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The Semantics of Musical Associations: Evidence from Experiment

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The imagination of characters and situations while listening to melodies represents a fundamental aspect of interacting with music. The semantics of such imagery – defined here as the conceptual and emotional associations evoked by musical stimuli – have been studied experimentally, revealing the following:

a) Music appears to convey semantic information; for instance, Koelsch et al. (2004) demonstrated that both musical and linguistic primes facilitate the processing of target words.

b) Listeners within the same cultural context tend to perceive music in a similar way: while listening, they imagine analogous narratives (Margulis et al. 2022) and can match others' imagery to musical excerpts (McAuley et al. 2021).

c) Listeners systematically derive meaning from music, and the resulting imagery suggests connections between linguistic processing and music perception (Hashim et al. 2023).

The primary objective of our study is to analyze the associations that arise in listeners during the perception of instrumental music, with particular focus on their convergence patterns. Additionally, we examine how tonal characteristics (major/minor) and subjective familiarity contribute to the process of meaning-making in music, exploring potential relationships between these factors and the nature and content of listeners' associations.

Data were collected from 100 participants (aged 18–72, M = 45.48, SD = 13.34) recruited via social networks and musical events in Minsk, Belarus. The sample encompassed diverse ages, educational backgrounds, professional occupations, and musical experience.

Participants listened to seven instrumental pieces and evaluated each for familiarity, recording their associations and emotions during designated pauses. The musical stimuli included both recognized and obscure compositions in major and minor tonalities, as well as two unpublished works.

A total of 700 associations and 700 emotion descriptions were analyzed, focusing on frequent lexical items and relationships between linguistic expressions and musical tonalities.

Key findings:

1. Listeners demonstrated significant convergence in their responses to individual instrumental melodies, with common associations comprising 25.6% to 46.1% of responses within pieces, while cross-melody convergence remained minimal (1-2%). This pattern suggests that while participants' overall associative responses were diverse, they exhibited substantial agreement in their conceptual interpretations of specific musical stimuli.

2. Subjective familiarity showed an association with certain types of imagery. Familiar melodies more frequently elicited dance-related associations than unfamiliar ones ($\chi^2 = 13.72$, $df = 1$, $p < 0.001$).

3. Major compositions were associated with dynamic imagery, while minor pieces showed no specific preference for dynamic/static imagery type ($\chi^2 = 19.37$, $df = 1$, $p < 0.001$). Visualization indicated that major melodies generated more uniform perceptions, whereas minor melodies evoked more diverse associations.

This study provides evidence that music can generate consistent conceptual associations among listeners from the same cultural background, though underlying mechanisms require further investigation. The findings also suggest that both tonality and subjective familiarity (to a lesser extent) may influence the content of associations, highlighting the interplay between music, emotions, and linguistic processing.

References

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