Is Speech Recognition Software a Viable Future for Dysarthric Speakers? A Critical Review

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The idea of speech-recognition software, in its purest form opens the possibilities for individuals with dysarthria to bypass one of their biggest barriers, being difficulties with speech clarity. This critical review explored the relationship between speech to text software (STT), (specifically speaker-dependent and speaker-adaptive speech to text software), and its ability to accurately decipher the speech of individuals with dysarthria. Speech to text (STT) is defined as "software that lets the user control computer functions and dictates text by voice" (Das et al.,

<u>Selection Criteria:</u>

Studies were included into the critical review if they discussed and compared the effectiveness and accuracy of both speaker-dependent and speaker adaptive STT software in patients dysarthria Patients in each of the studies had to have been identified as having dysarthria as diagnosed or laid out by a health care professional (i.e., doctor, or speech-language pathologist).

<u>Data Collection:</u>

Results of the literature review yielded 6 articles: four were level 2a research evidence studies; all of which were within-group experimental studies. One single case-study control (level 2b evidence), and one literature review (level 4 evidence).

Results

Within-Subjects Design:

Raghavendra, Rosengren and Hunnicutt (2001) wanted to test the feasibility of speaker-adaptive and speaker-dependent STT software as an input method for speakers with varying levels of dysarthria. This study followed a within-group design and contained 4 participants with dysarthria and one normal speaker (to

severity levels after explicit instruction. This is directly contrary to the articles by Raghavendra et al. (2001) and Rudzicz (2007) who found speaker-adaptive software to be more effective with the "mild" and "moderate" severity levels and vice versa for the "severe" dysarthrics.

The validity of the article's results is quite "strong" with a very clear and well-defined methodology section, however there are some concerns with the reliability of the results. Firstly, there remains the common issue of a reduced sense of reliability in response to the reduced participant size. However, with that being said, it is nice to see the authors include

recognition software based on a client's speech consistency, but to rather allow them to trial the software themselves. This has been indicated to increase the user's comfortability and compliance with the software and speech-recognition software as prescribed supportive communication tool.

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