

## The Effects of Maqām-Based Oud Therapy on Emotional and Physiological Responses in Malaysian Listeners

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### Abstract

This study explores the therapeutic potential of maqām-based music listening within the framework of Receptive Music Therapy (RMT). While maqām has historically been associated with spiritual healing and emotional regulation, its scientific validation remains limited. Using pre-recorded oud improvisations (taqsim) by Munir Bashir, this study examines how different maqām evoke psychological and physiological responses among listeners. A total of 20 participants completed pre- and post-listening assessments, measuring mood, stress levels, and emotional effects of Maqām Nahawand, Maqām Rast, and Maqām Bayati. Findings indicate a statistically significant reduction in stress levels ( $p < 0.05$ ) and an overall improvement in mood post-listening. Maqām Rast was most associated with stability and clarity, Nahawand evoked deep introspection and melancholy, while Bayati was linked to spiritual warmth, nostalgia, and relaxation. These results suggest that maqām-based music can serve as an effective tool for emotional regulation and stress reduction, particularly within non-Western music therapy models. By integrating ethnomusicological insights with empirical research, this study contributes to the global recognition of maqām-based music in therapeutic settings, offering new perspectives on culturally adaptive sound healing practices.

Keywords: emotional response, Gambus, Maqām, music therapy, Oud Music

### Introduction

Music has long been recognized for its therapeutic effects on emotional and physiological well-being. Numerous neuroscientific studies have demonstrated that specific musical elements can modulate brainwave activity, regulate mood, and induce relaxation, providing a basis for the clinical application of music therapy (Koelsch, 2014; Thaut, 2005; Bradt et al., 2013). However, the majority of research in music therapy has centered around Western classical music, often neglecting non-Western modal systems and their potential therapeutic benefits (Bunt & Stige, 2014). This Eurocentric focus has led to an underrepresentation of musical traditions such as maqām, an intricate modal system deeply embedded in Middle Eastern, Turkish, and Malay musical cultures (Touma, 1996). Despite its historical associations with psychological and spiritual healing, there remains a paucity of empirical research exploring the therapeutic effects of maqām in contemporary clinical and wellness settings.

The maqām system is a sophisticated framework of melodic organization that extends beyond mere scale structures, incorporating distinct melodic contours, microtonal nuances, and improvisational rules that evoke specific emotional states (Powers, 1980; Shiloah, 1997). Traditional musicological and ethnomusicological scholarship has long suggested that different maqām evoke distinct affective responses, a notion rooted in pre-modern Islamic thought. Al-Farabi (872–950 CE), in his seminal *Kitab al-Musiqa al-Kabir* (The Great Book of Music), posited that maqām influence cognitive and emotional states, emphasizing their role in mental and physical well-being (Farmer, 1930; Wright, 1978). Avicenna (980–1037 CE), in his *Kitab al-Shifa* (The Book of Healing), further elaborated on the psychosomatic effects of maqām, proposing that

specific modes could be used to treat melancholia and other psychological disorders (Shiloah, 1997; Rahaim, 2012). These perspectives align with contemporary affective neuroscience, which suggests that musical scales and tonal structures can elicit measurable changes in autonomic nervous system activity, emotional regulation, and cognitive processing (Koelsch et al., 2016; Patel, 2010).

Beyond its theoretical underpinnings, maqām has played a vital role in religious, ritualistic, and therapeutic contexts across various cultures. In the Islamic world, maqām-based recitations of the Quran, Sufi chants (dhikr), and religious hymns (qasida and madih) have historically been linked to spiritual transcendence and meditative states (Nasr, 1987; Nettle, 2005). Similarly, in Ottoman Turkey, the application of maqām in medical institutions, particularly within 15th–17th century hospitals (darüşşifas), was documented as a form of complementary therapy for mental illnesses, predating the formalization of music therapy in the West (Güvenç, 1993; Behrens, 2020). These accounts suggest a long-standing cross-cultural recognition of maqām’s psychological and physiological impact, yet its systematic scientific investigation remains limited.

