

IMPACT OF CLASSICAL AND INDIAN MUSIC GENRES ON EYEWITNESS MEMORY PERFORMANCE: A META-REVIEW

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ABSTRACT

This meta-review explores the impact of classical and Indian music genres on eyewitness memory performance, analyzing evidence from a range of studies that examine how different musical exposures influence recall accuracy and memory retention in eyewitnesses. The review synthesizes findings across cognitive and psychological research, focusing on whether specific music genres serve as cognitive enhancers or distractors in the context of memory encoding and retrieval processes. Results reveal that both classical and Indian music can influence memory performance, though the nature and extent of this impact vary significantly depending on factors such as tempo, familiarity, emotional tone, and individual differences in listeners. While classical music, often characterized by its structured rhythms and harmonies, generally supports enhanced memory recall, Indian music—with its complex rhythms and emotional depth—presents mixed effects, sometimes improving recall while at other times causing cognitive distraction. The implications of these findings suggest that musical background may play a crucial role in shaping eyewitness memory accuracy, an insight that could inform future legal practices and psychological research. Full results and an in-depth analysis will be discussed in the complete paper.

Keywords: Eyewitness Memory, Classical Music, Indian Music, Recall Accuracy, Memory Retention, Cognitive Enhancers, Memory Encoding, Retrieval Processes, Tempo, Familiarity, Emotional Tone, Cognitive Performance, Forensic Psychology

INTRODUCTION

The relationship between music and memory has been a subject of extensive research in the fields of cognitive psychology and neuroscience. Existing literature indicates that the unique characteristics of different musical genres, such as their rhythmic structures, harmonic complexities, and emotional associations, can significantly influence various aspects of human memory, including verbal, visual, and episodic recall. However, the specific impact of classical and Indian music genres on eyewitness memory performance remains a relatively understudied area.

The profound connection between music and memory is an underexplored frontier that beckons both scientific inquiry and practical application—especially when it comes to the critical realm of eyewitness testimony. As we navigate an era where the reliability of memory has monumental implications for justice and truth, it is essential to scrutinize the influences that music can exert on our recollections. Indian classical music, with its intricate ragas, and Western classical music, celebrated for its structured beauty, offer a compelling dichotomy that warrants thorough investigation.

India's musical tradition is remarkably diverse, encompassing a wide range of genres that vary in form, function, and cultural significance. Broadly, Indian music can be categorized into two classical systems and several non-classical genres, each offering distinct auditory experiences that may differentially influence cognitive and memory-related outcomes.

Hindustani Classical Music: Originating in North India, this genre emphasizes improvisation and the emotive potential of rāgas—melodic frameworks associated with specific moods and times of day. It is highly ornamented and rhythmically complex, often performed with instruments like the sitar, tabla, and sarangi.

Carnatic Classical Music: Rooted in South Indian traditions, Carnatic music is more composition-based, with a strong emphasis on vocal performance and lyrical content. Its structure is rigorous, integrating *kriti*

compositions and intricate rhythmic cycles (*talas*), typically supported by instruments like the veena, mridangam, and violin.

Folk Music: These regionally rooted forms reflect the social and cultural fabric of rural India. Genres such as Bhangra (Punjab), Baul (Bengal), and Lavani (Maharashtra) are characterized by simplicity, repetition, and danceable rhythms, often used in communal or ritual contexts.

Devotional Music (Bhajans, Kirtans, Qawwalis): These genres are spiritual in nature, designed to induce meditative or transcendent states. Bhajans and Kirtans are associated with Hindu traditions, while Qawwalis are linked to Sufi Islamic practices.

Bollywood/Filmi Music: India's most commercially popular genre, it is eclectic and incorporates elements from classical, folk, jazz, electronic, and Western pop. Its pervasive cultural reach makes it a salient auditory stimulus in memory and emotion studies.

Semi-Classical and Light Classical Forms: Genres like Thumri, Dadra, and Ghazal occupy a hybrid space between classical and popular music, often retaining rāga structures but emphasizing lyrical expressiveness and romantic themes.

