

**MUSIC AND MINDFULNESS:  
A RAPID REVIEW OF  
MUSIC AND MUSIC THERAPY'S IMPLEMENTATION WITH  
MINDFULNESS PRACTICE**

by

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## Table of Contents

Acknowledgements.....	5
Abstract.....	6
Literature Review.....	9
Clinical Applications of Mindfulness .....	9
Mindfulness and Positive Psychology.....	11
Mindfulness and Creative Arts Therapies .....	13
Mindfulness and Music Therapy.....	15
Method .....	16
Theoretical Framework .....	17
Inclusion and Exclusion Criteria.....	17
Results.....	18
Figure 1: .....	19
Study Methods: Designs and Measures .....	20
Study Methods: Use of Music.....	20
Quality Assessment.....	22
Table 1.....	23
Table 2.....	25
Table 3.....	27
Table 4.....	29
Study Findings.....	31
<i>Finding 1: Receptive and Active Music Experiences Were Combined with Mindfulness .....</i>	<i>31</i>
<i>Finding 2: Music- or Music Therapy–Implemented Mindfulness Practice Was a Viable</i>	
<i>Treatment in All Four Studies .....</i>	<i>34</i>

<i>Finding 3: Existing Research Exploring Music or Music Therapy’s Integration with Mindfulness Practice Is Rudimentary</i> .....	37
Limitations of Reviewed Studies .....	40
Discussion .....	44
Synthesis.....	44
Limitations .....	45
Future Possibilities for Research.....	46
Conclusion .....	48
References.....	50

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### **Abstract**

The modern practice of mindfulness has been used to clinically treat stress, active depression, depression relapse, addiction recovery, and eating disorders, and to promote self-awareness and acceptance. Mindfulness skills and mindfulness meditation have been used in conjunction with theoretical applications, such as cognitive behavioral therapy, dialectic behavioral therapy, and positive psychology, as well as creative arts therapies, such as dance/movement therapy, Insight Improvisation, and art therapy, to affect change. Though mindfulness has also been used with music and music therapy to achieve similar goals, a minimal amount of literature exists that directly discusses this. This rapid review summarizes the quantitative research published between January 2012 and July 2022 investigating the implementation of music with mindfulness practice. Recommendations for research are also included.

*Keywords:* Music therapy, mindfulness, mindfulness-based music therapy

## **Music and Mindfulness: A Rapid Review of Music and Music Therapy's Implementation with Mindfulness Practice**

Mindfulness meditation was originally derived from skills taught in Christianity, Judaism, Hinduism, Buddhism, and Islam (Rappaport & Kalmanowitz, 2014; McKay et al., 2019), but the modern practice of mindfulness is rooted in the Buddhist teaching called Dhamma, which promotes gaining insight to overcome personal suffering (Bodhi, 2011). In 1979, Dr. Jon Kabat-Zinn created the Stress Reduction and Relaxation Program, which utilized Dhamma-based mindfulness meditation to treat patients experiencing chronic physical pain (McKay et al., 2019). Building on the program's success, he then developed an eight-session, eight-week Mindfulness-Based Stress Reduction (MBSR) course from which he removed all connections to Buddhism and instead focused on resituating mindfulness in a scientific context (Kabat-Zinn, 2003). Mindfulness-Based Stress Reduction provided the foundation for mindfulness to be incorporated into modern psychotherapeutic forms, perhaps most notably as one of the four main modules of Marsha Linehan's dialectical behavior therapy (DBT) (McKay et al., 2019). Today, mindfulness practice with meditation is commonly used with psychotherapy to treat depression, anxiety, addiction, and pain (Mace, 2007; Creswell, 2017).

There are many definitions of mindfulness; among these are two common features. The first is that mindfulness is grounded in a person's "present moment experience" (Creswell, 2017, p. 493). This means that when engaging in mindfulness, the practitioner should not only pay attention to where they are physically, but also to their immediate emotional, mental, and perceptual thoughts and reactions. This is also known as "bare" attention, which in its essence signifies the processing of thoughts, emotions, and perceptions without judgment or rumination (Dorjee, 2010).

The second general feature of mindfulness is the practitioner's ability to nonjudgmentally accept these in-the-moment sensations and experiences (Creswell, 2017). It is important to note that this should not be a passive acceptance, but rather an open and active one of curiosity and non-reaction. This attitude of acceptance seeks ultimately to “[invite] in experiences, even if they are difficult” (Creswell, 2017, p. 493). These two features of mindfulness—awareness, and acceptance—aim to ground the practitioner's mind and prevent it from “wandering,” thus allowing them to ideally have agency over their thoughts to alleviate self-criticism, rumination, and worry.

One of the most cited definitions comes from Kabat-Zinn (2005), who writes that “mindfulness means paying attention in a particular way: on purpose, in the present moment, and nonjudgmentally” (p. 14). The key words of Kabat-Zinn's definition are “on purpose,” which specifies the practitioner's necessarily active role in the awareness and acceptance of present-moment experiences. Kabat-Zinn goes on to write:

If we are not fully present for many of those moments, we may not only miss what is most valuable in our lives but also fail to realize the richness and depth of our possibilities for growth and transformation (p. 14).

According to Kabat-Zinn, then, the present-moment awareness and acceptance that mindfulness calls for providing a strong foundation for therapeutic change. Mindfulness helps the practitioner recognize both the existing values, both desired and undesired, in their life and the existing possibilities for growth.



## Literature Review

### Clinical Applications of Mindfulness

Although Jon Kabat-Zinn (1990) does not consider his MBSR an official form of therapy, MBSR has effectively been used in hospitals to decrease symptoms of stress, anxiety, and depression in patients being treated for chronic, disabling, and/or terminal conditions by focusing attention on how the body habitually reacts to stress (Mace, 2007). In one example, eight weekly group sessions led by an instructor or therapist combined psychoeducation about the nature of stress and habits that exacerbate stress with guided body scans and seated and movement-oriented meditations in reaction to the scans. The group format encouraged discussion following the meditations to process what was experienced.

Mindfulness has also been incorporated into cognitive behavioral therapy (CBT) to form mindfulness-based cognitive therapy (MBCT) mainly to address depression recurrence (Kuyken et al, 2010). Formal MBCT is an eight-session program, like MBSR, during which patients are guided through breathing exercises and meditations to promote increased awareness of their relationship to their thoughts and feelings (Sipe & Eisendrath, 2012). Unlike normal cognitive behavioral therapy, MBCT does not seek to change patients' specific thought content but instead aims to promote self-compassion by focusing attention on awareness and acceptance of those thoughts. In addition to effectively treating depression relapse and active depression, MBCT has been shown to be effective in treating anxiety disorders and suicidality (Sipe & Eisendrath, 2012).

An extension of MBSR and MBCT is mindfulness-based eating awareness training (MB-EAT) which is used to treat binge-eating disorder (Mace, 2007; Kristeller et al., 2014). This program is usually longer than eight weeks and incorporates mindfulness to address two

common issues in people with binge eating disorders. Meditations used in MB-EAT are designed first to promote awareness of bodily function and state regarding post-meal satiety which is usually lacking in people with this disorder. Meditations used here also help patients accept feelings of guilt associated with binge eating and foster compassion and forgiveness.

Another extension of MBSR mindfulness meditation is lovingkindness meditation (LKM). Lovingkindness, also known as *metta* in the sacred Buddhist *Pali* language, is one of the four foundational Buddhist teachings (with compassion, sympathetic joy, and equanimity) (Kabat-Zinn, 2017). Lovingkindness in the context of mindfulness meditation, according to Sharon Salzberg, one of the pioneers of LKM, is an unconditional generosity of spirit that seeks to remove anger from the meditation process (2011). She writes that “While it is important to not condemn or hate the anger we see arising within us, [pure] mindfulness shows us its limiting, binding nature” (p. 181). Essentially, LKM is a letting go of all of our ill will no matter how heavy, and justified, it feels (Kabat Zinn, 2017).

Dialectical behavior therapy (DBT) was developed in the late 1980s by Marsha Linehan, a psychologist whose main clientele were women diagnosed with bipolar disorder (Pederson, 2015). Linehan initially utilized cognitive behavioral therapy (CBT) with her clients, but both she and her clients felt that the approach focused too heavily on clinical outcomes at the expense of personal acceptance and growth (Pederson, 2015). Linehan thus incorporated with her patients a didactic approach of reorganizing distorted thinking (CBT) while also working on personal and interpersonal acceptance, and emotional regulation and change (Pederson, 2015). Ultimately four modules of DBT were developed to use with clients in treatment: distress tolerance, mindfulness, emotional regulation, and interpersonal effectiveness (Wilks et al., 2017). The mindfulness module focuses on two sets of skills: active observation and participation, and learning how to be

non-judgmental about those experiences (Wilks et al., 2017). The main goal of mindfulness in DBT is to help the patient focus and maintain attention (Mace, 2007), which is borne of its initial use with patients with borderline personality disorders.

