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Neural Networks Supporting Audiovisual Integration for Speech: A Large-Scale Lesion Study

Gregory Hickok^{1*}, Corianne Rogalsky^{2*}, William Matchin³, Alexandra Basilakos⁴, Julia Cai², Sara Pillay⁵, Michelle Ferrill⁶, Soren Mickelsen², Steven W. Anderson⁷, Tracy Love⁶, Jeffrey Binder⁵, Julius Fridriksson⁴

¹University of California, Irvine

²Arizona State University

³University of California, San Diego

⁴University of South Carolina

⁵Medical College of Wisconsin

⁶San Diego State University

⁷University of Iowa

*co-first authors

Significance Statement: The physical environment is perceived through different sensory channels that must be integrated into a single coherent percept. An everyday example of such integration is speech, where auditory and visual ("lip reading") cues are integrated to yield a substantially enhance percept. Using both matching and mismatching audiovisual speech cues (the later resulting in an illusory percept) we studied the neural basis of multisensory integration in 100 stroke patients--the first such study--thus revealing the brain networks responsible. We find surprisingly that not all multisensory tasks tap into the same brain circuits but identify a core network responsible for stitching together our sensory experience.

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