

# **An investigation on emotional change before versus after music worship on Sunday service and whether such emotional alteration varies between people with versus without a divine encounter**

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## **ABSTRACT**

Nowadays, mental problems including anxiety and depression resulting from accumulated negative emotions are prevalent worldwide. Although secular music has been well documented as an effective instrument to regulate emotions, there is a paucity of investigations on whether religious music, particularly worship music, could also function as secular music especially regulating negative emotions. Besides, no research has examined whether divine encounters while music worshipping in a church setting could have an impact on emotional change. Thus, this research aimed to fill the gaps indicated above by hypothesising that people's emotions will be regulated following the music worship ritual, and that the divine encounter will affect the alteration of emotional change. 22 participants completed the Positive and Negative Affect Schedule (PANAS) before and after the musical worship ceremony on Sunday service. Results showed that people's positive and negative emotions significantly increased and decreased respectively after the music worship. Also, the significant difference in the negative emotional decline before and after the music worship between people with versus without the divine encounter was detected, whereas no significant difference in positive emotions in terms of the effect of divine encounter. Finally, limitations and future suggestions were also discussed.

## **1. INTRODUCTION**

To date, there is a tendency for people globally to demonstrate more negative emotions, including anxiety and sadness, compared to any time in the previous 16 years according to the Global Emotion Report in 2022. Consequently, individuals subjected to negative feelings for extended periods are more inclined to fall prey to physical and mental issues, such as high blood pressure and depression (Cohen & Williamson, 1991). Thus, readily available and cost-effective interventions for people to regulate emotions and control stress every day are imperatively necessitated nowadays.

Music, which many people can easily access, has been appreciated for emotional regulation by offering people support and relief. For example, several studies have documented that music has been purposefully used to enhance emotions in a positive manner and can aid in coping with adverse circumstances in life (Groarke et al., 2020; Ter Bogt et al., 2017; Van Goethem & Sloboda, 2011). Although secular music could provide people with a wonderful experience, it may not have as strong of effects as worship music (Walter, 2021).

Worship music is a kind of religious music in which Christians declare the saving power of God, rejoice in His redemptive mercy and encourage each other by chanting the truth of God's word (New International Version, Colossians 3:16). It not only offers individuals a wonderful experience like secular music, but also has the ability to awaken a person's entire essence and resonate with one's entire existence (Walter, 2021). Therefore, it raises the question in terms of whether worship music can affect people's emotional states. Trauger-Querry and Haghighi (1999) asserted that religious music could help with this functioning in part like secular music by redirecting individuals' negative thoughts away from frustrating and disappointing parts of life and towards healthier and enjoyable ones, assisting in the reduction in negative emotions. Similarly, religious music could enable people to have more strength and resilience to deal with adverse situations in life by connecting with God more deeply (Viladesau, 2000).

Music worshipping is classified as a spiritual activity, a state of mind or as a tool for getting closer to God (Walter, 2021). Besides, it could elicit positive emotions and also enable individuals to tackle emotional issues as a therapeutic instrument (Kgatle, 2019). Given that there are different ways in which Christians behave while music worshipping, including active singing to praise and rejoice with God, and passive listening to fully soak in the worship atmosphere where people could reflect on their faith (Walter, 2021), individuals might either sing along or listen to worship music during the ritual.

To begin with, Miller and Strongman (2002) requested 95 church members to fill out a survey investigating their emotions at various time points during a Sunday service. Researchers found that scores of participants' emotions considerably rose from just before the service to after the music worshipping section. Likewise, Byrd's study (2019) recruited 70 university students to listen to worship songs in a classroom setting. The results also showed that exposure to worship music could improve individuals' emotions. These results could be because religious music with a fast tempo might be arousing and exhilarating, and the faster beats have been found to stimulate and excite the neurological system (Krumhansl, 1997). Nonetheless, both of these two studies only examined whether the overall emotional states could be boosted, explicitly neglecting whether negative emotions might be minimised. Given that negative emotions could bring about depression, which is a commonly found mental issue around the world (Willroth et al., 2020), it is also crucial to investigate whether worship music could effectively and directly reduce people's negative affects, such as upset, distress and fear in this research, aside from examining positive emotion.

