative findings, where most patients elaborated on the importance of being more mindful, self-caring, and accepting of living with their chronic pain condition.

MSC and CPA in Music Therapy

We found no substantial increase in the MSC assumption that high pre-treatment self-compassion scores would result in higher chronic pain acceptance scores; quantitative outcomes were reversed. This could be traced back to the findings of McCracken and Yang (2006), who found that people living with chronic pain tend to fear and avoid unpleasant events and attempt to control difficult emotions. Through the results of the CPAQ-R, patients in this study showed increased chronic pain acceptance. Patients noted in the semi-structured interviews that MT sparked their curiosity because it is a new modality. For some patients, music came to play a role as a reactivated resource. Some started using music mindfully, and some picked up learning a musical instrument. For one patient, MT

helped her believe in her abilities despite her pain, and another stated that music was within itself a tool to practice self-compassion. Patients described their development of MSC in the light of being able to express their needs during MT treatment, perceiving their treatment as individualized, and feeling a sense of control as an active contributor in their treatment. Experiencing these new ways of coping in the context of MT may have acted as a catalyst in their relationship with their pain. These results may indicate feasibility of integrating MSC in MT.

Individual Differences in Pain Perception

Music, as a medium, has been researched to have the quality to act on those limbic areas increasingly active with persistent pain (Bacher, 2014; Garza-Villarreal et al., 2017; Taylor, 2010). In our study, only three patients showed a tendency to a decrease in pain perception (see Figure 5). Looking at individual self-reports throughout the individual MT sessions, there were also moments of increased pain scores post-session. It is common knowledge that the report of pain perception should be regarded as an individual and subjective process in a cultural context, and the utilization of self-reports in assessing pain perception in clinical practice is recommended to better understand the subjective manifestation of pain (Katz et al., 2015). The increase in pain perception post-therapy may, therefore, have been motivated by individual and subjective factors. Reporting pain may also foster somatization and attention-seeking behavior in the light of a vicious cycle of convincing the therapist of pain (Flor & Turk, 2011). Nevertheless, refocusing as an effect of MT treatment was stated by multiple patients in the study. It may have offered some patients a way to adapt new coping mechanisms in a safe and anxiety-reduced space.

Individual Experiences with MT and MSC

Another aim of this feasibility study was to examine patients' subjective experience of combining MSC and MT. Some patients showed low development in MSC. It was further evident that over-identification and self-judgment were increased and that focus on pain and somatization behavior was reoccurring. These examples are relevant, as it seems these individuals have not encountered compassionate relationships in their past. Research seems not to have investigated possible correlations between experiencing compassion from others and developing self-compassion (Strauss et al., 2016). The phenomenon of pain behavior may be the consequence of suffering, described as a state of helplessness and meaninglessness, and an immediate threat to an individual's self-concept (Flor & Turk, 2011). Pain magnification is an example of those pain behaviors, where individuals are driven to convince others of their suffering. Pain behaviors have been researched and described as a way for individuals to communicate distress (Flor & Turk, 2011). In MT, the music may act as a catalyst in the therapeutic relationship, and it is possible that patients who had debilitating experiences lacking compassion in previous treatment, which is often the case for chronic pain sufferers, could benefit from MT (Reisch, 2002). Active music-making in a clinical setting occurs in relationships with one another and offers an instrument to hold and contain the expressed pain (Bacher, 2014). A common theme across the data set was that patients mentioned the importance of the therapeutic relationship and appreciated the music therapist's compassionate and empathetic demeanor, feeling welcome and understood. This relates back to similar studies that have found great importance in the relationship between patient and therapist, as therapists may play a role in changing insecure attachment styles (Neff, 2011). Self-compassion can be incorporated into any therapy modality developing from a therapeutic relationship when therapists connect with the client's goals instead of following a script (Desmond, 2016). The more chronic the patients' conditions are, the more the therapeutic alliance

appears to be strengthened through supportive, flexible, and individualized treatment that therapists choose to adapt according to the individual's needs (Germer & Neff, 2013). In the context of this presented study, it appeared the patients appreciated the individualized treatment approach and the aspects analyzed under the theme of the therapeutic relationship, such as feeling accompanied, compassion, and support, which was mentioned by all patients in this study.

Another aspect to consider is both MSC and chronic pain acceptance are ascribed to cognitive and behavioral therapy, and the verbal nature of the methods requires cognitive prerequisites (Katz et al., 2015; McCracken & Vowles, 2014). MT has the advantage of being a multisensory experience addressing both affective and sensory levels (Moreno, 2004), offering a mode of expression for the pain experience (Metzner, 2012). Music is applied to address pain as a multidimensional phenomenon, and the patients may be met with the iso-principle, using the music to match patients' moods (Dileo & Bradt, 1999). The flexibility of music as a medium to address these inhibitions was observed. Using MSC techniques in a MT context allowed for flexibility, individualized treatment, and experience of the method in a nonverbal, noninvasive, and multisensory context, instead of cognitively learning about it. The multimodal nature of MT can address long-term goals such as "psychological flexibility" (Davey et al., 2020). Psychological flexibility is "the capacity to continue with or change behavior, guided by one's goals, in a context of interacting cognitive and direct non-cognitive influences" (McCracken & Vowles, 2014, p. 181). We postulate that in the context of this study, MT may have increased psychological flexibility, which is a sub-process of acceptance and may, therefore, have led to better chronic pain acceptance.

Implications

MT as a treatment modality was well received by the patients in this feasibility study, and, based on quantitative and qualitative analysis, some change in pain acceptance did occur. A question arises whether the use of MSC techniques in MT can be generalized as a treatment modality for chronic pain patients. Individual treatment plans are especially needed in individuals with chronic pain because chronic pain and its corresponding pain perception are individualized, not generalized (Nöcker-Ribaupierre, 2008). An essential aspect of MSC is the encouragement of self-efficacy in patients (Germer & Neff, 2013). Patients in this study commented on their experience with self-efficacy and self-care during treatment. Using MSC interventions in any therapy context is often described as being both the path and the goal (Desmond, 2016), which can be related back to the perception of the patients in this study of taking an active role in expressing their needs. However, the question remains if it was the self-compassion work or the MT that made a difference, or was it both? With this small-scale study, we, of course, cannot determine which component was more effective. Additionally, would self-compassion have been equally effective without MT? To address this, it is important to consider that MSC and MT might be interdependent in their effects. Integrating MSC within MT sessions may enhance the therapeutic experience, providing a holistic approach that supports emotional and psychological well-being. Further research could explore the isolated effects of MSC and MT to determine their individual contributions to patient outcomes.

Feasibility and Limitations of the Study

Feasibility in this study design was a given in some respects. However, multi-faceted limitations must be considered for follow-up studies within that framework. The small sample size ($n = 8$) was a limitation for the quantitative analysis. Further, conducting research with people living with chronic pain in a clinical setting was challenging. Only

47% of the patients could be included in the study. Recruitment of the patients was problematic due to early discharge caused by health insurance cuts and/or due to aspects of therapy adherence, as some patients terminated their treatment early due to reasons of disappointment, lack of treatment motivation, or debilitating feelings due to chronic pain. Time was another limiting component. Germer and Neff (2013) researched the concept of MSC in the context of an intensive 8-week course with multi-hour, weekly sessions and daily practice exercises, and this study did not have the resources to imitate this aspect of the design. This observation can be a general limitation when conducting studies with chronic pain patients in an in-patient setting. Considering an out-patient setting might result in higher compliance and higher dosage of sessions. Another limitation of feasibility was aspects of the exclusion criteria. Since German or English language skills were a vital prerequisite for this study, many patients were not even considered for recruitment. This led to low diversity in the sample. The question of what helped the patients in this underlying study to increase self-compassion and chronic pain acceptance remains legitimate. Due to the inpatient and multimodal treatment, this question cannot be answered directly, nor can the contributing factors be pinpointed directly. Finally, the study was limited by the dual role of the music therapist as performing music therapist, data collector, and analyst. To address this limitation, data collection and analysis were supervised by the other authors.