This musical plurality offers a unique framework to investigate how genre-specific auditory features—such as rhythmic complexity, melodic contour, emotional tonality, and cultural familiarity—impact cognitive processes like attention, encoding, and recall in eyewitness memory tasks. The present meta-review examines these influences systematically, comparing the cognitive impact of Indian classical versus other Indian music genres on eyewitness performance.

Background & Importance of Study

Music has long been studied for its effects on cognitive function, attention, and memory performance. In forensic psychology, researchers have explored whether music exposure before, during, or after witnessing an event affects eyewitness memory. Classical and Indian music, with their unique rhythmic structures, may have differential effects on memory consolidation and retrieval. Studies suggest that:

- Western Classical Music (Mozart Effect) enhances cognitive performance and memory retention (Rauscher et al., 1993).
- Indian Classical Music (Ragas) influences emotional and neural processing, potentially aiding memory encoding (Bhatara et al., 2014).

Given the role of memory in forensic investigations, understanding how different musical genres impact eyewitness recall is crucial. Incorrect or distorted memory recall can have significant legal implications, making it imperative to explore whether music serves as a cognitive enhancer or a source of interference.

Difference between Classical Music & Other Genres of Music

CLASSICAL_—Typically known for complexity, structure, use of orchestral ensembles. Genre of music-wide range – time periods /styles /forms.

- Rich history –medieval to renaissance music to modern era.
- Categories – opera / organ music /symphony/ sonata
- Composers- Wolfgang Amadeus Mozart / Franz Joseph /Haydn / Ludurg Van Beethoven

Indian Music Genres-

Hindustani Music Genres:

- Abhang
- Bhajan
- Thumri
- Tappa
- Ghazal
- Kajri

Western Music for Memory Enhancement:

- Mozart's Symphony No. 40 in G Minor
- Beethoven's Moonlight Sonata

Indian Classical Music: Ragas and Their Impact on Memory

Basics of Ragas and Types of Ragas

Indian classical music consists of different ragas, which are melodic frameworks with specific scales, notes, and emotive influences. Ragas are categorized based on their time of performance and emotional impact, influencing cognitive functions, including memory.

Notable Ragas and Their Effects

Raag Bhoopali

- Description: Raag Bhoopali is a pentatonic raga (uses five notes) and is known for its uplifting and soothing qualities.
- Uses & Effects: Enhances concentration, reduces stress, and promotes clarity of thought, making it beneficial for memory retention and recall.
 - Bollywood Songs Based on RaagBhoopali:
 - Lata Mangeshkar's song "Ek PyarKaNagmaHai" from the film Shor, (1972)
 - Lata Mangeshkar's song ' Ae Malik Tere Bande Hum' from the film ' Do Aankhen Barah Haath' (1957)

Raag Yaman

- Description: Associated with tranquility and introspection.
- Effects on Memory: Aids relaxation, enhances cognitive focus, and fosters deep concentration.

Raag DarbariKanada

- Description: Known for its deep, meditative quality, often linked to stress reduction.
- Effects on Eyewitness Memory: Helps in reducing anxiety and may improve accurate recall of witnessed events.

Raag Bhairav

- Description: Traditionally performed in the early morning, associated with a sense of reverence and mindfulness.

- Effects: Encourages deep focus and can improve episodic memory recall.

OBJECTIVES & RESEARCH QUESTIONS

This meta-review aims to synthesize and analyze the available evidence on how exposure to classical and Indian music can affect the accuracy and retention of eyewitness memories. The findings from this review could hold important implications for forensic psychology, legal practices, and our understanding of the complex interplay between music, cognition, and memory. Aims to address the following objectives and research questions:

- To analyze existing research on the relationship between different music genres and eyewitness memory.
- To examine whether Indian classical music (Hindustani & Carnatic) improves or distorts memory performance.
- To investigate whether the tempo, tonal structure, or emotional influence of music affects episodic and eyewitness memory recall.
- To identify potential gaps in the literature concerning the forensic applications of music-induced memory effects.

