Evidence of Religious/Spiritual Singing and Movement in Mental Health: A Systematic Review

Abstract

Background

While mental health care needs have increased during the global pandemic, access to care has been reduced. Easily accessible alternative interventions may supplement existing mental health services to meet the increased need of mental health care. Our review explored the evidence of two alternative interventions, religious/spiritual (R/S) singing and R/S movement (dynamic meditation and praise dance), in relation to mental health outcomes.

Method

After registering with PROSPERO (CRD42020189495), a systematic search of three major databases (CINAHL, MEDLINE, and PsycINFO) was undertaken using predetermined eligibility criteria. Reference lists of identified papers and additional sources such as Google Scholar were searched. Quality of studies was assessed using the Mixed Method Appraisal Tool (MMAT). Data was extracted, tabulated, and synthesised according to the Preferred Reporting Items for Systematic Reviews (PRISMA) guidelines.

Results

Seven of the 259 identified studies met inclusion criteria. Three studies considered R/S singing, while four considered R/S movement. In R/S movements, three studies considered dynamic meditation while one investigated praise dance. Although moderate to poor in quality, included studies indicated a positive trend for the effectiveness of R/S singing and movement in dealing with mental health concerns.

Conclusion

While R/S singing and R/S movement (praise dance and dynamic meditation) may be of value as mental health strategies, findings of the review need to be considered with caution due to methodological constraints. The limited number and poor quality of included studies highlight the need for further quality research in these R/S practices in mental health.

Keywords: Religious singing, dynamic meditation, praise dance, mental health, spiritual movements

1. Introduction

In 2017, it was estimated that one in ten people lived with a mental health disorder worldwide, which is about 792 million people (Dattani et al., 2021). Mental health needs are reported to have increased across the globe due to the COVID-19 pandemic (Nochaiwong 2021; Xiong 2020). In a systematic review, Xiong et al. (2020) identified evidence of increased symptoms of anxiety (6.33% to 50.9%), depression (14.6% to 48.3%), post-traumatic stress disorder (7% to 53.8%), and psychological distress (34.43% to 38%) in the general population across eight countries during the first six months of the pandemic. Nochaiwong et al. (2021) also conducted a systematic review on the global prevalence of mental health concerns during the COVID-19 pandemic, extending the time period of included studies by three months. They reported that the prevalence of mental health concerns across 32 countries was 26.9% for anxiety, 28% for depression, 24.1% for post-traumatic stress symptoms, and 50% for psychological stress. COVID-19 is contributing to a global acute mental health crisis at a time when access to mental health services is already inadequate (Wang et al., 2007). In view of this, the United Nations has emphasised the importance of diverse mental health interventions to supplement existing mental health care (United Nations Sustainable Development Group [UNSDG], 2020). The aim of the present

review is to respond to the United Nations' call for more diverse interventions by exploring the evidence for mental health benefits of two religious/spiritual practices inherent across most religions and spiritual traditions.

Religions and spiritual traditions have sustained humankind for thousands of years. While the definition of religion and spiritual traditions remains a subject of debate (Worthington & Sandage, 2001), practices inherent in these traditions have been recognised as a source of comfort (Luskin, 2004). Religious and spiritual (R/S) practices are the channels or mediums through which one can have a religious, spiritual, or self-transcendent experience (Anastasi & Newberg, 2008). Self-transcendence or R/S experience is a well-documented phenomenon generally described as a heightened sense of self-awareness, connectedness with others, and/or union with something larger than oneself (Luskin, 2004; Yaden et al., 2017). Not only are self-transcendent experiences usually pleasant and peaceful, they are also inherently therapeutic and emotionally cathartic (d'Aquili & Newberg, 2000).

A range of R/S practices are utilised in religions and in spiritual traditions. These vary from education and cultivation of virtues to more concrete body-oriented practices such as chanting, R/S singing, and R/S movements. There are various reviews reporting mental health benefits for R/S practices focused on education, adopting attitudes or virtues such as gratitude, forgiveness, or kindness (Bonelli & Koenig, 2013; Cotton et al., 2006; Gonçalves et al., 2015; Koenig, 2009; Ross et al., 2015). **Other R/S practices, like chanting, breathwork, R/S singing, and R/S movement, are a more tangible (body-oriented) means of practice because,** in addition to their connection to a religion or spiritual tradition, they incorporate sensory (connection with senses) and motor (movement-related) components**. For instance, Salah, a R/S movement practice that combines recitation of prayers with a sequence of body movements has been shown to benefit health in addition to strengthening faith (Kamran, 2018; Sayeed & Prakash 2013). In addition to**

their connection to a religion or spiritual tradition, above R/S practices incorporate sensory (connection with senses) and motor (movement-related) components. For the remainder of this paper, we will refer to these practices as sensorimotor R/S practices.

Sensorimotor R/S practices have their origin in a religion or a spiritual tradition and have distinct sensory and motor components. Reviews have been conducted regarding the mental health benefits for some sensorimotor R/S practices, including yoga (Cramer et al., 2017; Pascoe & Bauer, 2015; Vancampfort et al., 2012), tai chi and qi gong (Liu et al., 2015; Zou et al., 2018), and chanting and breathwork (Malviya et al., 2022). These practices offer a tangible medium through which people may find comfort through the experience of self-transcendence (Newberg & d'Aquili, 2000). While there are many types of sensorimotor R/S practices, we considered two in this review that have not yet been reviewed – R/S singing and R/S movements. *R/S singing* is defined as a practice that involves singing *out loud* the words/lyrics of scriptures or songs that are religious or spiritual in nature and which are related to giving praise, worship, or prayer. *R/S movement* refers to practices that have their origins in a religion or spiritual tradition and involve body movements, often incorporating music and rhythmic movements. Examples are yoga, tai chi, dynamic meditation, and praise dance. These two sensorimotor R/S practices are discussed below in relation to mental health.

1.1. R/S singing and mental health

R/S singing is a common practice across all religions and spiritual practices (Beck, 2006; Wald-Fuhrmann et al., 2020). Many authors have reported R/S music and singing as instrumental to religious experience (Atkins & Schubert, 2014; Beck, 2019; Demmrich, 2020; Miller & Strongman, 2002). In a systematic review, Clark and Harding (2012) reported that active singing interventions such as karaoke appeared to have a positive effect on psychosocial outcomes, though the songs were not religious in nature, and overall findings were inconclusive. More recently, Wald-Fuhrmann et al. (2020) conducted a quantitative

study with Catholic participants focused specifically on religious singing. They reported that religious singing facilitated spiritual experience and that singing in a congregation induced feelings of social connectedness (Wald-Fuhrmann et al., 2020); but there were no outcomes in this study specific to mental health. While there are some studies that demonstrate positive effects of choral singing on mental health outcomes (Clift & Morrison, 2011; Johnson et al., 2017; Moss et al., 2018), to our knowledge no review has investigated the evidence of R/S singing on mental health outcomes.

1.2. R/S movements and mental health

Movement-based R/S practices are a part of most religions and spiritual traditions. There are several R/S practices that involve movement, which can be slow and concentrated (e.g., Tai Chi) or fast and rhythmic (e.g., religious dance by *Hare Krishna* devotees). Some movement practices can be done without music; however, other practices, such as liturgical dance and praise dance, occur as a part of worship with music as an integral component. Other practices, such as Dhikr (Abdul-Hamid & Hughes, 2015), start with slow repetitive movements and progress to faster movements alongside music that gradually increases in tempo and rhythm. The objective of these practices is to experience self-transcendence (Luskin, 2004) which yields various mental health benefits (Newberg & d'Aquili, 2000; Perry et al., 2021). As such, evidence suggests, R/S movements such as yoga (Hendricks et. al., 2017) and tai chi (Chi et. al., 2013) have mental health benefits. Even though these practices have their origin in religion or spiritual traditions, and were originally propounded for R/S purposes, they are often specifically practiced for their health benefits.

1.3.The Present Review

As mentioned above, while there are reviews regarding other R/S practices, there is no known review that has systematically investigated the evidence regarding the benefits of R/S singing or R/S movements in dealing with mental health concerns. In this systematic review,

we address this gap by reviewing evidence in the extant literature. It is anticipated that this review will provide evidence of possible supplementary interventions in mental health and enrich our knowledge base regarding the potential use of R/S singing and R/S movement in mental health clinical settings.

2. Methods

2.1. Protocol and registration

The protocol for this systematic review was registered on The International Prospective Register of Systematic Reviews (PROSPERO), identification number CRD42020189495. The review was conducted and reported according to the Preferred Reporting Items for Systematic Review Guidelines (PRISMA) (Moher et al., 2009).

2.2. Information source and search strategy

Three leading databases were searched: CINAHL; MEDLINE; and PsycINFO. A systematic and comprehensive search strategy with relevant key terms and MESH terms was developed. The search strategy was adapted as per guidelines of individual databases (see example for CINAHL, Table 1). The search was limited to English language and experimental studies. Search strategies of all databases are available in the supplementary material. Hand searches of reference lists and searches of additional sources, such as Google Scholar, were conducted.