A final notable application of mindfulness in psychotherapy is in acceptance and commitment therapy (ACT) (Mace, 2007). Acceptance and commitment therapy is based on six core treatment processes: acceptance, defusion, contact with the present moment, self as context, values, and committed action (Powers et al., 2009). Four of these—acceptance, defusion, contact with the present moment, and self as context—use mindfulness as a key concept. Contact with the present moment encourages awareness of the “here and now,” and acceptance promotes reaction without judgment. Defusion is described by Mace (2007) as a “deliberate dis-identification from thoughts” by using mindfulness to “see the difference between looking at your thoughts and looking from your thoughts” (p. 151). Self-as-context aims to help patients become aware of their awareness by promoting the self as the experience of their thoughts rather than the content of those thoughts (known as “self-as-content”).

### **Mindfulness and Positive Psychology**

Mindfulness-based positive-psychology interventions (MPIs) are mindfulness-based interventions (MBIs) that incorporate aspects of positive psychology, such as hedonia—the pursuit of pleasure or happiness (Allen et al., 2021)—and eudaimonia—the actualization of human potential (Deci & Ryan, 2008). Like mindfulness itself, positive psychology does not seem to have one specific definition. The advent of the term can definitively be traced back to Martin E. P. Seligman’s Presidential Address to the American Psychological Association in 1998 (Seligman, 1999). In that speech, Seligman essentially discussed how psychology and its inherent research and research methods had reached a point in time where “these same methods

[can be used] to measure and understand how to build personal human strengths and civic virtues” (Seligman, 1999, para. 7). Seligman arrived at this theory through discussions with Mihaly Csikszentmihalyi—the Hungarian-American psychologist most well-known for his theory of flow (Alex Linley et al., 2006)—and devised this definition of positive psychology:

The field of positive psychology at the subjective level is about valued subjective experiences: well-being, contentment, and satisfaction (in the past); hope and optimism (for the future); and flow and happiness (in the present). At the individual level, it is about positive individual traits: the capacity for love and vocation, courage, interpersonal skill, aesthetic sensibility, perseverance, forgiveness, originality, future-mindedness, spirituality, high talent, and wisdom. At the group level, it is about the civic virtues and the institutions that move individuals toward better citizenship: responsibility, nurturance, altruism, civility, moderation, tolerance, and work ethic (Seligman & Csikszentmihalyi, 2000, p. 5).

Alex Linley et al. (2006) integrated the myriad definitions of positive psychology, including the above, into a simple one: “positive psychology is the scientific study of optimal human functioning” (p. 8).

As in MBCT, the concept of self-compassion plays an important part in the theoretical foundations of positive psychology. Neff et al. (2007) found that using mindful self-compassion to combat negative feelings led to a more optimistic mindset in 177 undergraduate students. Results from this study also showed that self-compassion in the face of adversity actually facilitated more positive growth as well as the ability to radically accept both oneself and others. Unsurprisingly, the concept of self-compassion, though relatively new to Western psychology,

also has its roots in Buddhism (Brach, 2004), and Neff et al. (2007) conclude that a self-compassionate mindset enhances both hedonia and eudaimonia.

Ivtzan et al. (2016) investigated the effect of an eight-week online Positive Mindfulness Program (PMP) that examined gratitude, self-compassion, and autonomy in 168 adults. Participants were asked to complete daily meditations, videos, and activities. There was a significantly higher improvement ( $p = .036$ ) in all the dependent variables of participants in the PMP group than in the control group. Smith et al. (2019) conducted a two-year longitudinal MPI to investigate the effects of an integrated mindfulness/meditation and Buddhism program called Dharma in Daily Life (DIDL) on 31 adults. Results showed that the integrated program positively affected well-being, though it was noted that frequency of meditation practice was an important variable in increased hedonia.

### **Mindfulness and Creative Arts Therapies**

Mindfulness has also been incorporated into various creative arts therapy treatments. Mindfulness in art therapy has been used to effectively treat patients with chronic pain and cancer (Peterson, 2014). Mindfulness-based art therapy (MBAT), developed by Caroline Peterson, combines art therapy exercises with skills training and education modules from Jon Kabat-Zinn's MBSR program. Peterson initially developed MBAT to work with patients with cancer to help decrease distress levels caused by chemotherapy. Mindfulness meditations in MBAT combine the more common forms of breath awareness, body scan, and sitting and walking meditations, with the more art-specific forms of mindful awareness of the available art materials and meditative creative expression. In describing mindful awareness of art materials (MEAM), Peterson (2014) writes, "The elements of each paired set [of art materials] are explored as objects that touch the sense gateways" (p. 67). The goal of this is to foster a more

immediate and personal connection not only to the materials themselves but also to the consideration of which materials will best express the patient's creativity.

Mindfulness has been used by dance/movement therapy with patients to improve anger management as well as to treat disorders caused by trauma (Tantia, 2014). In working with patients recovering from trauma caused by physical and/or sexual abuse, Tantia uses movement and mindfulness to address the common feeling of dissociation from their bodies. Tantia not only focuses on mindful attention *to* the body during these therapeutic movement exercises, but she also stresses mindful attention *with* the body. She writes, "From the subtlest movement of the breath to the grand movement of the limbs, attention *with* the body in dance/movement therapy is the active aliveness of feeling one's own presence" (Tantia, 2014, p. 97). This supports the idea of embodiment, which Tantia calls the cornerstone of dance/movement therapy. Embodiment in dance/movement therapy combats dissociation by allowing the patient to experience "a living form of expression" (p. 98) by mindfully connecting them to their physically active bodies.

Mindfulness has been incorporated into drama therapy in the form of Insight Improvisation. It has been used to help patients overcome anger issues (Gluck, 2014). Insight Improvisation combines insight meditation—a basic form of mindfulness meditation called *vipassana* in the Buddhist Pali language (Insight Meditation Society, n.d.)—with improvised drama and psychotherapy (Gluck, 2014). The therapeutic process involves experiences that use insight meditation as a foundation on which exercises involving the client's body and voice are built. Gluck writes that "the moment-by-moment impulses the client follows in Insight Improvisation [are informed] by the inexhaustible flow of inner and outer stimuli arising and passing away in each moment" (p. 110). Essentially, this mindfulness-informed approach to

drama therapy allows the client to be actively expressive but in a relaxed state, which is the reason Gluck (2014) employed it successfully with his case study client's uncontrolled anger.

A final example is mindfulness and poetry therapy (Fox, 2014). Fox writes that the main elements of poetry—simile, metaphor, image, line breaks, and word choice—empower a person by connecting the literal activity of writing a poem to the figurative imagery and language used as a personal expression in poetry. Applying mindfulness to this connection allows for “nonjudgmental openness” (Fox, 2014, p. 132) in the therapeutic poetry-writing process. Not only does this hopefully permit the client to express their emotions and thoughts without bias, but here it also encourages them to use the present moment as a launching point for stream-of-consciousness expression. According to Fox, this lets memories and experiences from the client's past more easily and freely emerge in a way that might not be possible without mindful attention to the process.

### **Mindfulness and Music Therapy**

Music therapy can be defined as “a reflexive process wherein the therapist helps the client to optimize the client's health, using various facets of music therapy experience and the relationships formed through them as the impetus for change” (Bruscia, 2014, p.36). It is important to note that the “therapist” in this definition is a board-certified music therapist and not a therapist who may use music as part of an experience. Though this rapid review did reveal a number of studies involving mindfulness practice with music implementation and/or music therapy, the majority were excluded as they did not meet the inclusion criteria. As well, many of the studies involved both music-listening and mindfulness practice, but as separate experiences to test a common hypothesis. Ultimately, two of the four studies involved a board-certified music therapist in their facilitations.

A notable excluded article that did employ mindfulness-based stress reduction with music therapy investigated how the intervention affected pain, anxiety, and sleep quality in adolescents with osteosarcoma (Liu et al., 2019). In this randomized control trial, 56 females and 35 males listened to music facilitated by a music therapist before and after MBSR exercises guided by a psychologist trained in MBSR over a span of eight weeks. The authors conducted this study because, while similar studies have been done with women with breast cancer, no study involving the combination of MBSR and music therapy had been attempted with people with osteosarcoma. Results showed that the combination of both seemed to reduce pain, anxiety, and issues with sleep in the tested population. However, the authors noted that there were many limitations to their study, including a small sample size and sample selection from only one hospital.