Accordingly, the above-mentioned gap in this field might be addressed by examining negative emotions using the Positive and Negative Affect Schedule (PANAS), which is a subjective evaluation of emotional state (Watson et al., 1988). For example, Kreutz et al. (2004) administered an experiment in which participants were instructed to complete the PANAS. Their saliva was collected before and after the singing session where they were asked to sing Mozart's *Requiem*. Researchers found that choir singing enhanced subjects' positive affects and substantially increased the level of secretory immunoglobulin A (S-IgA), as well as decreased their negative affects. These results indicated that choir singing has a beneficial influence on individuals' emotions and immunological function. Thus, based on the aforementioned results that examined the effects of classical music, this research will also employ PANAS to capture whether worship music on Sunday service could assist people in reducing negative emotions.

As far as the present researcher is aware, no research has been conducted to explore whether divine encounters might have an influence on the shift of people's emotional states before and after the music worship ceremony on Sunday service. Spirituality is defined as a personal and subjective experience and may involve the connection to the divine (Pargament, 2001). The divine encounter is a religious experience. It is defined as a life-enriching and life-changing event, and gives people joy and hope, as well as a sensation of connecting to greater supernatural power (Bennett & Hacker, 2003; Walter & Altorfer, 2022). Experiencing God's presence has been considered to be a crucial part of contact with the divine (Walter & Altorfer, 2022). Given that feeling the divine was regarded as a joyful and pleasurable event (Walter & Altorfer, 2022), it is plausible to extrapolate that having the experience of sensing God in the musical worship ceremony will have an impact on the shift of believers' positive emotions.

Spirituality can offer people a sense of meaning and purpose in their lives, in particular the negative life events, which could contribute to improved mental health outcomes, including decreased depression and anxiety (Paloutzian & Park, 2014). For example, Wong et al.'s (2006) systematic review on spirituality and mental health showed that participants with higher degrees of spirituality demonstrated higher levels of meaning and purpose in life, which was associated with better mental health and lower levels of anxiety and depression. Their findings indicate that the sense of meaning and purpose that derived from spirituality (the divine encounter) could prompt a more positive outlook on life and a reduction in negative emotions.

Furthermore, Gartner's (1996) review showed that there was a positive relationship between one's spirituality and well-being, as well as overall psychological functioning. For example, Hourani et al. (2012) found that strong spirituality had a substantial protective impact for depressive symptoms in a study of 24,000 randomly chosen active US military males. Ozcan et al. (2021) revealed that spirituality could function as an effective coping mechanism for female workers who suffered from high levels of stress and trauma at work based on 19,000 sample over the course of 5 years. Results showed that more spiritual participants who reported that connecting to the divine enabled them to feel calm, reassured and help them find the inner peace. These findings revealed that more spiritual persons may have better-coping abilities and a greater feeling of inner peace, which may serve to reduce unpleasant emotions. Based on aforementioned studies, it is reasonable to expect that the divine encounter during the music worshipping will affect the change of people's negative emotions.

This research will build on Miller and Strongman's (2002) findings, aiming to investigate not only the effects of music worshipping on individuals' positive emotions, but also to examine negative emotions. Additionally, this study investigates whether there was a difference in emotional change between those who experienced the divine in comparison to those without divine encounter prior to versus after the section of music worshipping on Sunday service.

The hypotheses that will be tested are that:

1. Worship music on Sunday service will impact people's emotions by boosting positive emotions and lessening negative emotions before and after the musical worship ceremony.
2. The divine encounter while music worshipping on Sunday service will influence the change of people's emotions. That is, those who had the divine encounter will show greater emotional alteration in terms of both positive and negative emotions compared to those who did not.

This research is significant since it is the first study to explicitly investigate whether worship music could also regulate negative emotions. And, it is the first one to examine whether the divine encounter people felt in the midst of music worshipping could impact the emotional change in comparison to those who did not, which could potentially add some new insights into the field of music psychology. Moreover, given that prevalent mental issues such as anxiety and depression stem from gradually accumulated negative emotions, this research could provide people with a practical, easily accessible approach to cope with mental issues resulting from negative emotions by attending the Sunday service, and in particular, music worshipping.

## 2. METHOD

*Participants.* 22 subjects at least 18 years of age were recruited for this research by convenience sampling initially. Yet, after visual examination, one response was excluded from the following data analysis due to incompleteness of the survey. The remaining 21 subjects were aged 20 to 65 years ( $M = 33.48$ ,  $SD = 15.74$ ; 15 females, 6 males). The majority (47%) were from the UK and the second most common country that people came from was China (33%). All participants were baptised Christians. Half (50%) of participants attended church or other religious meetings more than once a week. 67% of subjects spent time in prayer at least once every day.