STRATEGY	**#1 AND #2**
1	Hymn* OR Choir OR Kirtan OR Piyyut OR “religious singing” OR “religious song” OR “Singing prayer” OR “religious singing” OR “Religious song” OR Hymns OR Gospel OR Praises OR "Choral singing" OR Qawwali OR Qavvali OR Bhajan OR "devotional singing" OR “Sacred song” OR

	Pizmonim OR “Praise dance” OR “Dynamic meditation” OR “Sacred dancing” OR ‘Sacred dance” OR “Religious dancing” OR “Rhythmic movement” OR Whirling OR “Liturgical dance” OR ‘Liturgical dancing” OR “Sufi dance”
2	(MM "Mental Disorders") OR (MM "Mental Disorders, Chronic") OR (MM "Mental Health") OR (MM "Stress") OR (MM "Stress Disorders, Post-Traumatic") OR (MM "Quality of Life") OR (MM "Psychological Well-Being") OR (MM "Depression") OR (MM "Bipolar Disorder") OR (MM "Affective Disorders, Psychotic") OR “Mood disorders” OR (MM "Anxiety") OR (MM "Anxiety Disorders") OR (MM "Generalized Anxiety Disorder")
Results #1 AND #2	61
Limiters Applied	English language
Results with limiters	60
Duplicates	4
Final	56

Table 1. *Search strategy for CINAHL (from 1937 to 2020)*

2.3. Study selection and eligibility criteria

Peer reviewed qualitative/quantitative/mixed experimental studies that investigated the effects of two sensorimotor practices (R/S movements; R/S singing) on mental health outcomes were included. Only studies that used either of these two practices with the presence of sensorimotor components such as vocalisation of words, active use of body parts, and/or body movements, were used. Studies that used only listening to R/S singing and

lacked active singing were excluded. While yoga, tai chi, and qigong met the criteria of R/S movement, they were also excluded as they have been previously reviewed. Studies published in languages other than English were excluded, as were unpublished studies, case reports, and grey literature. Detailed eligibility criteria are presented in Table 2.

Covidence software was used to screen studies and extract data. Screening of studies was done in two phases. In Phase 1, the first author (SM) assessed titles and abstracts against eligibility criteria. Two other authors (PM and BZ) collectively screened the titles and abstracts as second reviewers. Phase 2 screening followed the same process for full text articles. Discrepancies in selection were resolved by discussion until mutual agreement.

Criteria	Inclusion Criteria	Exclusion Criteria
Types of Study	All types of experimental study designs (research studies)	Reviews, dissertations, expert views
Intervention	R/S Dancing, R/S Movement, Dynamic Meditation, Spiritual/Religious 'Rhythmic movements', Whirling (as a religious or spiritual practice).	General Dancing, Music and Movement Therapy, Dance therapy, Yoga, Qigong, Tai Chi
	Religious Singing, Choir, Hymn, Sacred Singing, Kirtan, Singing Prayer, Piyyut, Religious song, Hymns, Gospel, Praises, Choral Singing, Folk singing and/or dancing with R/S connection, Qawwali, Bhajan, Devotional Singing, Pizmonim, liturgical dancing.	Music Therapy, Listening to music, Non-religious choir/General singing, or dancing with no R/S connection, Folk singing and/or dancing without R/S.
Problem	Mental health, Mental health condition/s as outcome, Stress/distress, QOL, Wellbeing.	Only physical condition, any other condition not related to mental health.
Outcome measure	Behavioural measures, self-report measures.	Physiological measures such as biomarkers, heart rate variability.

Table 2. *Eligibility criteria*

2.4. Quality appraisal

Quality of the studies was assessed using the Mixed Method Appraisal Tool (MMAT) (Hong et al., 2018). The MMAT was developed to appraise the methodological quality of empirical studies. The latest version includes two screening questions and five criteria for each of the following five study designs included in the MMAT (Hong et al., 2018). There are sections of the MMAT to appraise five different study designs: (a) qualitative; (b) randomised controlled trial; (c) nonrandomised; (d) quantitative descriptive; and (e) mixed methods studies (Hong et al., 2018). To align with reporting recommendations of the MMAT (Hong et al., 2018), all quality appraisal results include an overall score as well as a detailed presentation of the ratings of each criterion. The detailed appraisal is important because an overall score does not clarify which aspect of the study is 'problematic' (Crowe & Sheppard, 2011).

2.5. Data extraction and analysis

2.5.1. R/S singing

Data was extracted by one author (SM) and verified by another (PM). Studies were tabulated under the categories: a) author, year, country, and setting; b) study purpose and research questions; c) study design; d) sample characteristics; e) methodology; and e) key findings.

Qualitative data regarding R/S singing was analysed using thematic synthesis. Thematic synthesis comprised coding text, developing descriptive themes, and 'going beyond' the primary studies to develop analytical themes and answer the questions posed by the current review (Thomas & Harden, 2008). NVivo, computer assisted qualitative data analysis software (Welsh, 2002), was used for coding. Results sections of included papers were independently coded line by line by two reviewers (PM and SM). These codes were independently aggregated to create descriptive and analytical themes, followed by discussion

between SM and PM. Codes and themes were then further reviewed by author BZ who was not involved in the development of codes and themes.

2.5.2. R/S movement

Quantitative data was extracted by one author (SM) and verified by another author (BZ). Studies were then tabulated under the following categories: a) study, country, and setting; b) population characteristics; c) outcome measure; d) intervention; e) control/comparison; and f) outcome. There were no qualitative data for studies of R/S movement.

3. Results

3.1. Search results

Figure 1 shows results of the searches and the screening process. Database searches retrieved a total of 259 studies, including 64 from MEDLINE, 60 from CINAHL, and 135 from PsycINFO. After removing duplicates and screening titles and abstracts, 15 full texts required screening. A total of seven articles met inclusion criteria for this systematic review and were included in the final analysis: three on R/S singing; and four on R/S movements. Studies concerning R/S singing used qualitative or mixed methodologies, whereas studies related to R/S movements were all quantitative.

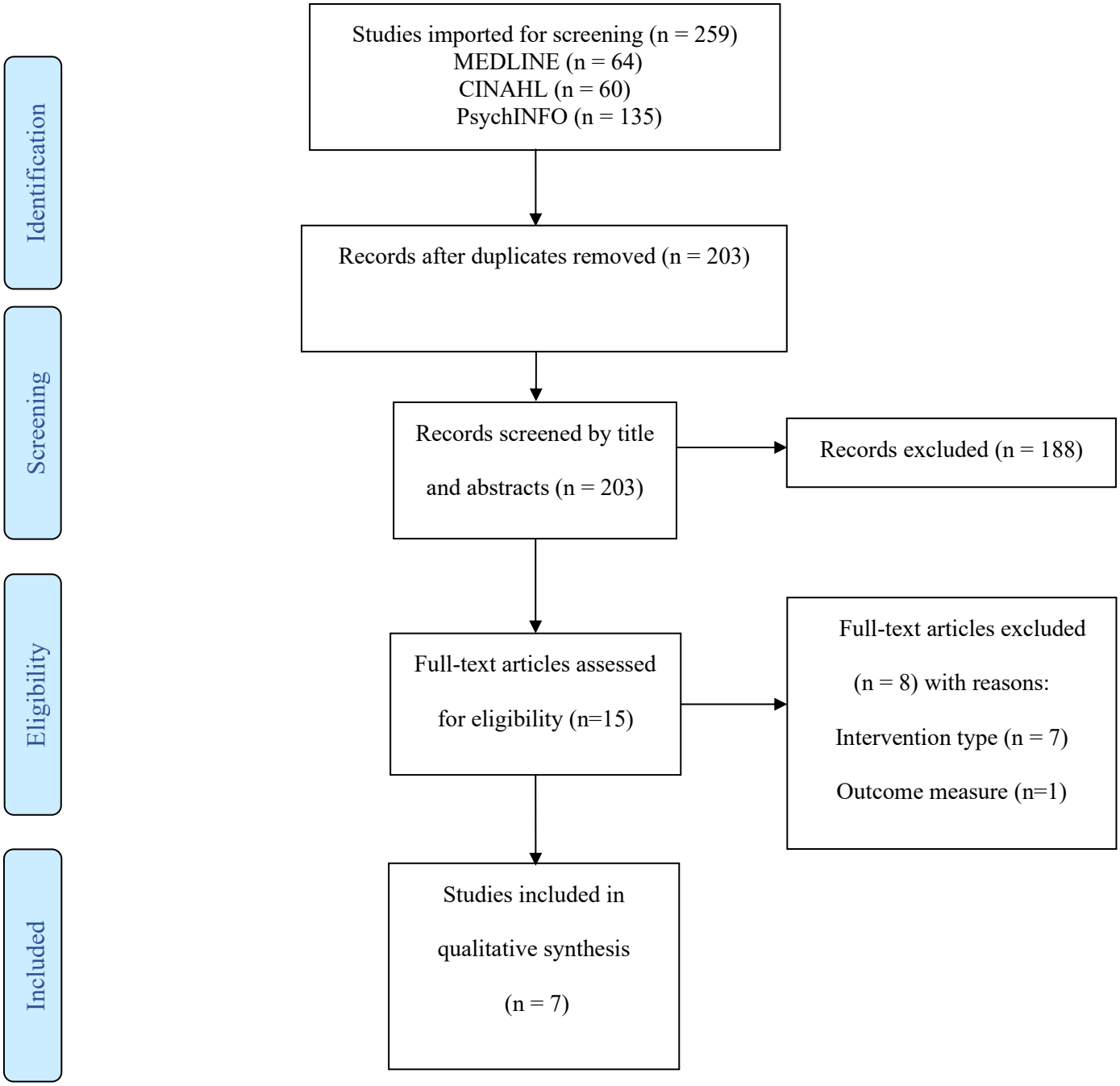

Figure 1.

Flowchart of the selected studies following PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines (Moher et al., 2009)

3.2.Quality of included studies

Table 3 provides results of the MMAT quality appraisal for all studies: the two studies identified as mixed methods (Hamilton et al., 2013; 2017); the one qualitative study (Hamilton et al., 2016); and the four quantitative studies (Chung et al., 2016; Iqbal et al., 2014; 2016; Vyas, 2007). Results for R/S singing and movement are discussed separately below.

3.2.1. Quality appraisal – R/S singing

All three studies on use of R/S singing for mental health concerns were from the same first author and substantial similarities in text were noted across all three (Hamilton et al., 2013; 2016; 2017). Based on our quality assessment, overall quality for each of the three included studies was poor. As seen in Table 3, qualitative and quantitative findings of the two mixed method studies (Hamilton et al., 2013; 2017) were poorly integrated and, based on the MMAT, methodology of the third study (Hamilton et al., 2013) could have been improved by adding quantitative measures to support qualitative findings.

