Visual cortex activation in bilingual blind individuals during use of native and second language

By zroth
Created 7/4/2011
By zroth July 4, 2011


Abstract:

Recent neuroimaging and transcranial magnetic stimulation studies indicate that the occipital cortex of congenitally blind humans is functionally relevant for nonvisual tasks. There are suggestions that the underlying cortical reorganization is restricted by a critical period. These results were based on comparison between early and late blind groups, thereby facing the problem of great variability among individuals within each group. Using functional magnetic resonance imaging, we studied bilingual congenitally blind individuals during use of 2 languages: one acquired early ((Hebrew)), the other later in life ((English), at approximately 10 years). The subjects listened to chimeric words consisting of superimposed Hebrew and English nouns. They were instructed to either covertly generate a verb to the heard noun or repeat the noun, in either Hebrew or English. Lateralized activation during verb generation (vs. repeat) was found in classical language areas, in congruence with previous studies in sighted subjects. Critically, in our study, the blind participants typically also had robust left lateralized occipital differential activation during verb generation (vs. repeat), in both languages. This suggests that the critical period for plasticity persists beyond 10 years or that the visual cortex of the blind might be engaged in abstract levels of language processing, common to the 2 languages.

Journal:
Cerebral Cortex (New York, N.Y.: 1991)

Volume:
17

Pagination:
1249?1259

Date Published:
jun

Notes:
(PMID:) 16861335
UPCOMING EVENTS

Learn more about our exciting upcoming events!

read more

Studying at ELSC

Our Int'l Ph.D. program provides outstanding students with top-notch courses in computational neuroscience.

read more

The Building

The Jerusalem Brain Sciences Building will provide a state-of-the-art research and teaching facility for the Edmond and Lily Safra Center for Brain Sciences.

read more

ELSC Media Channel

Get into our media channel and investigate ELSC's latest videos: seminars, public lectures, courses and video articles.

read more

Source URL: http://elsc.huji.ac.il/zohary/publications/visual-cortex-activation-bilingual-blind-individuals-during-use-native-and-secon