In the Malay world, maqām has been adapted into the gambus tradition, a musical form that evolved through centuries of Arab-Malay cultural exchange (Matusky & Tan, 2017; Kartomi, 1981). The gambus is the regional name for the oud, a fretless instrument that originated in the Middle East and later spread across various cultures, has been central to various traditional Malay musical genres, including zikir (Sufi chanting), ghazal ensembles, and hadrah drumming performances (Tan, 2020). These performances, often embedded within religious and healing rituals, reflect indigenous understandings of maqām as a medium for inducing altered states of consciousness, emotional catharsis, and spiritual purification (Saidon et al., 2018; Yampolsky, 2010). However, while anecdotal and historical sources attest to the therapeutic function of maqām-based music in Malay cultural contexts, contemporary scientific validation of these claims remains scarce.

Recent developments in music therapy and affective neuroscience provide compelling opportunities to re-examine the therapeutic potential of maqām. Research on entrainment theory suggests that slow, repetitive musical structures can synchronize with physiological rhythms, thereby influencing heart rate variability, respiration, and emotional arousal (Thaut, 2005; Large, 2010). Maqām, with its distinctive use of microtonality and modal inflections, may offer a unique avenue for exploring these phenomena in greater depth. Furthermore, studies on music-induced analgesia and stress reduction indicate that cultural familiarity plays a crucial role in music’s effectiveness as a therapeutic tool (Koelsch et al., 2016; Chanda & Levitin, 2013). Given that maqām is deeply embedded in the cultural soundscape of Middle Eastern and Malay societies, it is plausible that its use in receptive music therapy (RMT) could yield meaningful psychological and physiological outcomes for listeners with cultural affinity to this tradition.

Despite these theoretical and historical considerations, the empirical investigation of maqām’s therapeutic effects remains in its infancy. This study aims to bridge this gap by systematically examining listener responses to maqām-based music, assessing its potential role in relaxation, stress reduction, and emotional regulation. By integrating perspectives from ethnomusicology, music cognition, and neuroscience, this research seeks to contribute to a broader understanding of how non-Western modal traditions can inform contemporary music therapy practices.

## Music Therapy & Sound Healing

Music therapy and sound healing have been extensively studied for their ability to modulate physiological and psychological processes, with research demonstrating measurable effects on the autonomic nervous system, neurochemical responses, and emotional regulation (Bradt & Dileo, 2010; Chanda & Levitin, 2013; Koelsch, 2014). The therapeutic applications of music extend beyond mere aesthetic appreciation, influencing heart rate variability, cortisol secretion, and cognitive function through entrainment mechanisms and neuroplasticity (Thaut, 2005; Koelsch et al., 2016). Neuroscientific studies indicate that different musical structures—including timbre, rhythm, and tonality—have distinct impacts on emotional and physiological states (Blood & Zatorre, 2001; Juslin & Västfjäll, 2008).

A growing body of research suggests that non-Western modal and microtonal music systems may influence listeners in ways that differ from Western equal-tempered music. Western music, largely structured around the 12-tone equal temperament system, imposes standardized pitch intervals that contrast with the microtonal inflections and melodic contours found in *maqām*, *rāga*, and other non-Western modal traditions

(Altenmüller & Schlaug, 2015; Patel, 2010). These modal systems rely on microtonal tuning and variable pitch intonation, which may engage auditory perception and neural processing differently than Western harmonic structures (Gill & Purves, 2009; Krumhansl, 2004). Research on the affective impact of microtonal music suggests that the subtle frequency deviations in modal scales enhance emotional depth and may evoke heightened states of introspection and altered consciousness (Fritz et al., 2009; Levy, 1982).

