Effects of music and speech distractors on sensorimotor synchronization. What is the role of musical expertise?

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The ability to coordinate movements with rhythmic auditory stimuli (e.g., in dance) is universal. Auditory stimuli may vary with regard to their tendency to attract movement. In a previous study we asked nonmusicians to tap their index finger in synchrony with an isochronous auditory sequence (i.e., metronome) while music or speech distractors were presented. Musical distractors attracted taps more than speech distractors. In the present study we examined whether similar findings can be replicated in musicians and nonmusicians with a different task in which participants synchronized with a metronome by varying fingers' pressure force. Twenty-eight nonmusicians and fourteen professional musicians produced short-duration force pulses with their index finger on a force transducer along with an isochronous auditory Target sequence (i.e., tones with 600 ms IOI) while a Distractor was presented, namely music or speech. Musical distractors were 3 excerpts from highly familiar musical pieces (e.g., Bee Gees' Stayin' Alive). Speech distractors were 3 well-known excerpts from Polish children poetry (IOI = 600 ms). The distractors were presented at one of various phase relationships with respect to the target. Preliminary results indicate that synchronization accuracy, as revealed by the asynchrony between the time of occurrence of force pulses and the Target stimuli, was more disrupted by music distractors than by speech distractors. Interference due to speech distractors was more visible in nonmusicians than in musicians. These findings suggest that musical expertise may shape our ability to ignore specific categories of external auditory stimuli (e.g., speech).