REVIEW OF LITERATURE

The existing literature on the impact of music on memory performance suggests that different music genres can have varying effects, both positive and negative, on cognitive processes involved in memory encoding, storage, and retrieval.

Indeed, a substantial body of research has found that exposure to classical music, which is often characterized by its structured rhythms, harmonic complexities, and emotional depth, can enhance various aspects of memory performance. (Roden et al., 2012) For example, several studies have demonstrated that listening to specific classical compositions, such as excerpts from Vivaldi's "Four Seasons," can improve adult working memory and short-term memory. (Velasco & Hirumi, 2020) This enhancement is often attributed to the cognitive stimulation and mood-regulating effects of classical music, which may facilitate the encoding and retrieval of information. (Musliu et al., 2017) Furthermore, research on the "Mozart Effect" has suggested that exposure to certain classical compositions can temporarily boost cognitive abilities, including memory performance. (Musliu et al., 2017)

In contrast, the impact of Indian music on memory performance appears to be more complex and varied. Some studies have found that exposure to Indian music can positively influence mood, emotion, and even cognitive abilities, potentially supporting memory processes, while other research has indicated that the complex rhythmic structures and emotional intensity of Indian music can serve as distractors, negatively impacting memory encoding and retrieval.

Indian classical music is a treasure trove of emotional and cognitive potential. Ragas are not merely tunes; they represent a complex interplay of notes designed to evoke specific feelings and states of mind. Research suggests that these ragas can enhance emotional processing, leading to improved memory encoding—the very bedrock upon which reliable eyewitness accounts are built. Imagine a witness, enveloped in the soothing, yet stimulating sound of a raga, finding their memories clearer, more vivid, and less susceptible to distortion. This possibility is not just a theoretical consideration—it has profound implications for how we approach eyewitness testimony in legal settings.

In contrast, the well-documented "Mozart Effect" serves as a testament to the capabilities of Western classical music in enhancing cognitive performance and memory retention. Listening to compositions from masters like Mozart has been shown to improve spatial-temporal reasoning, a cognitive skill crucial for extracting and conveying details accurately. In high-stakes situations—such as courtroom environments—this cognitive enhancement could mean the difference between justice served and a wrongful conviction based on faulty memory recall.

Music and Memory: Theoretical Perspectives

The relationship between music and memory is explained through various theoretical frameworks:

Arousal-Mood Hypothesis

This hypothesis suggests that music affects memory based on its ability to alter emotional states. Relaxing music improves memory retention by reducing cognitive load, while highly arousing or discordant music may interfere with recall accuracy (Thompson et al., 2001).

Neuroplasticity & Music Therapy

Neuroscientific studies indicate that music influences brain plasticity, particularly in the hippocampus, which is crucial for memory encoding and retrieval. Research in music therapy suggests that exposure to structured musical compositions enhances synaptic connectivity, thereby aiding memory retention (Sarkamo et al., 2008).

Meta-Analysis of Eyewitness Memory & Music

Empirical studies have examined how background music influences eyewitness memory:

Studies with Positive Effects

Research indicates that participants recalled more details after listening to relaxing background music, suggesting that certain musical elements facilitate deeper encoding of information.

Studies on classical and instrumental music show enhanced episodic memory recall, with slower tempos contributing to better memory consolidation.

Studies with Negative Effects

Some genres, particularly those with fast-paced rhythms or lyrics, resulted in fragmented recall and increased susceptibility to misinformation.

Distracting musical elements, such as sudden tempo shifts, may interfere with attentional processes, leading to memory distortions.

Research Gaps

Despite growing interest in the cognitive effects of music, several research gaps remain:

- Few studies explore the impact of Indian ragas on forensic memory accuracy.
- Limited understanding of how tonal structures influence episodic memory.
- Lack of forensic-based experimental studies examining music's role in eyewitness testimony reliability.

METHODOLOGY

To conduct this meta-review, a comprehensive search was performed across multiple electronic databases, including PubMed, PsycINFO, and Google Scholar, using keywords such as "eyewitness memory," "classical music," "Indian music," "recall accuracy," "memory retention," and "cognitive performance."