One of the key mechanisms through which *maqām*-based music may exert therapeutic effects is its relationship with low-frequency sound vibrations and resonance. Studies in psychoacoustics indicate that low-frequency sound waves and harmonic overtones play a crucial role in inducing deep relaxation and meditative states by stimulating the parasympathetic nervous system (Bodner et al., 2007; Labbé et al., 2007). Low-frequency oscillations, often present in *maqām*-based compositions, have been linked to entrainment effects, wherein auditory rhythms synchronize with brainwave activity, promoting alpha and theta wave dominance associated with relaxation and meditation (Tervaniemi et al., 2000; Gaser & Schlaug, 2003). This aligns with findings in vibroacoustic therapy, which demonstrate that subsonic and infrasonic frequencies, similar to those found in traditional modal music, can regulate physiological stress markers such as heart rate, blood pressure, and cortisol levels (Bartel et al., 2017).

Furthermore, *maqām*'s distinctive melodic and modal progressions contribute to an embodied listening experience that extends beyond passive auditory perception. Traditional theories of *maqām*, as posited by historical figures such as Al-Farabi and Avicenna, suggest that different *maqām* elicit specific emotional and cognitive responses based on their intervallic structure and tonal emphasis (Shiloah, 1997; Farmer, 1930). Contemporary studies in music cognition and affective neuroscience corroborate this notion, demonstrating that culturally conditioned tonal patterns can prime listeners for specific affective states and influence memory retrieval, spatial cognition, and emotional processing (Koelsch, 2014; Patel, 2010). These findings suggest that *maqām*, as a microtonal and highly ornamented system, may engage the brain's limbic and paralimbic regions differently from conventional Western tonal structures, thereby offering unique therapeutic benefits (Menon & Levitin, 2005; Koelsch et al., 2006).

While Western music therapy frameworks have largely focused on tonal consonance and harmonic progressions, *maqām*-based music therapy offers an alternative paradigm centered on modal improvisation, melismatic phrasing, and microtonal expression. This is particularly relevant in religious and meditative contexts where *maqām* has been historically utilized to induce spiritual transcendence, enhance contemplative states, and facilitate emotional catharsis (Nettl, 2005; Nasr, 1987). The application of *maqām* in traditional healing practices, such as Ottoman-era music therapy in medical institutions (*darüşşifas*) and Malay gambus performances in *zikir* (*Sufi* chanting) rituals, highlights its longstanding role in therapeutic and spiritual settings (Güvenç, 1993; Tan, 2020).

Despite its historical and theoretical foundations, the empirical investigation of *maqām*'s therapeutic effects remains limited. Future research should employ neuroimaging techniques such as fMRI and EEG to examine how *maqām*-specific pitch structures influence neural activity and emotional regulation. Additionally, controlled studies assessing the physiological and psychological impact of *maqām*-based interventions in clinical populations could provide valuable insights into its potential applications in modern music therapy. By integrating ethnomusicological perspectives with contemporary neuroscience, this research can contribute to a more holistic understanding of the therapeutic power of *maqām* and its role in global music therapy practices.

### **The Maqām System & Its Psychological Effects**

The *maqām* system, a modal framework in Middle Eastern, Turkish, and Malay music, is built on microtonal intervals, quarter tones, and specific melodic progressions, all of which are believed to evoke profound emotional and psychological responses (Touma, 1996; Powers, 1980). Unlike the Western equal-tempered scale, which divides an octave into twelve semitones, the *maqām* system employs microtonal inflections and non-fixed tuning, allowing for more nuanced expressive possibilities that engage the auditory cortex in unique ways (Marcus, 2007; Shannon, 2015). These microtonal variations are integral to shaping the listener's perception and emotional experience, as they introduce subtle pitch fluctuations that can enhance musical tension and resolution (Poché, 1995).

Cognitive and affective neuroscientists suggest that modal and microtonal music systems may activate different neural pathways compared to Western diatonic structures, particularly due to their non-standard tuning and ornamentation techniques (Menon & Levitin, 2005; Koelsch, 2014). In Middle Eastern and Malay traditions, *maqām* is widely regarded not only as a musical construct but also as a therapeutic tool capable of influencing mood, consciousness, and physiological states (Shiloah, 1997; Racy, 2003). The associations between *maqām* and specific psychological effects are deeply embedded in traditional music theories, with different *maqām* modes believed to induce distinct emotional and cognitive responses.