These limitations to Liu et al.'s (2019) study and other studies, combined with the small number of examples of studies involving actual music-therapy informed mindfulness practice, suggest that this is a topic worth further investigation. Liu et al. (2019) conclude that this is the case with their population, and this rapid review will propose additional recommendations. Both mindfulness practice and music therapy, separately and together, are being considered as more mainstream treatments for mental health. Continued research regarding music therapy–informed mindfulness practice will be a valuable addition to the literature.

### **Method**

This rapid review sought to investigate how music and music therapy has been implemented with mindfulness practice with specific inclusion and exclusion criteria, detailed below. The literature review for this rapid review was conducted from June 1 to July 31, 2022, as the research for my thesis requirement for the degree of Master of Science in Music Therapy at



the State University of New York at New Paltz. A rapid review is, essentially, a streamlined systematic review (Tricco et al., 2015). The information-synthesis process in a rapid review is rigorous but simplified in order to produce results in a timelier manner than in a systematic review. The limitations imposed by the rapid-review method allowed for this topic to be more easily scrutinized in order to inform music therapists' decisions about the future implementation of music with mindfulness. Reporting followed the Preferred Reporting Items for Systematic Review and Meta-Analyses Protocols (PRISMA-P) 2015 checklist (Shamseer et al., 2015) where applicable.

### **Theoretical Framework**

The epistemological foundation for this rapid review is an objective one, as it sought to answer the proposed research question by relying on past observation and measuring the resulting empirical evidence (Hiller, 2016). According to Matney (2019), objectivist research derives truth from “the world or the object imposing meaning onto the subject” (p. 13), as opposed to the interaction between the subject and the object (constructionism) or human interpretation of meaning (subjectivism). The theoretical foundation of this review is post-positivist, as the literature being reviewed is composed of studies done by multiple researchers in varying settings over a set period of time (Cohen, 2016). Essentially, though this rapid review assesses only quantitative results, its post-positivist theoretical foundation assumes that these results are not absolute—future research may add to or change the existing literature. The overall realist ontology of this study, though, establishes its theoretical roots in objectivism.

### **Inclusion and Exclusion Criteria**

Peer-reviewed quantitative research in English published between January 1, 2012, to July 1, 2022, were included in this review. The following databases were searched: Medline,

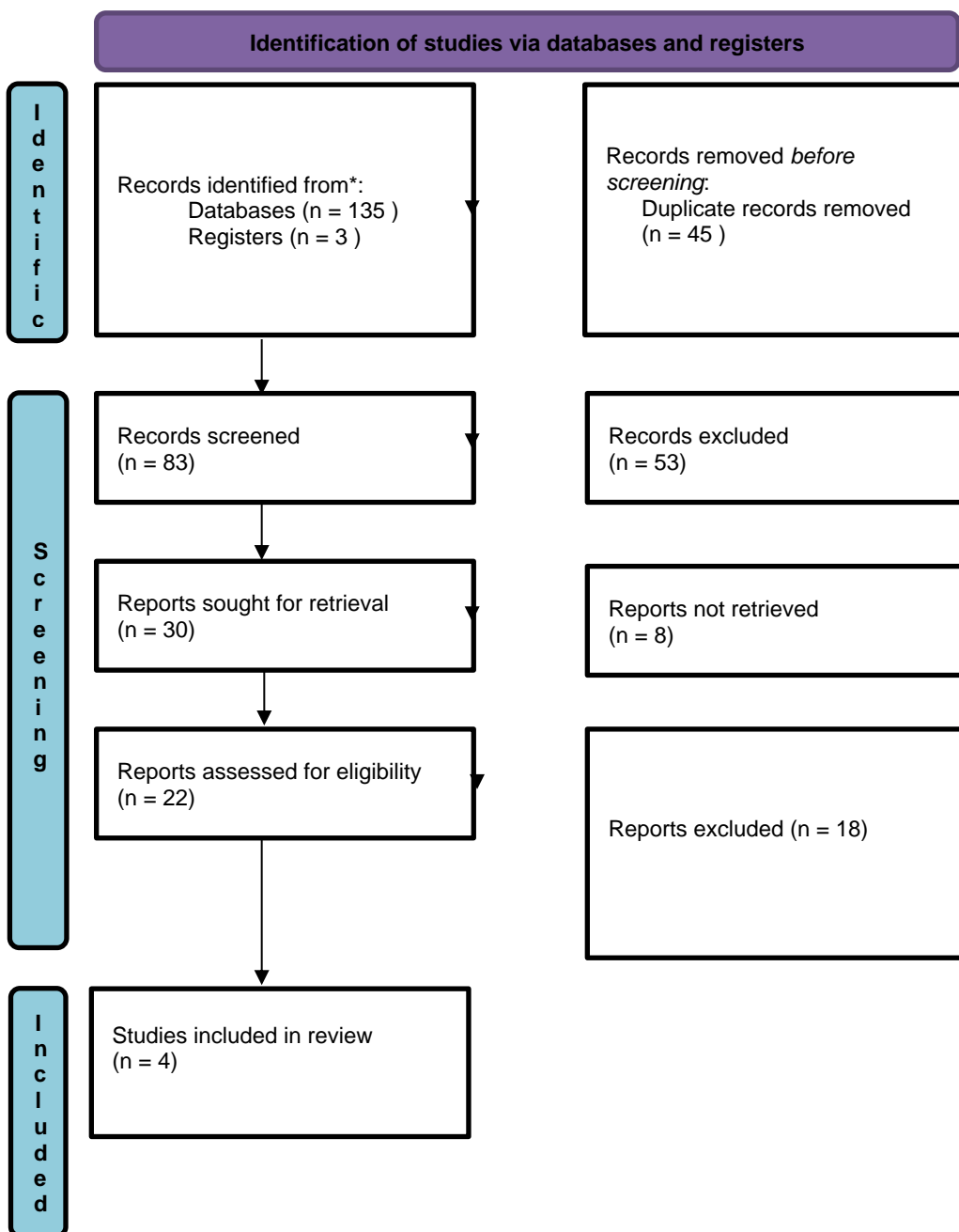
PsycINFO, and CINAHL, and the following journals were hand-searched: *Approaches*, *Music Therapy Today*, and *Voices*. Search terms were “music therapy and mindfulness,” “music and mindfulness,” and “mindfulness and positive psychology.” Research participants were between the ages of 18 and 70, had a mental health diagnosis, or medical condition, and experienced stress, depression, or anxiety. Publications that were not-peer reviewed, did not employ a quantitative methodology, were not published in English, and included participants younger than 18 and older than 70, or that did not have a mental health or medical diagnosis that included symptoms of stress, depression, or anxiety, were excluded.

### **Results**

A total of 138 articles were retrieved with 45 duplicates. Following the review of the remaining 83 titles, 53 were excluded because they contained at least one exclusion criterion. Thirty articles’ abstracts were then reviewed for further consideration and eight were excluded, which left 22 articles for a full-text review. After the full-text review, 18 articles were further eliminated, and four articles were ultimately included in the review (Baylan et al., 2020; Lesiuk, 2015; Miller, 2017; and Sorensen et al., 2019). See Figure 1.

**Figure 1:**

*Flow diagram of search strategy and article selection (Page et al., 2021)*



### **Study Methods: Designs and Measures**

Research designs of the included articles are randomized control trials (Baylan et al., 2020; Miller, 2017), repeated measures (Lesiuk, 2015), and quasi-experimental (Sorensen et al., 2019). Data collection tools included: participant-reported assessments at baseline, three months, and six months, and post-experiment interviews with an assessor blind to group allocation (Baylan et al., 2020); attention measurement using Conners' Continuous Performance Test II (CPT-II; Conners, 2004), mood measurement using the Profile of Mood States-Brief Form (POMS-BF; McNair et al., 1971), and participant assessment collected from homework assignments (Lesiuk, 2015); pre- and post-session 12-step and AA-slogan assessments, and pre- and post-session clinician notes (Miller, 2017); and the Five-Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006), the Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011), Fears of Compassion Scales (FCS; Gilbert et al., 2011), Kessler 6 (K6; Kessler et al., 2010), and the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS; Tennant et al., 2007) (Sorensen et al., 2019). Studies were conducted by an assistant psychologist (Baylan et al., 2020); a mindfulness-based music therapist (Lesiuk, 2015); a music therapist in a non-profit therapeutic community program (Miller, 2017); and a clinical psychologist, a clinical and music psychologist, and an honors student (Sorensen et al., 2018). Data were collected over six months (Baylan et al., 2020); four weeks (Lesiuk, 2015); 12 weeks (Miller, 2017); and pre-program, post-program, and four-week follow-up (Sorensen et al., 2019).

### **Study Methods: Use of Music**

Baylan et al.'s (2020) three-arm, parallel-group, single-blind randomized control trial utilized music-listening combined with mindfulness training (referred to as mindful-music listening) as compared to music listening alone and audiobook listening (for the control group).

