

Experience of Music Used With Psychedelic Therapy: A Rapid Review and Implications

Clare O’Callaghan, AM, PhD, MMus, BMus, BSW, RMT[®]

**Caritas Christi Hospice & Department of Psychosocial Cancer Care
Research, St Vincent’s Hospital, Melbourne, Australia**

**Department of Medicine, St Vincent’s Hospital, and Melbourne
Conservatorium of Music, The University of Melbourne, Melbourne,
Australia**

Daniel J. Hubik, MBBS, M. Psychiatry, FRANZCP

**Department of Psychosocial Cancer Care Research, St Vincent’s
Hospital, Melbourne, Australia**

Justin Dwyer, MBBS Psychiatry, FRANZCP

**Department of Psychosocial Cancer Care Research, St Vincent’s
Hospital, Melbourne, Australia**

Martin Williams, PhD

**Monash Institute of Pharmaceutical Sciences, Monash University,
Melbourne, Australia**

PRISM Inc., Melbourne, Australia

Margaret Ross, PsyD, BSocSci, MAPS, FCCLP

**Caritas Christi Hospice & Department of Psychosocial Cancer Care
Research, St Vincent’s Hospital, Melbourne, Australia**

Bonny Method of Guided Imagery and Music emerged following discontinuation of psychedelic therapy research in the early 1970s, but psychedelic therapy research has since revived. Music remains a vital component. This study examined participants’ experiences of music in psychedelic therapy research. A rapid review of qualitative and

This study was conducted while the authors were clinically working at St Vincent’s Hospital Melbourne.

Address correspondence concerning this article to Clare O’Callaghan, PhD, RMT, Caritas Christi Hospice, St Vincent’s Hospital, 41 Victoria Parade, Fitzroy, Australia, 3065. Phone: +61-3-9231-2211. E-mail: clare.ocallaghan@svha.org.au

quantitative journal articles in four major databases was conducted in February to April, 2019, using the terms *hallucinogens, psychedelic, "lysergic acid diethylamide," psilocybin, ayahuasca, music, and/or "music therapy."* Of 406 articles retrieved, 10 were included ($n = 180$; 18–69 years old). Participants had varied backgrounds. Music was widely considered integral for meaningful emotional and imagery experiences and self-exploration during psychedelic therapy. Music transformed through its elicitation of anthropomorphic, transportive, synesthetic, and material sensations. Music could convey love, carry listeners to other realms, be something to "hold," inspire, and elicit a deep sense of embodied transformation. Therapeutic influence was especially evident in music's dichotomous elicitations: Music could simultaneously anchor and propel. Participant openness to music and provision of participant-centered music were associated with optimal immediate and longer-term outcomes. Many studies reported scarce details about the music used and incidental findings of music experienced. Further understanding of participants' idiosyncratic and shared responses to music during drug therapy phases will inform optimal development of flexible music protocols which enhance psychedelic therapy. Music therapists could be involved in the psychedelic therapy research renaissance through assisting with research to optimize music-based protocols used. If psychedelics become approved medicines, music therapists may be involved in offering psychedelic therapy as part of therapeutic teams.

Keywords: *psychedelic therapy; hallucinogen; music; music therapy; "Bonny Method of Guided Imagery and Music"*

Psychedelic drugs are psychoactive compounds that primarily act on neural serotonin 5HT_{2A/2C} receptors and cause altered emotion, cognition, and perception (Nichols, 2016). The synthesis of lysergic acid diethylamide (LSD) in 1938, the subsequent discovery of its psychoactive effects in 1943, and discovery of psilocybin (active agent in the so-called "magic mushrooms") in 1955 spawned the use of psychedelics in psychotherapy from the 1950s (Pollan, 2018). LSD was distributed by a drug company from 1949 for patient research; however, psychiatrists also "often tested the drug with any patient group that intrigued them" (Bonson, 2018, p. 592). [The Federal Food, Drug, and Cosmetic Act of 1938 permitted distribution of drug samples for investigational use by qualified experts prior to "new drug application" approval (Bonson,

2018).] Psychedelics were widely considered “miracle drugs” for many psychiatric disorders, including anxiety, depression, and alcoholism, although psilocybin and other plant-based psychedelics, including ayahuasca, have been used by indigenous communities for centuries (Pollan, 2018). Early research and clinical practice demonstrated the therapeutic potential of LSD for alleviating depression, anxiety, existential distress, and pain in patients with cancer (Pahnke, Kurland, Unger, Savage, & Grof, 1970).

Sensationalized recreational use of psychedelic compounds eventually drew political and cultural backlash, resulting in the placement of psychedelic drugs in the most restrictive Schedule I category of the U.S. Controlled Substances Act in 1970 (Belouin & Henningfield, 2018). This scheduling banned many psychedelics for medical use and discouraged associated research (Belouin & Henningfield, 2018). Around this time, international psychedelic drug control treaties and efforts also emerged (Belouin & Henningfield, 2018). Psychedelic research then dwindled (Grocke, 1999) but resurged in the 1990s, with follow-on findings indicating therapeutic benefits for depression (Carhart-Harris et al., 2016), smoking addiction (Johnson, Garcia-Romeu, & Griffiths, 2017), alcohol dependence (Bogenschutz, 2017), and obsessive-compulsive disorder (Griffiths et al., 2016; Grob et al., 2011; Moreno, Wiegand, Taitano, & Delgado, 2006). Studies examining psychedelic therapy administered to patients with life-threatening conditions also revealed positive benefits, including on anxiety (Gasser, Kirchner, & Passie, 2015; Ross et al., 2016), depression, demoralization, hopelessness, spiritual well-being (Ross et al., 2016), quality of life (Griffiths et al., 2016; Ross et al., 2016), and life meaning (Griffiths et al., 2016). Psilocybin is widely used in contemporary psychedelic therapy research. Primary advantages of psilocybin are its very low toxicity and benign side-effect profile, and the relatively short duration of its psychoactive effects, with sessions generally lasting 8 hr (Griffiths, Richards, McCann, & Jesse, 2006).

Psychedelic Therapy and Music

Although psychedelic therapy sessions do not follow one psychotherapeutic model, music-listening has remained a vital component (Bonny & Pahnke, 1972; Kaelen et al., 2018), including in contemporary psychedelic therapy studies (Kaelen et al., 2018). A 1965 review claimed that music in psychedelic therapy could be

used to alleviate psychotomimetic response and alter mood; however, music could also distract from fully experiencing drug effects (Hoffer, 1965). In 1972, researchers (including music therapist, Helen Bonny) asserted that music complements therapeutic aims of psychedelic therapy through providing continuity within an experience of timelessness and structure as patients relinquish usual controls and further enter inner worlds: this enables emotional release and “peak experience,” characterized by a sense of unity, transcendence, reverence, wonder, meaningfulness, and ineffability (Bonny & Pahnke, 1972). Recent psychedelic, music, and neuroimaging studies support these assertions. A review highlights: (a) partial overlap of brain regions involved in music processing and those affected by psychedelics; (b) psychedelic enhancements to auditory perception and tonal tracking of music; and (c) facilitation between psychedelics and music in the activation of neural areas involved in emotion, autobiographical memory, mental imagery, and self-referential processing (Barrett, Preller, & Kaelen, 2018).

Psychedelics are conceptualized as effecting a “relinquishment” of filters that people normally use to regulate internal milieu. This letting go of psychological control allows less inhibited emotional expression. Usual regulatory processes of music-evoked emotion are potentially diminished, allowing more extensive processing of music and elicitation of related emotion (Barrett et al., 2018). Choice of music appears important as music psychology studies demonstrate that, “Emotions influence what music listeners choose to hear, and music influences how they feel” (Swaminathan & Schellenberg, 2015, p. 194). Further, music therapy reduces anxiety (Gao et al., 2019); hence, music may reduce emotional arousal, potentially helping patients to find solutions to struggles, as commonly reported in psychedelic therapy (Pollan, 2018). Music’s potential to connect patients with deeply meaningful and therapeutic experiences (O’Callaghan et al., 2014) could also be enhanced through its interaction with the drug (Kaelen et al., 2018).

Use of Music in Psychedelic Therapy

Although psychedelic therapy and music listening interactions facilitate profound responses in emotion, mental imagery, and meaning (Barrett et al., 2018; Kaelen et al., 2018), limited attention

has focused on understanding views about the music used. Its examination is encouraged to promote the development of empirical guidelines for music used in sessions and optimization of therapeutic outcomes (Barrett et al., 2018). In 1963, music therapist, Hermina Browne, commenced supervising music presented with LSD to patients with alcoholism at the New Jersey Neuropsychiatric Institute and reported on patients' responses. Throughout the 5-hr LSD sessions, music and silence alternated for 30 min each, and staff believed that familiar, religious, and romantic music helped and guided patients (Eagle, 1972).