3.2.2. Quality appraisal – R/S movement

As shown in Table 3, overall quality of the four included studies on R/S movement was poor in all but one study (Chung et al., 2016), which could have been strengthened by inclusion of a control group. Two of the three studies (Iqbal et al., 2014; 2016) rated as poor in quality were from the same author and contained considerable similarity in the text. The third study had a small sample size and lacked a control group (Vyas, 2007).

Mixed Method Studies						
Study	**Overall Score**	**Is there an adequate rationale for using a mixed methods design to address the research question?**	**Are the different components of the study effectively integrated to answer the research question?**	**Are the outcomes of the integration of qualitative and quantitative components adequately interpreted?**	**Are the divergences and inconsistencies between quantitative and qualitative results adequately addressed?**	**Do the different components of the study adhere to the quality criteria of each tradition of the methods involved**
Hamilton et al., 2013	2/5	Yes	No	No	Yes	No
Hamilton et al., 2017	2/5	Yes	No	No	Yes	No
Qualitative Study						
Study	**Overall Score**	**Is the qualitative approach appropriate to answer the research question?**	**Are the qualitative data collection methods adequate to address the research question?**	**Are the findings adequately derived from the data?**	**Is the interpretation of results sufficiently substantiated by data?**	**Do the different components of the study adhere to the quality criteria of each tradition of the methods involved**
Hamilton et al., 2016	4/5	Yes	No	Yes	Yes	Yes
Quantitative Studies						
Study	**Overall Score**	**Are the participants representative of the target population?**	**Are measurements appropriate regarding both the outcome and intervention (or exposure)?**	**Are there complete outcome data?**	**Are the confounders accounted for in the design and analysis?**	**During the study period, is the intervention administered (or exposure occurred) as intended?**
Chung et al., 2016	4/5	Yes	Yes	Yes	No	Yes
Iqbal et al., 2014	2/5	Cannot tell	Yes	No	Cannot tell	Yes
Iqbal et al., 2016	2/5	Cannot tell	Yes	Yes	Cannot tell	Cannot tell

Vyas, 2007	2/5	Yes	Yes	No	No	Cannot tell

Note: Yes-1; No-0; Cannot tell-0

Table 3. *Quality Appraisal of Studies using the Mixed Method Appraisal Tool*

3.3. Characteristics of included studies

3.3.1. R/S singing

All three R/S singing studies (Hamilton et al., 2013; 2016; 2017) were conducted in the United States of America. The data were collected through semi-structured interviews lasting 15-60 minutes, and participants were given a $25 to $30 gift card for each interview. Primarily females (69.5%), participants were all African American. Participants of two studies were older individuals (>50 years) (Hamilton et al., 2013; 2016) while one study considered a younger sample (18-49 years) (Hamilton et al., 2017). Overall, 151 participants of all three studies were predominantly of Christian faith, except for a small proportion (17.2%) of younger adults in one study (Hamilton et al., 2017) who did not report a *current* religious association; nevertheless, they continued to use religious singing as a strategy to deal with mental health concerns (Hamilton et al., 2017).

One study examined use of religious songs in management of psychological symptoms associated with cancer (Hamilton et al., 2016). The psychological symptoms included depression or low mood (n=15, 48.4%) and anxiety (n= 13, 41.9%) (Hamilton et al., 2016). The other two studies (Hamilton et al., 2013; 2017) investigated how religious songs helped participants cope with mental health concerns associated with stressful life events. The stressful life events were related to work/school issues, caregiving for and death of a family member, stress related to relationships, and physical illness (Hamilton et al., 2013; 2017). While physical illness included cancer, heart disease, and/or trauma, the authors did not specify if any participants had a diagnosis of mental illness (Hamilton et al., 2013).

In one study (Hamilton et al., 2013), younger participants (18-29 years) reported higher numbers of stressful events related to work/school, while middle-aged participants (30-49 years) reported stresses concerning their own illness, caregiving, and ultimate death of

a family member (Hamilton et al., 2017). Older participants (>50 years) primarily experienced stressful events such as loss of loved ones, chronic life-threatening illness, and stress related to work (Hamilton et al., 2013). The oldest group (>75 years) reported the highest number of stressful events related to caregiving and death of a spouse.

All three studies investigated the use of religious songs as an intervention by asking participants to report on how they used religious songs to deal with their psychological symptoms (Hamilton et al., 2016) and stressful events (Hamilton et al., 2013; 2017). The session duration and intervention length of the R/S singing intervention was not reported in any of the studies. In the first study (Hamilton et al., 2013), the authors divided the religious songs used by participants into five categories. Categories were based on the personal meaning participants attached to the religious songs and how mental health benefits were derived from the songs. The five categories were: thanksgiving and praise; instructive; communication with God; memory of forefathers; and life after death. In the subsequent studies (Hamilton et al., 2016; 2017), the authors explained how these different categories of songs were used during stressful events (Hamilton et al., 2017) and to manage symptoms of depression and anxiety associated with cancer (Hamilton et al., 2016). Table 4 reports the key findings of each study.

The qualitative findings of R/S singing studies were analysed using thematic analysis. Twenty-four codes were initially identified and then subsequently merged into nine broad codes. From these nine codes, three descriptive themes were developed (see Table 5 for codes, themes, and example quotes). From the descriptive themes, five key *analytical concepts* were identified that provided a possible rationale for the effectiveness of religious songs in mental health issues. The identified analytical concepts were: role of faith; role of meaningful words; effect of musical elements of R/S songs and musicality; possible effect of active singing; and attachment security priming.

Author, year/ Country/ Setting	Study Purpose and Research Questions	Study Design	Sample Characteristics (age/ gender/ diagnosis/ sample size / ethnicity)	Methodology	Key Findings
Hamilton et al., 2013/ USA/ Community	*Purpose*: To explore the use and meaning of different types of religious songs in response to life events, and whether songs used differs for young, middle, and older African Americans.	Mixed design	≥50 years/ Female 70.7%/ With experience of the loss of loved one or a life-threatening illness/ N=65/ older African American adults with known religious affiliations.	Multi-methods with: a) a qualitative component, including criterion sampling, open-ended semi-structured interviews lasting 15–60 minutes, and content analysis; b) a quantitative component, using statistics including ANOVA and χ 2 tests.	Authors divided songs in five categories: thanksgiving and praise; instructive; communication with God; memory of forefathers; and life after death. Songs of thanksgiving and Instructive categories were comforting and uplifting and were most frequently used to deal with stress. Songs of instruction helped participants in providing guidance and perspective during stressful event. Songs related to the category 'memory of forefather' helped instilling sense of connection and safety. Songs related to 'communication to God' served as prayers and were useful at times when, due to overwhelmed with the stress of a tragic life event, the cognitive process of constructing the words for a prayer was difficult. Authors identified that previous generations taught religious songs to younger generations as a coping strategy to overcome life stresses. Lastly, songs of 'life after death' helped in being resilient in the face of crisis with the hope of better life ahead. Overall thanksgiving and praise songs were the most used and memory of forefathers was the least frequently used across three age groups. There was no difference in the type of songs used across three age groups except the songs of life and death. The oldest old group had higher number of participants using life after death songs.
Hamilton et al., 2016/ USA/ Community	To explore the use of a religious song in the alleviation of psychological symptoms among cancer patients	Quali-tative	≥50 years/ Female 83.9%/ Participants who identified themselves as a cancer survivor/ N=31/ Older African American adults	Qualitative descriptive design including criterion sampling, open ended semi-	The psychological symptoms reported by the participants were: (1) depressed mood (n=15, 48.4%); (2) anxiety (n =13, 41.9%). Using the definitions and categorisation of religious songs in the previous study (Hamilton et al., 2012), authors discussed how various types of songs were used in response to the psychological symptoms. The types of religious songs used

				structured interviews lasting 15-60 minutes and content analysis	included songs that were instructive (n=12, 38.7%), thanksgiving and praise (n=10, 32.3%), communication to God (n=8, 25.8%), life after death (n=4, 12.9%), and memories of forefathers (n=2, 6.5%). In order of frequency used, religious songs used for a *depression* were instructive, thanksgiving and praise, communication (prayers to God), memory of forefathers, and life after death. Songs from the instructive category served to remind participants of God's love and his ability to heal and resolve their health concerns. The types of religious songs used for *anxiety* included thanksgiving and praise, instructive, and communication. The lyrics the songs served as a reminder of God's continual presence during grief and pain and his ability to ensure a good outcome. Authors reported that lyrics of religious songs were reminders to participants that they could rely on God to provide for their needs.
Hamilton et al., 2017/ USA/ Community	To explore ways in which religious songs are used as mental health-promoting strategies in response to stressful life events. Whether categories of songs used among older African Americans in previous studies are relevant to this younger population.	Mixed design	18-50 years/ Female 60%/ Participants having experienced stressful situation, the loss of a loved one or a life-threatening illness/ N=55/ younger African American adults	Semi-structured interviews lasting 15–45 minutes. Descriptive statistics were used to describe differences in song themes according to age group (young adult 18–29 and middle age 30–49) and gender with ANOVA (continuous variables) and Chi-square and Fisher's exact	Using the definitions and categorisation of religious songs in the previous study (Hamilton et al., 2012), authors discussed how various types of songs were used in response to the stressful situations. The category of religious song used most frequently for both age groups was Instructive followed by Communication with God, Thanksgiving and Praise/Memories of Ancestors, and Life after Death. The songs of Instruction were the most frequently used category of religious song by men and women of both age groups. While songs that were instructive served as reminder, songs of Instruction were inspirational, encouraging to think optimistically during stressful situations. Songs of Instruction also allowed the participants to reflect on strategies family members used to manage stressful situations. Thanksgiving and praise were the second most frequently used among the young adult men and women but least frequently used among the middle-aged men and women. These songs instil sense of gratitude during current stressful situations. When stressed, participants recalled using songs that connected them to a past time with a loved one. The

				test (dichotomous and categorical variables).	category of the songs that evoke memory of ancestors was used more frequently by women of both age groups but not at all by middle-aged men. The category communication (prayers) to God was used equally by the young adult men and women but not by middle aged adult men. Songs that reflect a belief in life after death were used least frequently used by both groups and only used by women. As noted by the authors, Instructive songs were most frequently used by young and middle-aged participants. These songs provided guidance and perspective in the context of trust and reliance on God. All participants in the middle age group had religious affiliation. Only 17.2% of younger group did not have any religious association. Authors noted that, despite absence of current religious affiliations, young and middle-aged participants still used religious songs as coping strategy during stressful life situations.