Conclusions

In conclusion, this feasibility study was a first step in integrating MSC within MT for chronic pain, which, to the knowledge of the authors, is the first study to do so. To advance further access to MT for chronic pain patients, more advocacy on the effects of MT on chronic pain is needed. More collaborative and transdisciplinary studies incorporating qualitative and quantitative methods may provide evidence to support such advocacy.

Due to the small sample size, our results cannot be generalized, and causality is not given. Despite its limitations, the study design was assessed as feasible, and patient outcomes, particularly in regard to chronic pain acceptance, lay the groundwork for further investigation. It is our hope that our study may serve as a starting point for future trials.

Disclosure Statement

The authors declare the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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Appendix A

Sample Descriptive Music Therapy Interventions & Session Protocols

Participant	Mindful Self-Compassion (MSC) components	Music Therapy Intervention Short Description	Descriptive Therapy Protocol (translated from German to English)
1	Common Humanity vs. Isolation	Dealing with difficult emotions: Using mindful self-compassion to confront difficult emotions. Using the music to create connection from isolating emotions and physical pain to the outer world.	Following the self-compassion break, patient (pt.) verbalizes the need to act upon increased pain perception, she says that she tends to isolate in those situations and would like to try an alternative. She verbalizes that drumming would be appropriate for this need. The drumming improvisation is dynamic and rhythmical; pt. closes her eyes during playing. In reflection, she verbalizes that she felt her inner force coming out. Where in her body she located that force? In her abdomen. She associates this force with her femininity, which has been suppressed by her family (mother) and evokes emotions of shame. She expresses being touched to let that force out and having somebody witness this force. How this force is related to her chronic pain? Suppressing the force relates to increased pain.
2	Common Humanity vs. Isolation	Sentences of kindness: Patient is on the monochord bed, the therapist leads a meditation with the focus on mindfulness, using body scan techniques with self-compassion, choosing sentences of good will to bodily parts. Examples: “May I be calm,” “May I be strong,” “May I accept myself.”	Pt. expresses need for isolation due to it being the day when her daughter died. She expresses deep sadness and increased pain perception. After a self-compassion break with receptive music, pt. realizes need to experience calmness on the monochord bed. Guidance with image of earth as an unconditional force of acceptance and invitation to form sentences of good will. Pt. verbalizes in reflection that she visualized a cherry tree connecting the earth and the sky where her daughter is. Allowed herself to be sad and defined sentence of good will as “May I be calm.” Pt. verbalizes less pain and calmness in her body.
3	Self-Kindness vs. Self-Judgment	MSC in daily life: Using the self-compassion break to approach difficult	Pt. expressed that she felt increased pain perception after last music therapy session in reaction to monochord bed. Explanation of concept of “backdraft” when using self-

Participant	Mindful Self-Compassion (MSC) components	Music Therapy Intervention Short Description	Descriptive Therapy Protocol (translated from German to English)
		life situations with self-kindness. Practicing this in a music therapy context using the music to reinforce self-kindness through choosing soothing instruments that represent self-kindness.	compassion. She agrees that she is not used to being kind to herself yet, elaborates on situation at the office with annoying and dominating co-worker, she feels powerless in those situations and feels increased pain. While elaborating on situation at the office, much self-judgment observable. Active music therapy intervention through ascribing instruments for co-worker (loud djembe drum). Pt. sits on chair and is guided to observe bodily sensations and emotions that arise during the music. Pt. describes anger that arises and pain perception increases. What she could do? Chooses to play big gong drum, which she plays with great intensity and immediately stops as she is startled by her anger. She realized that this intensity of the drum brings her even closer to the co-worker and expresses need to set boundaries. She chooses self-compassion break to feel what she needs. Finds a singing bowl soothing in this situation and the sentence, “It is ok to feel anger; what do I need in this moment?”
4	Mindfulness vs. Over-identification	Finding serenity: Patient is on the monochord bed. The therapist leads the experience with a meditation focusing on acceptance of the moment. Using the serenity prayer.	Pt. expresses need for relaxation on the monochord bed. Guidance with serenity prayer on things he can change and things he can let be. Pt. appears calmer than weeks before as observed by deeper breathing and longer sequences of eyes closed. Reflecting on the experience he ascribes that things he can change is to find more moments of calmness through mindfulness practice in his daily life. Serenity is important to him and he describes that he wants to take work life more easily.
5	Self-Kindness vs. Self-Judgment	Finding the compassionate voice: Using the Self-compassion break to approach difficult life situations with self-kindness. Practicing this in a music therapy context	Pt. expresses tiredness due to increased medication (Trittico) and indulges in self-judgment, why her therapy doesn’t show progress. Introduction to self-compassion break with receptive music. She verbalizes that her pain causes her body to sink in. I invite her to find a sound that she finds pleasant and soothing. While exploring the room, she chooses the singing bowls. In an active improvisation with six singing bowls,

Participant	Mindful Self-Compassion (MSC) components	Music Therapy Intervention Short Description	Descriptive Therapy Protocol (translated from German to English)
		using the music to reinforce self-kindness through choosing soothing instruments that represent self-kindness. Receptive music playing while patients formulates sentences of good-will.	music therapist (MTh) instructs her to find sentences of good will. She chooses, "May I laugh and be happy," "May I allow myself to sleep," "May I find calmness." To close the session, she asks if I can play the singing bowls to her. In the moments of silence, she expresses an increase of pain, the sentences helped her to distract her from the pain.
6	Self-Kindness vs. Self-Judgment	Soft touch: Using the self-compassion break to approach difficult life situations with self-kindness. Using soft touch with an instrument to self-soothe difficult emotions.	Pt. freezes (like past weeks) as she enters the room. She doesn't know where to sit down or stand. Invite her to listen to the music and follow her instinct while practicing self-compassion break, she finally sits down on chair. Pt. verbalizes that through this process of deciding to sit down and listening to the music, she was reminded of her childhood, as she was not allowed to show emotions and was silenced by her parents at home so that neighbours wouldn't hear her. Topic of taking up space is difficult for her and causes stress and pain. As an example, she mentions situations with her husband: When she gets mad she isolates, leaves the situation, feels shame and cries and feels helpless. Invite her to try out an intervention with soft touch. As I guide her she chooses to put her hand on her heart. If she could choose something in the context of music therapy that manifests this feeling? She asks to sing. Initially self-judging expressions, sings timidly though with increased power. She remembers that singing in a choir was a passion that she lost due to her chronic pain. Next session: Finding compassionate voice.
7	Mindfulness vs. Over-Identification	Dealing with difficult emotions: Reinforcing mindfulness through music experience allowing patient to focus on	Pt. checks in with pain perception 10 on NRS scale while talking without a pause focusing on convincing MTh that she has that much pain. Validation of her pain experience and empathy towards her expressed mistrust. Much resistance from pt. to engage in therapy. Invite her to arrive in the present