From 1968, Helen Bonny developed a music program for researchers using psychedelic drugs to treat patients at Maryland Psychiatric Research Centre (MPRC) Baltimore, drawing from about 100 music recordings of varied genres that staff had collected (Grocke, 1999). Bonny and others also used patient-completed music preference questionnaires to inform music used in experimental conditions (Bonny & Pahnke, 1972; Gaston & Eagle, 1970). After the LSD research program ceased, Bonny explored the use of music and imagery without LSD because she believed that music alone could stimulate imagery (Grocke, 1999). Bonny's work confirmed her belief and also demonstrated that, when music alone was used, recollections of imagery and feelings were "far greater" than when LSD was also ingested (Grocke, 1999). Consequently, Bonny developed the Bonny Method of Guided Imagery and Music (BMGIM) for "exploring consciousness for personal growth and transformation" (McKinney & Honig, 2017, p. 2). [The evolution of BMGIM is further described in Grocke (1999), which includes Bonny's account, and Clark (2019)]. This evidence-based method involves 1.5–2 hr sessions including: (a) Pre Talk (Preliminary therapist–client conversation); (b) Induction (Therapist suggestions for body relaxation and focusing the mind as clients transition into deeper altered states of consciousness); (c) The Music and Imagery Experience (30–50 min of a Bonny Method music program selected by the therapist during which time the client describes spontaneously experienced imagery and the therapist helps the client to explore it); and (d) Return and Post-Talk (Processing of imagery through discussion, mandala creation, or other art-making). Music selection is informed by therapists' experience and described as: "carefully selected pieces of music from the Western classical genre, the elements of which combine in a way that has

been found to optimally support and sustain the client's imagery experiences." (McKinney & Honig, 2017, p. 3).

Although many recent psychedelic studies only briefly (Belser et al., 2017; Griffiths et al., 2006) or do not (Griffiths et al., 2011, 2016; Johnson, Richards, & Griffiths, 2008; Ross et al., 2016) mention the nature of music used, music playlists prepared by two researchers are available (Hess, 2017; Kaelen et al., 2018). Their creators largely relied on "intuition" and experience when designing the standardized playlists: Bill Richards (Baltimore) used much classical music and avoided English lyrics except in the final phase of the drug therapy session, asserting that classical and non-lyrical music minimize usual and rational thinking (Hess, 2017). Mendel Kaelen (London) used classical, neoclassical, ambient, jazz, and ethnic music. Highly familiar music was avoided because, Kaelen believed, the music impeded opportunity for a new experience. When selecting music, Kaelen asked whether each piece included something intrinsic, likely to evoke emotion in most listeners (Sarosi, 2017). His playlist was also informed by Grof's (1980) description of different drug therapy phases and work by Bonny & Pahnke (1972) and Richards (2015).

Two studies, separated by 45 years, examined psychedelic therapists' views about musical features which support positive experiences in psychedelic therapy. Bonny and Pahnke (1972) reviewed the most frequently played music by seven MPRC therapists who had conducted over 600 LSD drug sessions and examined their views about optimal music for each phase of drug action, including psychedelic peak experience. Barrett, Robbins, Smooke, Brown, and Griffiths (2017) examined 10 therapists' views about optimal musical features which support peak mystical experiences in psilocybin therapy, that is, the feeling of oneness or unity with the world or universe. Findings from these two studies are summarized in Tables 1 and 2.

Another important area is participants' experience of music, especially given its association with treatment effect (Kaelen et al., 2018). This article presents a rapid review of participants' experiences of music in psychedelic therapy research. The research question is: What are participants' experiences of music in psychedelic therapy research using psilocybin, LSD, or ayahuasca? The review was conducted to inform a research team's decisions about the music used in a study examining psilocybin-assisted

TABLE 1.

Music Types, Mood, and Examples Recommended for Phases of LSD Drug Activity

Drug Phase, Time, Drug Effect Features	Music Type & Mood	Music Examples
1: Pre-onset (0–1.5 hours). Light popular. Can be chosen by patient Drug effect: start slowly	Mood: Pleasant & neutral	Hurry Sundown, For Baby, (Peter, Paul & Mary); "Within You Without You" Let It Be, (Beatles); Love Is All Around. (Moody Blues)
2: Onset (0.5–1.5 hours) Drug effect: definite	Good melodic line & regular rhythm. Mood: Calming, reassuring	Adagio movements, Concerto in D for guitar (Vivaldi); Fantasia on Greensleeves (Williams); Brahms symphonies
3: Building toward peak intensity (1.5–3.5 hr). Drug effect: deepening; the experience can overwhelm & lead to resistance, fear & desire to escape drug effects	Alternate instrumental & vocal. Insistent rhythms, long flowing phrases & dynamic crescendos. Vocal music often emphasizes human relationships, feelings of closeness & can reassure & comfort. English words with music not advised during periods of intensity & emotional turbulence, as it invites the rational mind rather than intuitive experience. Unfamiliar language is a useful substitute. Mood: Support & positive movement	First movements of Beethoven's Symphony No. 5 & Brahms' German Requiem; Smetana's Moldau; Opening chorus of Bach's St. Matthew Passion. Music which suggests insistent movement is relieved at regular intervals by music of a reassuring & supportive nature. Examples: Bach's Arioso & Come, Sweet Death; Elgar's Enigma Variations; Mozart's Laudate Dominum; Mahalia Jackson singing I Believe; Schubert's Ave Maria; selections from the Mormon Tabernacle Choir albums of hymns & anthems

TABLE 1.

Continued

Drug Phase, Time, Drug Effect Features	Music Type & Mood	Music Examples
<p>4: Peak Intensity of Drug Action (3 to 4.5 hr) Drug effect: psychedelict peak experiences are most probable^a</p>	<p>Therapist determines psychological state of patient & then chooses a selection that implements the treatment aim.</p> <p>a. When a patient is stuck, blocked & unable to release emotion: powerful, strongly structured music with insistent rhythms & wide frequency range—to move patient through conflict situations & into emotional abreaction.</p> <p>b. Peak music can help lift patient to psychedelic peak reactions heading in that direction. Trust & willingness to surrender into the music must be experienced is needed.</p>	<p>a. Beethoven's fifth symphony & first movements from his piano concertos "Winter," from Vivaldi's The Four Seasons.</p> <p>b. Gounod's St. Cecilia Mass; Richard Strauss' Transfiguration from Death & Transfiguration; Faure's Requiem, Parts III & VII; Barber's Adagio for strings; Brahms' The German Requiem Parts IV, V, VII; & selected hymns & anthems</p>
<p>5: Reentry (4.5–7 hr) Drug effect: If peak experience occurs, the exalted feeling tone remains. Rapidly changing experiences of earlier hours are replaced by a plateau of stabilized feeling.</p>	<p>The music should reflect the quiet, peaceful feelings that the patient is now experiencing.</p> <p>Patient enters a deeply quiescent state. Sometimes report hearing spontaneous beautiful internally produced music.</p>	<p>Adagio of Brahms' Violin Concerto, Wagner's Lohengrin, Prelude to Act I, & Liebestod from Tristan & Isolde; Adagio of Rachmaninoff's second symphony; Music for Zen Meditation.</p> <p>Periods of silence, white noise. Replaying of music which accompanied earlier abreaction may enable more complete release. Familiar music may be especially meaningful.</p> <p>Toward the end: Appalachian Spring, Copeland; Luboff Choir Album</p> <p>Apasionata; Misa Criolla, Ramirez; Bachians Brasileiras #5, Villa-Lobos.</p>

TABLE 1.

Continued

Drug Phase, Time, Drug Effect Features	Music Type & Mood	Music Examples
6: Return to Normal Consciousness (7 to 12 hours) Drug effects: wane	Repeat of session music especially meaningful to patient to elicit repetition of affect & review of problems areas & positive experiences	

Note: Adapted from **Bonny and Pahnke (1972)**. The Music Experience Questionnaire outlined in this article, which outlines the patient's music background, interests, involvement, and preferences, should guide early and late choice of music when the therapist believes that reassurance with familiar music is needed.
If the therapist considered that the patient has sensory overload use of another sensory modality is recommended, e.g., art, fragrance, eating fresh fruit.

TABLE 2.

Therapists' Views About Musical Features Which Support Pre-Peak and Mystical or Non-Dual Experience^e

Peak period music

Cyclical or slowly building to a climax over time, with regular, predictable, formulaic phrase structure, homogenous orchestration, static or slow building dynamics, simple meter (rubato uncommon), unrushed tempo (around 60 BPM), in major key, legato, with few modulations & changes of mood, continuous movement, & consistent musical material through the piece (melodies, phrase length, etc).

Genres: either classical (often orchestral & chorus) or new age with possible world music influences.

Pre-peak music differences

Likely to include a cyclic or slow buildup (composition may include multiple sections), either static or very variant (many ups & downs), faster tempo, & more heterogeneous instrumentation, frequent mood changes, & minor modes.

Genres: similar to peak music, but in pre-peak music the initial musical components had no relation to later components.

Note. Selected summary of features derived from [Table 1](#) in [Barrett et al. \(2018\)](#).

^eNon-dual experience is the relaxation of subject object, such as self versus other, good versus bad.

psychotherapy for the treatment of depression and anxiety associated with life-threatening illness. The team includes a music therapist and is inspired by [Bonny and Pahnke's \(1972\)](#) hope that information about *music in psychedelic therapy* may advance understanding of “the hypothesis that music is therapeutic at deeper levels of the psyche” (p. 83). While psychedelic therapy remains under clinical investigation as a therapeutic modality, the Food and Drug Administration has recently granted “breakthrough therapy” status to psilocybin in the context of Major Depressive Disorder ([Aday, Davoli, & Bloesch, 2019](#)) which will potentially expedite governmental approval of this intervention. It is, therefore, possible that psychedelics will become approved medicines in the United States, UK, and other Western countries within the next 3–5 years. As music is pivotal in psychedelic therapy, music therapists can potentially make important contributions to ongoing psychedelic

research and in psychedelic therapy delivery if psychedelics become approved medicines.