Table 4. *Characteristics of the religious/spiritual singing studies included in the review*

Descriptive themes	**Codes**	**Quotes**
Drawing positive feelings from faith	Drawing strength and comfort from God	*"Walk with me Lord…I need you to walk with me...and I started relying on that song… and I depended on that song. Really everybody thought I was going to die, and I thought that myself, 'cause I got everything prepared because I really didn't think I was gonna make it back home again…but I had to call on the Lord to give me the strength" (2016)* *"God is my everything, He' s my joy in sorrow, He' s my hope for tomorrow, He' s my rock in a weary land, A shelter in time of storm, God is, God is my everything" (2013)* *''Hold on God will see you through, I know it gets hard sometimes, but my God will see you through" (2016)*
	Drawing security and support	*Surrounded by the craziness and the violence it's like I feel like I can crawl into that little space where it's just me and God and I'm just like ''Lord, please keep me.'' (2017)* *"I know He's watching me; He never takes His eyes off of me. Even though I think He has, He hasn't. He's always with me no matter what" (2016)* *I don't have to fear…I feel that God has put a fence around me so that I'm protected." (2013)*
	Songs drawing courage and hope	*"That song just says no matter what you're going through there's still one more sunny day to come" (2017)* *"He's my hope for tomorrow…" (2013)* *There will be mountains that I will have to climb, and there will be battles that I will have to fight…I just can't give up now…Nobody told me the road would be east. I don't believe He brought me this far to leave me (2016)*

	Sense of reliance on God	*"Man will disappoint you, but God will always be there; He's not going to let you down. He'll be there when you need Him at all times, anytime." (2013)* *"Walk with me Lord…I need you to walk with me...and I started relying on that song... and I depended on that song" (2016)* *"I don't have to fear of being sick or having any illnesses. Because I just had a feeling that anytime I got into a stressful time, if I just think about — He' s here with me. He's gonna carry me through this" (2013)* *I was out recuperating…and every day I would sit, and I would listen to my gospel CD…I would just listen to it over and over, and it just fed my spirit and just let me know that God was with me the whole time and that He was gonna take care of me (2016)*
Singing songs provides comfort	Calming effect of tune and words	*I just hum it, you know; I like the tune…as well as the words. It helps me to…to get rid of stress, it calms me down, and it just makes me feel better to see things in a different way…because I know God is on my side (2016)* *You know, I' d have a song — I' d play it on the way there, and when I got out of chemo, I'd have something to look forward to…and the song…it brought me through" (2013).*
	Meaningful and inspirational lyrics	*"And you can fall on your knees, and you can pray, and it's just something about that verse right there that I just love" (2013)* *"And I was at church one Sunday, and that song just spoke volumes for me" (2016)* *"It (the song) has meaning because it covers just about everything in life, and um…it's kind of like talking to God" (2016)* *"And it kind of teaches you that what you thought was a bad day was actually a sunny day. You can kind of make any situation a better situation when you really think about what you could be going through." (2017)*

	Continuity of relevance of songs across different situations and time	*"I think hymns are songs that really tell a story and although the story may change the struggles haven't changed and so I think they are still relevant." (2017)* *"And you can identify with what was going on than to what it is — in fact the circumstance may be different in terms of the specific incident; but struggle, hardship, pain, anguish, — satisfaction, accomplishment, success, — the, peaks and valleys of the day, you know, all of that [is similar to today]" (2013)* *"That song just says no matter what you're going through there's still one more sunny day to come... And it kind of teaches you that what you thought was a bad day was actually a sunny day. You can kind of make any situation a better situation when you really think about what you could be going through" (2017).*
Reminder of past and comfort from the memory of secure relationships	Songs with loved ones and times gone by	*"My husband, that was a stressful time when I lost my husband . . . because he was sick for a long time. . .. I used to sing 'Amazing Grace' a lot all the time. Seemed like that was special to me — that hymn . . . I used to like it the old way because they used to sing it at prayer meetings when I was a child growing up at church" (2013)* *...I remember this one song because my best friend she used to lead it [sing in the choir] because she had this beautiful voice, and it was Heaven (2017)*
	Songs from childhood	*"As a child that was a song that I heard when I was going through some other trials and tribulations in my life not having to do necessarily with an illness but maybe financial or whatever, I don't remember" (2016).* *"Every time I sing that song…it takes me back to really being in my great grandmother's kitchen where I sat and I used to watch her cook all the time. She'd hum hymns while she was cooking. And even then some of the hymns would just touch me in a certain way and it was– I just remember feeling warm and feeling like the world was okay. So whenever I feel down now I think back to then; that's what gets me through" (2017)*

Table 5. *Codes/themes of religious/spiritual singing*

3.3.2. R/S movements

The four studies that met the criteria of sensorimotor R/S movements were all quantitative studies (see Table 6 for a summary of study characteristics and findings). Two studies were cohort studies with pre-post design (Chung et al., 2016; Vyas, 2007); the other two utilised control groups though they were not randomised (Iqbal et al., 2014; 2016). It was not reported whether the control groups in these two studies received any intervention. Also, R/S affiliation of participants was reported in any studies of dynamic meditation (Iqbal et al., 2014; 2016;Vyas, 2007). All four studies on R/S movement were conducted in community settings, with one study based in Hong Kong (Chung et al., 2016) and the remaining three in India (Iqbal et al., 2014; 2016; Vyas, 2007).

The four studies varied in participant characteristics, the aspects of mental health considered, and the intervention used. While three studies (Iqbal et al., 2014; 2016; Vyas, 2007) included both males and females, one study (Chung et al., 2016) included only female participants. Across the four studies, there were a total of 325 participants, but as confirmed in personal communication with the author (personal communication, N. Iqbal, November 7, 2020), two studies used the same 30 participants (Iqbal et al., 2014; 2016). Those two studies did not specify the clinical status of participants. Participants of the study with the largest sample size (n=256) were females with physical ailments (Chung et al., 2016), while the study with the smallest sample size (n=9) included healthy individuals (Vyas, 2007). In terms of mental health outcomes, one study assessed quality of life (psychological domain) (Chung et al., 2016), one considered anxiety (Iqbal et al., 2014), one examined six different components of mental health (Iqbal et al., 2016), and one measured various mental health components that the authors termed “clinical and corporate effects”, although no further explanation of these terms was provided (Vyas, 2007).

Two different types of R/S movements were used as interventions across the four studies. One study used praise dance (Chung et al., 2016) while three studies used dynamic meditation (Iqbal et al., 2014; 2016; Vyas, 2007). Praise dance was described as a structured intervention with 36 sessions of 30 minutes each, each taught under the guidance of a trained coach. The training included dances to seven worship songs with specific movements of different duration (Chung et al., 2016). Dynamic meditation involved a one-hour session that varied in the intensity of movements as it progressed through five stages, with 10 minutes for the first three stages and 15 minutes for last two (Iqbal et al., 2014). Only one study considered participants' religious affiliation in their analysis of the effect of the intervention (Chung et al., 2016).

All four studies varied considerably in terms of the impact of the intervention on mental health outcomes. Chung et al. (2016) reported a significant improvement in the psychological domain of the quality of life measure they used after praise dance intervention. This improvement occurred for all participants irrespective of their religious affiliation (74.2% were Christian and 25.8% were non-Christian). Of the three studies that used dynamic meditation, two considered anxiety (Iqbal et al., 2014; Vyas, 2007). One reported a significant reduction in anxiety in comparison to the control group (Iqbal et al., 2014), while the other found a significant reduction in anxiety levels from pre- to post-treatment in the same cohort (Vyas, 2007). Vyas (2007) also reported a significant reduction in depression from pre- to post-treatment and a significant decrease in an overall clinical syndrome including psychopathological variables such as anxious-depressive syndrome, somatic complaints, thought problems, internalisation, externalisation, and aggressive behaviours. The final study that used dynamic meditation examined the effect of this intervention on six dimensions of mental health in comparison to the control group. Authors reported a significant improvement in the pre-post score of the experimental group following

intervention compared to the pre-post score of the control group for three of these dimensions – integration of personality, autonomy, and environment mastery (Iqbal et al., 2016).