Several key *maqāmat* and their affective qualities include:

1. *Maqām Bayati* – Often associated with spiritual warmth, comfort, and nostalgia, this mode is widely used in religious recitations and folk traditions (Poché, 1995; Maalouf, 2002). Studies in music perception suggest that melodies incorporating gentle descending intervals and microtonal inflections, as found in *Bayati*, can evoke feelings of soothing familiarity and introspection (Shannon, 2015).
2. *Maqām Nahawand* – Structurally resembling the Western minor scale, *Nahawand* is linked to deep emotion, sadness, and introspection (Shiloah, 1997; Touma, 1996). Studies in music cognition suggest that minor-key melodies tend to be perceived as melancholic due to their lower harmonic tension and slower frequency oscillations (Huron, 2008). The emotional impact of *Nahawand* may also be attributed to its melodic resolution patterns, which often conclude on subdominant or ambiguous tonal centers, prolonging a sense of longing or emotional depth (Racy, 2003).
3. *Maqām Rast* – Often described as evoking stability, clarity, and spiritual elevation, *Rast* serves as the foundation of many classical Middle Eastern compositions (Marcus, 2007; Shannon, 2015). *Rast*'s characteristic perfect fourth and neutral third intervals create a sense of equilibrium and serenity, which may contribute to its psychological association with strength and balance (Touma, 1996).

### Maqām and Altered States of Consciousness

In traditional Islamic and *Sufi* music practices, these *maqām* have been historically used to induce altered states of consciousness during prayer, meditation, and healing rituals (Racy, 2003; During, 1988). In *Sufi* music, particularly in practices such as *dhikr* (remembrance ceremonies) and *samā'* (spiritual listening gatherings), *maqām*-based melodies are employed to facilitate trance-like states, promoting spiritual transcendence and emotional catharsis (Rouget, 1985; Nettle, 2005). Ethnomusicological studies suggest that *maqām*-induced trance states are often accompanied by physiological changes, such as alterations in breathing rate, heart rate, and neural oscillations (Güvenç, 1993; Becker, 2004).

Neurophysiological research indicates that modal music with sustained microtonal intervals and repetitive phrasing—characteristics frequently found in *maqām*-based music—can entrain alpha and theta brainwave activity, which are associated with meditative and relaxed states of consciousness (Tervaniemi et al., 2000; Bodner et al., 2007). These brainwave states are linked to enhanced emotional processing and introspection, suggesting that *maqām*-based music may modulate limbic system activity, particularly in regions such as the amygdala, hippocampus, and prefrontal cortex (Menon & Levitin, 2005; Koelsch et al., 2016).

Furthermore, cultural conditioning and musical expectation may play a significant role in shaping listeners' emotional responses to *maqām*. Research in cross-cultural music cognition suggests that individuals who are socialized within *maqām*-based musical traditions develop affective associations with specific tonal structures, reinforcing their perceived emotional and psychological impact (Balkwill & Thompson, 1999; Patel, 2010).

### Limitations and Future Directions

Despite these theoretical and historical foundations, empirical studies on how *maqām* specifically influences brain activity and emotional states remain limited. Existing research on music-evoked emotions has primarily focused on Western tonal systems, with comparatively little work exploring how microtonal and modal music

systems affect cognitive and neural processing (Koelsch, 2014; Juslin & Sloboda, 2010). Future studies should employ neuroimaging techniques such as fMRI, EEG, and PET scans to investigate how *maqām*-based music modulates brain connectivity, emotional valence, and physiological responses. Additionally, controlled experimental studies comparing *maqām*-based music interventions with conventional music therapy approaches could provide valuable insights into its potential clinical applications.

By integrating ethnomusicological perspectives with contemporary neuroscience, future research could further elucidate the mechanisms underlying *maqām*'s psychological effects, bridging the gap between traditional music therapy practices and modern scientific inquiry.

