

Five-year-old children's beat perception and beat synchronization abilities

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Western adults without formal training have implicit knowledge of their culture's music (Hannon & Trainor, 2007). Although simple metres are much more common than complex meters in Western music (London, 1995), young infants appear equally sensitive to both (Hannon & Trehub, 2005). Evidence of enculturation is present by 12 months, and adults perceive and reproduce rhythms with simple metrical structures more accurately than those with complex metrical structures (Hannon & Trehub, 2005; Snyder et al., 2006). We examined five-year-old children's perceptual sensitivity to musical beat alignment (adapting Iversen & Patel, 2008, adult task), the degree to which children synchronized their tapping to the beat of music with simple or complex metres (adapting Iversen & Patel, 2008, adult task), and whether beat production abilities correlate with perceptual sensitivity.

Children were presented with pairs of videos of puppets drumming to music with simple or complex metre. One puppet's drumming was synchronized with the beat of the music and the other had either incorrect tempo (10% faster or slower) or incorrect phase (25% early or late). Children were asked to select the better drummer. Children then tapped on an electronic drum at a self-paced speed, with a metronome, and with musical excerpts. Five-year-olds were better able to detect beat misalignments in simple than in complex metre music for both tempo errors ($p = .003$) and phase errors ($p = .05$). Analysis of tapping synchronization is ongoing. In general, children's ability to tap in synchrony depended more on the saliency of the beat than on metric structure.

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