*Design.* There were two independent variables in this research. The primary independent variable was time point (immediately prior to/after the music worshipping), and the second independent variable was a divine encounter during the music worship (Yes/No). The dependent variable in this study was people's emotional change before and after the music worshipping. A mixed-subjects design was employed in this research. A within-subjects design was used because participant participated in both conditions (prior to/after music worshipping). A between-subjects design was also adopted since subjects were allocated to either conditions that they had experienced divine encounter or conditions without divine encounter during the music worshipping.

*Measures.* The Positive and Negative Affect Schedule (PANAS) is a self-report scale measuring participants' emotions or moods (Watson et al., 1988). It contains 20 items, 10 of which assess positive affect (e.g. excited, proud) and 10 of which gauge negative affect (e.g. distressed, upset). Each item was evaluated on a five-point Likert Scale ranging from 1 (very slightly or not at all) to 5 (extremely).

*Procedure.* The current study was conducted as an assignment of the module of psychology of music, and it received ethical approval from the Department of Music. The research was carried out in-person at Durham Community Church. Prior to the beginning of the Sunday service, participants were presented with the information sheet and filled out the consent form. Given that thinking about going to church is a pleasant experience, people might have already felt thrilled before attending church, which might lead to the ceiling effect. Thus, the aim of this research is limited since it might fail to detect the difference in people's emotions before and after the music worship. Accordingly, this research asked people the extent how they have felt over this week. Thus, participants responded to the first PANAS that asked them to indicate the extent they felt over this week before the start of the music worshipping. Participants were either singing along or listening to worship songs during the ceremony in which five worship songs were played, including *10000 Reasons*, *Praise the Father Praise the Son*, *Nothing Is Impossible*, *Endless Praise*, and *Lead Me Lord*. Then, subjects completed the second PANAS that asked them to express their emotions right after the musical worship ceremony, and they also reported whether they had divine encounter or not during the music worshipping. Finally, after attendees were requested to report their demographic information including gender, age, ethnicity, whether they were Christians etc., they were presented with the debrief sheet that indicated the end of this research. The approximate time of completing the whole questionnaire was about 2 minutes.

### 3. RESULTS

*Descriptive Statistics.* The data from the current study were analysed using an independent *t*-test to examine whether people's positive and negative emotions may alter following the music worship. In addition, a one-way ANOVA was employed to test whether the divine encounter during the music worship could affect people's positive and negative emotional shifts. Descriptive results can be seen in Table 1.

Table 1. *Descriptive results for participants' positive and negative emotions in with divine and without divine groups.*

		Before		After	
		Mean	SD	Mean	SD
With divine	Positive	22.67	3.63	35.75	3.36
	Negative	22.58	6.57	13.33	2.35
Without divine	Positive	17.11	3.10	30.11	1.54
	Negative	16.44	3.17	15.67	4.66

*Statistical Analysis.*

#### *The effect of worship music on emotions*

There was a significant increase in positive emotions before the music worship ( $M = 20.28$ ,  $SD = 4.36$ ) compared to the after ( $M = 33.33$ ,  $SD = 3.92$ ,  $t = -10.20$ ,  $p < .001$ ). Similarly, there was also a significant decrease in negative emotions prior to ( $M = 19.95$ ,  $SD = 6.12$ ) the music worship in comparison to the after ( $M = 14.33$ ,  $SD = 3.62$ ,  $t = 3.62$ ,  $p < .001$ ). The visualisation of data can be seen in Figure 1 and Figure 2.

