Abstract

Evaluating the Efficacy of a Self-administered Speech-Language App for People With Chronic, Nonfluent Aphasia: A Pilot Study

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Abstract

Background: Aphasia is a language deficit that is most often caused by stroke. Speech-language therapy is effective in helping people recover lost language, and it should lead to generalization to untrained tasks and gains in functional language. However, not everyone is able to receive therapy due to a lack of finances; a lack of insurance coverage; or, most recently, COVID-19.

Objective: This study has 3 aims. For aim 1, we investigated whether a person with moderate to severe aphasia could manage the setup of an app-based treatment independently. Our second aim was to evaluate whether conducting an intensive treatment *without* speech-language pathologist (SLP) involvement was feasible. Participants with aphasia were asked to use the app 2 hours per day for 10 days, and we were interested to see if they could maintain this regimen or if frustration or boredom would promote dropout. For the third aim, we determined whether participants with aphasia in our digital treatment would make the same kinds of language gains that they would if they were working with an SLP and whether treatment gains would generalize to other language modalities, indicating that neuroplastic changes occurred due to treatment.

Methods: Our pilot study used a single-subject design, with 3 participants experiencing nonfluent aphasia at least 1 year poststroke. Participants were trained to use a comprehension and production app, with instructions to use the app 2 hours per day for 10 days (total treatment time=20 hours). Multiple standardized assessments were taken at the following three time points: pretreatment, 1 week posttreatment, and 10 weeks posttreatment. A recording device was used to capture pretreatment and 10-week posttreatment at-home conversations between the participants with aphasia and the conversational partner.

Results: Data were variable among our 3 participants (P1, P2, and P3). P1 and P3 showed clinically significant improvements on several measurements of language; P2 did not. Aphasia severity also decreased in P1 and P3. The analysis of the discourse recorded in the home environments showed that P1 and P3 each made use of the app-trained words in spontaneous conversation (increase of >63%). All 3 participants with aphasia reported positive increases in quality of life, and all continued to use the app even after the treatment period ended.

Conclusions: Independently administered, intensive treatment had salubrious effects on 3 participants with aphasia. P2's lack of improvement on language measures was attributed to not feeling challenged enough by the app. In general, the participants in this study were able to guide themselves in an independent manner to complete an intensive study, without using any SLP support. Though this study was only piloted on 3 individuals, it lays the groundwork for future studies assessing the independence of participants with aphasia in managing their own treatment.

Conflicts of Interest: None declared.

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KEYWORDS

aphasia recovery; autonomy; technology; app-based treatment

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