Participant	Mindful Self-Compassion (MSC) components	Music Therapy Intervention Short Description	Descriptive Therapy Protocol (translated from German to English)
		the here and now, engage in a nonverbal experience, allowing space for physical and emotional sensations.	moment and if she would like to find something that might ease her pain, to use this time in music therapy to practice self-compassion? She verbalizes that she would like to try the monochord bed. Guidance with deep breathing and self-compassion towards feelings that may arise. Has difficulties allowing mindfulness, expresses that “bed is too hard, difficulties accepting that MTh plays for her, breathing is difficult”. Invite her to allow space to these difficulties in the here and now and to focus on the sounds. Pt. seems to increasingly relax, continually talking less, closed eyes and relaxed face. Pt. reflects that experience was pain reducing, warm and hurtful to realize that she doesn’t allow times for herself and is preoccupied with anger towards her husband. At the end of the session pain perception on NRS is 7.
8	Common Humanity vs. Isolation	Giving and receiving compassion: Using the self-compassion break as a lead way to approach difficult and isolating life situations with awareness and kindness. Giving compassion to an old self, while using the music to manifest the compassion in the here and now.	As an introduction listening to preferred song by patient “Imagine” by Herbie Hancock, with a guided mindfulness of the body exercise throughout the duration of the song. The patient expresses that she hasn’t listened to a song in full length for a long time. What she experienced during the exercise? She expressed that she felt her pain and was more aware of it, however she felt connected through the message in the music and the memories connoted with it (childhood, moving from country to country with her family, being rootless, low empathy and care from busy parents). She described that she often feels and felt isolated enough by her pain, due to not finding words for it, that she has difficulties being with the pain (emotional & physical pain). Describes that she tends to distract herself by caring for other people and not acknowledging and ignoring her pain. Giving self-compassion to her inner child guided by therapist, what does the child need? A song played by MTh to feel heard and connected.

Appendix B

FOCUSED INTERVIEW QUESTION GUIDE

The aim of this interview is to evaluate the individual experience of patients affected by chronic pain. The focused questions are used to qualitatively assess the therapy process and the subjective experiences regarding the development of self-compassion and pain acceptance.

Room: _____
Date/Time: _____
Patient: _____
Interviewer: _____

Interview Questions:

Patient/patient orientation that this interview will be recorded via audio, but that the data will be anonymized as part of the master's thesis, as previously discussed.

Introductory questions:

1. How are you feeling at the moment?
2. How have you experienced music therapy in the last few weeks?
2.1 What experience comes to mind first?

Focus questions:

3. What does the term self-compassion mean to you?
3.1 Looking back, how do you experience your self-compassion?
3.2 How did you experience music therapy in relation to your self-compassion?
4. What does pain acceptance mean to you?
4.1 How did you experience music therapy in relation to your acceptance of pain?
5. How did you experience the chosen methods in music therapy?

Concluding questions:

6. What do you take away from the music therapy for your future?
7. Do you still have any open thoughts that you would like to mention?

If you have any thoughts that you would like to add in the next few days, please feel free to contact me via e-mail.

Thank you very much for your time and participation in this study.

Appendix C

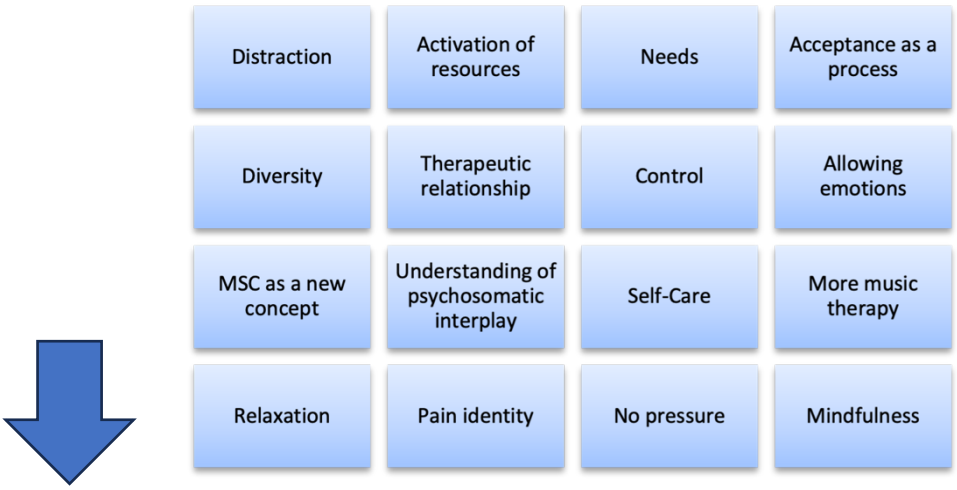
Thematic Analysis – Initial Codes & Theme