### **The Oud in Malay Healing & Cultural Practices**

The introduction of the *oud* (gambus) to the Malay world was part of a broader cultural diffusion process facilitated by Indian Ocean trade networks and the spread of Islam. Historical records indicate that Hadhrami and Persian merchants played a significant role in introducing Middle Eastern musical traditions to the Malay Archipelago (Reid, 1988; Matusky & Tan, 2004). Over time, the gambus became a central instrument in *zapin*, *ghazal*, and *hadrah* performances, particularly in *Sufi* devotional practices, where its modal structures aligned with *maqām* traditions (Tan, 2017).

Malay oral traditions suggest that specific *maqām* performances were believed to ease psychological distress, induce relaxation, and aid in spiritual healing (Saidon et al., 2018). The repetitive melodic structures and microtonal characteristics of *maqām* music were often used in *zikir* (*Sufi* chanting), healing rituals, and meditative practices. However, much of this knowledge remains anecdotal and has yet to be validated through empirical research.

Despite extensive studies on Western classical music therapy, research on *maqām*-based music therapy remains scarce. Neuroscientific findings indicate that modal music systems such as *maqām* activate brain regions linked to emotional regulation and relaxation (Janata et al., 2002a, 2002b), suggesting potential therapeutic applications. Yet, the scientific validation of *maqām*'s effects on mental health and well-being is still in its early stages (Koelsch, 2020). This study seeks to bridge the gap between historical tradition and modern scientific inquiry by empirically testing the therapeutic effects of *maqām*-based gambus/*oud* music. By doing so, it aims to expand the scope of culturally inclusive music therapy practices and deepen our understanding of how non-Western modal traditions influence cognitive and emotional states.

### **Methodology**

This study employs a mixed-methods approach, integrating quantitative self-report surveys and qualitative open-ended responses to examine the psychological and emotional effects of *maqām*-based music listening. The primary objective is to assess how *maqām* music influences stress levels, emotional states, and subjective well-being. A pre-post listening assessment was used, where participants reported their emotional and physiological states before and after listening to *maqām*-based music improvisations on the oud. Participants were recruited through random sampling, including both the general public and musicians. The study aimed for a sample size of 20 participants, ensuring a balance of individuals with varied exposure to *maqām* music. The selection of a heterogeneous sample allows for a broader understanding of *maqāmat* effects across different listener backgrounds. For this study, pre-recorded oud *taqsim* (improvisations) by Munir Bashir were selected as the musical stimuli. Munir Bashir (1930–1997) was a highly influential Iraqi oud master known for his pioneering work in *maqām*-based improvisation, particularly in expressing the microtonal and modal characteristics essential to *maqām* performance.

## Discussion

### Participant Demographics and Distribution

The study included a diverse group of participants in terms of age, musical background, and familiarity with *maqām*-based music. These factors influence individual responses to *maqām*, shaping the degree of mood enhancement, stress reduction, and emotional connection experienced.

### Musicians vs. non-musicians

The participant pool included both musicians and non-musicians, allowing a comparative analysis of their responses. Musicians, who already understood *maqām*'s tonal structures, started with higher pre-listening mood scores (Mean = 8.3). Their post-listening scores remained stable (8.6,  $p = 0.722$ , not significant). In contrast, non-musicians started with a lower pre-listening mood (Mean = 5.0) but showed a significant improvement post-listening (Mean = 8.5,  $p = 0.0013$ ). This suggests that *maqām* therapy may have a stronger emotional effect on listeners without formal musical training.