Participants selected preferred music (or audiobooks, in the control-group case) from any genre and were instructed to listen to the music daily for at least an hour during the intervention. The two music-listening groups differed in that the mindful-music listening group was directed to return attention back to the music if they found their minds wandering, whereas the music-listening group was not given any specific listening instruction.

Lesiuk (2015) used mindfulness-based music therapy (MNMT) weekly for one hour over a four-week period, with each session focusing on a different music therapy activity and theme. All the music used in the study was chosen by the author and given to the participants on a compact disc. Sessions 1 and 4 utilized receptive-music experiences to explore non-judgment (session 1) and acceptance (session 4), with participants using focused music-listening and writing in the first session, and music-assisted relaxation in the fourth. Session 2 explored *beginner's mind* and consisted of improvisation in the form of "novel instrument playing" (Lesiuk, 2016, p. 6), during which participants explored both the sound and touch of novel instruments such as an ocean drum and rain stick. They then sang along to familiar songs such as "Both Sides Now" by Joni Mitchell and "Let It Be" by the Beatles. Session 3, which focused on suspending judgment, combined instrumental re-creation with receptive activities in the form of rhythm imitation and "simple instrument playing" (Lesiuk, 2015, p. 278).

Miller (2017) employed both active and receptive music experiences in her program design. Specifically, three music-therapy interventions were designed to address a series of goals. The first was active music making, in which each participant was asked to choose a rhythm instrument and play along to a grounding beat. The second was song discussion, in which client-preferred music was brought in and shared with the group. The third was mindfulness and

music, in which pre-recorded, therapist-selected traditional meditation music, relaxation music, and classical music to accompany mindfulness meditation.

Sorensen et al. (2019) provided pre-recorded music via compact disc to participants in three randomized groups. Members of the first group, called Convergence, listened to live classical guitar music during guided Loving Kindness meditation (LKM). The second group, called LKM-only, did not listen to any music during guided LKM. The third group, called Music-only, meditated with musical accompaniment but no spoken words. The method of listening is unspecified, though participants in all groups were given audio recordings of the music used in the sessions to listen to at home prior to the post-test four-week follow-up survey.

### **Quality Assessment**

All four studies included in this rapid review were assessed for quality. The CLEAR NPT Checklist (Boutron et al., 2005) as adapted by Yinger and Gooding (2015) (see Table 1) was used to assess Baylan et al. (2020) and Sorensen et al. (2019) as they were non-pharmacological randomized control trials. The adapted checklist includes 8 items to measure intervention standardization, provider influence, and general bias. The lowest score a study could receive was 0, and the highest score was 8. Studies assessed with this CLEAR NPT Checklist adaptation with scores lower than 5 were considered at high risk of bias. This adaptation was deemed suitable for both these studies because Yinger and Gooding (2015) also used it for a non-pharmacological music therapy-specific systematic review.

**Table 1***Quality Assessment Rating Guidelines, Adapted from the CLEAR-NPT*

- 
1. **Was the generation of allocation sequences adequate?** Give 1 point only if a suitable method was used to generate the sequence of randomization (i.e., simple randomization via table of random numbers or computer-generated random numbers).
  2. **Was the treatment allocation concealed?** Give 1 point only if participants and investigators enrolling participants could not foresee upcoming group assignments.
  3. **Were details of the intervention administered to each group made available?** Give 1 point only if all of the following information was described in the report or made available in some type of addendum: information about who selected the music; type of music; music delivery method; intervention materials; intervention strategies; frequency of administration; duration of music during treatment; whether music was present before, during, and/or after the procedure; and general principles of individualization procedures when necessary
  4. **Was care providers' experience or skill in each arm appropriate?** Give 1 point only if an individual with training in music perception and clinical applications of music (e.g., a credentialed music therapist) was involved in designing and/or implementing treatment
  5. **Were participants adequately blinded?** Give 1 point only if participants were unaware of their group assignment, or if blinding was not feasible due to research design. (Answer questions 5.1 and 5.2 only if no points were awarded for question 5).
    - 5.1. If participants were not adequately blinded, were all other treatments and additional care similar in each randomized group? Give 0.5 points only if participants in both groups received similar treatment.
    - 5.2. If participants were not adequately blinded, were withdrawals and the number of participants lost to follow-up similar in each randomized group? Give 0.5 points only if the number and/or description of withdrawals and those lost to follow-up were similar between groups.
  6. **Were care providers adequately blinded?** Give 1 point only if care providers were unaware of participants' group assignment, or if blinding was not feasible due to research design. (Answer questions 6.1 and 6.2 only if no points were awarded for question 6).
    - 6.1. If care providers were not adequately blinded, were all other treatments and care similar in each randomized group? See guidelines for 5.1.
    - 6.2. If care providers were not adequately blinded, were withdrawals and the number of participants lost to follow-up similar in each randomized group? See guidelines for 5.2.
  7. **Were outcome assessors adequately blinded to assess the primary outcomes?** Give 1 point only if outcome assessors were unaware of participants' group assignment, or if blinding was not feasible due to research design. (Answer question 7.1 only if no points were awarded for question 7).
    - 7.1. If outcomes assessors were not adequately blinded, were specific methods used to avoid ascertainment bias (systematic differences in outcome assessment)? Give 0.5 points only if the main outcome was objective or "hard," or if outcomes were assessed
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by an independent reviewer who was blinded to the purpose of the study and hypotheses.

8. **Were the main outcomes analyzed according to the intention-to-treat principle?** Give 1 point only if all participants who were randomly assigned to a group completed the study in the group to which they were originally assigned or an intention-to-treat analysis was conducted
- 

*Note:* Adapted for use from Boutron et al. (2005) by Yinger and Gooding (2015).

Regarding Baylan et al. (2020), checklist questions 1, 2, 3, 5, 6, and 7 received 1 point, making the total 6 points out of 8 for quality assessment. This signifies that Baylan et al. was at low risk for bias and could be considered a high-quality study. Questions 6 and 7 received 1 point because this study was a single-blind study, and therefore blinding care providers and outcome assessors was not feasible due to the design of the research method. Question 4 was given a score of 0 because the clinical application of music in this study was not implemented by a music therapist. Question 8 was given a 0 because 16 individuals withdrew from the actual intervention phases before completion.

Baylan et al. themselves report the limitations of their study. They discuss certain participants' cognitive, physical, and/or psychological difficulties leading to inconsistent administration of tests during interventions. Because of this, they ultimately utilized a core set of tests to alleviate over-burdening participants and suggest that future studies should limit the number of tests from the beginning of the study. Another limitation the authors address is the use of self-reported listening diaries possibly leading to listening-duration bias. Though the diaries were completed daily and collected at the end of each week, the suggested listening time of at least an hour a day per participant could not be verified. The authors propose a more objective way of recording listening duration for future trials, as well as investigating which technologies of delivering music best support listening and whether outcomes gleaned from this study might



improve engagement in other therapies. However, the authors report that treatment fidelity in this study was high with 17 out of 18 sessions being completely consistent with study protocol.

Regarding Sorensen et al. (2019), checklist questions 2, 3, 4, 5, 6, 7, and 8 received 1 point, making the total 7 points out of 8 for quality assessment. This signifies a low bias and a high-quality study. Question 1 received 0 points because participants in this study signed up to one of the three workshops according to their availability. While they were blinded as to which program they were signing up for, the sequence of randomization was not generated by an outside party or computer program. Similar to Baylan et al. (2020), questions 6 and 7 received 1 point because this study was a single-blind study, and therefore blinding care providers and outcome assessors was not feasible due to the design of the research method. Unlike Baylan et al., Sorensen et al. (2019) utilized a music psychologist to facilitate the workshops, so question 4 received 1 point.

Lesiuk (2015) presented a quantitative, descriptive, longitudinal study with repeated measures. To assess the quality of this type of study, Ma et al. (2020) recommended the JBI critical appraisal checklist for case reports (Moola et al., 2020). This checklist presents 8 questions with “yes,” “no,” “unclear,” or “not applicable” answers—the specific questions and guidelines may be found in Table 2. There are no set guidelines or point systems for rating the internal validity of the study in question; rather, it is up to the reviewer.

## **Table 2**

### *JBI Critical Appraisal Checklist for Case Reports*

	Yes	No	Unclear	Not Applicable
1. Were patient’s demographic characteristics clearly described?				
2. Was the patient’s history clearly described and presented as a timeline?				

3. Was the current clinical condition of the patient on presentation clearly described?
4. Were diagnostic tests or assessment methods and the results clearly described?
5. Was the intervention(s) or treatment procedure(s) clearly described?
6. Was the post-intervention clinical condition clearly described?
7. Were adverse events (harms) or unanticipated events identified and described?
8. Does the case report provide takeaway lessons?