Method

Review Method

The review was conducted from February to May 2019, with a limited project timeline. A rapid review is a timely, streamlined approach to synthesizing evidence used to inform healthcare decisions. The search is less comprehensive and enables a cautious interpretation of findings, compared with evidence-based findings derived from a systematic review (Khangura, Konnyu, Cushman, Grimshaw, & Moher, 2012). Numerous rapid review approaches exist (Tricco et al., 2015) and this review was informed by Casey et al.'s (2017) approach as follows: development of keyword search strategy, undertaking the literature search, screening of literature, data abstraction, quality appraisal (limitations), and narrative synthesis of data (Mays, Pope, & Popay, 2005). Reporting followed the Systematic Reviews, Integrative Reviews, and Meta-Analyses checklist (PRISMA) (Moher, Liberati, Tetzlaff, Altman, & PRISMA Group, 2009) where applicable.

Procedure

The research team discussed and agreed on the review's aim, literature search criteria, and strategy. A librarian helped with the development of search terms. Initial literature screening of article titles and abstracts was informed by the question, "1. Does this paper include research findings about participant reported experiences of psychedelic therapy using psilocybin, LSD, or ayahuasca, which may include music?" Screening of full-text articles was informed by the question "2. Does this paper include research findings about participants' experience of music in psychedelic therapy using psilocybin, LSD, or ayahuasca?"

Inclusion Criteria. The study included primary research published in refereed journals with the following characteristics: participants \geq 18-year-old; healthy or any diagnosis; qualitative, quantitative, or mixed methods studies; includes a psychedelic therapy intervention involving psilocybin, LSD, or ayahuasca with music involved; includes participants' self-reports of music experiences in

psychedelic therapy, that is, subjective narrative and/or numerical accounts about exposure to music in psychedelic therapy acquired through interviews and/or questionnaires; questionnaire measures of emotional reactions associated with music and psychedelic therapy experience; studies published in the St Vincent's Hospital Melbourne, Australia, searched databases; and in English.

Exclusion Criteria. The study excluded: studies of psychedelic use in nonclinical settings (e.g., recreational psychedelic use, ethnographic fieldwork examining psychedelic rituals); psychedelic therapy research without mention of participants' music experience or music; studies examining therapists' perception of participants' music experiences; letters, commentaries, review articles, conference abstracts, book reviews, theses, and corrections.

The review searched the following electronic databases: Medline (Ovid, 1946—March 2019), Embase (Ovid, 1974—March 2019), PsycINFO (Ovid, 2002—March 2019), and CINAHL (1961—March 2019). Search terms were (hallucinogens or “lysergic acid diethylamide” or psilocybin or ayahuasca or LSD or psychedelic) and (music or “music therapy” [MESH, Ti, Abstract]).

To expedite the timeframe, we searched a limited number of databases and only examined included articles' quality (limitations) in relation to reporting of participants' music experiences. Each step was conducted by two independent reviewers. Articles that passed initial screening (Question 1) were determined by first (C. O'Callaghan), second (D. J. Hubik), and final (M. Ross) authors based on title and abstract. C. O'Callaghan and D. J. Hubik separately reviewed half of the abstracts, and C. O'Callaghan and M. Ross separately reviewed half of the abstracts. There was no disagreement about final studies included for full-text review. There was occasional disagreement on the reason for exclusion of articles, which were resolved via discussion. For example, one author reported that “Segida, L. (2015). I-migrations in cultures and languages. Dissertation Abstracts International Section A: Humanities and Social Sciences, 75(7-A(E)), No Pagination Specified” was a “discussion paper/commentary/letter” whereas another reported it as a thesis. After discussion of the meaning of dissertation (a term not widely used in Australia), it was excluded with the reason that it was a thesis. All full text included articles were read by C. O'Callaghan and one other author, who jointly decided and agreed on all article inclusions and exclusions (Question 2).

Data Abstraction and Narrative Synthesis

The ‘Strengthening the Reporting of OBservational studies in Epidemiology’ (STROBE) checklist (von Elm, 2007) informed a Table created to assist with synthesis of abstracted study details and included the following headers: Authors/date/location; Purpose of Study; Methods (design; music selection method, and instruction); Sample (eligibility and the psychedelic therapy study from which the sample was sourced, if applicable); Music Related Findings; Interpretation; and Limitations.

Information extracted from included studies is presented in descriptive summaries (Authors/date/location, Purpose of Study, Methods, Sample, Limitations), and as a narrative synthesis (Music Related Findings and Interpretations). A narrative synthesis narratively synthesizes evidence from multiple studies (as distinguished from statistical meta-analysis), including studies with wide-ranging designs, to explore relationships in findings in an attempt to generate new insights (Mays et al., 2005; Popay et al., 2006). Steps and techniques used in this synthesis were derived from Popay et al.’s (2006) guidance on conducting narrative syntheses and included: (a) Developing a preliminary synthesis of findings focused on patterns across the studies (Technique: Inductive thematic analysis); (b) Explorations of relationships in the data, including differences across studies (Technique: Multiple study findings translated into one another, i.e., findings compared and contrasted); and (c) assessing robustness of the synthesis (Technique: Critical reflection on the synthesis process in the Discussion) (Popay et al., 2006). [Another element which can be used in narrative syntheses, i.e., developing a theory of how the intervention works to inform the review question (Popay et al., 2006), was not necessary in this exploratory rapid review.]

The first two steps of the synthesis were conducted together as follows: (a) coding of study findings/interpretations using researcher created descriptive labels; (b) grouping of comparable codes across study findings/interpretations into researcher created categories; (c) grouping of comparable categories into researcher created themes; and (d) statements clarifying each theme, which illuminate comparisons across studies. This thematic analysis was informed by grounded theory methods (Corbin & Strauss, 2008). Qualitative data management software also supported the analysis (Muhr, 2005).

Information abstraction from each included article was led by C. O'Callaghan and reviewed by another author, that is, three authors each read two to three articles and verified relevant content in the abstraction [Supplementary Table](#). Two authors agreed with the content of articles in the Table. One author added content which was acceptable to C. O'Callaghan, including: eyeshades used in one study; baseline emotions not checked in one study; and additional participant quotes for one study.

C. O'Callaghan led the narrative synthesis of the Music Related Findings and Interpretations, and a strategy of the level of agreement between reviewers ([Kitto, Chesters, & Grbich, 2008](#)) was integrated whereby remaining authors examined all the Music Related Findings and Interpretations data listed in the abstraction Table, then read C. O'Callaghan's narrative synthesis, and discussed it until reaching an agreement. All authors agreed with the narrative synthesis after two items were added: (a) saline was the placebo used in one study and (b) only one study described associations between music *pitch* elements and imagery.

Results

A total of 406 articles were retrieved with 80 duplicates. Following the review of the remaining 326 titles/abstracts, 319 articles were excluded because they included at least one exclusion criteria, as reported in the study selection flow diagram ([Figure 1](#)). Seven full-text papers were reviewed and five included in the review ([Belser et al., 2017](#); [Carbonaro, Johnson, Hurwitz, & Griffiths, 2018](#); [Kaelen et al., 2015, 2018](#); [Noorani, Garcia-Romeu, Swift, Griffiths, & Johnson, 2018](#)). Two were excluded because music was not mentioned ([Johnson, Garcia-Romeu, Johnson, & Griffiths, 2017](#)) or it was an ethnographic rather than clinical study ([Talin & Sanabria, 2017](#)). References in the five included articles were examined, leading to an additional 16 full-text articles being reviewed. Five of these were also included in the synthesis ([Gasser et al., 2015](#); [Gaston & Eagle, 1970](#); [Griffiths, Richards, Johnson, McCann, & Jesse, 2008](#); [Swift et al., 2017](#); [Watts, Day, Krzanowski, Nutt, & Carhart-Harris, 2017](#)). The 11 not included studies described researchers' reports of music's effect on patients in psychedelic therapy ([Barrett et al., 2017](#); [Bonny & Pahnke, 1972](#); [Eagle, 1972](#)), did not present research on participants' music experiences

