

Effects of frequency on brain activity during word reading in Spanish-English bilinguals

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Previous work in our laboratory has found that Spanish-English bilingual children transition from Spanish dominance in early childhood to English dominance by early adolescence. In addition, neuroimaging studies with bilinguals have shown that language proficiency is an important modulator of neural activity. The purpose of the present study was to use functional magnetic resonance imaging (fMRI) to examine how language proficiency modulates neural activity in a group of child and adult. Participants were shown words that were both low and high frequency in separate Spanish and English blocks. For adults the results revealed larger frequency effects in Spanish than in English. In Spanish, the less dominant language there was increased activity in the left and right thalamus and the left medial frontal gyrus for high frequency words. Low frequency words elicited increased activity in the right anterior cingulate gyrus and middle frontal gyrus. In English, high frequency words revealed increased activity in the left angular gyrus and the right occipital-temporal juncture at the midline. However, no areas revealed increased activity for low frequency words in English. Hence, adult bilinguals revealed