Overall appraisal	Include	Exclude	Seek further info
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*Note:* Checklist devised by Moola et al., (2020)

After reviewing Lesiuk (2015) with this tool, questions 1, 3, 4, 5, 6, and 8 received “yes” answers, while questions 2 and 7 received “no” answers. Question 2 asked if the patient’s history was clearly described and presented as a timeline. The participant’s demographic information and cancer stage was identified; however, a timeline was not included. Question 7 sought to identify any adverse effects and/or unanticipated events due to the experimental treatment. Because none were described—whether because they were omitted or non-existent—the question received a “no” answer. Not included in the checklist was any assessment of sample size. Lesiuk writes that the study’s small sample size was one of the two significant limitations of the study. The other was the absence of a control group. This study seems to meet the high-quality standard as 75% of the checklist’s questions received “yes” answers, and one of the two questions that received a “no” answer was at least partially addressed.

Miller (2017) employed a pre-post methodology with no control group. To assess the quality of this study, this rapid review used the National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study with no control group (National Heart, Lung, and Blood Institute, 2021), as recommended by Ma et al. (2020). This tool is comprised of 12 questions focusing on key concepts for evaluating the internal validity of a study—the specific

guidelines are shown in Table 3. Points are not allocated in this tool; instead, questions are answered with “yes,” “no,” or “not applicable/reported,” and “good,” “fair,” or “poor” quality is assessed based on the findings.

**Table 3**

*The National Institutes of Health (NIH) quality assessment tool for before-after (Pre-Post) study*

Major Components	Response Options		
1. Was the study questions or objective clearly stated?	Yes	No	Cannot Determine/Not Applicable/Not Reported
2. Were eligibility/selection criteria for the study population prespecified and clearly described?	Yes	No	Cannot Determine/Not Applicable/Not Reported
3. Were the participants in the study representative of those who would be eligible for the test/service/intervention in the general or clinical population of interest?	Yes	No	Cannot Determine/Not Applicable/Not Reported
4. Were all eligible participants that met the prespecified entry criteria enrolled	Yes	No	Cannot Determine/Not Applicable/Not Reported
5. Was the sample size sufficiently large to provide confidence in the findings?	Yes	No	Cannot Determine/Not Applicable/Not Reported
6. Was the test/service/intervention clearly described and delivered consistently across the study population/	Yes	No	Cannot Determine/Not Applicable/Not Reported
7. Were the outcome measures prespecified, clearly defined, valid, reliable, and assessed consistently across all study participants	Yes	No	Cannot Determine/Not Applicable/Not Reported
8. Were the people assessing the outcomes blinded to the participants’ exposures/interventions?	Yes	No	Cannot Determine/Not Applicable/Not Reported
9. Was the loss to follow-up after baseline 20% or less? Were those lost to follow-up accounted for in the analysis	Yes	No	Cannot Determine/Not Applicable/Not Reported
10. Did the statistical methods examine changes in outcome measures from before to after the intervention? Were statistical tests done that provided <i>p</i> values for the pre-to-post changes?	Yes	No	Cannot Determine/Not Applicable/Not Reported
11. Were outcome measures of interest taken multiple times before the intervention and	Yes	No	Cannot Determine/Not Applicable/Not Reported

multiple times after the intervention (i.e., did they use an interrupted time-series design)?			
12. If the intervention was conducted at a group level (e.g. a whole hospital, a community, etc.) did the statistical analysis take into account the use of individual-level data to determine effects at the group level?	Yes	No	Cannot Determine/Not Applicable/Not Reported
<b>Quality Rating</b>	Good	Fair	Poor
Additional Comments (If Poor, please state why):			

*Note:* Checklist devised by National Heart, Lung, and Blood Institute (2021)

Questions 1, 2, 3, 4, 6, 10, 11, and 12 received “yes” answers, while questions 5 and 7 received “no” answers upon quality review. Questions 8 and 9 were deemed “not applicable” based on the study design. An additional, notable finding, corroborated by Miller in the “Conclusions and Recommendations” section, revealed that the study’s experimental group was open to clients entering and leaving throughout the testing process. This was due to the location of the study being an active inpatient treatment facility whose clients were not necessarily present for the entirety of the study. Because of this, Miller wrote that assessment data collected during the study might have been more conclusive if it had been done with a closed group.

The two questions which received “no” answers are also related to the location of the study. Question 5, which asks if the sample size of the study was sufficiently large enough to provide confidence in the findings, was answered “no” because the open-group format accommodated only three to seven group members, all in varying stages of treatment, at a time. essentially asks if outcome measures were assessed consistently across all study participants, which also was impossible due to the open-group scenario.

Despite three “no” answers and two “not applicable” answers, the eight “yes” answers show a majority of “good” results with this assessment tool. As well, because the two “no” answers related to the main weakness of the study, which was addressed by Miller, and because

removing the two “not applicable” answers leaves an 80% result of “yes” to “no” answers, it seems safe to assign a high-quality assessment to the study. Miller (2017) also states that the study’s findings make it impossible to correlate the format of the treatment sessions with the experiences shared by the participants. However, this does not reflect on the quality of the study itself but rather on the results.

This review also employed a measurement system devised by Robb et al. (2011), which assesses the design, music-therapy method, dependent variable, outcome measures, and results (see Table 4). Both RCTs reviewed in this study utilized only receptive methods of music implementation, while the non-RCTs employed both receptive and active methods.

**Table 4**

*Music-Based Intervention Reporting Criteria*

Author (year)	Design	Music Implementation or Music Therapy Method	Dependent Variable	Outcome Measures	Results
Baylan et al. (2020)	RCT	Receptive: mindful music-listening; music-listening	Cognition Mood	Post-intervention interview	Feasible and acceptable to incorporate brief mindfulness training into a music-listening context post-stroke for improving cognition and mood
Lesiuk (2015)	Quantitative, descriptive, longitudinal study with	Improvisation: rhythm imitation	Attention Mood	Conners’ Continuous Performance Test II	Significantly improved attention and mood states

	repeated measures	Receptive: focused music-listening and writing; music-assisted relaxation  Re-creative: playing instruments to familiar songs		Profile of Mood States–Brief Form  Narrative comments from homework	
Miller (2017)	Pretest/posttest	Improvisation: playing instruments to express emotion  Receptive: song discussion; music-in-mindfulness exercises	Mindfulness  Stress  Anxiety  Mood	Post-treatment survey	Feasible to utilize music therapy–implemented mindfulness in addiction treatment
Sorensen et al. (2019)	RCT with pretest/posttest	Receptive: Guided meditation with music  Music-only group listened to recordings  Convergence group listened to both live classical guitar music and recordings	Emotion-regulation  Mindfulness  Compassion  Self-compassion	Five facet mindfulness questionnaire (FFMQ)  Self-Compassion Scale-Short Form (SCS-SF)  Fears of Compassion Scales (FCS)  Kessler 6 (K6)  Warwick-Edinburgh mental well-being scale (WEMWBS)	Significant improvements in well-being and mindfulness  No significant reduction of fears of compassion or self-compassion, nor increase in self-compassion

*Note:* Taken from Robb et al. (2011)

## Study Findings

### *Finding 1: Receptive and Active Music Experiences Were Combined with Mindfulness*

Receptive and active music experiences were used in these studies. Both randomized control trials used music listening with mindfulness; however, the two non-RCTs utilized music both receptively and actively. Receptive music listening is one of the four main methods of music therapy. A receptive music experience can be defined as one in which “the client listens to music and responds to the experience silently, verbally, or in another modality” (Bruscia, 2014, p. 134). The music used in a receptive experience can be prerecorded or live (Bruscia, 2014). Both Baylan et al. (2020) and Sorensen et al. (2019) used receptive music-listening as the main method of music implementation in their studies, while Baylan et al. only used recordings and Sorensen et al. used both recordings and live music.

Participants in Baylan et al. (2020) were asked to listen to their assigned recordings on an iPod Nano for at least an hour a day over the course of the study, with the target amount being at least 56 hours over eight consecutive weeks. They were asked to keep a daily record of their listening to track both adherence to the interventions and measurements of their perceived efficacy. Participants in the music-listening and audiobook-listening groups were given instructions to select their material from any genre with the therapist keeping a record of the genres at each visit. The mindful-music participants were introduced to the concept of mindfulness in their first session and given a therapist-selected recording of a short mindfulness exercise to listen to following their preferred music listening for the first three weeks of the study. A different therapist-selected mindfulness exercise was given to the participants for the second three weeks of the study. For the last two weeks of the study, the mindful-music participants could select which of the two mindfulness exercises they preferred to listen to. The

guided mindfulness exercises were less than five minutes long and focused on key elements of mindfulness practice, including paying attention to the present moment.

