

Why sign language is good for your brain

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Cochlear implants (CI) are a very successful intervention for restoring functional hearing loss in severely or profoundly deaf children. Despite this, educational performance (including literacy and exam success) in children with CI continues to lag behind their hearing peers. Animal models of deafness and human neuroimaging studies have been used to propose that the functions of auditory cortex are compromised by cross modal plasticity. This has been argued to result from the use of visual language – in the form of sign language, or speech reading accompanying the auditory speech signal. Emotive terms such as ‘invasion of auditory cortex’ suggest a pathological process related to visual language use. I will argue that ‘sensitive periods’ comprise both auditory and language sensitive periods, and thus cannot be fully described with animal models. Despite prevailing assumptions, there is no evidence to link the use of visual language to poorer CI outcome. Cross modal reorganization of auditory cortex is the result of deafness (auditory deprivation), occurring regardless of compensatory strategies, such as sign language use. In contrast, language deprivation during early sensitive periods has been consistently linked to poor language outcomes. Cross-modal plasticity can be reduced by early implantation. However, language sensitive periods have largely been ignored when considering variation in CI outcome, leading to ill-founded recommendations concerning visual language in CI habilitation.