Study/ Country/ Setting	Population Characteristics			Outcome Measure	Intervention	Control	Outcome
	Experimental N= Number of participants Age Sex	**Control/ Comparison N= Number of participants Age Sex**	**Diagnosis**				
Chung et al., 2016, Hong Kong, Community (Praise Dance Association Hong Kong)	N= 256 participants Mean age= 57.6; SD=7.6 0 Males; 256 Females		Diabetes, asthma, cardiovascular disease, heart failure, chronic respiratory disease, thyroid, liver and kidney diseases, rheumatism, arthritis, osteoporosis, and cancer)	World Health Organization Quality of Life WHOQOL-BREF (HK)	The praise dance program comprised 36 sessions, three times a week (12 weeks in total). Each dancing session lasted for 30 minutes	N/A	**Psychological domain of WHOQOL-BREF (HK)** **Pre-Intervention** M (SD)=14.36 (2.10) **Post-Intervention** M (SD)=14.77 (2.05) **Pre/Post mean difference** t (255) =4.00, p <0.001 There was no significant interaction of religion (Christian or non-Christian) with the benefit of praise dance.
Iqbal et al., 2014, India, Community (Osho Dhyandeep Kendra)	N= 30 Mean age=35.46 Male=11	N= 30 Mean age= 31.26 Male=12	N/A	Sinha and Sinha (1995) Anxiety scale	Experimental Group: Dynamic meditation, lasting one hour Control Group: No intervention.	No interventi on*	**Anxiety** **Post-Intervention** **Control group** M (SD)=23.20(18.34) **Experiment group** M (SD)=21.20(15.79) **Between group analysis of post intervention scores =** F (1, 57) =4.94, p=0.03, partial eta-squared=0.08

Iqbal et al., 2016, India, Community (Osho Dhyandeep Kendra)	N= 30 Mean age= 35.46 Male=11	N= 30 Mean age= 31.26 Male=12	N/A	Mental Health Inventory (1983)	Experimental Group: Dynamic meditation is one hour meditation conducted in five stages varying in different intensity of activities. Post-test after 21 days of dynamic meditation training. Control Group: No intervention.	No interventi on*	**Positive self-evaluation** **Pre - Intervention** **Control group** M(SD)= 31.2 (4.4) **Experiment group** M(SD)= 29.8 (3.9) **Post - Intervention** **Control group** M(SD)= 30.52 (4.4) **Experiment group** M(SD)= 30.6 (4.7) **Between group analysis of post intervention scores =** *F* (1, 58) =1.38, *p*=0.24, partial eta-squared-0.02 **Perception of reality** **Pre - Intervention** **Control group** M(SD)= 25.3 (3.4) **Experiment group** M(SD)= 23.0 (4.2) **Post - Intervention** **Control group** M(SD)= 25.1 (3.5) **Experiment group** M(SD)= 23.6 (4.2) **Between group analysis of post intervention scores =** F=0.95, p=0.33, partial eta-squared-0.01 **Integration of personality** **Pre - Intervention** **Control group** M(SD)= 35.5 (4.9) **Experiment group** M(SD)= 33.0 (5.5)

							Post – Intervention **Control group** M(SD)= 35.6 (4.7) **Experiment group** M(SD)= 36.7 (4.5) **Between group analysis of post intervention scores =** F=12.04, p=0.001, partial eta-squared-0.17 **Autonomy** **Pre - Intervention** **Control group** M(SD)= 17.7 (2.4) **Experiment group** M(SD)= 16.7 (3.0) **Post – Intervention** **Control group** M(SD)= 17.8 (2.4) **Experiment group** M(SD)= 18.0 (2.8) **Between group analysis of post intervention scores =** F=9.88, p=0.003, partial eta-squared-0.14 **Group oriented attitude** **Pre - Intervention** **Control group** M(SD)= 30.0 (4.0) **Experiment group** M(SD)= 31.0 (4.1) **Post – Intervention** **Control group** M(SD)= 30.1 (4.1) **Experiment group** M(SD)= 31.6 (4.8)

							Between group analysis of post intervention scores = F=0.70, p=0.40, partial eta-squared-0.01 **Environmental mastery** **Pre - Intervention** **Control group** M(SD)= 27.6 (3.9) **Experiment group** M(SD)= 26.8 (3.8) **Post – Intervention** **Control group** M(SD)= 27.5 (3.7) **Experiment group** M(SD)= 30.4 (4.4) **Between group analysis of post intervention scores =** F=22.36, p<0.001, partial eta-squared-0.28
Vyas, 2007, India, Community	N= 9 Mean age= 38.29 Male=3	N/A	Healthy individuals	ASEBA-ASR (Achenbach & Rescorla, 2003) OSI- R (Psychological strain)	Dynamic meditation is one hour meditation conducted in five stages varying in different intensity of activities	N/A	Pair-wise comparison between- Baseline and day 7- meditation effect Baseline and day 12- lasting effect **ASR syndrome score** **Clinical syndrome*** Overall decrease- (p=0.001) Meditation effect- (p=0.03) Lasting effect-(p=0.001) **Scores of six of ten components were significant:** **Anxious-depressive syndrome** Overall decrease- (*p*=0.02) Meditation effect- (p=0.04) Lasting effect-(p=0.01) **Somatic complaints** Overall decrease- (p=0.01) Meditation effect- (NR)

							Lasting effect-(p=0.02) **Thought problems** Overall decrease- (p=0.03) Meditation effect- (p=0.05) Lasting effect-(p=0.05) **Aggressive behaviours** Overall decrease- (p=0.02) Meditation effect- (NR) Lasting effect-(p=0.02) **Internalisation** Overall decrease- (p=0.04) Meditation effect- (NR) Lasting effect-(NR) **Externalisation** Overall decrease- (p=0.05) Meditation effect- (NR) Lasting effect-(NR) **ASR DSM IV symptoms scores** **Depression** Overall decrease- (p=0.002) Meditation effect- (p=0.02) Lasting effect-(p=0.003) Other components of ASR DSM IV were not significant Only 9 participants completed the intervention. Participant characteristics were not provided specific to this subset

* As communicated by the author (N. Iqbal, personal communication, November 7, 2020)

Table 6. *Characteristics of the religious/spiritual movement studies included in the review*

4. Discussion

The aim of this review was to investigate the evidence regarding the effect of R/S singing and R/S movement on mental health. Our search strategy retrieved three studies on R/S singing and four on R/S movement. None were randomised controlled trials. While studies on R/S singing used gospel songs and hymns and were very similar in terms of intervention, studies on R/S movement varied in the intervention used. Almost all participants of the R/S singing studies had a religious affiliation (i.e., Christianity); however, only one study in R/S movement considered participants with a R/S association (Chung et al., 2016). Due to differences in the intervention and outcomes considered, we discuss findings separately for each sensorimotor R/S practice.

4.1. R/S singing

We set out to investigate the evidence regarding the effect of R/S singing on mental health concerns. While studies in our review considered different aspects of mental health, they found that religious songs were a useful strategy in dealing with mental health concerns overall. In the included studies, religious songs used by the participants were divided into five categories. Authors then explained how each category of songs was helpful in dealing with mental health concern in a unique way; for example, songs of instruction were helpful in providing guidance and songs of ‘memory of forefathers’ instilled a sense of safety. We synthesised the qualitative data of these three studies to address our research aim of this review- to investigate the evidence of effectiveness of religious singing in mental health. The three descriptive themes identified from the data resulted in generation of five analytical concepts to meet the research aim of the review. Each of these analytical concepts is discussed below.

Role of faith

All participants in the included studies were from a Christian faith, and most were active in this faith, with the exception of a small cohort of the younger participants in one study (Hamilton et al., 2017). Although these participants no longer had any religious affiliations, they still used religious songs to deal with mental health concern. The role of faith, or religious belief, was the most common component that emerged in our thematic synthesis. As reported by the authors, participants were able to draw positive feelings such as hope, comfort, strength, courage, and a sense of security through their faith. A belief in something larger and stronger than oneself may have helped participants cope with stress and other emotions associated with stressful events. The finding that religious faith is related to better mental health outcomes has previously been demonstrated in the literature. In a review of 74 studies, religious belief was strongly related to reduction in depression, anxiety, and suicide ideations (AbdAleati et al., 2016). In another study with 236 individuals, higher levels of religious faith were associated with higher resilience to stress, optimistic outlook, and lower levels of anxiety (Pardini et al., 2000). While religious songs were not used in these two studies (AbdAleati et al., 2016; Pardini et al., 2000), religious faith was linked with positive mental health outcomes. Consistent with this association, it appears that religious songs were instrumental in reinforcing the individual's faith and served as a supportive mental health strategy.

Role of meaningful words

While faith played a role, participants also appeared to place great importance on the words/lyrics of the R/S songs. As identified in one descriptive theme, participants seemed to draw positive feelings based on the words of songs and their perceived meaning. These words could be uplifting, hope-giving, and inspiring. During stressful events, assuring and comforting themes of religious songs may have helped participants to change their outlook

and thereby possibly helped with mental health concerns such as depression and anxiety. Changing feelings by replacing unhelpful thoughts with more constructive thoughts is the basic strategy of conventional thought-based therapies such as cognitive behaviour therapy (Hawton et al., 1989). Our proposition is supported by findings of a qualitative study with 40 psychiatric patients in which participants recognised hymn singing as one of the strategies that helped them to cope better by appraising the stressful event through their religious faith (Sullivan et al., 1993). Additionally, in one of the included studies, Hamilton et al. (2013) reported that, while overwhelmed with emotions, participants struggled to articulate their plight; thus, engaging in religious singing provided them an avenue to express themselves. Since stress affects cognition and language expression (Shields et al., 2016), we suggest that religious songs may have also helped participants to articulate their feelings.

Effect of musical elements of R/S songs and musicality

Participants identified that the tune and melody of R/S singing provided comfort at a time of distress. Since musical elements such as rhythm, tempo and melody elicit emotional responses in humans (Bradt et al., 2021), it is possible that musical elements of religious songs elicited positive emotions which may have helped participants to deal with mental health concerns. This is consistent with the finding of a recent systematic review where music interventions including active singing (not necessarily R/S in nature) reduced the level of anxiety and depression in people with cancer (Bradt et al., 2021).

Musicality is a ‘uniquely human and spontaneously developing trait’ that relates to our ability to sing and perceive music (Honing et al., 2015). Musicality has been demonstrated to provide solace in adults, particularly in older adults (Rentfrow & Levitin, 2019). Given the participants of included studies were all adults, musicality may have played a role in drawing comfort from R/S songs.

Possible effect of active singing

Some participants of the studies included in our review mentioned that the very act of singing the song was comforting for them. In a randomised controlled trial with 258 older people, active singing (not R/S in nature) significantly reduced anxiety and depression and improved mental health components of quality of life (Coulton et al., 2015). Bradt et. al (2021) also reported that music interventions, including active singing reduced the level of anxiety and depression in people with cancer. This supports our supposition that in the included studies of our review, along with faith and other factors discussed above, active singing may have played a role in deriving mental health benefits from religious singing.

