

The Effects of Indian Classical Music on Mood: The Role of Familiarity

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Abstract

Previous research has demonstrated that music, specifically cultural music, can have therapeutic benefits for individuals, such as improved mood. However, there are relatively few studies examining the impact of Indian classical music on mood and how familiarity influences this effect. To address this gap in the literature, we investigated whether listening to Indian classical music affects a person's mood, and how is this effect influenced by familiarity with the genre. To begin, we created and distributed a survey that played either Indian classical music or white noise, with participants randomized to one of the two conditions, stratified by familiarity with Indian classical music. Then, we measured positive affect with the PANAS Questionnaire and conducted a two-way ANOVA on the positive mood scores. We found there was a main effect of condition, such that music improved positive mood scores more than white noise. There was no main effect of familiarity. That is, familiarity with the music had no effect on positive mood scores. By extension, there was no interaction effect, which means the positive effect of music was consistent across music and white noise. The main effect of the condition aligns with previous studies demonstrating that listening to music improves mood. However, familiarity did not enhance this effect, contrary to our hypotheses and previous literature. Additional studies need to assess the effect of familiarity in a larger, more representative sample. Overall, these findings suggest Indian classical music can be used as a powerful tool in therapeutic settings to improve mood, especially for patients who have not responded to other treatments.

Keywords: Indian classical music, mood, familiarity, music therapy, positive affect

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Recent studies have highlighted music's potential as a medical intervention. For example, music therapy reduced self-reported anxiety and improved depression scores in breast cancer patients (Xu et al., 2024), and exposing people with schizophrenia to music improved their PANNS (Positive and Negative Syndrome Scale) score, indicating music therapy reduced symptom severity (Tseng et al., 2016). These therapeutic benefits stem from music's ability to act as an "auditory anchor". Music activates the brain's limbic system, specifically neural pathways associated with emotional resilience and social development (Rus et al., 2024). These findings establish music's potential as a therapeutic tool.

However, the effectiveness of music as a therapeutic tool depends on the listener's familiarity. Music helps patients redirect their focus from painful events to a more pleasant stimulus, and perceptions of music styles, sounds, and rhythms vary cross-culturally (Reynaud et al., 2021). Therefore, familiarity with cultural music, such as Yoik music, can further enhance positive mood change in a therapeutic setting (Hämäläinen et al., 2021). Familiarity with music can also contradictorily make participants believe energetic music is more relaxing than calmer music (Scarratt et al., 2023). Therefore, the influence of familiarity must be considered when selecting music for music therapy.

Nevertheless, there are many areas for improvement in this realm of study. In Western music therapy, emotional responses to music are assumed to be similar universally. This

approach does not account for music enculturation, the process of understanding the structure of cultural music through repeated exposure. Current studies demonstrate music enculturation affects emotional responses to music, suggesting that familiarity with the music being used may increase the efficacy of music therapy (Athanasopoulos et al., 2021). For example, Western music emphasizes the importance of major and minor keys, with major keys typically being labelled as “happy” while minor keys are typically considered “sad”. However, many remote Asian and African tribes were not able to distinguish between major and minor compositions (Egermann et al., 2015). Music enculturation, a learned ability, affects listening experiences during music therapy. Therefore, to effectively utilize cultural music in music therapy, further research needs to be conducted to explore the link between familiarity and mood in different cultures.

One type of music that has not been experimented with is Indian classical music. Indian classical music originated in Southeast Asia almost 6,000 years ago. While divided into two types of music (Carnatic and Hindustani), both are influenced by cyclical patterns of nature, like times of day and seasons. Musicians in this art form express themselves through singing or various instruments, such as the sitar, sarod, and harmonium. Both the vocal and instrumental traditions are grounded in improvisation, making each performance creative and unique (An Introduction To: Indian Classical Music, 2023). As noted previously, a patient’s familiarity with cultural music helps enhance music therapy. Therefore, this opens up a new window of opportunity for Indian classical music to be used effectively in clinical settings.