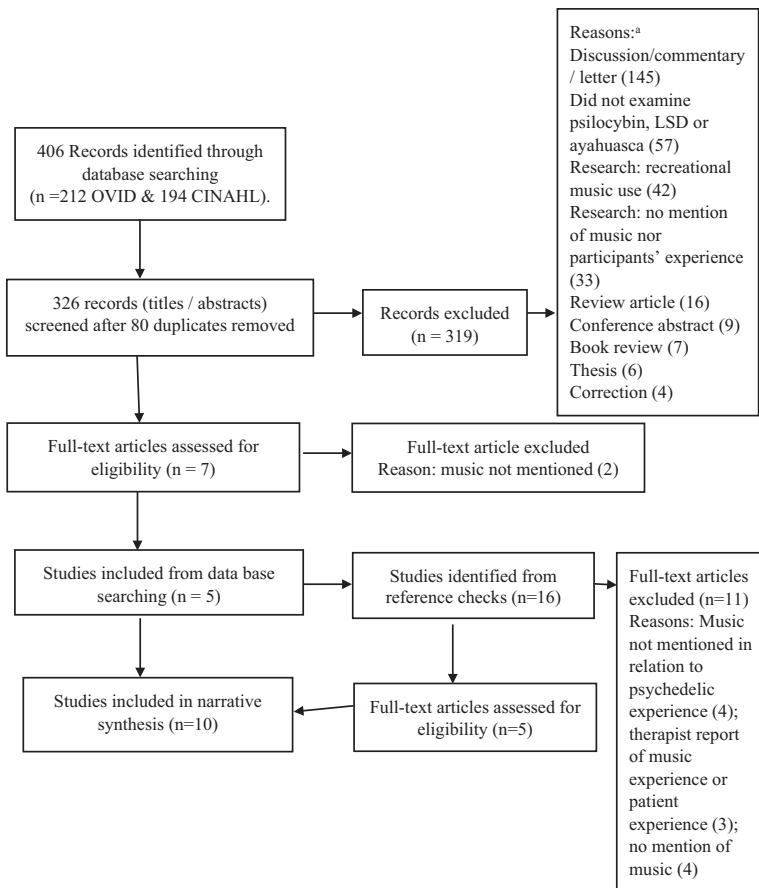


FIGURE 1.
Study selection flow diagram.

^aOne reason reported per study; some studies could be rejected for ≥ 1 reason.

(Bogenschutz, 2017; Griffiths et al., 2006, 2011; Grob et al., 2011), nor state that music was used (Garcia-Romeu, Griffiths, & Johnson, 2014; Johnson, Garcia-Romeu, & Griffiths, 2017; Loizaga-Velder & Verres, 2014; Turton, Nutt, & Carhart-Harris, 2014). Data abstraction for the 10 reviewed studies is in the [Supplementary Material](#).

Study Locations and Samples

There were 180 participants in included studies, aged 18–69 years, and 53 of 121 participants were female (sex unstated in one study). In two sets of two articles, [Belser et al. \(2017\)](#) and [Swift et al. \(2017\)](#), and [Watts et al. \(2017\)](#) and [Kaelen et al. \(2018\)](#), participants were sourced from the same primary studies, that is, [Ross et al. \(2016\)](#) and [Carhart-Harris et al. \(2016\)](#), respectively. Studies were undertaken in the United States (6), UK (3), and Switzerland. Sample sizes ranged from 10 to 59. Previous psychedelic experience of participants was not reported in three studies ([Belser et al., 2017](#); [Gaston & Eagle, 1970](#); [Swift et al., 2017](#)), one study included psychedelically naïve participants ([Griffiths et al., 2008](#)), and remaining studies included some-to-all psychedelically experienced participants. Seven studies examined effects of psilocybin with music, on: people regularly involved in religious/spiritual activities ([Griffiths et al., 2008](#)); meaning-making and experience of death with cancer ([Belser et al., 2017](#); [Swift et al., 2017](#)); depression ([Kaelen et al., 2018](#); [Watts et al., 2017](#)); smoking cessation ([Noorani et al., 2018](#)); and healthy volunteers ([Carbonaro et al., 2018](#)). Other studies examined the effects of LSD with music on: people with alcoholism ([Gaston & Eagle, 1970](#)); existential anxiety related to life-threatening illness ([Gasser et al., 2015](#)); and healthy volunteers ([Kaelen et al., 2015](#)).

Study Purpose

Two studies each specifically examined how the music was associated with altered states and remembered experiences, whether music supported the psychedelic therapy experience, and music preferences during the therapy ([Gaston & Eagle, 1970](#); [Kaelen et al., 2018](#)). Individual studies also examined views about how music was administered ([Gaston & Eagle, 1970](#)), and whether music was associated with clinical outcome ([Kaelen et al., 2018](#)). Three studies examined whether music-evoked emotions were enhanced while under the drug ([Carbonaro et al., 2018](#); [Kaelen et al., 2015, 2018](#)). In a study examining smoking cessation, an extensive interview framework included the question, “Did the music play a role?” ([Noorani et al., 2018](#)). Otherwise, studies aimed to examine nonmusic-related effects but reported on incidental comments made about the music.

Study Methods: Design and Measures

Research designs included mixed methods (Gasser et al., 2015; Griffiths et al., 2008; Kaelen et al., 2018), qualitative thematic analyses (Belser et al., 2017; Noorani et al., 2018; Swift et al., 2017; Watts et al., 2017), a cross-sectional single exposure trial with five music conditions (Gaston & Eagle, 1970), a paired study using quantitative measures (Kaelen et al., 2015), and a paired longitudinal dosage study (Carbonaro et al., 2018). Data collection tools included: semi-structured interviews examining psychedelic experiences (Belser et al., 2017; Gasser et al., 2015; Griffiths et al., 2008; Kaelen et al., 2018; Noorani et al., 2018; Swift et al., 2017; Watts et al., 2017); researcher visual analog scale ratings (VAS) informed by participant interview content (Kaelen et al., 2018); the Quick Inventory of Depressive Symptoms pre-post the session, to examine the association between music and clinical outcome (Kaelen et al., 2018); a music preference survey with closed-ended questions, including about music examples presented administered pre-post LSD (Gaston & Eagle, 1970); the Objective Checklist for LSD Experience (Gaston & Eagle, 1970); an open-ended question with VAS response (“How emotionally affected were you by the music?”) (Kaelen et al., 2015); Geneva Emotion Music Scales (GEMS)-9 which asked about music tracks played during LSD therapy (Kaelen et al., 2015); and Subjective Effects and States of Consciousness Questionnaires, which contained one music item each (Carbonaro et al., 2018). Studies were mostly conducted using therapists, although trained “monitors” (Carbonaro et al., 2018; Griffiths et al., 2008) or “guides” (Gasser et al., 2015; Noorani et al., 2018) were used in four studies. Data were collected during the psychedelic therapy (Carbonaro et al., 2018) or a week (Gaston & Eagle, 1970; Kaelen et al., 2018), 4 months (Griffiths et al., 2008), 3 months (Gasser et al., 2015), 6 months (Watts et al., 2017), 1–52 weeks (Belser et al., 2017; Kaelen et al., 2015; Swift et al., 2017), or 30 months (Noorani et al., 2018) later.

Study Method: Use of Music

Approaches to music played during psychedelic sessions varied. Only two studies detailed specific music used. In Kaelen et al.’s (2015) LSD study, 10 tracks were used, based on participants’ ratings for highest liking and lowest familiarity. The 10 tracks were

from 16 researcher-selected tracks presented to the participants and are listed in the article. The music playlist used in [Kaelen et al.'s \(2018\)](#) study is completely detailed in the Supplementary Material included in that study. The playlist order was arranged by study staff to complement psilocybin effect phases. In this study, participants also received an opportunity of listening to the playlist in a preparation session; one participant, who strongly disliked this playlist, used the Richards' playlist, mentioned earlier ([Hess, 2017](#)).

[Gaston and Eagle \(1970\)](#) used participants' music preferences, spanning nine categories, to inform music presented but the information was used to inform five treatment conditions, that is, no music; miscellaneous music, familiar and liked music free-field, familiar and liked music with headphones, and unfamiliar and disliked music. Music from all categories was randomly used in the miscellaneous condition. Music categories, not actual music used, were listed in the article. In the remaining seven studies, the nature of music presented was only alluded to, with phrases including: (a) "with music" ([Gasser et al., 2015](#)), (b) "a program of classical music" ([Griffiths et al., 2008](#)), (c) "a program of classical and world music" ([Carbonaro et al., 2018](#)), (d) "a program of music" ([Noorani, 2018](#)), and (e) "a specific music playlist" ([Belser et al., 2017](#); [Swift et al., 2017](#); [Watts et al., 2017](#)). [Watts et al. \(2017\)](#) and [Kaelen et al. \(2018\)](#) both used participants sourced from [Carhart-Harris et al.'s \(2016\)](#) study, so it can be inferred that [Watts](#) used the [Kaelen et al. \(2018\)](#) playlist. Likely, [Griffiths et al.'s \(2008\)](#) study, who had Richards on the team, used the psychedelic playlist that [Richard's](#) designed ([Hess, 2017](#)).

Instructions given to participants when listening to music varied widely. Headphone use was one of the experimental conditions in two studies ([Carbonaro et al., 2018](#); [Gaston & Eagle, 1970](#)) and also reported in three others ([Kaelen et al., 2015, 2018](#); [Noorani et al., 2018](#)). Participants were requested to cover or close their eyes in all except one study ([Griffiths et al., 2008](#)) and in four studies participants reclined on a bed/couch ([Carbonaro et al., 2018](#); [Gaston & Eagle, 1970](#); [Kaelen et al., 2018](#); [Watts et al., 2017](#)). Instructions across the studies included, "relax as completely as possible," "Let the music take you where you need to go" ([Gaston & Eagle, 1970](#), p. 7), focus attention inwards ([Griffiths et al., 2008](#); [Swift et al., 2017](#)), "relax" ([Kaelen et al., 2015, 2018](#)), lie comfortably ([Belser](#)

et al., 2017; Swift et al., 2017), and “trust, let go, and be open” (Noorani et al., 2018, p. 757). In Kaelen et al.’s (2018) psilocybin study, both headphones and speakers presented music during sessions to allow deep immersion, continuity if headphones were disrupted, and for therapists to empathize with participants’ states.