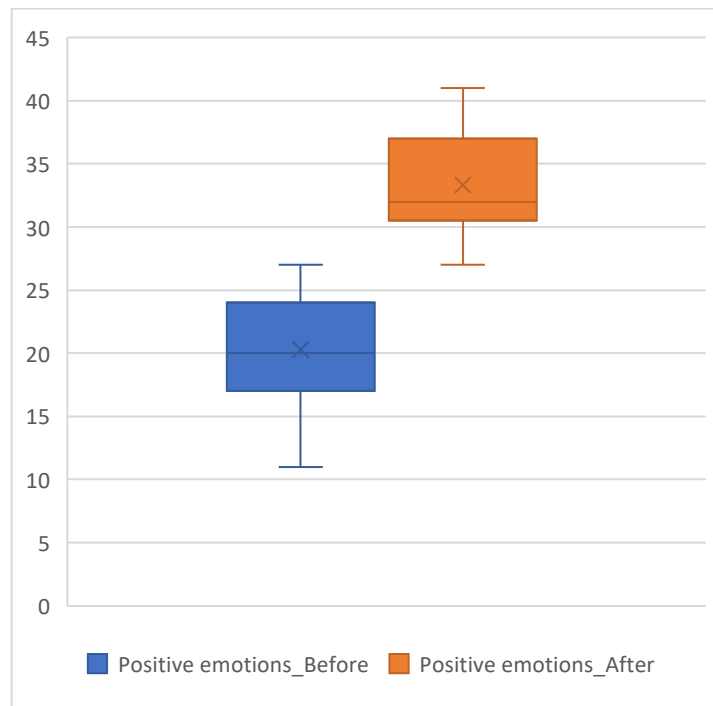


Figure 1. Change of positive emotions before and after the music worship

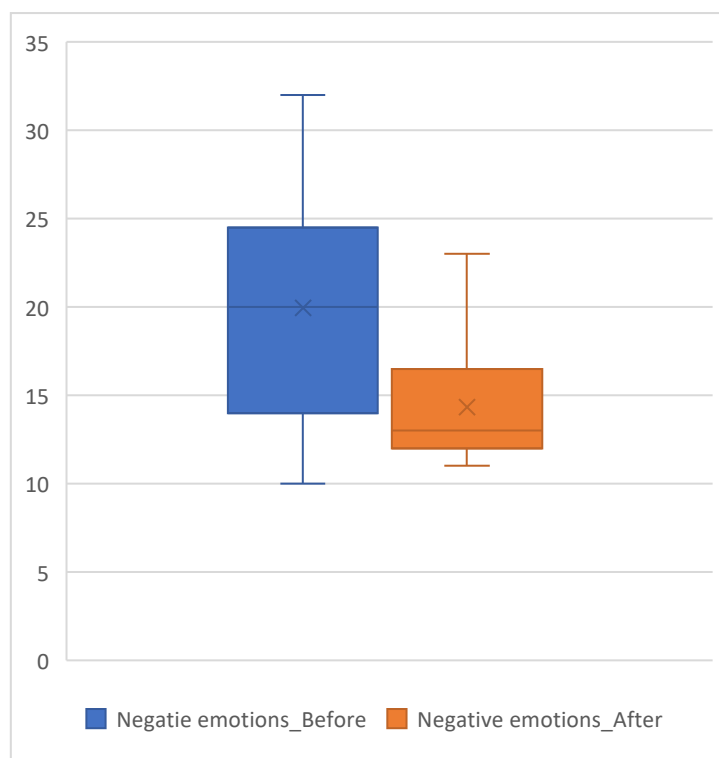


Figure 2. Change of negative emotions before and after the music worship

*The effect of the divine encounter on change of emotions*

Results of ANOVA demonstrated that there was no significant effect of a divine encounter on the shift of positive emotions prior to and after the worship ritual ( $F(1, 19) = .01, p = .93$ ), meaning that there was no significant difference in positive emotional change between people with and without a divine encounter before and after the music worship. As can be seen from results that positive emotional change of people with a divine encounter before ( $M = 22.67, SD = 3.63$ ) and after ( $M = 35.75, SD = 3.36$ ) was not greater than that of individuals without a divine encounter before ( $M = 17.11, SD = 3.10$ ) and after ( $M = 30.11, SD = 1.54$ ) the music worship.

Nonetheless, the effect of the divine encounter was significant on the change of negative emotions before and after the section of music worship ( $F(1, 19) = 13.54, p = .002$ ), indicating that there was a significant difference in negative emotional shift between individuals with and without a divine encounter before and after the music worship. The negative emotional change of individuals with a divine encounter before ( $M = 22.58, SD = 6.57$ ) and after ( $M = 13.33, SD = 2.35$ ) was significantly greater than that of participants without a divine encounter before ( $M = 16.44, SD = 3.17$ ) and after ( $M = 15.67, SD = 4.67$ ) the music worshipping part.

