Visual word recognition in bilingual deaf children

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For many deaf children, visual word recognition and reading skills are dramatically delayed. We report on a visual word recognition study in bilingual deaf children across different ages. The study contains several experiments and a separate longitudinal set-up. In the experiments, we investigated whether phonological and sign processes occurred during visual word recognition at primary school age. In hearing people, the role of phonology during visual word recognition is extensive. However, contradictory results have been found for the use of phonology by deaf readers. We carried out several experiments, applying a Word-Picture Verification paradigm.

Stimuli in the phonology experiments included pseudo homophones. Results in these experiments not only revealed that the deaf children lacked automatic activation of phonology during visual word recognition when pseudo homophones had to be rejected (Experiment 1); the deaf children were also incapable of ignoring orthographic information and using phonological information when explicit instructions were provided to accept pseudo homophones (Experiment 2). The hearing control groups activated phonology in both experiments.

A second series of experiments focussed on the role of Sign Language during word recognition. Word-Picture pairs included pairs with overlapping sign phonology for the sign translation equivalents. We found that sign phonology (hand shape, movement, location, and orientation) becomes activated during visual word recognition by deaf children; more errors were made and response times were slower when sign phonology was overlapping. In addition, highly iconic signs were processed faster and more accurately than weakly iconic signs. Hearing control groups did not activate sign phonology or sign iconicity information. These findings might have large theoretical and practical implications for visual word recognition in deaf children. Presently, we are investigating to what extent the findings are consistent across different ages and proficiency levels, assessing bilingual deaf high school students.

Additionally, in a longitudinal set-up across a period of three years, we investigated which skills were most important to boost the initial development of visual word recognition and reading fluency in deaf children. In this part of the study, several abilities were assessed: visual word recognition, reading fluency, sign vocabulary and vocabulary of Dutch, sign phonological awareness, finger spelling, and rhyme awareness of Dutch. In addition, short term memory was measured in word and picture paradigms. We will give a first insight into beneficial patterns of skills towards accurate and fast visual word recognition skills and reading fluency. Vocabulary knowledge was found to be a strong predictor, as was finger spelling, for both visual word recognition and reading fluency. Interestingly, short term memory played a mediating role for rhyme awareness as additional predictor for both visual word recognition and reading fluency.

References: