Experience Modifies Neural Basis of Language: Evidence from Early-Blind Children

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Abstract: Humans are hypothesized to have evolved brain regions that enable them to acquire language. Surprisingly, recent research with blind adults suggests that brain regions in the occipital lobe, which evolved for vision, can take on language functions. We examined when and why occipital areas develop language functions. We used fMRI to measure brain activity during story comprehension in nine blind and twenty sighted children (ages 4-17 years). In two control conditions, children listened to speech in foreign languages and short music clips. We found that occipital brain regions respond to story comprehension more than to foreign languages or music. A language-sensitive response was present in blind children as young as 4 years old, who have not yet learned Braille. We conclude that in the absence of visual input, occipital brain regions can take on language functions during childhood language acquisition.