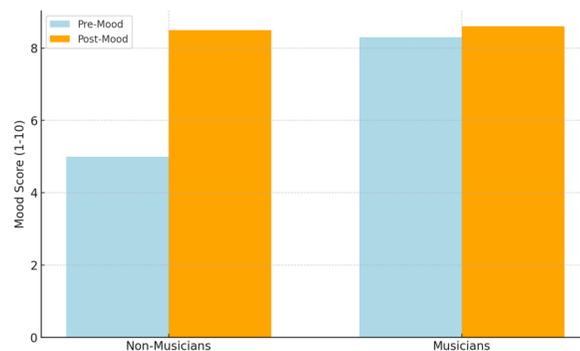


Figure 1. Comparison of Pre/Post Mood Scores: Musicians vs. Non-Musicians

(Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

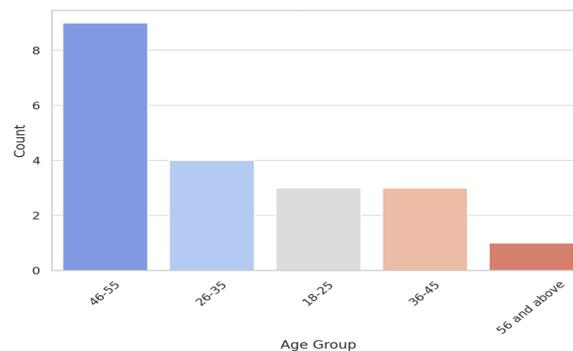


Figure 2. Age Group Distribution

(Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

Participants unfamiliar with *maqām* had significantly lower pre-listening mood scores (4.14) but showed a large and statistically significant improvement (8.43,  $p = 0.003$ ). Familiar listeners started with high baseline scores (8.00) and experienced minimal change post-listening. *Maqām* therapy may be most impactful for individuals unfamiliar with the tradition, possibly due to novelty effects.

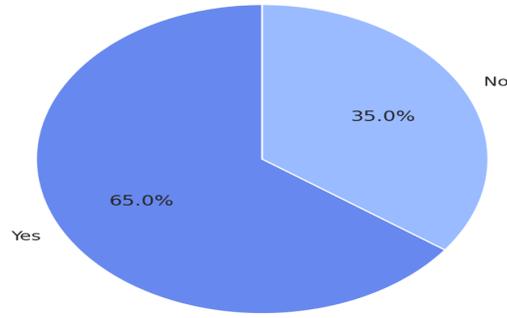


Figure 3. Prior Exposure to Maqām Music  
 (Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

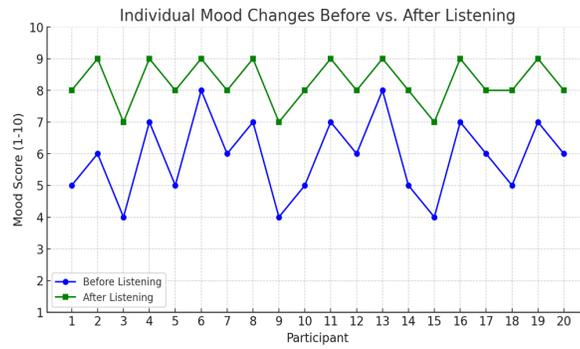


Figure 4. Individual Mood Changes Before vs. After Listening  
 (Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

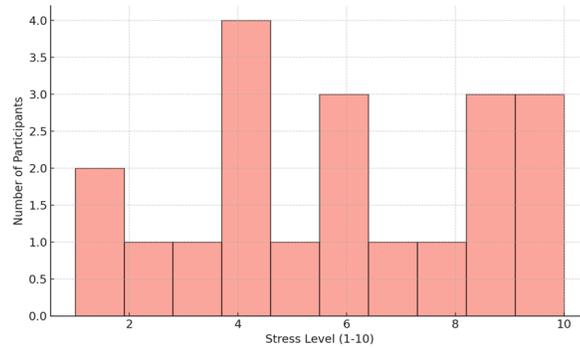


Figure 5. Pre-Listening Stress Distribution (Mean = 5.90, SD = 3.01)  
 (Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

