

Solo and duet: How the brain plays music

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Everywhere in the world people enjoy listening to and making music together. Over the past 30 years, research on the neurocognition of music has gained a lot of insights into how the brain perceives music. Yet, our knowledge about the neural mechanisms of music production remains sparse. How does a musical idea turn into action? And how do musicians coordinate sounds and actions when they perform in groups? The present line of research isolated distinct genre-dependent levels of action planning in solo pianists and identified dynamically balanced mechanisms of interaction in duetting pianists using 3T fMRI and (dual) EEG. The data converge on three main findings: (A) distinct neural networks for abstract harmonic and concrete motor planning converge in left lateral prefrontal cortex that acts as a hub for solo music production, (B) internal models of other-produced musical actions in cortico-cerebellar audio-motor networks coordinate self and other during joint music performance, and (C) interbrain synchrony during joint music making is not merely an epiphenomenon of shared sensorimotor information but is modulated by the alignment of cognitive processes. Altogether, it will become clear that solo and joint music performance relies on general principles of human cognition, tuned to achieve the musical perfection required on stage.