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Lip reading based speech perception through internet video calls

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Objective:

To analyze lip reading based speech perception through internet video calls by profoundly hearing impaired individuals and Cochlear-Implant-Users.

Methods:

Lip reading skills of 14 deaf adults and 10 Cochlear Implant-Users were assessed using the HSM sentence test. Videotapes were recorded with different speakers, webcams (Logitech Pro9000, C600 and C500), video resolutions (1280x720, 640x480, 320x240, 160x120px), frames per second (30, 20, 10, 7, 5 fps) and different image/sound delays (0-500ms). All prerecorded videos were presented with and without sound and in two different screen sizes. Additionally, scores for a live Skype video connection and live face-to-face communication were assessed.

Results:

Higher frame rate (>7fps), higher camera resolution (>640x480px) and shorter picture/sound delay (<300ms) were associated with increased speech perception scores. Additionally, scores were strongly depending on the speaker but not influenced by the physical properties of the camera optics or the full screen mode. Overall, CI-users with poor open speech perception scores (n=5) performed better (mean speech perception +23.6%, SD±19.5%) if additional visual cues were offered by video telephony.

Conclusion:

Video telephony has the potential to improve communication of hearing impaired individuals.