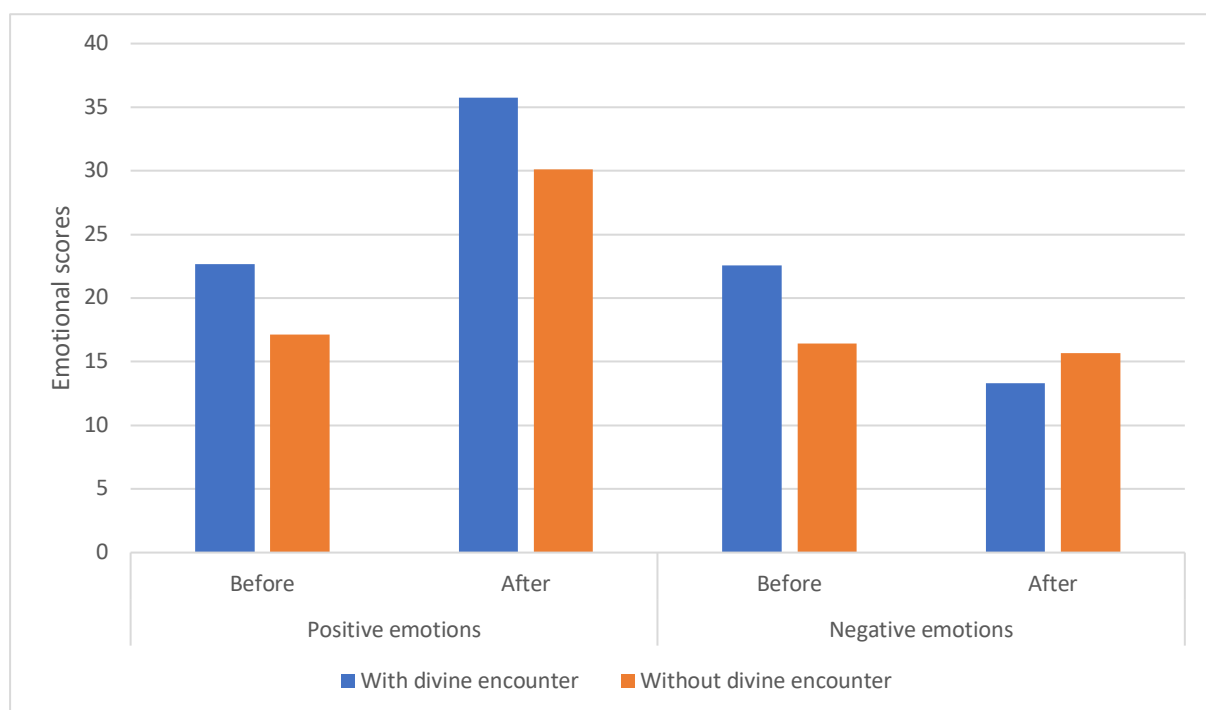


Figure 3. Change of positive and negative emotions before and after the music worship in with divine and without divine groups

## 4. DISCUSSION

This research sought to investigate whether people's positive and negative emotions could be enhanced and reduced respectively after music worship at Sunday service at church, and whether emotions of participants who had divine encounters changed more than those who did not experience the presence of God.

The current findings revealed that people's positive emotions significantly increased and that negative emotions dramatically decreased after the music segment, signifying that worshipping music could act as a facilitator of individuals' emotions. Hence, the first hypothesis that worship music on Sunday service could serve as an emotional regulator by boosting positive and mitigating negative emotions was accepted. Concerning the increase in positive emotions after music worshipping, the current result aligned with the findings of Miller and Strongman (2002), suggesting that subjects' moods were significantly enhanced after the immediate end of music worshipping versus just before the music section of Sunday service, and that of Byrd (2019) who also found that the improvement in emotions was a result of the exposure to worship music in a classroom environment. Given that

some worship songs in the current research had a fast tempo, such as *Nothing Is Impossible* and *Endless Praise*, participants' positive emotions could be boosted as a result of the stimulation and excitement of neurological systems (Krumhansl, 1997).

In terms of negative emotions, the current result was in accord with earlier research showing that there was a decrease in subjects' negative emotions after the singing session of classical music (Kreutz et al., 2004). A possible explanation may be that religious music could facilitate a deeper connection with God by offering people the strength and resilience to face adversities in life (Viladesau, 2000). Therefore, individuals' negative emotions could be mitigated since their focuses might be diverted from unpleasant and painful parts of life towards more positive and healthier thoughts (Trauger - Querry & Haghighi, 1999), potentially leading to a significant decrease in negative emotions after people were exposed to worship music.

However, regarding the divine encounter, no significant difference in the rise of positive emotions after the section of music worship between people with versus without divine encounters was detected. This unanticipated result revealed that the rise in positive emotions following the worship ceremony was not affected by whether people encountered the divine or not during the worshipping. On the contrary, people who reported having divine encounters demonstrated a significant reduction in negative emotions before versus after music worshipping compared to those who did not have the experience of the divine. This finding indicated that whether there was a significant decrease in negative emotions after music worshipping was influenced by whether people experienced heavenly contact in the middle of music worship. Therefore, the second hypothesis was partially accepted.