The search yielded a total of approx. 37 relevant studies, which were then carefully reviewed and synthesized to address the research question.

Only those studies that directly examined the impact of classical or Indian music on eyewitness memory performance were included in the analysis, ensuring a focused and relevant scope for the meta-review.

RESULTS

The synthesis of the literature reveals a complex and multifaceted relationship between music genres and eyewitness memory performance.

Regarding classical music, the reviewed studies consistently demonstrate a positive impact on various aspects of memory, including recall accuracy and retention. Exposure to classical compositions, particularly those characterized by structured rhythms and harmonic complexities, appears to facilitate the encoding and retrieval of visual and verbal information, potentially through the cognitive stimulation and mood-enhancing effects of this genre.

In contrast, the impact of Indian music on eyewitness memory performance is more subtle. Some studies have found that exposure to Indian music can positively influence mood and emotion, which may support memory processes, while others have reported that the complex rhythmic structures and emotional intensity of Indian music can serve as distractors, negatively impacting memory encoding and retrieval (Musliu, Berisha, & Latifi, 2017; Musliu, Berisha, Musaj, et al., 2017).

DISCUSSION

The findings of this meta-review suggest that the impact of music on eyewitness memory performance is highly dependent on the specific characteristics of the musical genre. Classical music, which is often defined by its structured rhythms, harmonic complexities, and emotional depth, appears to enhance various aspects of memory, such as recall accuracy and retention, potentially through its cognitive stimulating and mood-regulating effects.

The impact of Indian music on eyewitness memory, however, is more nuanced. While some studies have found positive effects, potentially due to the emotional and mood-enhancing properties of this genre, other research has indicated that the complex rhythmic structures and emotional intensity of Indian music can act as distractors, impairing memory encoding and retrieval processes.

We found that in Indian music genres RAGAS such as Raga Darbari and Raga Yaman, which are marked by their intricate rhythmic patterns and profound emotional resonance, can sometimes lead to enhanced recall, particularly for visually salient details. However, other Indian music genres, such as fast-paced Bollywood-style compositions, may have a detrimental effect on eyewitness memory due to their cognitive demands and potential for distraction.

CONCLUSION

This meta-review has revealed the contrasting impacts of classical and Indian music on eyewitness memory performance, with the former demonstrating a more consistently positive influence on recall accuracy and retention. The implications of these findings extend beyond the realm of cognitive psychology, as they hold significant relevance for the fields of forensic psychology and legal practices, where the reliability and accuracy of eyewitness testimony play a crucial role.

Future research should continue to explore the complex interplay between specific musical characteristics, cognitive processes, and memory performance, with a particular focus on the differential effects of various music genres.

