

The influence of language modality on the neurobiological basis of language processing

Mairéad MacSweeney

University College London

m.macsweeney@ucl.ac.uk

Abstract

Most of our knowledge about the neurobiological bases of language comes from studies of spoken languages. By studying signed languages, we can determine whether what we have learnt so far is characteristic of language per se or whether it is specific to languages that are spoken and heard. Research with deaf people allows a unique perspective into the influence of sensory and language experience on the neural basis of language processing. Nevertheless, I will review lesion, fMRI and ERP studies that overwhelmingly indicate that the neural systems supporting signed and spoken language are very similar: both involve a predominantly left-lateralised perisylvian network.

However, the neural systems supporting sign and speech are not identical. I will review recent studies that have highlighted processing differences between languages in these different modalities. For example, these studies have highlighted an important role for the left parietal lobe in signed compared to spoken language processing.

I will also review research with late learners of a signed language. These studies offer a unique perspective into the influence of age of language acquisition on the neurobiology of language processing, which is different to that of a hearing late learner of a spoken language. This research informs the important issue of critical or sensitive periods for language processing.

It is also informative to consider what we can learn about spoken language processing from looking at processing of spoken language (lipreading) and derivations of spoken language (reading) in those born deaf. This research can be informative to studies with hearing people and can help establish, for example, the level of importance of auditory information in learning to read.