Attachment security priming

Several participants mentioned finding comfort through using songs that reminded them of a positive time with a significant other. As reported by the authors of included studies, parents and elders of the family taught religious songs to young ones with a vision that they would use these songs as a strategy to cope with struggles of life in the future. Reminders of songs that were previously sung with loved ones possibly served to prime attachment security, in which a memory of a past secure relationship stimulates positive feelings and elevates mood (Liao et al., 2017).

4.2. R/S movements

Four studies assessed the effect of R/S movements on mental health. While one study considered praise dance, the other three considered dynamic meditation. Praise dance, as described by the authors, was a structured intervention and participants were trained under the guidance of a dance coach. The training included dances of a specific duration to seven worship songs (Chung et al., 2016) about the *power of God and Christ*. **Praise and worship activities are documented to improve '*sense of connection with God, and with fellow***

worshipers, leading to upliftment and renewal' **(Tshabalala & Patel 2010), thereby possibly inclusion of praise singing elicited positive feelings of hope and renewal, potentially benefitting mental health. These feelings may have been further elicited through the movement associated with the dance activity in this practice. Dance and movement interventions have been shown to increase body awareness through integration of sensory information which supports affect regulation (Weare 2020). In a study with 111 participants, dance intervention was found to reduce stress and anxiety levels and promote mental well-being (Mavrovouniotis et al., 2008). Similarly, in a systematic review of eight studies, dance and movement intervention was identified as an effective intervention for depression (Karkou et al., 2019). It appears that the combination of R/S aspect and sensorimotor components of praise dance (praise singing and movement), offered mental health advantages that may have possibly improved quality of life for participants.**

Dynamic meditation was a one-hour session where intensity in breathing, and movements varied in five stages. Sessions started with meditation that included chaotic and deep breathing that progressed to vigorous body movements and expression of emotions, which then led to the next phase which introduced a mantra (i.e., **repetition of sound, word or phrase usually recited in a same tone to concentrate and/or calm the mind (Dudeja, 2018)**. The mantra used in this phase included shouting 'hoo, hoo hoo' while jumping with raised arms. This mantra phase was followed by being still in one place and concluded with a dance of rejoice and gratitude. In one dynamic meditation study, Vyas (2007) indicated that some participants reported benefits from the sensorimotor aspect of the practice such as yelling and dancing, although this feedback was not considered in the results. The author of the study suggested that physical aspect of the practice might have contributed to the overall cathartic effect of dynamic meditation (Vyas, 2007). **Though we only included studies with**

behavioural measures in our review- in an experimental study, blood cortisol levels, an indicator of stress (Bansal et., 2015) were reduced (thus reduced stress) following 21 days of dynamic meditation intervention (Bansal et al., 2015). While there is no study in the extant literature that investigates the mechanism underlying the therapeutic effect of dynamic meditation, there is evidence of mental health benefits of components of dynamic meditation. For instance, vocal chanting, which is similar to the mantra practice used in dynamic meditation, supports positive mental health outcomes (Malviya et al., 2022). Similarly, interventions involving outward expression of emotions such as crying, have been shown to reduce stress levels (Byun et al., 2020). Intensive movement exercises (Battaglia et al., 2015) and deep breathing (Serafim et al., 2019) are associated with reduced levels of anxiety and finally, dance is evidenced to promote mental wellbeing (Millman et al., 2021).

Although both interventions involved body movements, praise dance included a distinct religious component which was not part of the dynamic meditation intervention. Despite inclusion of a religious component in the praise dance study, personal religious affiliation did not appear to be a necessary requirement since the authors reported positive mental health outcomes for both religious and non-religious participants (Chung et al., 2016). This finding was in line with the findings of a non-randomised study (Mavovouniotis et al., 2008) with 111 older participants (aged 60-91) where significantly lower levels of anxiety and psychological stress were reported in the experimental group compared to the controls after the intervention of traditional Greek dance. However, the intervention in this study was not religious in nature (Mavovouniotis et. al., 2008).

Given the variability in the mental health outcomes considered across the four R/S movement studies, it is hard to draw conclusions regarding the overall effectiveness of R/S movement on specific mental health outcomes. In general, a positive trend was noted in

response to both interventions. Praise dance reportedly increased quality of life while studies that considered dynamic meditation reported a positive effect on mental health outcomes such as depression, anxiety, and some dimensions of general mental health.

5. **Limitations and future considerations**

Several limitations warrant consideration. In terms of the review, only experimental studies published in English were included; grey literature was not considered. Thus, it is possible that some relevant studies may have been overlooked. Due to heterogeneity in participant samples, interventions used, and mental health outcomes considered, it was not possible to conduct meta-analysis. Despite increased importance of reporting clinical significance (Ranganathan et al., 2020), this was not provided in any of the studies.

Another limitation was that, in both R/S singing and R/S movement, multiple studies were conducted by the same authors with substantial similarity in text. All three R/S singing studies were from the same primary author (Hamilton et al., 2013; 2016; 2017). Similarly, two studies on R/S movement were from the same primary author and used the same sample (Iqbal et al., 2016; 2014). Findings from these studies should be considered cautiously. Overall, the limited number of studies and the relatively poor quality of studies for both R/S singing and R/S movement practices mean that findings can only be considered indicative.

In relation to individual studies, poor study quality was related to several biases. For example, selection bias was evident for studies focused on R/S singing since participants were social contacts of the researchers. All three R/S singing studies were conducted with samples of the same African American ethnicity, religious background, and geographical location which raises question on transferability of findings to other populations (Hamilton et al., 2013; 2016; 2017).

Despite limitations, findings of the review suggest potential value in the use of R/S singing and movement as mental health strategies. Robust, high-quality studies, such as

randomised controlled trials, are warranted to ascertain mental health benefits of R/S singing and R/S movements (dynamic meditation and praise dance). In particular, studies are needed to help discern whether it is the participant's faith/religious/spiritual affiliation, the meaning of the words, the sensorimotor aspect of the R/S singing or R/S s, and/or the priming of relationships that is of primary value to these outcomes**.**

6. Clinical application

The ultimate objective of reviewing the evidence of sensorimotor R/S practices in mental health was to consider the potential transfer of the findings to clinical settings. There are several factors to be considered when using these findings in clinical mental health settings. Although religious songs were used to improve mental health states, authors of the *R/S singing* studies in our review did not comment on any diagnosis of mental illness among participants. Thus, conclusions regarding whether religious songs represent a potentially useful intervention strategy with people with mental illness, and especially those without a religious affiliation, remain unclear. This proposition is buoyed, however, by findings of a study by Browne (2009) who reported a positive relationship between religious practices, including hymn singing, and sustained recovery in people with serious mental illness. Moreover, Nuechterlein et al. (1994) reported that religious singing may have self-regulatory benefits; this strategy helped participants dealing with stress which might have prevented relapse and sustained recovery. While it is possible that R/S singing can be used with people with mental illness for self-regulatory purposes, caution is warranted for using this approach with people with psychosis as there is lack of clear guideline to differentiate faith-related thought disorders from religious beliefs (Pierre, 2001; O'Connor & Vandenberg 2005).

While the positive trend for use of R/S singing to benefit mental health is encouraging, it is important to note that faith was a crucial component in all included studies; hence, findings of the review may not generalise to clinical populations with a non-religious background.

More rigorous studies are required to understand the role of R/S affiliation in the effectiveness of religious singing in mental health. Also, mental health benefit of R/S singing for people with mental illness remains unclear.

To understand applicability of our findings of *R/S movements* in clinical mental health settings, we need to consider dynamic meditation and praise dance separately. An overall positive trend was noted for dynamic meditation, and the author of one study recommended its use in clinical settings (Vyas, 2007). Despite originally a spiritual practice, dynamic meditation studies did not have any requirement of specific R/S association which makes it potentially more generalisable for both religious and non-religious population, although R/S affiliation of participants was not reported. Conducted with a much larger sample, the study on praise dance was of higher quality; however, all participants were female. The participants of the praise dance study were both religious and non-religious, with positive findings for both, indicating possible applicability of this practice in both populations. More focussed studies are required to assess the role of R/S affiliation in the effectiveness of praise dance and acceptability of this practice by participants with and without religious affiliation. Lastly, feasibility studies should be conducted to understand the use of R/S singing and R/S movements in clinical settings and the perceptions and attitudes of mental health professionals in using these practices as an intervention.

7. Conclusion

Findings of this review suggest that R/S singing may be of value as a mental health strategy, at least for people with a religious background. For R/S movements, findings were mixed. Based on our findings, mental health evidence of dynamic meditation is encouraging. While this practice does not require R/S association, its potential use with individuals with or without R/S background remains unclear. Praise dance may be beneficial for individuals with religious or non-religious background. **Though our review provides preliminary evidence**

of two R/S practices, more studies are warranted that investigate other R/S practices and translation of the evidence into clinical practice. **Integration of R/S practices in conventional mental health interventions may supplement existing mental health care in clinical settings.**

8. Authorship contribution statement

SM contributed to the protocol development, overall design, article screening, data collection, data extraction and analysis, quality appraisal and manuscript preparation. PM and BZ contributed to overall design, screening of articles, data analysis, quality appraisal, and review of the manuscript.

9. Declaration of competing interest

None

10. Acknowledgements

None

11. Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sector.