Study Findings

Four themes emerged from the analysis related to music experienced during psychedelic therapy as follows. Where available, participant numbers from the original studies are signified by “#.”

Theme 1. Music Is Central for Supportive and Meaningful Emotional and Imagery Experiences and Therapeutic Outcomes.

Music was widely considered “central” (Belser et al., 2017; Noorani et al., 2018) or “integral” (Watts et al., 2017) to participants’ “phenomenal” (Belser et al., 2017) experiences during psychedelic therapy: a vehicle for “making things happen” (Belser et al., 2017, p. 374). Music was supportive (Gaston & Eagle, 1970; Swift et al., 2017), calming (Kaelen et al., 2018), and associated with intensified and meaningful emotions (Kaelen et al., 2015, 2018), thoughts, and mental imagery which carried participants into different realms: “The music was melding with what I was feeling, and it was all mixing up to create images in my mind... the music was the whole script, the whole movie, the whole everything” (#427) (Kaelen et al., 2018, p. 762).

In two studies, many participants said that music enabled them to surrender to emotions (Griffiths et al., 2008; Watts et al., 2017). In one of these, music also provoked participants’ repressed emotions and acceptance of those which were painful (Watts et al., 2017). In another, researchers observed that negative music-evoked emotions often helped to elicit and address participants’ psychological issues (Kaelen et al., 2018). Kaelen et al. (2015) found that music with LSD was associated with participants’ significantly higher experience of emotion (diff 0.51, $p = .006$); and wonder, power, tenderness, and transcendence (all $p = .027$; see figure 2 of Kaelen et al.’s (2018) article for effect size) compared with when participants experienced music with placebo (saline). Carbonaro et al. (2018) also found that as psilocybin dosages increased, participants also reported experiencing stronger absorption in music listening ($p < .05$) and sense of music’s significance ($p < .05$). Elsewhere, musically elicited spiritual connections were also evident through music’s association with “heaven” (Gaston & Eagle, 1970) and the

aesthetic: “To “let go” & become enveloped in the beauty of – in this case – music – was enormously spiritual” (#27) (Griffiths et al., 2008, p. 19).

Theme 2. Transformation via Music’s Anthropomorphic, Transportive, Material, and Dichotomous Elicitations. Participants described how music experienced during therapy was transformational through its elicitation of anthropomorphic, transportive, and material sensations. Individuals described music as “alive” (Noorani et al., 2018), a “coauthor,” “ally” (Belser et al., 2017), and lover: “I was in love with the music. But I felt like it was [also] in love with me. That’s a great feeling” (#405) (Noorani et al., 2018, p. 760). Music was also something “real” to “hold” onto (Gaston & Eagle, 1970), a “conveyor” of experience (Belser et al., 2017), “tour guide”/“guide” (Belser et al., 2017; Kaelen et al., 2018), and a carrier, which took people to different places (Kaelen et al., 2018). One participant said it was “gorgeous” being “carried” with the music “from dark to light, from tension to total relaxation” (#3) (Gasser et al., 2015, p. 63). Some “lived” in the music, said that their experience matched the music, or that it enabled richer self-exploration (Belser et al., 2017). Music was also experienced by some in visual-, somatic-, and/or gustatory-auditory synesthesia. One tasted the music and another felt: “My entire body was musical instrument for every sound, which was coming through my head and it eviscerated from top to bottom . . . I know what a grand piano feels like when it is played” (Belser et al., 2017, p. 373). Swift et al. (2017) stated that, “Nine participants described a loosening or even dissolving sense of self, often merging with different elements of their experience such as the music, emotions, or images” (p. 497).

Similarly, most participants in Gaston and Eagle’s (1970) study felt that music was touching or a part of them and, as mentioned earlier, music melded with #427’s feelings (Noorani et al., 2018).

Music’s therapeutic influence was also especially evident in how the music elicited dichotomous emotional and imagery effects. Music enhanced participants’ experience of both power and tenderness (Kaelen et al., 2015) and enabled a participant to simultaneously “let go” and be “enveloped” in music (Griffiths et al., 2008). Others stated, “The music was wonderful because it anchors you and yet it propels you” (Belser et al., 2017, p. 373), and “Incredibly

funny and tears of joy, then crying because of the poignancy of the music” (Watts et al., 2017, p. 538).

Theme 3. Openness and Liked Music and Listening Contexts Support Therapeutic Outcomes. Participants’ liking of music heard during psychedelic therapy was associated with therapeutic impact. Most positive outcomes were evident when the music was liked, accepted, and resonated (Kaelen et al., 2018). Rare dislike of music ($n = 2$) in Kaelen et al.’s (2018) psilocybin study was associated with reduced subjective effects. These participants preferred their own music. A “few” participants in Watts et al.’s study also wanted freedom to change the music and one added that listening to the music blindfolded and with headphones, as required, was “sickening and nauseating” when she wanted to open her eyes and “do things under the effect of the drug” (p. 550). At one point, the “trippy” music in Kaelen et al.’s study (2018) made #10 think, “I’m going crazy” (Kaelen et al.’s Supplementary file, p. 9). Also in this study, liking ($r = 0.61$, $p = .006$), resonance ($r = 0.67$, $p = .002$), and openness ($r = 0.70$, $p = .0008$) to music predicted mystical experience, and resonance ($r = 0.53$, $p = .016$), and openness ($r = 0.59$, $p = .007$) to music predicted insightfulness. Researchers asserted that music in psychedelic therapy should, therefore, be “patient centered,” including through adapting music during sessions when needed. They also stated that participants need an open and curious attitude and preparedness to engage in emergent therapeutic content (Kaelen et al., 2018). Two other participants also recommended that music should be tailored to each participant (Gaston & Eagle, 1970; Noorani et al., 2018). Gaston and Eagle’s (1970) findings also informed their recommendations that the music should reflect participants’ music preferences and “unique responses” in psychedelic therapy, but that while the music needs to be liked the music does not need to be familiar.

Studies which examined participants’ liking of music in psychedelic therapy sessions indicated that most affirmed the music experienced (Gaston & Eagle, 1970; Kaelen et al., 2018; Watts et al., 2017). This includes Gaston and Eagle’s (1970) finding that most liked the music in four music intervention arms, although the music conditions were informed by all participants’ completion of an LSD Music Preference Questionnaire. All except the no-music condition ($n = 10/59$) stated that music should be in sessions, yet in this no-music group, four participants also requested music

during sessions. There were exceptions in studies, however, where individuals wanted the music changed (Watts et al., 2017) or said that the music was “manipulative” (Noorani et al., 2018). In Watts et al.’s (2017) study, 3 out of 20 participants found the music restrictive and too dark, sometimes unbearable. In Kaelen et al.’s (2018) study (which used the same participants as Watts), 10 out of 19 participants stated that the music had unwelcome influences on subjective experiences, although 18 out of 19 participants also stated music had welcome influences. Only a few studies reported on participants’ views about various genres experienced during psychedelic therapy. Love ballads were most preferred in Gaston and Eagle’s (1970) LSD study. In Kaelen et al.’s (2018) later psilocybin study, the most preferred music was ethnic, vocal, and (neo-) classical music. Kaelen et al. (2018) also reported that music most liked by participants through drug therapy phases included: (a) calming (ambient) music, particularly at early and final (return) phases, and sometimes during the peak phase and (b) more emotionally evocative music, also during peak phase. These researchers surmised that optimal playlist design needs to include music genre selection structured to match different phases of drug experience (and added that this supported other authors’ views) (Kaelen et al., 2018). Individuals in Noorani et al.’s (2018) study also recommended more periods of silence (#417) and “repetitive harmonics” (#422). Elsewhere, a few wanted the “spooky” Holocaust Gorecki track removed, which “is about a young Jewish woman being prepared for death; it evokes deep sorrow” (Watts et al., 2017, pp. 554–555).

Only Gaston and Eagle (1970) speculated about associations between musical pitch elements and imagery, reporting that low pitches were noticed more than high pitches, but high pitches were associated with brighter colors, smaller geometric designs, and more real past experiences. Most participants preferred high pitches due to associations with virtues and heaven. These authors also reported that no distortion of music experienced was evident.

Two studies reported on the experience of wearing headphones. In one, familiar music heard through headphones was the most effective presentation method ($n = 59$; $p < .05$) (Gaston & Eagle, 1970); however, a participant elsewhere found the expectation of using headphones, eyeshades, and lying down restrictive (Noorani et al., 2018).

