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INFLUENCE OF DIFFERENT MUSIC GENRES ON HEART RATE AND CARDIOVASCULAR RESPONSE

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Relevance. Heart rate and physiological arousal can be affected by changes on tempo, rhythm and emotional intensity. Knowing how various musical genres impact heart rate helps identify possible therapeutic uses of music in clinical and stress-reduction contexts. Although daily music exposure is ubiquitous, the genre-specific physiological effects remain incompletely characterized. This study examines the connection between heart rate response and music genre while taking age and gender into account particularly in non-Western and student populations.

Aim: to evaluate the effect of different types of music on heart rate and to assess the demographic factors on cardiovascular responses.

Materials and methods. Fifty subjects (25 males, 25 females) from various age groups participated. First the participants provided their information such as age, weight, height and BMI. Baseline pulse rate was then recorded. Subsequently, participants were exposed to five music genres: Disco pop, ambient, rap, classical, and pop. And lastly, they were allowed to play their favorite song. Exposure to each genre was limited to 2.5 minutes (Parizek et al., 2023) with the volume at 50% to avoid discomfort. Pulse rate was measured using a pulse oximeter. Statistical analysis was performed using Microsoft Excel and Statistica 10.

Results and their discussion. The mean baseline heart rate was 80.4 bpm. Mean increases in heart rate were highest during pop (+6.4 bpm) and disco-pop (+5.8 bpm), followed by rap (+5.1 bpm) and classical music (+5.0 bpm). Ambient music produced minimal change (+0.7 bpm), with some male participants showing a slight decrease (−3.3 bpm). Gender-stratified analysis demonstrated higher mean ΔHR in females compared to males in most genres (e.g., disco-pop: +7.1 bpm vs. +3.1 bpm; rap: +6.6 bpm vs. +1.1 bpm). These findings suggest a tendency toward greater physiological responsiveness in females under stimulating auditory conditions, although such differences are not universally established in the literature (Nater et al., 2006). A weak negative correlation was observed between age and ΔHR (Spearman's $r = -0.22$, $p > 0.05$), indicating a non-significant trend toward reduced cardiovascular responsiveness with increasing age. Overall, genres characterized by higher tempo and rhythmic intensity were associated with greater increases in heart rate, suggesting increased autonomic arousal (Wu and Chang, 2021). Pop and disco-pop, two stimulating genres, generally resulted in the largest mean increases in heart rate, indicating increased sympathetic activation, which also causes a slight increase in respiratory rate (Watanabe et al., 2015). Ambient music showed a somewhat parasympathetic-dominant or stabilizing impact change with little variation from baseline.

Conclusions. The significance of music genre in influencing heart rate magnitude in relation to baseline values is confirmed by statistical analysis. While ambient music produces minimal change on cardiovascular activity, high-tempo and rhythmically demanding genres cause larger mean increases. Age-related patterns and gender disparities imply that autonomic response is influenced by demographic variables. These results provide credence to the theory that music-induced cardiovascular alterations are quantifiable, genre-specific, and influenced by personal traits.