Practical solutions for digitally administering and scoring of a children's speechreading test

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Paper and Poster Abstract

Use of visual information about speech is pronounced in situations in which auditory information is degraded because of, for example, background noise or reverberation. In speechreading (often also called lip reading), information about lip, jaw and tongue movements but also the visual cues of facial expressions are used to perceive the message of a speaker. People with hearing loss try to make use of speechreading for complementing the insufficient auditory information caused by their hearing problem, but interindividual differences are large and reliable assessment methods are needed.

Aims of the research project *Gaze on lips?* (https://www.oulu.fi/en/projects/gaze-lips) are twofold: to construct, standardize and validate the pre-recorded Speechreading Test for Finnish Children (SPETFIC; Huttunen & Saalasti, 2023) with automatized scoring and to find out the developmental trajectory of primary school-age children's speechreading skills. Data are currently being compiled from 8- to 11-year-old hearing children to have the age norms for the SPETFIC.

In the current presentation, we report the practical solutions of administering SPETFIC both in-person and remotely. Remotely collected samples are managed by REDCap tools hosted at the University of Oulu, Finland. REDCap (Research Electronic Data Capture; Harris et al. 2009; 2019) is a secure, web-based software platform designed to support data collection. We implemented remote testing by utilizing screen sharing of a Zoom meeting (Zoom, 2024) so that SPETFIC is run on a test administrator's computer. For testing the stability and speed of the Internet connection and the capabilities of screen sharing of Zoom video call, a specific frame drop estimation test was constructed. If there were issues causing excessive frame dropping, a one-time direct access link to the REDCap running SPETFIC was conveyed to the child via chat channel of the Zoom.

SPETFIC includes the automatic scoring of the results, shown both as total and section specific score on screen after finishing the test. Additionally, the item-by-item and summary results of the test can be downloaded as comma-separated (CSV) files. After the validation phase, speech and language therapists testing the children at clinics can choose to separately administer either the section A (easier words), the section B (more difficult words) or the sentence section. Having these sections enables tapping of a fairly wide skill spectrum and following up of skill improvement along the child's maturation and

intervention. Automatic scoring rules out scoring errors in both research and clinical use of the test.

Keywords: Finnish language, lipreading, online testing, speechreading, visual speech processing.

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