Theme 4. Music Is Associated With Positive, Longer-Term Effects. Some findings revealed how the music in psychedelic therapy changed participants' lives, namely through how they related to music. Those who experienced familiar music through headphones in [Gaston and Eagle's \(1970\)](#) study changed their music preferences after the LSD experience. Following involvement in Gasser and et al.'s (2015) study, a participant listened to music more consciously. Certain musical pieces from sessions continued to overwhelm 6 out of 12 of this study's participants with positive emotions. Elsewhere, two participants also considered taking up musical instrument playing after sessions, and 2.5 years after psilocybin therapy #413 was "so into music now" ([Noorani et al., 2018](#), p. 765). In the depression studies (which used the same participants), many who had stopped enjoying music were able to listen to it again ([Kaelen et al., 2018](#); [Watts et al., 2017](#)). [Kaelen et al. \(2018\)](#) also reported:

Reductions in depression 1 week after psilocybin were significantly predicted by the music experience variables, liking ($r = 0.60, p = 0.006$), resonance ($r = 0.59, p = 0.008$), and openness ($r = 0.57, p = 0.001$), but not by drug intensity ($r = 0.004, p = 0.98$). (p. 513)

Study Limitations

In eight studies, the specific music used was not reported ([Belser et al., 2017](#); [Carbonaro et al., 2018](#); [Gasser et al., 2015](#); [Gaston & Eagle, 1970](#); [Griffiths et al., 2008](#); [Noorani et al., 2018](#); [Swift et al., 2017](#); [Watts et al., 2017](#)). Interview schedules in qualitative studies also included one ([Noorani et al., 2018](#)) or no ([Belser et al., 2017](#); [Gasser et al., 2015](#); [Swift et al., 2017](#); [Watts et al., 2017](#)) music experience questions. In individual studies, no details were provided about the analytic approach to textual data ([Griffiths et al., 2008](#)), instructions about music engagement ([Gasser et al., 2015](#)), the data collector/person accompanying sessions ([Kaelen et al., 2015](#)), baseline emotion checking before music was played ([Kaelen et al., 2015](#)), nor participant code identifiers to signify quotes ([Belser et al., 2017](#)), which is necessary to ensure that the illustrative quotes are not all from one person.

Discussion

In psychedelic therapy research, details about music offered by researchers and used by participants are needed to assist with the development of guidelines for music provision into the future (Barrett et al., 2018); however, such details are often absent in study reporting. Similarly, music's role in psychedelic therapy research is seldom examined. Participant reports of music-related experiences were evident in only 10 studies in this rapid review, 5 of which just reported incidental statements in research focused on nonmusic-related effects. Yet, when participants liked and were open to music used, music was integrally linked with positive multisensorial and transformational outcomes. Music experienced as "negative" may lead to therapeutic outcomes through eliciting and helping to address psychological concerns; however, therapeutic outcomes may alternatively diminish when the music is "dissonant with the (individual's) unfolding experience" (Kaelen et al., 2018, p. 516). Some of those with depression also developed enhanced appreciation of music following psychedelic therapy, as found in psychedelic therapy outcomes in the 1960s (Hoffer, 1965). Lack of detail about the music used and experienced in psychedelic research is striking given its profound effect. This may be due to lack of awareness about how music analysis could assist researchers to examine the efficacy of music in psychedelic therapy.

Future Possibilities for Music in Psychedelic Therapy Research

Future research could examine associations between music structures heard when participants experience significant altered effects, evident via participant reporting or (possibly) therapist observation. Researchers could examine whether there are similar musical features in psychedelic therapy associated with peak experiences, or with lead-up and follow-on reintegration phases. Study designs with comparable aims already used in music psychology and BMGIM research could be helpful for future psychedelic therapy research. For example, a structural analysis of music passages associated with participants' reports of physical responses found that tears were most reliably elicited by passages with sequences and appoggiaturas, and shivers most commonly elicited by passages with new or unexpected harmonies (Sloboda, 1991). Grocke (1999) also used a Structural Model of Music Analysis to examine whether

the music being played when participants experienced pivotal moments during BMGIM had similar structural components. Pivotal moments were defined as intense embodied experiences when clients experience life-changing resolution after confronting distressing imagery. Common features included formal structures (e.g., ternary) with repetitive themes and rhythmic motifs, consistent rhythmic structures, slow tempi, diatonic tonal structural progressions with predictable harmonies, predominantly legato (with perhaps pizzicato in accompaniment), and instrumental dialog (Grocke, 1999). Participants' views about optimal music for different phases of drug effects during psychedelic therapy may also inform guidelines for developing psychedelic therapy playlists, including genres, familiar/unfamiliar, or vocally comprehensible/non-comprehensible music.

Developing Guidelines for Music in Psychedelic Therapy

Guideline development for music in psychedelic therapy would need flexibility due to the widely varied, idiosyncratic ways that individuals respond to music. Participants' music backgrounds and preferences can affect the quality of their psychedelic experience (Kaelen et al., 2018), and unwelcome music can be associated with participants feeling spooked (Watts et al., 2017) and manipulated (Noorani et al., 2018). Hence, participants should have the opportunity to sample researcher-offered music before drug ingestion, as described in Kaelen et al.'s (2018) psilocybin study, and to choose music used in sessions. Inviting participants to reflect on their musical backgrounds and whether there is specific music that they want included or excluded should also occur. Therapist adaptation of music presented during psychedelic therapy sessions may also be needed to reduce adverse experiences, as recommended throughout the history of psychedelic therapy (Bonny & Pahnke, 1972; Hoffer, 1965; Kaelen et al., 2018). Therapists and researchers inevitably face a challenge when endeavoring to distinguish between negative music-evoked emotions, which can help to address participants' psychological issues, and unwelcome music associated with adverse outcomes and need for playlist changes. Further research on therapists' decision-making related to music changes in psychedelic therapy, and participants' reactions to these changes, would help to inform this area. Bonny developed 18 music programs for use in BMGIM with titles describing either

the program's intent (e.g., transitions) or music's affective quality (e.g., serenity) (Grocke, 1999). Research on BMGIM therapists' reasons for using different music playlists across sessions may also illuminate future planning for music use in psychedelic therapy.

Overall, findings from the rapid review support other authors' recommendations for "patient-centered" or "patient-specific" music (Barrett et al., 2018) for optimal participant experience and therapy outcomes. This includes both the music played and how it is presented, as participants need a choice over using headphones, blindfolds, or lying down to listen.

Suggestions for Planning Music in Psychedelic Therapy

Further suggestions informed by this study's findings for planning the music in psychedelic therapy follow. Participants need:

- an invitation to be open-minded to music heard during psychedelic therapy because music is heard differently in a non-ordinary state of consciousness, and the music one wants to hear may not have optimal therapeutic effects;
- to ideally experience music which is unfamiliar, rather than familiar, which may already have positive or negative associations;
- to be informed that music which is liked, even when unfamiliar, can have positive effects;
- to be invited to choose the music for their psychedelic therapy session through listening to samplers of music playlist/s designed by psychedelic therapy researchers;
- to feel empowered to attenuate the psychedelic effect of music through choosing to be in silence, which may also be helpful (Hoffer, 1965; Noorani et al., 2018), or to listen to environmental sounds, such as bird song, the ocean, or wind;
- to be advised that previous participants in psychedelic therapy find different playlists helpful, that some prefer music from the classical tradition, while others prefer more neoclassical and ethnic music, etc., and that some may need to avoid music with adverse associations. There is no one universally applicable playlist for psychedelic therapy.

If the participant experiences heightened distress during drug ingestion, therapists should also consider including music the

participant identifies in preparatory sessions as having a positive mood association. Use of a “rescue genre” or “rescue songs” as a non-pharmacological support intervention may facilitate a soothing response, assist with reduction of severe anxiety or agitation, and avoid the need for “rescue medications.” Therapists should also consider providing headphones and speakers to support participants’ deep immersion in the music alongside therapists’ awareness of music heard.

Strengths and Limitations, including Critical Reflection of the Synthesis

This is the first systematic review of participants’ self-reported experiences of music in psychedelic therapy. Although it was a rapid approach with the search limited to refereed journal articles and major health databases, it was comprehensive, likely to have retrieved most (if not all) relevant articles, and independent reviewers were involved in all review phases. The entire data set which informed the development of themes is also available in the [Supplementary Material](#). The findings illuminate music’s integral role in psychedelic therapy and generate practical ideas for supporting participant-centered music selection procedures in sessions. Nonetheless, limitations related to reviewed studies, which spanned 1970 to 2018 across only three western countries (United States, England, and Switzerland), restrict the scope of application of the findings. Study designs and statistical procedures have evolved since the [Gaston and Eagle \(1970\)](#) study: adjustment for multiple comparisons were historically not performed but, if they had been, statistical significance may not have been obtained. Limited conclusions can only be drawn from the findings because of the studies’ heterogeneity regarding: clinical populations; research questions; and methods, including drug and music used, psychedelic therapy provided, and outcome measures. Specific music used in eight studies was also not detailed whereas contact with study authors may have improved this reporting. Researchers’ cultural backgrounds would have likely affected decisions about the music used in psychedelic therapy (and participants’ experience of sessions) similar to how music therapists’ backgrounds can affect their “motivations as clinicians” ([Gonzales, 2011](#), p. 30). Further reflection by researchers on motivations for decisions about the

music used in psychedelic therapy may inspire deeper insight into their work, and use of client-centered music. The review also did not examine psychedelic therapy outcomes when no music was used; however, [Gaston and Eagle's \(1970\)](#) findings would support music's availability in psychedelic therapy, as four participants in the no-music group condition requested music, and ethnographic fieldwork research also indicates that music amplifies and accentuates positive experiences following ingestion of psychedelic substances ([Shanon, 2011](#)).

