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Validating child-friendly neuroimaging language localizer in adults

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Abstract

Toddlers undergo massive changes in their language abilities, but are almost never studied with awake functional magnetic resonance imaging. For future use in toddlers, we developed two child-friendly, engaging, well-controlled tasks that robustly activate the language network. The first task presents 20-second edited audiovisual clips from Sesame Street: a single puppet addressing the viewer or two puppets speaking to each other, while the auditory speech is played forwards or backwards. The second task presents 1-3 minutes of continuous dialogue, in which the speech of only one character is played in reverse. Twenty adults heard our two novel tasks, along with a validated auditory language localizer (Scott et al, Cognitive Neuroscience, 2017). The same cortical regions were active in our tasks (Forward>Backward speech) as in the localizer (Intact>Degraded). These results validate our new tasks, which we hope will enable cognitive neuroscience studies of language in challenging but important populations, like toddlers.