Although sensing the divine while musical worship was a pleasant and delightful occurrence (Walter & Altorfer, 2022), the unexpected result of positive emotional change could be accounted for through three perspectives containing the nature of worship music, singing in the church setting and a religious group identity as a Christian. To begin with, from the view of the nature of worship music, it is designed to evoke deep positive emotions (Argyle, 2000), and worship music could lead worshippers to feel ecstatic by sparking strong positive emotional responses (Penman & Becker, 2009). In addition, moving to the perspective of singing under church circumstances, the emotional effect of singing primarily functions via social interaction and a feeling of connection with a group (Bonde et al., 2013), in which elements of religious collective practices encompassing worship music and synchronic behaviours could elicit and intensify positive emotions (Van Cappellen et al., 2021). Singing in the church could provide church members with a chance to convey themselves to God, which to some extent could in turn, bring them joyfulness (Joseph & Petersen, 2015). Furthermore, from the standpoint of group identity, positive emotions that are appreciated by the religious community could be triggered by religious practices such as music worshipping, since such ritual could make worshippers' religious identity salient (Van Cappellen et al., 2021), aiding in the increase in positive emotions for church members. Thus, given that worship music itself and the salience of group identity as a Christian could facilitate positive emotions, and that religious collective activity could further amplify positive emotions, it is reasonable that there was not a significant difference in the improvement of positive emotions after music worship regardless of whether there was a divine encounter.

Regarding the negative emotions, there was a substantial difference in the lowering of negative feelings between individuals who had heavenly encounters and those who did not. The current result could be explained by Paloutzian and Park's (2014) idea and Wong et al.'s (2006) finding that the divine encounter during the music worship on Sunday service might elicit a sense of hope, enabling worshippers to attribute meaning and purpose to adverse and challenging life events, which potentially contributes to the mitigated negative emotions. Besides, the current results could be accounted for by Gartner (1996) and Ozcan et al. (2021), who found that connecting to the divine might lead to better coping skills and greater sense of inner peace. Believers who experienced God while music worshipping were more inclined to possess better coping skills for negative emotions such as stress and anxiety by releasing all the burdens to Higher Power. Hence, people who had the divine encounters were more inclined to feel the meaning and purpose of life, and were more likely to have better coping skills and the sense of inner peace during the musical worship ritual. Thus, it is reasonable that the difference in negative emotional change before worshipping versus after was significantly affected by the divine encounter, supporting the hypothesis that the negative emotions of people who had divine encounters were significantly mitigated in comparison to those who did not.

Although this research has high ecological validity, some limitations remain. The current findings might not be generalisable to the wider population since the sample size of the present study was small. Regarding its practical implication, regulating emotions via music worship on Sunday service might only be adopted by Christians, since people who do not believe in Jesus might be reluctant to hear religious music or enter the church. Consequently,

exposing them to worship music might not aid in emotional regulation or even backfire, potentially leading to increased disgusted feelings.

Future studies in this area could examine whether the effect of worship music on emotional changes could be affected by different genres of worship songs such as contemporary Christian songs, upbeat Black gospel and bluegrass. Additionally, the familiarity of worship songs should also be considered in future research to see if individuals' emotions could be altered more by familiar compared to unfamiliar worship songs. Regarding the divine encounter, future investigators should delve into this field to further probe how underlying mechanisms of divine encounters interacting with worship music on Sunday service influence people's emotions.

In brief, this study sought to investigate the impact of worship music on Sunday service on the alteration of worshippers' emotions, and whether there was a difference in the change of emotional states between people with versus without a divine encounter. Current results revealed that both positive and negative emotions demonstrated significant changes before versus after the musical worship ritual, and that people with divine encounter showed a significant decrease in negative emotions compared to those without a divine encounter. No significant results were detected pertaining to the effect of divine encounter on positive emotions. Although this research possessed limitations, it provides some insights into the existing literature on the impact of worship music on emotions by explicitly examining negative emotions. Moreover, this research was the first of its kind to investigate whether the divine encounter could aid in facilitating the emotional change while music worshipping in the church setting. Finally, this research had practical implications by offering people a readily available strategy to tackle negative emotions that, if not adequately handled in time, could lead to severe mental issues such as anxiety and depression.

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