Conclusion

In psychedelic therapy research, liked music is considered integral for meaningful altered experiences and enriching self-exploration. Music can promote and extend helpful experiences of multi-sensorial and synesthetic sensations, safety and companionship, conveyance of love, and transportation to other realms. Music can also elicit a sense of deeply embodied transformation. Therapeutic influence is especially evident in the dichotomous physical and emotional ways that music can be experienced, as was also evident when music was used for self-care through cancer diagnoses ([O'Callaghan et al., 2014](#)): music can simultaneously anchor yet propel, and elicit tears of joy and poignancy. Music can also be associated with negative emotions, which could help with the processing of psychological issues, or they may be unwelcome, reinforcing the need for patient-centered planning of music in psychedelic therapy.

Music therapists, Browne, Eagle, Gaston, and Bonny, helped the original psychedelic therapy researchers to understand music's import as a tailored accompaniment to drug ingestion. BMGIM, Helen Bonny's legacy spawned from her contribution, has since been embraced by international music therapists ([McKinney & Honig, 2017](#)). Music therapists are well-placed to help with the psychedelic therapy research renaissance. First, music therapists can help to develop optimal approaches for offering music in psychedelic therapy research, through researching music associated with participant reports of significant reactions during drug therapy phases. This would include examining music genres, silences, micro-analysis of passages associated with significant outcomes, and the scope of shared and idiosyncratic reactions. Second, music therapists could help to explore whether integration of any of the

BMGIM techniques into psychedelic therapy has merit (Drinkell, 2017). Finally, music therapists can be involved in trials comparing BMGIM with psychedelic therapy outcomes. If psychedelics become approved medicines, music therapists may be involved in offering psychedelic therapy as part of therapeutic teams. Bonny's belief, that music alone is powerful enough to stimulate imagery without the need for psychedelics (Grocke, 1999), is also well demonstrated (McKinney & Honig, 2017). Further understanding about clinical indications for BMGIM, psychedelic therapy, or combination of both, is hopefully on the horizon.

Supplementary Data

Supplementary data are available at *Journal of Music Therapy* online.

Funding

This review was unfunded.

Conflict of interest

None declared.

References

- Aday, J. S., Davoli, C. C., & Bloesch, E. K. (2019). 2018: A watershed year for psychedelic science. *Drug Science, Policy and Law*, 5, 1–4. doi:10.1177/2050324519872284
- Barrett, F. S., Preller, K. H., & Kaelen, M. (2018). Psychedelics and music: Neuroscience and therapeutic implications. *International Review of Psychiatry (Abingdon, England)*, 30(4), 350–362. doi:10.1080/09540261.2018.1484342
- Barrett, F. S., Robbins, H., Smooke, D., Brown, J. L., & Griffiths, R. R. (2017). Qualitative and quantitative features of music reported to support peak mystical experiences during psychedelic therapy sessions. *Frontiers in Psychology*, 8, 1238. doi:10.3389/fpsyg.2017.01238
- Belouin, S. J., & Henningfield, J. E. (2018). Psychedelics: Where we are now, why we got here, what we must do. *Neuropharmacology*, 142, 7–19. doi:10.1016/j.neuropharm.2018.02.018
- Belser, A. B., Agin-Lieb, G., Friedman, H. L., Guss, J., Bossis, A. P., & Ross, S. (2017). Patient experiences of psilocybin-assisted psychotherapy: An interpretative phenomenological analysis. *Journal of Humanistic Psychology*, 57, 354–388. doi:10.1177/0022167817706884

- Bogenschutz, M. P. (2017). It's time to take psilocybin seriously as a possible treatment for substance use disorders. *The American Journal of Drug and Alcohol Abuse*, 43(1), 4–6. doi:10.1080/00952990.2016.1200060
- Bonny, H. L., & Pahnke, W. N. (1972). The use of music in psychedelic (LSD) psychotherapy. *Journal of Music Therapy*, 9(2), 64–87. doi:10.1093/jmt/9.2.64
- Bonson, K. E. (2018). Regulation of human research with LSD in the United States (1949–1987). *Psychopharmacology*, 235:591–604. doi:10.1007/s00213-017-4777-4
- Carbonaro, T. M., Johnson, M. W., Hurwitz, E., & Griffiths, R. R. (2018). Double-blind comparison of the two hallucinogens psilocybin and dextromethorphan: Similarities and differences in subjective experiences. *Psychopharmacology*, 235(2), 521–534. doi:10.1007/s00213-017-4769-4
- Carhart-Harris, R. L., Bolstridge, M., Rucker, J., Day, C. M., Erritzoe, D., Kaelen, M.,... Nutt, D. J. (2016). Psilocybin with psychological support for treatment-resistant depression: An open-label feasibility study. *Lancet Psychiatry*, 3(7), 619–627. doi:10.1016/S2215-0366(16)30065-7
- Casey, M., O'Connor, L., Cashin, A., Smith, R., O'Brien, D., Nicholson, E.,... Egan, C. (2017). An overview of the outcomes and impact of specialist and advanced nursing and midwifery practice, on quality of care, cost and access to services: A narrative review. *Nurse Education Today*, 56, 35–40. doi:10.1016/j.nedt.2017.06.004
- Clark, M. (2019). The evolution of the Bonny method. In D. E. Grocke (Ed.), *Guided imagery and music: The Bonny method and beyond* (2nd ed., pp. 11–25). Dallas, TX: Barcelona Publishers.
- Corbin, J., & Strauss, A. (2008). *Basics of qualitative research 3e: Techniques and procedures for developing grounded theory*. Thousand Oaks, CA: Sage.
- Drinkell, M. (2017). *Magical moments: Similarities and differences between imagery experienced in a Guided Imagery and Music (GIM) session and a psychedelic trip (unpublished report)*. Melbourne: Victorian College of the Arts, The University of Melbourne.
- Eagle, C. T. (1972). Music and LSD: An empirical study. *Journal of Music Therapy*, 9, 23–36. doi:10.1093/jmt/9.1.23
- Gao, Y., Wei, Y., Yang, W., Jiang, L., Li, X., Ding, J.,... Ding, G. (2019). The effectiveness of music therapy for terminally ill patients: A meta-analysis and systematic review. *Journal of Pain and Symptom Management*, 57(2), 319–329. doi:10.1016/j.jpainsymman.2018.10.504
- Garcia-Romeu, A., Griffiths, R. R., & Johnson, M. W. (2014). Psilocybin-occasioned mystical experiences in the treatment of tobacco addiction. *Current Drug Abuse Reviews*, 7(3), 157–164. doi:10.2174/1874473708666150107121331
- Gasser, P., Kirchner, K., & Passie, T. (2015). LSD-assisted psychotherapy for anxiety associated with a life-threatening disease: A qualitative study of acute and sustained subjective effects. *Journal of Psychopharmacology (Oxford, England)*, 29(1), 57–68. doi:10.1177/0269881114555249
- Gaston, E. T., & Eagle, C. T. Jr. (1970). The function of music in LSD therapy for alcoholic patients. *Journal of Music Therapy*, 7, 3–19. doi:10.1093/jmt/7.1.3
- Gonzales, P. J. (2011). The impact of music therapists' music cultures on the development of their professional frameworks. *Qualitative Inquiries in Music Therapy*, 6, 1–33.

