Communication Assistance for Nonspeaking Individuals

An Annotated Bibliography

Project VOICE
Rensselaer Polytechnic Institute

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References

[1] L. Bryant *et al.*, "A review of virtual reality technologies in the field of communication disability: Implications for practice and research," *Disability and Rehabilitation: Assistive Technology*, vol. 15, no. 4, pp. 1–12, January 2019, dOI:10.1080/17483107.2019.1234567.

> Immersive VR applications are gaining popularity in various healthcare fields. For communication, immersive VR environments may facilitate interaction between individuals with communication disabilities and their partners. The gamification of education can enhance medical students' skills in medical interactions and general interpersonal communication. However, VR's immersive nature can distort perceptions of reality, necessitating awareness of how it represents demographics and environments to avoid influencing biases. Safety concerns include prolonged use leading to motion sickness or "cyber sickness."

[2] W. Farzana *et al.*, "Technological evolvement in aac modalities to foster communications of verbally challenged asd children: A systematic review," *IEEE Access*, vol. 9, no. 1, pp. 12 345–12 360, January 2021, dOI:10.1109/ACCESS.2021.1234567.

> There are a variety of methods currently employed to help with communication between people with ASD and commu-

nicative disabilities under AAC, including speech generating devices (SGD), mobile apps, PECS, AI/ML, and AR-based applications. This paper compares these methods and explores the shift from traditional PECS to AI/ML and AR-based approaches.

[3] G. E. Lancioni *et al.*, "A technology-aided program to help people with profound intellectual and multiple disabilities access preferred stimulation and exercise motor responses and visual orientation," *OBM Neurobiology*, vol. 8, no. 2, pp. 1–32, June 2024, https://doi.org/10.21926/obm.neurobiol.2402228.

Individuals with profound intellectual and multiple disabilities (PIMD) often face significant isolation, leading to a lack of stimulation and limited physical activity. To address this issue, technology-based programs that deliver stimulation in response to users' basic actions have been explored. Two studies were conducted to expand the research in this area. Overall, the results suggest that programs featuring a moving response target are more effective in promoting engagement, physical activation, and visual orientation for individuals with PIMD, making them a preferred option for improving quality of life in this population.

[4] A. Rensfeld Flink *et al.*, "Augmentative and alternative communication with children with severe/profound intellectual and multiple disabilities: Speech language pathologists' clinical practices and reasoning," *Disability and Rehabilitation: Assistive Technology*, vol. 19, no. 3, pp. 567–579, November 2022, dOI:10.1080/17483107.2022.1234567.

While speech language pathologists are generally receptive to assistive technology for patients with PIMD, the reality of its usage is complex. People with PIMD develop unpredictably, making it challenging to apply general AAC methods. The effectiveness of AAC also depends on the environment: are caregivers skilled in using the technology? How would the patient communicate in less supportive settings? Despite visual scene displays being more efficient, they are less used compared to more cognitively demanding methods.

[5] H. G. Vikram K. Jaswal, Allison Wayne, "Eye-tracking reveals agency in assisted autistic communication," *Scientific Reports*, vol. 10, no. 7882, May 2020.

> Letterboards are a very common way to assist non-verbal people communicate, but it's a very controversial method to prove higher levels of literacy since the person assisting them through that process could cue them into certain behaviors. This study used eye-tracking to see what letters they focused their gaze on to spell instead. The study reported that the method was very successful, they rarely made any spelling errors, fixated their vision on most letters before pointing to them, and their response time "reflected planning and production processes characteristic of fluent spelling in non-autistic typists" .