You got rhythm, or not: Testing individual differences in rhythmic skills

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Rhythmic skills are widespread in humans. The majority, musicians and nonmusicians alike, can perceive the underlying pulse when listening to music, and synchronize to the beat by finger tapping or body swaying. Yet, there are some important inter-individual differences in these abilities. Some individuals encounter major difficulties in moving to the beat (poor synchronizers). Poor synchronization can be found in the general population (beat deafness), as a result of a neurodevelopmental disorder (e.g., ADHD, developmental stuttering), or of a neurodegenerative disease in the elderly (e.g., Parkinson's disease). Research from my lab shows how individual differences in rhythm perception and synchronization can be captured with our Battery for The Assessment of Auditory Sensorimotor and Timing Abilities (BAASTA). The battery includes a variety of perceptual and sensorimotor tests, thereby allowing a systematic assessment of rhythmic skills. Moreover, I will present preliminary data showing that analyzing data from BAASTA with machine learning techniques is a promising strategy for characterizing individual rhythmic profiles in the general population, and potentially in patients with rhythm disorders.

BIOGRAPHY

Simone Dalla Bella studied cognitive psychology at the University of Padua (Italy), completed a Ph.D. in cognitive neuropsychology at the University of Montreal (Canada), and received a Habilitation degree from the University of Warsaw (Poland). He also obtained a Master degree in piano performance from the Conservatory of music of Mantua (Italy). He is currently full Professor in the Department of Psychology at the University of Montreal (Canada), and from June 2018 Co-director of the International Laboratory for Brain, Music and Sound Research (BRAMS, Montreal). His research interests concern the cognitive and neuronal mechanisms underpinning music perception and performance. His research has focused on musical skills, such as pitch and rhythm perception/production, in the general population as well as in individuals with musical deficits (tone deafness and beat deafness). Current research is centered around 1) the evaluation and profiling of rhythmic abilities in healthy individuals and patient populations (e.g., patients with Parkinson's disease, ADHD), and 2) the use of rhythmic stimulation and training to improve motor skills (e.g., gait and speech in patients with Parkinson's disease). He uses behavioral methods, motion capture, EEG, and exploits new mobile technologies for testing and training purposes.