- Griffiths, R. R., Johnson, M. W., Carducci, M. A., Umbricht, A., Richards, W. A., Richards, B. D.,...Klinedinst, M. A. (2016). Psilocybin produces substantial and sustained decreases in depression and anxiety in patients with life-threatening cancer: A randomized double-blind trial. *Journal of Psychopharmacology (Oxford, England)*, 30(12), 1181–1197. doi:10.1177/0269881116675513
- Griffiths, R. R., Johnson, M. W., Richards, W. A., Richards, B. D., McCann, U., & Jesse, R. (2011). Psilocybin occasioned mystical-type experiences: Immediate and persisting dose-related effects. *Psychopharmacology*, 218(4), 649–665. doi:10.1007/s00213-011-2358-5
- Griffiths, R., Richards, W., Johnson, M., McCann, U., & Jesse, R. (2008). Mystical-type experiences occasioned by psilocybin mediate the attribution of personal meaning and spiritual significance 14 months later. *Journal of Psychopharmacology (Oxford, England)*, 22(6), 621–632. doi:10.1177/0269881108094300
- Griffiths, R. R., Richards, W. A., McCann, U., & Jesse, R. (2006). Psilocybin can occasion mystical-type experiences having substantial and sustained personal meaning and spiritual significance. *Psychopharmacology*, 187(3), 268–83; discussion 284. doi:10.1007/s00213-006-0457-5
- Grob, C. S., Danforth, A. L., Chopra, G. S., Hagerty, M., McKay, C. R., Halberstadt, A. L.,...Greer, G. R. (2011). Pilot study of psilocybin treatment for anxiety in patients with advanced-stage cancer. *Archives of General Psychiatry*, 68(1), 71–78. doi:10.1001/archgenpsychiatry.2010.116
- Grocke, D. (1999). *Phenomenological study of pivotal moments in guided imager and music (GIM) therapy (PhD thesis)*. The University of Melbourne, Melbourne.
- Grof, S. (1980). *LSD psychotherapy*. Alameda, CA: Hunter House.
- Hess, P. (2017). This is a scientifically determined playlist for tripping. Retrieved from <https://www.inverse.com/article/38980-psilocybin-mushroom-playlist-research>. Accessed 16 March 2019.
- Hoffer, A. (1965). D-Lysergic acid diethylamide (Lsd): A review of its present status. *Clinical Pharmacology and Therapeutics*, 6, 183–255. doi:10.1002/cpt196562183
- Johnson, M. W., Garcia-Romeu, A., & Griffiths, R. R. (2017). Long-term follow-up of psilocybin-facilitated smoking cessation. *The American Journal of Drug and Alcohol Abuse*, 43(1), 55–60. doi:10.3109/00952990.2016.1170135
- Johnson, M. W., Garcia-Romeu, A., Johnson, P. S., & Griffiths, R. R. (2017). An online survey of tobacco smoking cessation associated with naturalistic psychedelic use. *Journal of Psychopharmacology (Oxford, England)*, 31(7), 841–850. doi:10.1177/0269881116684335
- Johnson, M., Richards, W., & Griffiths, R. (2008). Human hallucinogen research: Guidelines for safety. *Journal of Psychopharmacology (Oxford, England)*, 22(6), 603–620. doi:10.1177/0269881108093587
- Kaelen, M., Barrett, F. S., Roseman, L., Lorenz, R., Family, N., Bolstridge, M.,... Carhart-Harris, R. L. (2015). LSD enhances the emotional response to music. *Psychopharmacology*, 232(19), 3607–3614. doi:10.1007/s00213-015-4014-y
- Kaelen, M., Giribaldi, B., Raine, J., Evans, L., Timmerman, C., Rodriguez, N.,... Carhart-Harris, R. (2018). The hidden therapist: Evidence for a central role of music in psychedelic therapy. *Psychopharmacology*, 235, 505–519. doi:10.1007/s00213-017-4820-5

- Khangura, S., Konnyu, K., Cushman, R., Grimshaw, J., & Moher, D. (2012). Evidence summaries: The evolution of a rapid review approach. *Systematic Reviews, 1*, 10. doi:10.1186/2046-4053-1-10
- Kitto, S. C., Chesters, J., & Grbich, C. (2008). Criteria for authors in the submission and assessment of qualitative research articles for the *Medical Journal of Australia*. *Medical Journal of Australia, 188*, 243–246. doi:10.5694/j.1326-5377.2008.tb01595.x
- Loizaga-Velder, A., & Verres, R. (2014). Therapeutic effects of ritual ayahuasca use in the treatment of substance dependence—qualitative results. *Journal of Psychoactive Drugs, 46*(1), 63–72. doi:10.1080/02791072.2013.873157
- Mays, N., Pope, C., & Popay, J. (2005). Systematically reviewing qualitative and quantitative evidence to inform management and policy-making in the health field. *Journal of Health Services Research & Policy, 10*(Suppl 1), 6–20. doi:10.1258/1355819054308576
- McKinney, C. H., & Honig, T. J. (2017). Health outcomes of a series of Bonny Method of Guided Imagery and Music sessions: A systematic review. *Journal of Music Therapy, 54*(1), 1–34. doi:10.1093/jmt/thw016
- Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G.; PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Plos Medicine, 6*(7), e1000097. doi:10.1371/journal.pmed.1000097
- Moreno, F. A., Wiegand, C. B., Taitano, E. K., & Delgado, P. L. (2006). Safety, tolerability, and efficacy of psilocybin in 9 patients with obsessive-compulsive disorder. *The Journal of Clinical Psychiatry, 67*(11), 1735–1740. doi:10.4088/jcp.v67n1110
- Muhr, T. (2005). *ATLAS/ti: the knowledge workbench [CD-ROM]* (Version 5.0). Berlin: ATLAS.ti Scientific Software Development.
- Nichols, D. E. (2016). Psychedelics. *Pharmacological Reviews, 68*(2), 264–355. doi:10.1124/pr.115.011478
- Noorani, T., Garcia-Romeu, A., Swift, T. C., Griffiths, R. R., & Johnson, M. W. (2018). Psychedelic therapy for smoking cessation: Qualitative analysis of participant accounts. *Journal of Psychopharmacology (Oxford, England), 32*(7), 756–769. doi:10.1177/0269881118780612
- O’Callaghan, C. C., McDermott, F., Michael, N., Daveson, B. A., Hudson, P. L., & Zalberg, J. R. (2014). “A quiet still voice that just touches”: Music’s relevance for adults living with life-threatening cancer diagnoses. *Supportive Care in Cancer, 22*(4), 1037–1047. doi:10.1007/s00520-013-2059-1
- Pahnke, W. N., Kurland, A. A., Unger, S., Savage, C., & Grof, S. (1970). The experimental use of psychedelic (LSD) psychotherapy. *JAMA, 212*(11), 1856–1863.
- Pollan, M. (2018). *How to change your mind: What the new science of psychedelics teaches us about consciousness, dying, addiction, depression, and transcendence*. New York, NY: Penguin Books.
- Popay, J., Roberts, H., Sowden, A., Arai, L., Rodgers, M., Britten, N.,...Duffey, S. (2006). Guidance on the conduct of narrative synthesis in systematic reviews. Economic and Social Research Council Methods Program. Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.178.3100&rep=rep1&type=pdf>. Accessed 16 March 2019.

- Richards, W. (2015). *Sacred knowledge: Psychedelics and religious experiences*. New York, NY: Columbia University Press.
- Ross, S., Bossis, A., Guss, J., Agin-Liebes, G., Malone, T., Cohen, B.,...Schmidt, B. L. (2016). Rapid and sustained symptom reduction following psilocybin treatment for anxiety and depression in patients with life-threatening cancer: A randomized controlled trial. *Journal of Psychopharmacology (Oxford, England)*, *30*(12), 1165–1180. doi:[10.1177/0269881116675512](https://doi.org/10.1177/0269881116675512)
- Sarosi, P. (2017, March 23). Music and psychedelics – An interview with Mendel Kaelen. *Drug Reporter*. Retrieved from https://drogriporter.hu/en/mendel_interview/
- Shanon, B. (2011). Music and ayahuasca. In D. Clarke & E. Clarke (Eds.), *Music and consciousness: philosophical, psychological, and cultural perspectives* (pp. 281–294). New York, NY: Oxford University Press.
- Sloboda, J. (1991). Music structure and emotional response: Some empirical findings. *Psychology of Music*, *19*, 110–120. doi:[10.1177/0305735691192002](https://doi.org/10.1177/0305735691192002)
- Swaminathan, S., & Schellenberg, E. G. (2015). Current emotion in music psychology. *Emotion Review*, *7*(2), 189–197. doi:[10.1177/1754073914558282](https://doi.org/10.1177/1754073914558282)
- Swift, T. C., Belser, A. B., Agin-Liebes, G., Devenot, N., Terrana, S., Friedman, H. L.,... Ross, S. (2017). Cancer at the dinner table: Experiences of psilocybin-assisted psychotherapy for the treatment of cancer-related distress. *Journal of Humanistic Psychology*, *57*, 488–519. doi:[10.1177/0022167817715966](https://doi.org/10.1177/0022167817715966)
- Talin, P., & Sanabria, E. (2017). Ayahuasca's entwined efficacy: An ethnographic study of ritual healing from 'addiction'. *The International Journal on Drug Policy*, *44*, 23–30. doi:[10.1016/j.drugpo.2017.02.017](https://doi.org/10.1016/j.drugpo.2017.02.017)
- Tricco, A. C., Antony, J., Zarin, W., Striffler, L., Ghassemi, M., Ivory, J.,...Straus, S. E. (2015). A scoping review of rapid review methods. *BMC Medicine*, *13*, 224. doi:[10.1186/s12916-015-0465-6](https://doi.org/10.1186/s12916-015-0465-6)
- Turton, S., Nutt, D. J., & Carhart-Harris, R. L. (2014). A qualitative report on the subjective experience of intravenous psilocybin administered in an fMRI environment. *Current Drug Abuse Reviews*, *7*(2), 117–127. doi:[10.2174/1874473708666150107120930](https://doi.org/10.2174/1874473708666150107120930)
- von Elm, E., Altman, D. G., Egger, M., Pocock, S. J., Gøtzsche, P. C., & Vandenbroucke, J. P.; STROBE Initiative. (2007). The Strengthening of Reporting of Observational Studies in Epidemiology (STROBE) statement: Guidelines for reporting observational studies. *Plos Medicine*, *4*(10), e296. doi:[10.1371/journal.pmed.0040296](https://doi.org/10.1371/journal.pmed.0040296)
- Watts, R., Day, C., Krzanowski, J., Nutt, D., & Carhart-Harris, R. (2017). Patients' accounts of increased "connectedness" and "acceptance" after psilocybin for treatment-resistant depression. *Journal of Humanistic Psychology*, *57*, 520–564. doi:[10.1177/0022167817709585](https://doi.org/10.1177/0022167817709585)