Sample of Interview excerpts & coding

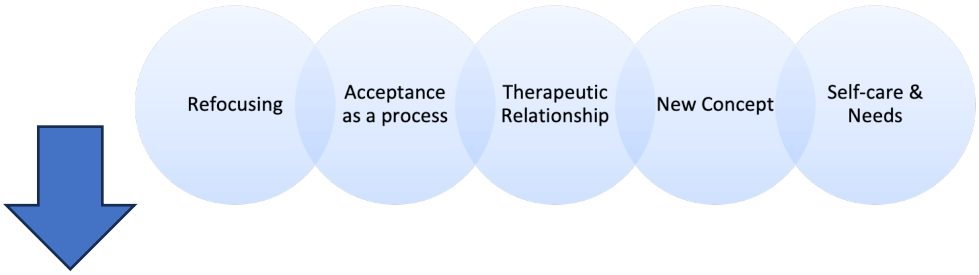
Patient	Data Extract	Coded for	There	Subtheme	Time Mark Recording
1	"So, I almost never had pain in music therapy"	Refocusing	Refocusing	Relaxation	4:38
1	"I just experienced the therapist as empathetic and sensitive, she sensed what issues were at hand and also how she also directly named the issues I have related to pain"	Therapeutic Relationship	Therapeutic Relationship	Compassion	5:28
9	"The music acts as a tool for self-compassion. It is something that I have newly learned about and treating myself compassionately is something that I haven't done for years, I want to keep at it."	Mindful Self-Compassion (MSC) as a new concept	Self-Care	Practicing self-compassion	3:34
9	"[...] Being able to not feel the pain during MT or even diminished and sometimes being distracted by something new[...]"	Distraction	Refocusing	Distraction from the pain	5:09
9	"I couldn't listen to music anymore because of my pain, although music was always very important to me, for me the MT was enabling me to listen to music again and especially when I need it for myself"	Activation of resources	Acceptance	Reactivation	3:20
4	"For blocking out the pain, it was important for me to do something completely different"	Diversity	Refocusing	Curiosity	3:22
6	"At every therapy session, I was allowed to express and how I was feeling and what I wished to do [...] and I was also allowed to lie down...also just let my feelings flow"	Control Self-Care	Self-Care	Expressing needs	3:01
6	"When I get angry, I learned that I can comfort myself, similar to how my mother took me in her arms, hug myself"	MSC as a new concept Self-Care	Self-Care	Practicing self-compassion	1:34
5	"Just doing what I want to and following my needs [...] and that music also calms me down a lot"	Allowing emotions Relaxation	Self-Care	Expressing needs	2:32
5	"Self-compassion for me is accepting that you have emotional outbursts but you can also comfort yourself...like you would with a good friend"	MSC as a new concept Self-Care Allowing emotions	Self-Care	Practicing self-compassion	3:28

Patient	Data Extract	Coded for	There	Subtheme	Time Mark Recording
7	"I was allowed to try a lot of new things, never had the opportunity otherwise in my life, I was so curious [...] Because of the pain I missed a lot, I want to experience things despite the pain"	Diversity Distraction Activation of resources	Refocusing	Curiosity	7:08
7	"Pain acceptance is hard, I don't accept it unfortunately, my pain is like a twin sister, I live with her"	Acceptance as a process Pain identity	Acceptance	Pain Identity	5:08
2	"The images have a lot to do with my inner self [...] images that move me and show me what I needed: peace and quiet"	Refocusing	Refocusing	Calmness	4:20
2	"Standing up for myself and also saying no has become very important to me, I would never have done that before"	Control Self-Care needs	Self-Care	Expressing needs	2:45