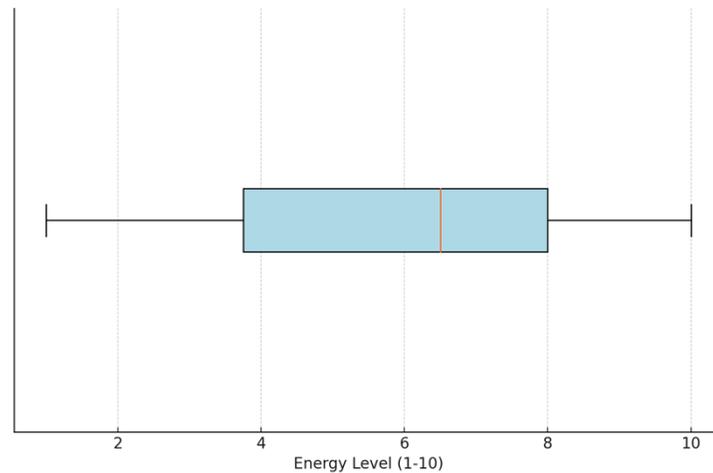


Figure 6. Pre-Listening Energy Levels (Mean = 5.9, SD = 2.90)  
(Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

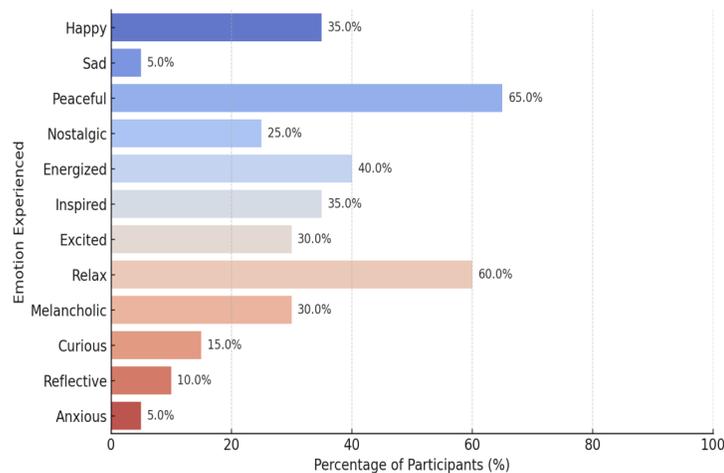


Figure 7. Overall Emotion Distribution (Percentage-Based)  
(Source: *Maqām-Based Music Listening Survey 2025*, conducted as part of the RMT Pilot Study by Dr. Raja Zulkarnain Raja Yusof)

The RMT pilot study provides strong empirical support for *maqām*-based *oud* music's ability to enhance mood, reduce stress, and evoke distinct emotional states. The statistically significant improvement in mood post-listening reinforces *maqām*'s therapeutic potential, particularly for non-musicians and listeners unfamiliar with *maqām*.

Further research should examine:

1. Physiological measurements (heart rate, EEG) to assess *maqām*'s impact on stress response.
2. Longitudinal studies to explore its effects on anxiety, mindfulness, and emotional resilience.
3. Comparative analysis with other modal music traditions (*raga*, Gregorian chant) to contextualize *maqām*'s therapeutic applications globally.

These findings bridge traditional Malay-Arabic healing practices with modern music therapy research, opening new possibilities for *maqām*-based interventions in mental health and wellness programs.

## Conclusion

In conclusion, this study demonstrates that maqām-based music holds significant therapeutic and emotional potential, offering a compelling bridge between traditional Malay–Arabic healing practices and contemporary music therapy, ethnomusicology, and psychoacoustic research. Through empirical evidence of mood enhancement, culturally informed subgroup differences, and alignment with historical emotional descriptions of maqāmāt, the findings affirm the relevance of non-Western musical systems within modern scientific discourse. While limitations related to sample diversity and physiological measurement invite further investigation, the study establishes a strong foundation for future interdisciplinary research and clinical application. By positioning maqāmāt as both a cultural heritage and a viable therapeutic resource, this research contributes to a more inclusive, culturally responsive, and globally informed understanding of music’s role in emotional regulation and well-being.

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