Previous literature on Indian classical music has established that listening has health-related benefits. For example, listening to Indian classical music helped reduce anxiety, stress, and depression among adults (Pareek & Shekhawat, 2022). Furthermore, healthy elderly men who listened to Raag Todi experienced a significant decrease in systolic pulse rate, breathing, and respiratory rate (Chatterjee & Mukherjee, 2020). However, most literature on Indian classical music does not explore the effect of familiarity with the music on positive mood change in therapeutic settings. Nevertheless, the establishment of this relationship with other ethnic music implies the same can be hypothesized about Indian classical music.

To address this gap in the literature, this study aimed to investigate how familiarity and exposure to Indian classical music affect mood change. By assessing the difference in mood between our control group (white noise) and our experimental group (Indian classical music), we sought to establish a causal relationship between listening to Indian classical music and an increased positive mood. We hypothesized that the group listening to Indian classical music would have higher positive mood scores after listening than the white noise group. Additionally, we hypothesized that greater familiarity with Indian classical music would lead to a stronger positive effect on mood.

Methods

Research Participants

To satisfy our inclusion criteria, participants were required to live in the United States and be between the ages of 18 and 50. Upon selection, participants were sorted into two groups: familiar and unfamiliar with Indian classical music. Familiarity was defined as responding to the question “*How familiar are you with Indian classical music?*” with “unfamiliar” (never heard of Indian classical music before), or “maybe familiar” (heard of Indian classical music before but

never listened). Consequently, unfamiliar participants were defined as responding to the question with “unfamiliar” (never heard of Indian classical music before), “maybe familiar” (heard of Indian classical music before but never listened), or slightly familiar (listened once or twice). Participants were recruited primarily from online Facebook communities centralized in the United States. 44 people (23 males and 21 females) were recruited, and participant ages ranged from 18 to 50 years ($M = 40.36$, $SD = 7.17$).

Recruitment Procedures

We used Facebook to recruit participants because our target demographic uses it as a primary social media platform, and features such as Facebook Groups allowed us to target specific communities. Participants familiar with Indian classical music were recruited through Indian classical music forums, specifically the “Lovers of Hindustani Classical Music” forum. Participants unfamiliar with Indian classical music were recruited through general United States forums, specifically the “United States of America (USA)” forum.

To recruit participants, we posted a flyer on each online forum advertising the opportunity. The flyer included a QR code and a link to the survey on Qualtrics. Upon entering the survey, participants completed a prescreening survey. If participants did not meet the inclusion criteria, we informed them of their ineligibility and thanked them for their time. If they were eligible, we informed them of the survey’s expectations and requested that they sign an informed consent form, reminding them that participation was voluntary and that withdrawing from the study was an option at any time. Finally, the participant took the main survey.

Study Design

This study was a 2x2 between-subjects design. The first independent variable was familiarity with Indian classical music. The question was “How familiar are you with Indian classical music?”, and answers were measured on a 5-point Likert scale, the scale items ranging from 1 (not at all familiar) to 5 (extremely familiar). The second independent variable was Indian classical music exposure, which was manipulated. Participants were either exposed to a 5-minute white noise clip or a 5-minute recording of Raag Bhairavi, which has been shown to have a calming effect in previous studies (Jain & Maheshwari, 2019). Finally, the dependent variable was positive mood. Participants rated their emotional state after listening to the piece of Indian classical music using the positive portion of the Positive and Negative Affect Schedule (Watson et al., 1988).

Stimuli

The Indian classical music clip was of Raag Bhairavi, taken from a YouTube video titled “[Raga Bhairavi | राग भैरवी | Pt. Hariprasad Chaurasia | Flute Music | Indian Classical Instrumental](#)”, and the white noise clip is taken from a YouTube video titled “[10 min white noise for stress](#)”.

