

Emerging Technologies for Scanning

Articles at a Glance · Scanning

Susan Koch Fager, Melanie Fried-Oken, Tom Jakobs and David R. Beukelman (2019). New and emerging access technologies for adults with complex communication needs and severe motor impairments: State of the science. *Augmentative and Alternative Communication*, 35:1, 13-25, DOI: 10.1080/07434618.2018.1556730.

What question did the researchers try to answer?

What are the new and emerging access technologies for adults with acquired neurological conditions? (The authors state that some of these new technologies could also be appropriate for children with severe motor impairments.)

How did they do it?

The authors cited case studies and new research to highlight common access issues, and then offered solutions that use new technology. Solutions include the following:

- **Issue:** Some scanners require perfect switch placement. If the individual moves, they can lose access to the switch and the problem can be undetected by a caregiver.
Solution: Wearable switches and movement-sensing technologies may help.
- **Issue:** Some individuals cannot use any type of switch or an eye gaze system.
Solution: New improvements in brain-computer interface (BCI) technologies may help those individuals. Some BCIs measure the sensory-motor rhythm when users are shown letters and asked to imagine moving their limbs to make selections. No actual movement is necessary, but this method takes considerable focus and good cognition.
- **Issue:** An individual has difficulty using eye tracking accurately, but also fatigues quickly with switch scanning.
Solution: Combine both access methods. Recent research studies show good results when eye gaze is used for large areas and combined with scanning for smaller targets.

What were the results?

“The goal of the new and emerging access technologies described in this paper is to increase the ability to access technology, reduce fatigue, and improve satisfaction with communication” (Koch Fager, et al. 2019). Although the article did not state that these new technologies are the certain answer to all access issues, the researchers believe that these new findings are promising and need further study and implementation into AAC devices.

How can we apply this to Tobii Dynavox communication solutions?

Individuals with motor impairments have challenges that result from their access limitations. These issues could be due to:

- A lack of technical support or caregiver education.
- Inefficient access that causes fatigue.
- A lack of consistent access in all situations and positions throughout the day (for example, access while driving a wheelchair).
- A need for a more personalized access method due to severe motor and/or vision impairments.

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