The study is ambiguous about preferred genres of music or audiobook. When genres are described, the authors write, “New listening material was provided in 59% of sessions” (Baylan et al, 2020, p. 153). Because the study earlier stated that participants were asked to select their preferred genres, it is unclear what this “new listening material” was or by whom it was provided. The study does go on to report that “fiction/crime” was the most preferred genre of the audiobook group. “Pop/rock” was most preferred in the music-listening group, and “classical/easy listening” was most preferred in the mindful-music group.

The same is true of Sorensen et al. (2019). While Sorensen et al. compared responses to three different interventions. The three groups in this study were 1.) Music-only, 2.) Loving Kindness Meditation (LKM)–only, and 3.) Convergence, which was a synthesis of music and LKM. Both recordings and live music were employed in the receptive music experiences in this study. Each group met for one two-hour session for psychoeducation relevant to their group’s subject and then engaged in the group activity. The LKM group was guided through three meditations without musical accompaniment; the music-only group listened to music for one unguided meditation; and the Convergence group was guided through three meditations all accompanied by live classical guitar music. It is unclear whether the music used in the music-only group was prerecorded or live, but the study refers to the music for that group as “musical accompaniment” (Sorensen et al., 2019, Table 2) as opposed to the Convergence group “being accompanied by classical guitar music” (Table 2), so it is possible that it was not live.

Both the LKM and Convergence groups were given a CD with their appropriate meditations with or without music following the single two-hour experimental session, while the



Music-only group was instructed to choose the music they wanted to listen to at home. Sorensen et al. (2019) only utilized a receptive experience similar to Baylan et al. (2020). The difference between this study and Baylan et al. (2020) is that this study employed both live and prerecorded music.

Both Lesiuk (2015) and Miller (2017) used a combination of receptive music listening and active music-making in their studies. While “active music-making” is not a technical music-therapy method, three methods can be assigned to active music-making in the music-therapy milieu: 1) improvisation, 2) composition, and 3) re-creation. Improvisation can be defined as a music-therapy experience in which the client makes up music alone, in a group, and/or with the music therapist to create a musical piece (Bruscia, 2014). Composition can be defined as an experience in which the client writes original pieces or songs with the music therapist’s guidance (Bruscia, 2014). Re-creation can be defined as an experience in which the client learns, sings, plays, and/or performs a pre-written piece of music (Bruscia, 2014).

Lesiuk (2015) employed re-creation, improvisation, and music-listening in a four-week mindfulness-based music therapy (MBMT) program. The program consisted of one hourlong individual music-therapy session weekly plus homework to be completed between sessions. Each week’s session addressed a single mindfulness attitude: Week 1 used music-listening and writing to address nonjudgment; Week 2 had participants playing instruments along with familiar songs (re-creation) to address beginner’s mind; Week 3 used imitation and improvisational instrument-playing to address suspending judgment; and Week 4 used music-assisted relaxation (receptive) to address acceptance and letting go. The author, a board-certified music therapist facilitated the sessions. The homework given to the participants was related to the weekly theme, and a CD was provided with therapist-chosen music.

Miller (2017) used improvisation, music listening, and composition during the study's 12-week music-therapy group sessions. Participants were asked to improvise on rhythm instruments, such as egg shakers, tambourines, and hand drums, to explore "in-the-moment" emotions and expressions. Regarding music-listening, the study employed both song discussion and music relaxation. Song discussion—the verbal processing of client-preferred prerecorded music—was used to allow clients to share their recovery experiences, and therapist-chosen music for relaxation was used during meditation. Finally, song mash-up—whereby recordings of two or more prerecorded songs are combined to form a single piece of music (Baker, 2015)—was utilized as a compositional approach in the final group session.

***Finding 2: Music- or Music Therapy–Implemented Mindfulness Practice Was a Viable Treatment in All Four Studies***

Baylan et al. (2020) sought to assess the feasibility and acceptability of a mindful music listening intervention with patients suffering from low mood and depression/anxiety post-stroke. Their study used the acronym MELLO—measuring the effects of listening for leisure on outcome after stroke—to signify its three randomly tested groups (music-listening, audiobook-listening, and mindful-music listening). It is important to note that this study was not intended to compare efficacy measurements among the three groups, but the authors do write that the focus was on the two music-listening groups over the audiobook-listening group, which they considered their control group.

Baylan et al. (2020) ultimately found that it was both feasible and acceptable to incorporate brief mindfulness training in a music-listening context with patients with low mood and depression/anxiety post-stroke. Post-session interviews with the study's participants revealed that both music-listening groups more frequently reported listening to be more "enjoyable and

uplifting” (Baylan et al., 2020, p.156) than the audiobook-listening group. Between the two music-listening groups, the mindful-music group reported a higher frequency of listening aiding relaxation, attention control, and emotion regulation. The mindful-music listening group also reported being better able to refocus on the music during instances of wandering mind more so than either the audiobook-listening group or music-listening group. All three groups’ interventions showed improvement over baseline measurements of cognition and mood.

Sorensen et al. (2019) did seek to compare the three groups (Music-only, LKM-only, and Convergence) in their study regarding the effectiveness of each intervention on psychological well-being. Cumulative findings showed that all three interventions produced improvements in well-being and mindfulness equally effectively, with further improvements over time. Though the Convergence intervention, which combined music listening and LKM, did prove effective, it did not show that such a combination was more valuable than the experiences delivered separately. The authors suggest their results demonstrate that music listening alone may be able to successfully regulate emotion and improve well-being.

Relative to the Music-only group, the LKM-only and Convergence groups also did not show a significantly greater reduction of fears of compassion or self-compassion, or increases in self-compassion. Sorensen et al. (2019) go on to cite Wampold and Imel (2015), who offer a contextual model for therapy in which common factors across treatments are more significant predictors of efficacy than the individual approaches or techniques themselves. Sorensen et al. (2019) suggest that it is possible that the study’s engaging facilitators, group sessions that implicitly encouraged socialization and bonding, and probable connection inspired by the music itself, all contributed to the success of the three groups.

Lesiuk (2015) found that the MBMT program piloted in her study “significantly improved attention and mood states for women receiving adjuvant chemotherapy for breast cancer” (p. 281). Similar to the post-stroke patients in Baylan et al. (2020), Lesiuk’s (2015) patients experienced mood distress during and following their treatment, in this case, chemotherapy. Specifically, the MBMT intervention reduced tension, depression, anger, fatigue, and confusion in women experiencing “chemobrain,” a change in cognitive function that has been described as mental slowing or the inability to multitask due to adjuvant chemotherapy (Hurria et al., 2007). The intervention also significantly improved the women’s levels of alertness and activity.

Self-reports from some of the women in the study described feelings of increased relaxation and decreased stress. Several women also reported an increase in better sleep. One specific comment, taken from a participant’s homework journal, states that...

The music was extremely relaxing and beautiful...My mood, thoughts, and feelings changed. I was apprehensive, nervous, etc. Now, I feel acceptance, relaxed, ready for the approaching surgery—totally with a positive attitude!

(Lesiuk, 2015, p. 281)

The significant reduction in negative mood states, and especially in fatigue, due to MBMT demonstrated the benefits of such a program for the population of Lesiuk’s study.

Miller (2017) reported that both assessment data and client reports showed that the combined use of music therapy and mindfulness helped 15 adult women in addiction treatment explore emotions, decrease stress and anxiety, and increase mood. The goal of Miller’s study was to help clients in recovery develop a closer relationship with the slogans and 12 steps of Alcoholics Anonymous (AA) solely through the lens of music therapy—implemented mindfulness

practice. This holistic perspective also allowed participants to experience overall growth in where they were at with their personal relationship to the 12 steps. However, though the assessment data and client responses generally supported the use of music therapy and mindfulness in addiction treatment, the study's conspicuous lack of detailed results implies that more research needs to be done to specify exactly how such an intervention could benefit a wider population.

***Finding 3: Existing Research Exploring Music or Music Therapy's Integration with Mindfulness Practice Is Rudimentary***

The included studies are some of the first to investigate music or music therapy's implementation with mindfulness practice. The considerable number of studies that were excluded by title or ultimately did not meet the inclusion criteria for this rapid review corroborates that. Additionally, both Baylan et al. (2020) and Lesiuk (2015) were pilot studies, meaning that they were testing the feasibility/acceptability of an approach to determine whether it could be used on a wider scale (National Center for Complementary and Integrative Health, 2022). Baylan et al. (2020) recognized the established benefits of music in treating mental disorders. With regard to post-stroke patients, the study discussed music listening as a method of safe, accessible, and low-cost treatment to alleviate and/or prevent psychological morbidities (e.g., poor sleep quality, fatigue, stress, distress, post-traumatic stress symptoms, anxiety, and depression). The study also considered how active music listening—consciously paying attention to the music rather than having it on in the “background” while completing other tasks—likely promotes relaxation and positive mood change. As mindfulness strives to promote well-being by focusing on the present moment without judgment, Baylan et al. proposed that active music listening and mindfulness “share a common mechanism of action via attentional control” (p.