Procedures

Following recruitment, participants were asked about their age and gender. Both groups, participants familiar with Indian classical music (“familiar participants”) and unfamiliar with Indian classical music (“unfamiliar participants”), were randomly assigned to a condition, stratified such that there were an equal number of familiar and unfamiliar participants in each condition. There were two conditions: Indian classical music and White Noise (see **Stimuli**). There were 18

familiar participants in condition 1, 12 familiar participants in condition 2, 6 nonfamiliar participants in condition 1, and 8 nonfamiliar participants in condition 2. After reporting age and gender, participants listened to their assigned listening condition for 5 minutes. After listening, participants completed the PANAS questionnaire. Since this study measured positive affect, the questionnaire was shortened to 10 items measuring only positive emotions on a Likert scale.

Analysis

The results of this survey were analyzed by creating a sum score for the positive affect scores (PANAS) for each participant after listening. We compared the means between conditions and familiarity groups using ANOVA. Then, we identified whether there were significant main effects of familiarity with Indian classical music, condition, and a significant interaction effect of familiarity by condition on positive affect. Statistical significance was determined by comparing the p-value to an alpha value of 0.05, which represents the threshold for significance (ability to reject the null hypothesis). The null hypotheses, that 1) Indian classical music has no positive effect on mood, 2) familiarity with Indian classical music does not have a positive effect on mood, and 3) familiarity with Indian classical music does not affect the effect of condition on mood, are rejected if the p-value is less than the alpha value. Statistical analyses were performed using JASP.

Results

Participant Characteristics

Depending on their response to a 5-point Likert scale question assessing familiarity, 30 people were placed in the familiarity condition (68%), and 14 people were placed in the unfamiliarity condition (32%). About 24 people (55%) received Indian classical music, while 20 people (45%) received white noise. The table below contains more comprehensive information regarding participant distribution.

Table 1

Participant demographics by music condition

Variable	Music	Noise
<i>N</i>	24	20
Female	13	8
Male	11	12
Age (<i>M, SD</i>)	40.08 (7.77)	40.70 (6.55)
Age Range	18 - 50	30 - 50

Table 2
Participant Distribution by Familiarity and Condition

	Music	Noise	Total
Familiar	18 (41%)	12 (27%)	30 (68%)
Unfamiliar	6 (14%)	8 (18%)	14 (32%)
Total	24 (55%)	20 (45%)	44 (100%)

Effect of Condition and Familiarity on Positive Affect

Each participant took the PANAS questionnaire, trimmed down to only measure positive affect. Scores ranged from 10 to 50. Among all the participants, the overall mean was 23.8 and the standard deviation was 10.8. The means and standard deviations for each condition are displayed in the table below.

Table 3
Descriptives Statistics for Each Condition - Positive Mood

Condition	Familiarity Binary	N	M	SD	SE	CV
Music	Familiar	18	30.33	9.267	2.184	0.306
	Unfamiliar	6	29.83	6.014	2.455	0.202
Noise	Familiar	12	16.00	8.213	2.371	0.513
	Unfamiliar	8	16.25	8.120	2.871	0.500