REFERENCES

- Agarwal, P., Karnick, H., Indian Institute of Technology, Kanpur, India, Carnegie Mellon University, USA, & Raj, B. (2013). A Comparative Study Of Indian And Western Music Forms. In *International Society for Music Information Retrieval*.
- Babel, S., Baral, S., & Srivastava, A. (2023). Impact of listening to Indian classical music, or Rāgas, on the Electroencephalogram: A Meta-Analysis. *Cureus*. <https://doi.org/10.7759/cureus.49592>
- Balch, W. R., Bowman, K., & Mohler, L. A. (1992). Music-dependent memory in immediate and delayed word recall. *Memory & Cognition*, 20(1), 21–28. <https://pubmed.ncbi.nlm.nih.gov/1735194/>
- Calvert, S. L., & Tart, M. (1993). Song versus verbal forms for very-long-term, long-term, and short-term verbatim recall. *Journal of Applied Developmental Psychology*, 14(2), 245–260.
- Classical music: Differences between Indian classical and western*. (n.d.). Secret Mumbai. Retrieved February 18, 2025, from <https://secretmumbai.com/western-and-indian-classical-music/>
- Jäncke, L. (2008). Music, memory and emotion [Review of Music, memory and emotion]. *Journal of Biology*, 7(6), 21. BioMed Central. <https://doi.org/10.1186/jbiol82>
- Kumari, N. (2021b). Music Genre Classification for Indian music Genres. *International Journal for Research in Applied Science and Engineering Technology*, 9(8), 1756–1762. <https://doi.org/10.22214/ijraset.2021.37669>
- Musliu, A., Berisha, B., & Latifi, D. (2017). The Impact of Music in Memory. In *European Journal of Social Sciences Education and Research* (Vol. 10, Issue 2, p. 222). <https://doi.org/10.26417/ejser.v10i2.p222-227>
- Musliu, A., Berisha, B., & Latifi, D. (2017b). The impact of music in memory. *European Journal of Social Sciences Education and Research*, 10(2), 222. <https://doi.org/10.26417/ejser.v10i2.p222-227>
- Nagarajan, K., Srinivasan, T., & Ramarao, N. (2015). Immediate effect of listening to Indian raga on attention and concentration in healthy college students: A comparative study. *Journal of Health Research and Reviews*, 2(3), 103. <https://doi.org/10.4103/2394-2010.168367>
- Parmar, P. R. (2022). Predicting Accuracy in Eyewitness Testimonies with Memory Retrieval Effort and Confidence. *International Journal of Indian Psychology*, 10(4), 913-916. DIP:18.01.088.20221004, DOI:10.25215/1004.088
- Roden, I., Kreutz, G., & Bongard, S. (2012). Effects of a School-Based Instrumental Music Program on Verbal and Visual Memory in Primary School Children: A Longitudinal Study. In *Frontiers in Psychology* (Vol. 3). Frontiers Media. <https://doi.org/10.3389/fpsyg.2012.00572>
- Roy Choudhury N. & Dharani N. (2021). Music: Impact on Memorisation and Anxiety Among Children. *International Journal of Indian Psychology*, 9(4), 29-34. DIP:18.01.004.20210904, DOI:10.25215/0904.004
- Sangeet Galaxy Journal. (n.d.). *Current Issue and Archive*. <https://sangeetgalaxy.co.in/current-journal/>
- Sangeet Galaxy. (2021). *Reshaping the Brain through Music: Instrumental Learning, Neuroplasticity, and Academic Achievement*. <https://sangeetgalaxy.co.in/paper/reshaping-the-brain-through-music-instrumental-learning-neuroplasticity-and-academic-achievement/>
- Sangeet Galaxy. (2022). *Cover Page Index-4*. <https://sangeetgalaxy.co.in/paper/cover-page-index-4/>
- Suman, O., Pramod, A., Alaka, N.M.S., Sanjana, S.B. & Mallikarjun (2023). Perception of Law Enforcement Officials and Legal Experts towards Eyewitness Competency. *International Journal of Indian Psychology*, 11(3), 3648-3653. DIP:18.01.342.20231103, DOI:10.25215/1103.342
- Team, A. (2024, July 23). Indian Classical Music vs Western Music: A Comparative guide. *AAFT*. <https://aaft.com/blog/music/indian-classical-music-vs-western-music-a-comparative-guide/>
- Thompson, L. A., & McKinley, A. (2005). Effects of music on memory: A meta-analytic review. *Journal of Music Therapy*, 42(2), 93–113.
- Thompson, W. F., Schellenberg, E. G., & Husain, G. (2001). Arousal, mood, and the Mozart effect. *Psychological Science*, 12(3), 248–251. <https://pubmed.ncbi.nlm.nih.gov/11340926/>
- Vassena, E., Kochman, K., Latomme, J., & Verguts, T. (2016). Unimodal and cross-modal prediction is enhanced in musicians. *Scientific Reports*, 6, 25225. <https://doi.org/10.1038/srep25225>
- Velasco, E. de la M., & Hirumi, A. (2020). The effects of background music on learning: a systematic review of literature to guide future research and practice [Review of the effects of background music on learning: a systematic review of literature to guide future research and practice]. *Educational Technology Research and Development*, 68(6), 2817. Springer Science+Business Media. <https://doi.org/10.1007/s11423-020-09783-4>
- Venkat, N. (2015). *Forms and styles of Hindustani vocal music*.