150). Attentional control theory essentially states that anxious individuals commonly perceive threats to current goals wherein they attempt to reduce the anxiety to achieve the goal (Eysenck et al., 2007). Attentional control, then, is defined as an individual's ability to successfully focus attention in a flexible manner (Derryberry & Reed, 2002). Baylan et al. (2020) concluded that the effects of active music listening might be enhanced by incorporating elements of mindfulness to provide a novel method of developing attentional control skills to reduce low mood and promote cognitive recovery post-stroke.

Lesiuk's (2015) study was based on past research indicating mindfulness practice as an effective treatment for emotional distress. Lesiuk embraced mindfulness as a possible treatment for women with breast cancer receiving chemotherapy as physical symptoms leading to low mood and depression/anxiety have been reported. Implicitly evoking attentional control, she writes that "mindfulness involves being aware of and attentive to the form of thoughts rather than the content of thoughts" (Lesiuk, 2015, p. 277). She also compared mindfulness to CBT by saying that while CBT focuses on the reframing of the content of distressing thoughts, mindfulness focuses on the awareness of those thoughts, which is referred to as pre-reflexive functioning because it acts *on* and not *within* thought and feeling (Brown & Ryan, 2003). Lesiuk (2015) found this to be a more appropriate approach for the study participants. Lesiuk notes that Graham (2010) reported that music stimuli were an effective source of focus for mindfulness practice by facilitating attentional training and meditation designed to help clients cope with rumination, worry, and over-analytical thinking.

Miller (2017) studied how music therapy and mindfulness might benefit women in an addiction treatment center. The study noted how principles of mindfulness—being able to be fully present and aware without judgment—especially complement one of the primary tenets of

AA philosophy, “one day at a time” (White, 2021), which is often rephrased as “one hour at a time” or “one minute at a time” (Kunst, 2021). Miller (2017) also discussed how music therapy is frequently used to treat some of the same conditions as mindfulness—namely stress, anxiety, and mood—by using music to regulate breathing and bring awareness to the present moment. The study thus aimed to explore the effect of the congruence of both approaches on its population.

Miller, a board-certified music therapist who used music therapy with this population prior to her study, noticed that music tended to bring up memories of past failures that caused them to experience a range of emotions as well as a deep concern for their future. She wrote that “this focus on the past and future seemed to create a sense of “stuckness” (Miller, 2017, p. 52). Her research question—could music therapy combined with mindfulness help women in recovery develop healthy coping skills and the ability to be “in the moment”?—was borne of this observation. Miller also noted that issues causing this “stuckness,” such as lack of safety, emotional exploration, and empowerment, plus aftereffects from trauma, were gender specific to women, and thus this approach seemed especially indicated for this population.

Sorensen et al. (2019) investigated how Convergence—LKM and music—might affect the well-being of a general adult population. The study defines well-being as a state in which an individual feels able to cope with everyday stress, satisfied with their life, and well-supported by others. It also cites Lyubomirsky (2001) in assessing well-being as one of the most valued goals of most cultures. Previous studies by authors of the included study focused on assessing LKM as a successfully effective approach to enhance well-being in adults (Kirby et al., 2017) and studying music as an important aspect of relaxation to improve coping skills and well-being in adolescents (Dingle et al., 2016). As mentioned earlier, two of the four authors of the included

study piloted an unpublished study of 28 females participating in a single two-hour, non-RCT Convergence workshop, but the included RCT is the first published research on Convergence's effect on well-being.

### **Limitations of Reviewed Studies**

The studies included in this review had significant limitations. First, all the studies were designed as feasibility/pilot studies. Though these studies are important, as they provide foundational evidence on which to base further research, the evidence collected in a feasibility/pilot study is not meant to be interpreted as significant on its own. Leon et al. (2011) write that “the fundamental purpose of conducting a pilot study is to examine the feasibility of an approach that is intended to ultimately be used in a larger scale study” (p. 626). This feasibility is not limited to the overall efficacy of a hypothesis but also can include a better understanding of recruitment procedures, randomization, intervention implementation, and retention (Leon et al., 2011). Additionally, Leon et al. note that because feasibility/pilot studies are not themselves hypothesis-testing studies, neither safety nor efficacy are fully evaluated. Feasibility/pilot studies, then, are necessary initial steps in conducting research that must be further explored with more specific and detailed experimentation.

Small sample sizes were a second common limitation among all four studies. Sorensen et al. (2019) had the largest sample size ( $N = 78$ ), while both Lesiuk (2015) and Miller (2017) had the smallest sizes ( $N = 15$  for both). Baylan et al.'s (2020) sample size ( $N = 72$ ), though also small, was drawn from a specific population of ischemic stroke victims in two cities in Scotland over a two-week period of time. While the size of the potential pool of participants is not reported, because of the precise population needs for Baylan et al., the smaller sample size seems like less of a limitation here. However, Sorensen et al. (2019) targeted staff and students at the



University of Queensland in Brisbane, Australia, and members of the general community who were experiencing “a busy and sometimes stressful work life” and were “interested in learning some well-being skills” (p. 273). This study’s ultimate sample size of 78 seems like a greater limitation as the desired population was more general. Both Lesiuk’s (2015) and Miller’s (2017) populations were specific (women receiving chemotherapy and women in an addiction rehabilitation center, respectively), but even despite that, an experimental sample size of 15 is small no matter the population, something that Lesiuk herself mentions in her discussion.

Neither Lesiuk (2015) nor Miller (2017) had control groups. Because these studies were pilot studies and were not RCTs, the lack of control groups seems appropriate for this stage of research. However, Lesiuk does mention that the absence of a wait-list control condition in her study was, in fact, a limitation. A wait-list control group not only provides an untreated comparison against the experimental group, but also allows the control group to actually receive the intervention at a later date (Schimelpfening, 2021). Any type of control group in an experiment would ensure that any variation is due to experimental variables and not chance (Simkus, 2023).

The majority of subsequent limitations in these studies were presented by the studies’ authors themselves. Baylan et al. (2020) mentioned that because participants self-reported the duration of their actual music-listening time in diaries, bias was possible. The authors suggested an objective measurement tool for music listening for future studies. Final suggestions regarding music listening were for future studies to investigate whether using music in different ways affects outcomes in other therapies and whether certain psychological and neurobiological mechanisms of action, such as emotion regulation and stress reduction, might interfere with the cognitive effects of music and/or mindfulness.

Baylan et al. (2020) also discussed that it was impossible to administer every test to every participant at each time point in the study due to the participants' cognitive, physical, and psychological difficulties. The authors developed a core set of tests to alleviate this, though they did attempt to deliver as many planned tests as was feasible without overburdening the participants. For future studies, the authors suggested limiting the number of tests to prevent any overburdening whatsoever.

Lesiuk (2015) noted that her study's greatest limitations were its small sample size and lack of a control condition. Additionally, she discussed that although her participants' chemotherapy sessions were concurrent with the study's MBMT sessions, the chemotherapy sessions varied in duration prior to the MBMT sessions. Some of the participants had only completed one-third or one-half of their prescribed chemotherapy cycles, while others were closer to the end of their cycles. Thus, it was possible—and likely—that participants' attention and mood responses related to this inconsistency.

Another possible limitation, according to Lesiuk, was the study's lack of group sessions. Lesiuk (2015) wrote that “the social connection available [to participants] in a group setting may further enhance the benefits of MBMT for women” (p. 281). Women with stage IV breast cancer were excluded from the study, but Lesiuk noted that a separate study measuring the effect of MBMT on symptom distress and quality of life for that population was recommended. Finally, the study's inability to control participants' home- and work-life stress could be included in further studies to account for more precise MBMT effectiveness.

The majority of the “Conclusion and Recommendations” section of Miller (2017) addresses the study's limitations over its results. That the study took place in the treatment facility itself meant that the group was open to clients entering and leaving throughout the

treatment process, as that was the protocol of the facility. Though 15 women in total took part in the study, only three to seven women were in the group at any given time. Miller suggested that a subsequent study would provide more conclusive results with a closed group. Additionally, similar to Lesiuk (2015), the small sample size of Miller (2017) and the lack of a control condition limited the study's power.

There were further limitations specific to Miller. The author wrote that the women in the experimental group shared traumatic experiences within the context of the music-therapy sessions themselves, and, thus, it was impossible to determine with certainty that the session format correlated with the women's willingness to share their stories on such a personal level. Miller stated that further research is also needed to determine if the correlation between the study's gender-specific treatment, music therapy–implemented mindfulness, and the women's willingness to work through triggered traumatic memories are indeed correlated. Finally, the author proposed further research needs to be done to identify any neurological and/or psychological factors that may influence motivation to maintain sobriety.