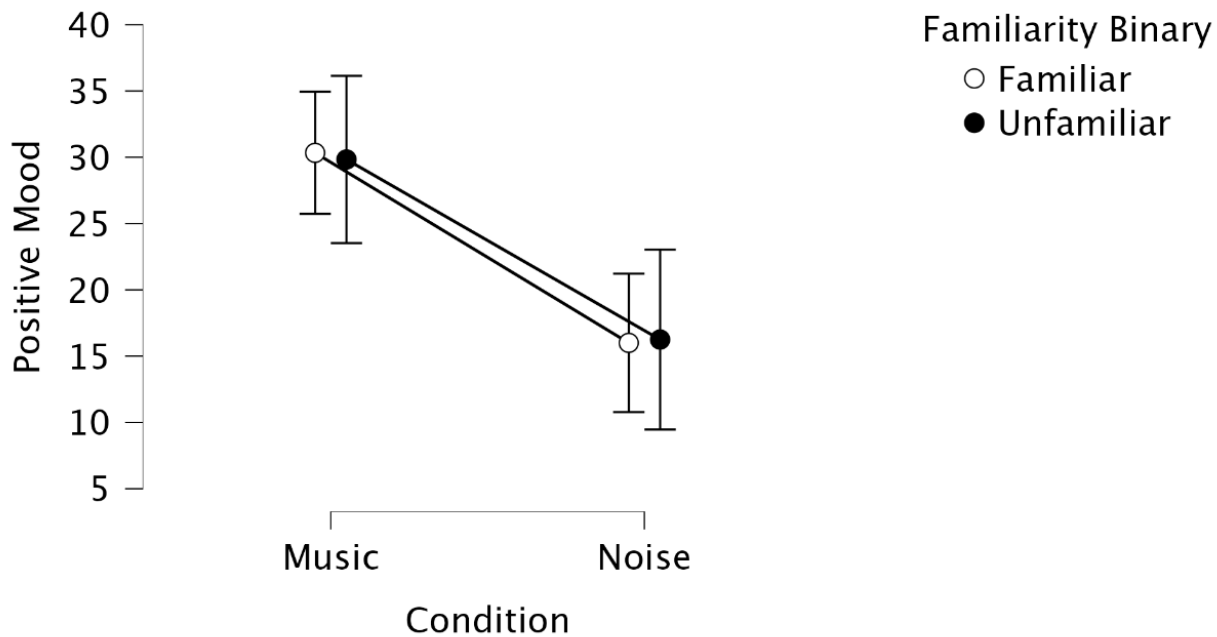
We conducted a two way analysis of variance on the positive mood scores to assess the main effects of each factor as well as the interaction effect. There were two levels of condition (white noise, Indian classical music) and two levels of familiarity (familiar, unfamiliar).

The main effect of condition was statistically significant ($F(1, 40) = 25.455, p < .001$), indicating that the mean positive mood score was significantly greater following Indian classical music ($M = 30.21, SD = 8.45$) than for white noise ($M = 16.10, SD = 7.96$). The main effect of familiarity was not statistically significant ($F(1, 40) = 0.002, p > 0.05$), indicating that the mean change score was not significantly different in the familiar group ($M = 24.60, SD = 11.27$) than in the unfamiliar group ($M = 22.07, SD = 9.90$). The interaction of condition and familiarity was non-significant ($F(1, 40) = 0.018, p > 0.05$).

Table 4
ANOVA - Positive Mood

Cases	Sum of Squares	df	Mean Square	F	p
Familiarity Binary	0.145	1	0.145	0.002	0.964
Condition	1810.081	1	1810.081	25.455	<0.001
Familiarity Binary Condition	1.306	1	1.306	0.018	0.893
Residuals	2844.333	40	71.108		

Figure 1
Positive mood scores by Condition and Familiarity



Note: Error bars indicate the 95% confidence interval.

Discussion

In this study, we conducted a two-way analysis of variance to test the hypotheses that Indian classical music has a positive effect on mood, familiarity with Indian classical music has a positive effect on mood, and familiarity with Indian classical music increases the positive effect of condition on mood. We found that listening to Indian Classical Music significantly improved mood, and that familiarity did not increase mood or enhance the effect of the condition on mood.

Regarding conditions, we found that listening to Indian Classical Music significantly enhanced mood compared to white noise, supporting our hypothesis that exposure to Indian classical music improves positive affect scores. This is in line with previous studies. For example, listening to Indian classical music helps reduce anxiety, stress, and depression among adults (Pareek & Shekhawat, 2022) and improves physiological markers of stress (Chatterjee & Mukherjee, 2020).

These findings are important because they indicate that Indian classical music can be used in music therapy by anyone, regardless of their familiarity with the music. This adds to music selection beyond typical Western music choices, which is useful for patients who have not responded to other treatments. This research builds on previous research suggesting that Indian classical music has a positive effect on mood. For example, listening to Indian classical music can help reduce anxiety, stress, and depression among adults (Pareek & Shekhawat, 2022), and listening to Raag Bhairavi can have a calming effect on listeners (Jain & Maheshwari, 2019).

