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Speaking a Language is Not Enough! Distinct Neurobiological Reading Networks Support Heritage Language and Bilingual-Biliterate Children's Reading

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Abstract

In the U.S., Heritage language learners (HLLs) are bilinguals who grew up in homes where a non-English language was spoken but received English instruction from school. We used resting-state functional connectivity analysis to examine the differences in the reading networks of HLL and matched bilingual children who are biliterate in both languages (bilingual-biliterates). Compared to bilingual-biliterates, HLLs built a wider and more distributed reading network. This more distributed network included connections to regions known to be involved in motor control, verbal memory, speech production, and language control. Moreover, even though no significant difference in English reading was found, HLLs continued to show differentiated intrinsic connectivity associated with English reading scores. For HLLs only, better English reading scores were related to stronger functional connectivity between reading and language control areas. This suggests that HLLs are more likely to recruit brain regions involved in language control to achieve advanced English word reading.