Sorensen et al. (2019) discussed that although the study was an RCT, participants were randomized according to their individual availability which might have resulted in systematic bias. They logically suggested that a subsequent RCT utilize truly randomized allocation. Related to that, the study recruited people with “a busy and sometimes stressful work life” (Sorensen et al., 2019, p. 282), which could have biased an improvement in participants' well-being no matter the specific treatment. Like Baylan et al. (2020) this study did not have a non-treatment control group; unlike Baylan et al., this study did not consider any of its groups a control group. Sorensen et al. (2019) thus proposed that a subsequent study involve a “no

treatment” or waitlist control group to increase power, reduce bias, and possibly alleviate some of the aforementioned limitations.

As well, Sorensen et al. deemed the study’s intervention durations “minimal” as each of the three were two-hours long. The authors justified this by mentioning that even 20-minute LKM experiences have proven to have positive effects, but they went on to suggest more sessions with greater frequency and duration for a more powerful subsequent study. Finally, the authors recommended that further tests using Convergence deviate from classical guitar music, as not every participant relates the same way to the same genres of music.

## **Discussion**

### **Synthesis**

The four studies included here, though similar in certain aspects, reveal that the investigation into the implementation of music or music therapy with mindfulness practice is in its exploratory stage. Baylan et al. (2020) and Sorensen et al. (2019) were RCTs, while Lesiuk (2015) and Miller (2017) were not. Three of the four studied targeted specific populations that have historically benefited from mindfulness practice, while Sorensen et al. (2019) hypothesized that music-listening combined with LKM would elevate the well-being of their participants coping with the general stress of daily life. However, the targeted populations were varied in and of themselves, with one related to pre-medical-procedure well-being, one related to post-procedure well-being, and one related to addiction recovery. The two RCTs used only receptive music methods to test their hypotheses, while Lesiuk (2015) and Miller (2017) utilized a combination of active and receptive methods. Additionally, Baylan et al. (2020) used audiobook listening in one arm of their trial, while the other studies included only music listening.

These major differences show that while each study was robust and thorough in its experimentation, the common results that mindfulness with music or music therapy were beneficial to the tested groups in each study remain, at this point, both exceptional and generic. Though all four studies each passed a quality assessment for this review, the studies in their discussion sections list an equal or greater number of limitations than strengths in the overall designs of each experiment. The results of each study were all dependent on surveys and/or journals completed by participants, so there was much room for subjective interpretation of how exactly mindfulness combined with music benefited each participant. It should also be reiterated here that Sorensen et al. (2019) found that Convergence—LKM plus music-listening—did not show more effective results than each group on its own.

A key takeaway is that receptive music experiences combined with mindfulness practice seem to be a promising avenue of treatment as music listening is used consistently across all four studies. Further, all four studies showed improved well-being due to mindful music listening. Though Miller (2017) utilized both active and receptive music experiences, active music-making occurred in only two of the study's 13 total sessions. Of course, the genres of music, and method and consistency of music delivery varied among the studies, but at least according to the self-reports of every study's participants, mindful music listening not only improved well-being during the studies but also continued to do so for participants who tracked their listening following the studies' completions.

### **Limitations**

The greatest limitation of this rapid review is that it is a rapid review and not a systematic review or meta-analysis. Systematic reviews and meta-analyses are viewed as the gold standard of evidence-based research because of their rigorous and time-consuming approach (Moons et

al., 2021). Often these reviews have multiple authors or even teams of researchers spending months or years assessing research results. This rigor ensures research with low bias and high validity. A rapid review seeks to produce similar results but in a streamlined fashion. Often rapid reviews are done in response to urgent situations. For example, Schünemann and Moja (2015) argue that a rapid review should take no longer than 8 weeks. However, this time limitation coupled with the set exclusion criteria meant that the exclusion of significant results was more likely (VCU Libraries, 2021). Additionally, only one person performing study selection and data extraction, which was the case here, can lead to less transparency and increased errors in the computation of the number included and excluded articles.

Another limitation of this review is that because of the exclusion criteria, only four articles were deemed suitable for inclusion. Though there is no set number of articles required for rapid or systematic reviews—in fact, it is possible to attempt a review that uncovers no prior research—the greater the amount of peer-reviewed literature to review, the more powerful the results. That the four included articles all were feasibility/pilot studies, means that the findings in this review are largely inconclusive and unspecific.

### **Future Possibilities for Research**

As evidenced by this rapid review, the main area for future research on the topic of music- or music therapy–implemented mindfulness practice seems to be to continue to generally investigate the topic. As previously noted, the dearth of literature available to address this rapid review’s research questions illustrates the overall extant lack of conclusive research. A primary reason for this could be that both music therapy and mindfulness are still considered “alternative” approaches to mental health treatment, and each is still lacking its own conclusive quantitative research. As well, there are a limited number of practitioners who are certified to

facilitate both music therapy and mindfulness, which presents an issue when it comes to facilitating both together.

The lack of available research plus the four articles reviewed here show that it is not entirely clear how music and mindfulness work together most effectively. Neither included RCT involved board-certified music therapists and only used music-listening with mindfulness, while the non-RCTs, conducted by board-certified music therapists, used, cumulatively, all four music-therapy methods. It seems viable, then, to conduct more foundational research regarding which method(s) of music-therapy implementation with mindfulness work most effectively before widening the scope. The included studies aimed to discover if music's implementation with mindfulness could be an effective mental-health treatment without any separate trial or comparison of methods. A randomized control trial comparing variations of two, three, or all four methods of music therapy implemented with mindfulness practice would be a valuable addition to the research literature and could provide more detailed justification and direction for future research.

There are also numerous variations of approaches within each method of music therapy. For example, Baker (2015) discusses such techniques as rapping, song collage, mash-ups, and parody song as distinct approaches within the overall method of songwriting. Each of these songwriting method variations could potentially be incorporated with mindfulness to determine its efficacy, as could other variations of each music-therapy method. The difficulty in exploring this line of research is related to the dearth of music therapists who are researchers or are able to carry out clinical research at their place of employment.

Music- or music therapy–implemented mindfulness proved effective when used with populations whose specific symptoms seemed to historically benefit from music therapy and

mindfulness. Further research would be appropriate with additional populations whose mental-health symptoms have benefited from music therapy and mindfulness separately. Because of the included studies' effective work with post-stroke patients and women with breast cancer receiving chemotherapy, this seems especially prudent in the area of mental health recovery from medical conditions and/or procedures over which the patient has limited or no control. Additionally, it would be worthwhile to investigate whether the study detailed in Miller (2017) could be used as effectively in a non-alcohol substance-abuse treatment program.

### **Conclusion**

Research detailing music and/or music therapy's implementation with mindfulness is in its early stages. The studies covered in this rapid review—including the two RCTs—all sought to test the accessibility and feasibility of their treatments rather than compare them to other treatments. As well, the two included studies conducted by board-certified music therapists cumulatively employed all four methods of music therapy with mindfulness to test feasibility, which demonstrates that it does not yet seem clear which way of incorporating music into mindfulness is most effective or beneficial. That the majority of the studies included did show efficacy in music- or music therapy–implemented mindfulness, though, suggests that subsequent research is worthwhile.

Three of the four included studies targeted specific populations—post-stroke patients (Baylan et al. 2020), women with breast cancer receiving chemotherapy (Lesuik, 2015), and women in an addiction-treatment facility (Miller, 2017)—and each found that music- or music therapy–implemented mindfulness was an effective treatment. While not explicitly comparing treatment effects on general psychological well-being, Sorensen et al. (2019) did find that music- implemented LKM was not more effective than music-listening or LKM alone. Other specific



populations whose mental health historically has benefited from mindfulness and/or music therapy, then, seem to make sense as potential study populations for further research. Because music-implemented LKM was not found to be less effective than music-listening or LKM alone, it also seems prudent to consider further experimentation in this area.

A final consideration is that while active and receptive music experiences and mindfulness on their own have been shown to enhance mood and well-being in both specific and general populations, the implementation of music with mindfulness practice can enhance mindfulness by providing a specific focal point. All four studies in this review successfully employed mindful meditation with music demonstrating that a person's mind is less likely to "wander" if there is assistance in keeping it anchored. It can even be said that adding rhythm to a simple breathing exercise, which is often done as a group-therapy check in and/or closing, is an example of implementing music with mindfulness, as the steady pulse of the music again acts as an anchor for keeping attention on the "here and now." Thus, while the four studies included in this rapid review suggest specific paths of further worthwhile investigation and research, it should not be overlooked that the combination of music and mindfulness are likely being utilized on a daily basis in ways that may not be outwardly noticeable but are nonetheless important and effective.

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