Regarding familiarity, we discovered no significant main effect of familiarity, which means that familiarity with Indian classical music did not influence positive mood scores regardless of condition. This does not support our hypothesis that familiarity with Indian classical music increases positive mood scores. This does not align with previous studies, which have found that familiarity with cultural music, such as Yoik music, can enhance positive mood in therapeutic settings (Hämäläinen et al., 2021). This null finding can be explained in three ways: 1) First, it is possible familiarity does not have a positive effect on mood in Indian Classical Music, 2) This result can be explained by the Hawthorne Effect, which is when individuals modify their behavior because they feel they are being watched (Landsberger, 1958), and 3) uneven group sizes between the familiar ($n = 30$) and unfamiliar ($n = 14$) participants may have reduced statistical power, making it difficult to detect a true effect of familiarity if it existed. 1) Regarding the Hawthorne effect, participants who are unfamiliar with Indian classical music may have purposefully boosted their positive mood scores when exposed to Indian classical music because they perceive they are being watched, leading them to inflate their positive mood scores to appear culturally receptive. As a result, there would not be a significant difference between the familiar and unfamiliar groups. 2) Another way this result can be explained is due to demand characteristics, which is altered behavior when participants in an experiment receive cues that reveal the experiment's purpose. As a result, participants unfamiliar with Indian classical music may have inflated their positive mood scores to fit the study's purpose, therefore bridging the gap between the scores of the familiar and unfamiliar groups. 3) Uneven group sizes between the familiar ($n=30$) and unfamiliar ($n=14$) groups may have reduced statistical power, meaning the study may not have had enough sensitivity to detect a true difference in mood between the two groups if it existed.

Regarding the interaction effect, we found that the difference in positive mood scores between the Indian classical music and white noise condition was not affected by participants' familiarity with the music. This does not support our hypothesis that familiarity with Indian classical music affects the effect of condition on mood. This is not consistent with previous literature, which demonstrated familiarity enhances positive therapeutic outcomes in the case of Yoik music (Hämäläinen et al., 2021). This null effect can be explained in two ways. 1) It is possible that familiarity with Indian classical music does not affect the condition of mood. 2) The Hawthorne Effect or demand characteristics may have impacted the participant's responses,



resulting in a null effect. 3) Uneven group sizes between the familiar ($n = 30$) and unfamiliar ($n = 14$) groups may have reduced statistical power, meaning the study may not have had enough sensitivity to detect a true difference in mood between the two groups if it existed.

Limitations

There are several limitations to this study that must be considered when interpreting these results. First, our sample suffered from sampling error. The group sizes for familiarity were uneven (30 familiar participants, 14 unfamiliar participants). This may have reduced our statistical power to detect differences between the groups. Secondly, this study had a small sample size. There were only 44 participants, or approximately 8 participants per group. Having more participants would have increased the study's accuracy. The small sample size might mean we did not find an effect that truly exists. The findings of this study are not generalizable beyond our specific subsample. Our sample only represents the United States; therefore, the results are not generalizable globally. Additionally, our sample was limited in terms of age (30-50). These findings may not apply to adolescents, young adults, or older adults. Last, our stimulus selection was not comprehensive. Because this study tests how Raag Bhairavi affects mood, these findings are not generalizable for all raags. Similarly, the white noise control may not have been an ideal comparison. Some participants may have been calmed or irritated by the white noise clip, affecting their positive mood scores.

Conclusion

In this study, we found that listening to Indian classical music increased positive mood scores, familiarity with Indian classical music did not influence positive mood scores, and familiarity did not influence the effect of condition on positive mood scores by conducting a two-way ANOVA on positive mood scores. These findings are important because they indicate that Indian classical music can be used in music therapy by anyone, regardless of their familiarity with the music, adding to typical Western music selections. In the future, studies must be conducted with a larger and more representative sample to ensure the results are generalizable to the overall population. Additionally, more research must be conducted to assess the interaction effect and the familiarity condition to ensure results are not influenced by the Hawthorne Effect or demand characteristics.

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