

ACOUSTICS2008/353

The neural bases of normalising for accented speech: a repetition suppression functional magnetic resonance imaging study

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A repetition suppression fMRI paradigm was employed to explore the neuroanatomical substrates of normalisation for accented speech in spoken sentence processing. Sentences were produced in two accents: in Standard Dutch and an artificial accent of Dutch. In the experiment, participants listened to two sentences presented in quick succession. The second sentence was either spoken by the same speaker in the same accent, by the same speaker in a different accent, by a different speaker in the same accent, or by a different speaker in a different accent. This design allowed us to study neural responses to a change in speaker only, a change in accent only and a change in accent and speaker. Results showed small effects for a change of speaker only in right Superior Temporal Gyrus (STG). A change of accent only showed extensive activations in left and right STG and Superior Temporal Sulcus (STS). Finally, a change of speaker and accent showed extensive activations in left and right STG and STS, and increased activity in left Inferior Frontal Gyrus (IFG). The results indicate that normalisation processes for accented speech recruit a wide neural network. The role of left IFG in normalisation processes will be discussed.