World Academy of Science, Engineering and Technology
International Journal of Cognitive and Language Sciences
Vol:18, No:11, 2024

On the Influence of Music, Short-Term Memory, and Neurodivergence on Reading Comprehension

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Abstract : Many people listen to music while studying or working, and research shows that music has many potential benefits for productivity and learning. Two studies were conducted to investigate the influence of different genres of background music on reading comprehension. The first study focused on the effects of instrumental music on reading comprehension. In this study, participants were randomly grouped into one of six genre groups: Jazz, Pop, Rock, Western classical, Indian classical, and no music (control). Participants then completed a reading comprehension task with background music of their assigned genre. Each participant had one reading comprehension score. The second study focused on the effects of vocal music on reading comprehension. Participants were randomly assigned to one of six genre groups: Rap, Rock, Jazz, Indian Classical, Western Classical, and Pop. In this study, each participant had two reading scores: one for a reading task with background music and one for a reading task without background music (control). Pop music and Rock music were hypothesized to improve reading comprehension compared to silence, while Rap, Western Classical, Indian Classical, and Jazz music were expected to impair reading comprehension. In both studies, background music, regardless of genre, had no significant effects on participants' reading comprehension. No differences in reading comprehension scores were found between the vocal and instrumental music groups. The participants' data were grouped by neurodivergent status. There were significant differences in reading scores without background music between the neurodivergent and neurotypical groups. When background music was added, these differences in reading scores disappeared. Participant data was then grouped to study the influence of age on the effects of background music on reading comprehension. There were no significant differences in reading comprehension scores between age groups. Participant data was also grouped by years of musical experience. There were no significant differences in reading comprehension scores between these groups. Participants in both studies also completed a digit span forward task without any background music to assess short-term memory capacity. The ratio between short-term memory scores and reading scores was calculated to evaluate whether short-term memory was linked to reading comprehension. The ratio scores were grouped by genre, and distributions for each group were calculated. The distributions indicate that short-term memory is weakly linked to reading comprehension performance. Further large-scale research is required to validate these results.

Keywords : background music, musical genre, neurodivergence, reading comprehension, short-term memory
Conference Title : ICMPC 2024 : International Conference on Music Perception and Cognition
Conference Location : San Francisco, United States
Conference Dates : November 04-05, 2024