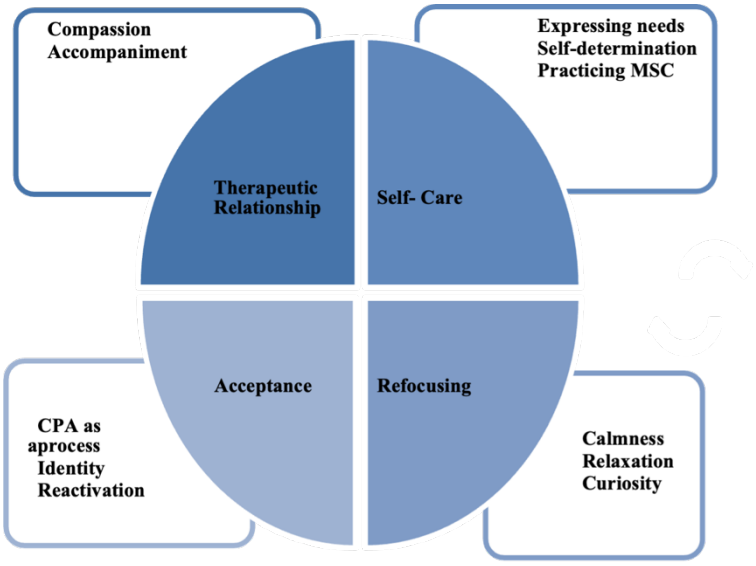
Initial Codes



Resulting Themes



Final Themes & Subthemes



Appendix D

Table 2. Self-Compassion and Chronic Pain Acceptance Pre-Post-Treatment Results.

Self-compassion	n	Pre-treatment*	Post-treatment*	p-value**
SCS_total	8	2.6 (2.1 to 3.80)	2.8 (2.30 to 3.80)	0.106
SCS_SK	8	2.4 (1.0 to 3.8)	2.9 (2.4 to 3.6)	0.059
SCS_SJ	8	3.6 (2.6 to 4.0)	3.2 (2.8 to 4.2)	0.498
SCS_OV	8	3.6 (1.8 to 4.3)	3.1 (1.8 to 4.3)	0.073
SCS_MI	8	2.8 (2.0 to 3.8)	3.1 (2.5 to 3.8)	0.197
SCS_IS	8	3.1 (1.5 to 4.6)	2.8 (1.5 to 3.5)	0.136
SCS_CH	8	3.1 (1.3 to 3.8)	3.0 (1.3 to 3.8)	1.000
Chronic Pain Acceptance				
CPAQ_R_total	8	44.0 (32 to 68)	49.5 (36 to 87)	0.014
CPAQ_R_AE	8	23 (20 to 42)	29.50 (2 to 52)	0.042
CPAQ_R_PW	8	19.5 (11 to 37)	23 (11-38)	0.014

Note: *(median (range)); ** Wilcoxon Signed-Rank Test with continuity correction;
SCS: Higher scores reveal higher mindful self-compassion, whereas 1 is the lowest number and 5 is the highest number that can be achieved for the SCS questionnaire.
Subscales: SK = Self-kindness vs. SJ = Self-judgment; CH = Common Humanity vs. IS = Isolation;
MI = Mindfulness vs. OV = Over identification
CPAQ-R: CPAQ-R score can range from 0–156, higher numbers indicate higher chronic pain acceptance.
Subscales: AE = Activity Engagement: Results score range can from 0–66; PW = Pain Willingness:
Results score can range from 0–54

Table 3. Pain Perception Pre- Post-Treatment Results.

Pain perception	Participant number	Pre-treatment*	Post-treatment*	p-value**
	1	8 (5 to 10)	4.5 (0 to 5)	0.014
	2	7 (5 to 10)	5 (0 to 7)	0.034
	3	6 (4 to 8)	5 (4 to 8)	0.071
	4	5.5 (3 to 9)	4.5 (2 to 6)	0.057
	5	6 (3 to 8)	4 (1 to 8)	0.147
	6	7 (5 to 8)	4 (1 to 6)	0.021
	7	7.5 (5 to 10)	7.5 (5 to 9)	0.671
	8	6 (4 to 8)	5 (0 to 6)	0.059
Total	1 to 8	6 (3 to 10)	5 (0 to 9)	2.910

Note: *(median (range); ** Wilcoxon Signed-Rank Test with continuity correction
NRS: Numeric Rating Scale from 0 (no pain) to 10 (worst pain ever)