References

Abdul-Hamid, W. K., & Hughes, J. H. (2015). Integration of religion and spirituality into trauma psychotherapy: An Example in Sufism? *Journal of EMDR Practice and Research*, *9*(3), 150-156. http://doi.org/10.1891/1933-3196.9.3.150

AbdAleati, N. S., Mohd Zaharim, N., & Mydin, Y. O. (2016). Religiousness and mental health: systematic review study. *Journal of Religion and Health, 55*(6), 1929-1937. https://doi.org/10.1007/s10943-014-9896-1

Anastasi, M. W., & Newberg, A. B. (2008). A preliminary study of the acute effects of religious ritual on anxiety. *Journal of Alternative & Complementary Medicine*, *14*(2), 163-165. https://doi.org/10.1089/acm.2007.0675

Atkins, P., & Schubert, E. (2014). Are spiritual experiences through music seen as intrinsic or extrinsic? *Religions*, *5*(1), 76-89. https://doi.org/10.3390/rel5010076

Bansal, A., Mittal, A., & Seth, V. (2016). Osho dynamic meditation's effect on serum cortisol level. Journal of Clinical and Diagnostic Research,10(11). https://doi.org/10.7860/JCDR/2016/23492.8827

Battaglia, C., di Cagno, A., Fiorilli, G., Giombini, A., Borrione, P., Baralla, F., Marchetti, M., & Pigozzi, F. (2015). Participation in a 9-month selected physical exercise programme enhances psychological well-being in a prison population. *Criminal Behaviour and Mental Health*, *25*(5), 343-354. https://doi.org/https://doi.org/10.1002/cbm.1922

Beck, G. (2019). Sacred music and hindu religious experience: from ancient roots to the modern classical tradition. *Religions*, *10*(2), 85. https://doi.org/10.3390/rel10020085

Beck G (ed.) (2006) Sacred Sound: Experiencing Music in World Religions. Waterloo, ON, Canada: Wilfrid Laurier University Press.

Bonelli, R. M., & Koenig, H. G. (2013). Mental disorders, religion and spirituality 1990 to 2010: a systematic evidence-based review. *Journal of Religion and Health*, *52*(2), 657-673. https://doi.org/10.1007/s10943-013-9691-4

Bradt, J., Dileo, C., Myers-Coffman, K., & Biondo, J. (2021). Music interventions for improving psychological and physical outcomes in people with cancer. *Cochrane Database of Systematic Reviews(10).* https://doi.org/10.1002/14651858.CD006911.pub4

Browne, M. Q. (2009). A significance of sacramental ministry among individuals with severe and persistent mental illness. *Journal of Religion, Disability & Health, 13*(3/4), 260-273. https://doi.org/10.1080/15228960902931863

Byun, H.-S., Hwang, H., & Kim, G.-D. (2020). Crying Therapy Intervention for Breast Cancer Survivors: Development and Effects. International Journal of Environmental Research and Public Health, 17(13), 4911. https://www.mdpi.com/1660-4601/17/13/4911

Chi, I., Jordan-Marsh, M., Guo, M., Xie, B., & Bai, Z. (2013). Tai chi and reduction of depressive symptoms for older adults: a meta-analysis of randomized trials. *Geriatrics & Gerontology International*, *13*(1), 3–12. https://doi.org/10.1111/j.1447-0594.2012.00882.x

Chung, J. W.-Y., Wong, B. Y.-M., Chen, J.-H., & Chung, M. W. L. (2016). Effects of praise dance on the quality of life of chinese women. *Journal of Alternative & Complementary Medicine*, *22*(12), 1013-1019. https://doi.org/10.1089/acm.2016.0167

Clark, I., & Harding, K. (2012). Psychosocial outcomes of active singing interventions for therapeutic purposes: a systematic review of the literature. *Nordic Journal of Music Therapy*, *21*(1), 80-98. https://doi.org/10.1080/08098131.2010.545136

Clift, S., & Morrison, I. (2011). Group singing fosters mental health and wellbeing: findings from the East Kent 'singing for health' network project. *Mental Health & Social Inclusion*, *15*(2), 88-97. https://doi.org/10.1108/20428301111140930

Cotton, S., Zebracki, K., Rosenthal, S. L., Tsevat, J., & Drotar, D. (2006). Religion/spirituality and adolescent health outcomes: A review. *Journal of Adolescent Health*, *38*(4), 472-480. https://doi.org/10.1016/j.jadohealth.2005.10.005

Coulton, S., Clift, S., Skingley, A., & Rodriguez, J. (2015). Effectiveness and cost-effectiveness of community singing on mental health-related quality of life of older people: Randomised controlled trial. *British Journal of Psychiatry, 207*(3), 250-255. https://doi.org/10.1192/bjp.bp.113.129908

Cramer, H., Anheyer, D., Lauche, R., & Dobos, G. (2017). A systematic review of yoga for major depressive disorder. *Journal of Affective Disorders*, *213*, 70-77. https://doi.org/https://doi.org/10.1016/j.jad.2017.02.006

Crowe, M., & Sheppard, L. (2011). A review of critical appraisal tools show they lack rigor: Alternative tool structure is proposed. *Journal of Clinical Epidemiology*, *64*(1), 79-89. https://doi.org/10.1016/j.jclinepi.2010.02.008

d'Aquili, E. G., & Newberg, A. B. (2000). The neuropsychology of aesthetic, spiritual, and mystical states. *Zygon: Journal of Religion & Science*, *35*(1), 39. https://doi.org/10.1111/0591-2385.00258

Dattani, S., Ritchie, H., Roser, M. (2021). Mental Health. Retrieved February 10, 2022, from https://ourworldindata.org/mental-health

Demmrich, S. (2020). Music as a trigger of religious experience: What role does culture play? *Psychology of Music*, *48*(1), 35-49. https://doi.org/10.1177/0305735618779681

Dudeja, J. (2018). Analysis and benefits of chant-less Sohum/Humsa mantra meditation. *Sports Engineering. July*, *3*(2), 198-203.

Gonçalves, J. P., Lucchetti, G., Menezes, P., & Vallada, H. (2015). Religious and spiritual interventions in mental health care: a systematic review and meta-analysis of randomized controlled clinical trials. *Psychological Medicine*, *45*(14), 2937-2949. https://doi.org/10.1017/s0033291715001166

Hamilton, J. B., Sandelowski, M., Moore, A. D., Agarwal, M., & Koenig, H. G. (2013). "You Need a Song to Bring You Through": The Use of Religious Songs to Manage Stressful Life Events. *Gerontologist*, *53*(1), 26-38. https://doi.org/10.1093/geront/gns064

Hamilton, J. B., Worthy, V. C., Kurtz, M. J., Cudjoe, J., & Johnstone, P. A. (2016). Using religious songs as an integrative and complementary therapy for the management of psychological symptoms among African American cancer survivors. *Cancer Nursing*, *39*(6), 488-494. https://doi.org/10.1097/NCC.0000000000000335

Hamilton, J., Stewart, J., Thompson, K., Alvarez, C., Best, N., Amoah, K., & Carlton-LaNey, I. (2017). Younger African American Adults' Use of Religious Songs to Manage Stressful Life Events. *Journal of Religion & Health*, *56*(1), 329-344. https://doi.org/10.1007/s10943-016-0288-6

Hong, Q. N., Fàbregues, S., Bartlett, G., Boardman, F., Cargo, M., Dagenais, P., Gagnon, M.-P., Griffiths, F., Nicolau, B., O'Cathain, A., Rousseau, M.-C., Vedel, I., & Pluye, P. (2018). The Mixed Methods Appraisal Tool (MMAT) version 2018 for information professionals and researchers. *Education for Information*, *34*(4), 285-291. https://doi.org/10.3233/EFI-180221

Honing, H., ten Cate, C., Peretz, I., & Trehub, S. E. (2015). Without it no music: cognition, biology and evolution of musicality. *Philosophical Transactions of The Royal Society B, 370*(1664), 20140088. https://doi.org/10.1098/rstb.2014.0088

Hawton, K., Salkovskis, P. M., Kirk, J., & Clark, D. M. (1989). *Cognitive Behaviour Therapy for Psychiatric Problems: A Practical Guide.* Oxford.Oxford University Press.

Hendriks, T., de Jong, J., & Cramer, H. (2017). The Effects of Yoga on Positive Mental Health Among Healthy Adults: A Systematic Review and Meta-Analysis. *Jounal of Alternative and Complementary Medicine, 23*(7), 505-517. https://doi.org/10.1089/acm.2016.0334

Iqbal, N., Singh, A., & Aleem, S. (2016). Effect of Dynamic Meditation on Mental Health. *Journal of Religion & Health*, *55*(1), 241-254. https://doi.org/10.1007/s10943-015-0082-x

Iqbal, N., Singh, A., Aleem, S., & Bano, S. (2014). Effects of Dynamic Meditation on Anxiety. *Indian Journal Of Health And Wellbeing, 5*(8), 909-912. Retrieved from http://www.i-scholar.in/index.php/ijhw/article/view/92194

Johnson, J. K., Louhivuori, J., & Siljander, E. (2017). Comparison of well-being of older adult choir singers and the general population in Finland: A case-control study. *Musicae Scientiae*, *21*(2), 178-194. https://doi.org/10.1177/1029864916644486

Kamran, G. (2018). Physical benefits of (Salah) prayer-strengthen the faith and fitness. *Journal of Novel Physiotherapy and Rehabilitation*, *2*, 43-53. https:// DOI: 10.29328/journal.jnpr.1001020

Karkou, V., Aithal, S., Zubala, A., & Meekums, B. (2019). Effectiveness of Dance Movement Therapy in the Treatment of Adults With Depression: A Systematic Review With Meta-Analyses. *Frontiers in Psycholo*gy, *10*, 936-936. https://doi.org/10.3389/fpsyg.2019.00936

Koenig, H. G. (2009). Research on religion, spirituality, and mental health: A Review. *The Canadian Journal of Psychiatry*, *54*(5), 283-291. https://doi.org/10.1177/070674370905400502

Liao, R., Wang, S., Zhang, P., Zhou, Y., & Liu, X. (2017). Effect of priming with attachment security on positive affect among individuals with depression. *Social Behavior and Personality, 45*(2), 331-338. https://doi.org/10.2224/sbp.6236

Liu, X., Clark, J., Siskind, D., Williams, G. M., Byrne, G., Yang, J. L., & Doi, S. A. (2015). A systematic review and meta-analysis of the effects of Qigong and Tai Chi for depressive symptoms. *Complementary Therapies in Medicine*, *23*(4), 516–534. https://doi.org/10.1016/j.ctim.2015.05.001

Luskin, F. (2004). Transformative practices for integrating mind-body-spirit. *Journal of Alternative and Complementary Medicine. 10*(Supplement 1), S15–23. https://doi:10.1089/ acm.2004.10.S-15

Malviya, S., Meredith, P., Zupan, B., & Kerley, L. (2022). Identifying alternative mental health interventions: a systematic review of randomized controlled trials of chanting and breathwork. *Journal of Spirituality in Mental Health*, 1-43. https://doi.org/10.1080/19349637.2021.2010631

Mavrovouniotis, F. H., Argiriadou, E. A., & Papaioannou, C. S. (2008). Greek traditional dances and quality of old people's life. *Journal of bodywork and movement therapies, 14*(3), 209-218. https://doi.org/10.1016/j.jbmt.2008.11.005

Miller, M. M., & Strongman, K. T. (2002). The emotional effects of music on religious experience: A Study of the Pentecostal-Charismatic Style of Music and Worship. *Psychology of Music*, *30*(1), 8-27. https://doi.org/10.1177/0305735602301004

Millman, L. S. M., Terhune, D. B., Hunter, E. C. M., & Orgs, G. (2021). Towards a neurocognitive approach to dance movement therapy for mental health: A systematic review. *Clinical psychology & psychotherapy*, *28*(1), 24-38. https://doi.org/https://doi.org/10.1002/cpp.2490

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine, 151*(4), 264–269. doi:10.7326/0003-4819-151-4-200908180-00135

Moss, H., Lynch, J., & O'Donoghue, J. (2018). Exploring the perceived health benefits of singing in a choir: an international cross-sectional mixed-methods study. *Perspectives in Public Health*, *138*(3), 160-168. https://doi.org/http://dx.doi.org/10.1177/1757913917739652

Newberg, A. B., & d'Aquili, E. G. (2000). The neuropsychology of religious and spiritual experience. *Journal of Consciousness Studies*, *7*(11-12), 251-266. https://doi.org/10.1111/0591-2385.00258

Nochaiwong, S., Ruengorn, C., Kednapa, T., Hutton, B., Awiphan, R., Chabaphai, P., Ruanta, Y., Nahathai, W., & Tinakon, W. (2021). Global prevalence of mental health issues among the general population during the coronavirus disease-2019 pandemic: a systematic review and meta-analysis. *Scientific Reports, 11*(1). https://doi.org/http://dx.doi.org/10.1038/s41598-021-89700-8

Nuechterlein, K. H., Dawson, M. E., Ventura, J., Gitlin, M., Subotnik, K. L., Snyder, K. S., Mintz, J., & Bartzokis, G. (1994). The vulnerability/stress model of schizophrenic relapse: a longitudinal study. *Acta Psychiatrica Scandinavica*, *89*, 58-64. doi:10.1111/j.1600-0447.1994.tb05867.x

O'Connor, S., & Vandenberg, B. (2005). Psychosis or Faith? Clinicians' Assessment of Religious Beliefs. *Journal of consulting and clinical psychology, 73*(4), 610-616. https://doi.org/10.1037/0022-006X.73.4.610.

Pardini, D. A., Plante, T. G., Sherman, A., & Stump, J. E. (2000). Religious faith and spirituality in substance abuse recovery. *Journal of Substance Abuse Treatment*, *19*(4), 347–354. https://doi.org/10.1016/s0740-5472(00)00125-2.

Pascoe, M. C., & Bauer, I. E. (2015). A systematic review of randomised control trials on the effects of yoga on stress measures and mood. *Journal of Psychiatric Research*, *68*, 270–282. https://doi.org/10.1016/j.jpsychires.2015.07.013

Perry, G., Polito, V., & Thompson, W. F. (2021). Rhythmic Chanting and Mystical States across Traditions. *Brain Sciences, 11*(1), 101. https://www.mdpi.com/2076-3425/11/1/101

Pierre, J. M. (2001). Faith or Delusion? At the Crossroads of Religion and Psychosis. *Journal of Psychiatric Practice*, *7*(3), 163-172. doi:10.1097/00131746-200105000-00004

Ranganathan, P., Pramesh, C., & Buyse, M. (2015). Common pitfalls in statistical analysis: Clinical versus statistical significance. *Perspectives in Clinical Research, 6*(3), 169. https://doi.org/10.4103/2229-3485.159943

Rentfrow, P. J., & Levitin, D. J. (2019*). Foundations in Music Psychology: Theory and Research*. Rentfrow, P. J. & Levitin, D. J.(Eds),Cambridge. MIT Press.

Ross, J. J., Kennedy, G. A., & Macnab, F. (2015). The effectiveness of spiritual/religious interventions in psychotherapy and counselling. *Psychotherapy and Counselling Federation of Australia (PACFA)*: Melbourne.

Sayeed, S. A., & Prakash, A. (2013). The Islamic prayer (Salah/Namaaz) and yoga togetherness in mental health. *Indian Journal of Psychiatry*, *55*(Suppl 2), S224-S230. https://doi.org/10.4103/0019-5545.105537

Serafim, S. D., da Ponte, F. D. R., Lima, F. M., Martins, D. S., Rosa, A. R., & Kunz, M. (2019). Effects of deep breathing in patients with bipolar disorder. *Perspective in Psychiatric Care, 55*(1), 119-125. https://doi.org/10.1111/ppc.12325

Shields, G. S., Trainor, B. C., Lam, J. C., & Yonelinas, A. P. (2016). Acute stress impairs cognitive flexibility in men, not women. Stress, 19(5), 542-546. https://doi.org/10.1080/10253890.2016.1192603

Sullivan, W. P. (1993). 'It helps me to be a whole person': The role of spirituality among the mentally challenged. *Psychosocial Rehabilitation Journal, 16*(3), 125-134. https://doi.org/10.1037/h0095669

Thomas, J., & Harden, A. (2008). Methods for the thematic synthesis of qualitative research in systematic reviews. *BMC Medical Research Methodology*, *8*, 45-45. https://doi.org/10.1186/1471-2288-8-45

Tshabalala, B. G., & Patel, C. J. (2010). The role of praise and worship activities in spiritual well-being: perceptions of a Pentecostal Youth Ministry group. *International Journal of Children's Spirituality*, *15*(1), 73-82. https://doi.org/10.1080/13644361003603074

UNSDG | *Policy brief: COVID-19 and the need for action on mental health.* (2020, May 13). United Nations Sustainable Development Group. https://unsdg.un.org/resources/policy- brief-covid-19-and-need-action-mental-health

Vancampfort, D., Vansteelandt, K., Scheewe, T., Probst, M., Knapen, J., De Herdt, A., & De Hert, M. (2012). Yoga in schizophrenia: a systematic review of randomised controlled trials. *Acta Psychiatrica Scandinavica*, *126*(1), 12-20. https://doi.org/10.1111/j.1600-0447.2012.01865.x

Vyas, A. (2007). Effects of seven-day osho dynamic study: A pilot study. In Kostas Andrea Fanti (ed), *Psychological Science: Research, Theory and Future Directions*. Athens: Athens Institute for Education and Research (ATINER). Retrived from https://scholar.google.com/scholar_lookup?title=Effects%20of%20seven-day%20osho%20dynamic%20study%3A%20A%20pilot%20study.&publication_year=2007&author=Vyas%2CA

Wald-Fuhrmann, M., Boenneke, S., Vroegh, T., & Dannecker, K. P. (2020). “He who sings, prays twice”? singing in roman catholic mass leads to spiritual and social experiences that are predicted by religious and musical atitudes [Original Research]. *Frontiers in Psychology*, *11*(2371). https://doi.org/10.3389/fpsyg.2020.570189

Wang, P. S., Aguilar-Gaxiola, S., Alonso, J., Angermeyer, M. C., Borges, G., Bromet, E. J., . . . Wells, J. E. (2007). Use of mental health services for anxiety, mood, and substance disorders in 17 countries in the WHO world mental health surveys. *Lancet (London, England), 370* (9590), 841–850. doi:10.1016/S0140-6736(07)61414-7

Weare, Suzanne, "Rhythm and Safety of Social Engagement: Polyvagal Theory Informed Dance/Movement Therapy" (2020). *Expressive Therapies Capstone Theses*. 347. https://digitalcommons.lesley.edu/expressive_theses/347

Welsh, E. (2002). Dealing with Data: Using NVivo in the Qualitative Data Analysis Process. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, *3*(2). https://doi.org/10.17169/fqs-3.2.865

Worthington, E. L., Jr., & Sandage, S. J. (2001). Religion and spirituality. *Psychotherapy: Theory, Research, Practice, Training*, *38*(4) Empirically Supported Therapy Relationships: Summary Report of the Division 29 Task Force, 473–478. doi: 10.1037/0033-3204.38.4.473.

Xiong, J., Lipsitz, O., Nasri, F., Lui, L. M. W., Gill, H., Phan, L., Chen-Li, D., Iacobucci, M., Ho, R., Majeed, A., & McIntyre, R. S. (2020). Impact of COVID-19 pandemic on mental health in the general population: A systematic review. *Journal of Affective Disorders, 277*, 55-64. https://doi.org/https://doi.org/10.1016/j.jad.2020.08.001

Yaden, D. B., Haidt, J., Hood, R. W., Vago, D. R., & Newberg, A. B. (2017). The varieties of self-transcendent experience. *Review of General Psychology*, *21*(2), 143-160. https://doi.org/10.1037/gpr0000102

Zou, L., Yeung, A., Li, C., Wei, G.-X., Chen, K., Kinser, P., Chan, J., & Ren, Z. (2018). Effects of meditative movements on major depressive disorder: A systematic Review

and meta-analysis of randomized controlled trials. *Journal of Clinical Medicine*, *7*(8), 195. https://doi.org/10.3390/jcm