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Role of Artificial Intelligence in Speech Therapy

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Artificial Intelligence (AI) is a hot topic in general, and an even hotter topic for speech-language pathologists. Artificial intelligence can be defined as the capability of a machine to imitate aspects of human intelligence. The goal of AI is to create machines that can use characteristics of human intelligence to solve problems and adapt to a changing environment.

Artificial Intelligence (AI) is increasingly being utilized in various sectors, notably in education and healthcare, to enhance learning experiences and therapeutic practices.

In the educational field, AI assists teachers in creating personalized learning experiences tailored to diverse student learning styles. This integration aims to improve educational outcomes by addressing individual needs. 2

Artificial Intelligence is becoming increasingly important for Speech and Language Pathologists as it provides tools to enhance clinical practice and improve client outcomes. In Speech Therapy, AI technologies such as Automatic Speech Recognition (ASR) and voice banking are employed to aid individuals with communication impairments. These tools facilitate speech recognition and the generation of synthesized voices, providing essential support for those affected.3

Speech and Language Pathologists Play a crucial role in diagnosing and treating Communication Disorders but their Services are often limited by workforce shortage and long waiting lists, particularly affecting individuals in rural areas. The High Cost and time demand of traditional Speech Therapy further exacerbate these challenges. In response, researchers are developing AI-based automated tools for speech therapy that can be accessed through mobile devices or cloud services, thereby enhancing accessibility and affordability. 4

Various studies have targeted the creation of AI tools for specific Speech Impairments, these tools include a web application for therapist and caregivers that's real time feedback, a tablet based tool specifically for children with apraxia and computer system design to teach prosody and provide visual feedback to hearing impaired children. Additionally, robotic assistant and therapy robots like Buddy are being proposed to support practice at home. 5

AI-powered applications, like Better Speech's generative AI therapist, offer targeted interventions for speech therapy. It is important to note that these applications are designed to complement, rather than replace, human therapists.

Chat GPT will likely become an increasingly reliable and useful tool for SLPs as the technology advances. Despite serious drawbacks, I think SLPs may find ways to use Chat GPT in an ethical and responsible manner for certain tasks but it is essential for Speech Therapist to recognize their limitations and use them to complement Human Therapy.

Despite its potential, AI has limitations, including accuracy issues, potential biases in feedback, and a lack of empathy. It is necessary for therapists to ensure that clients are informed and consent to the use of AI in their therapy. This understanding will ensure ethical use and maintain a person-centered approach in therapy. Overall, AI presents significant promise for enhancing diagnostic precision and therapeutic outcomes, particularly for individuals with neurodegenerative diseases. 7

References

1. Sennott, S. C., Akagi, L., Lee, M., & Rhodes, A. (2019). AAC and artificial intelligence (AI). *Topics in language disorders*, *39*(4), 389-403.
2. Kanwal, K., Ibrahim, Z., & Siddiqui, A. A. (2024). The Convergence of Artificial Intelligence, Digital Therapeutics, and Biomedical Electronics in the field of Speech-

Language Therapy: AI and Digital Innovations in Speech Therapy. *Allied Medical Research Journal*, *2*(2), 277-292.

3. Cave, R., & Bloch, S. (2021). Voice banking for people living with motor neurone disease: Views and expectations. *International Journal of Language & Communication Disorders*, *56*(1), 116-129
4. Suh, H., Dangol, A., Meadan, H., Miller, C. A., & Kientz, J. A. (2024, June). Opportunities and Challenges for AI-Based Support for Speech-Language Pathologists. In *Proceedings of the 3rd Annual Meeting of the Symposium on Human-Computer Interaction for Work* (pp. 1-14).
5. Deka, C., Shrivastava, A., Abraham, A. K., Nautiyal, S., & Chauhan, P. (2024). AI-based automated speech therapy tools for persons with speech sound disorder: a systematic literature review. *Speech, Language and Hearing*, 1-22.
6. Moell, Birger. "Comparing the Efficacy of GPT-4 and Chat-GPT in Mental Health Care: A Blind Assessment of Large Language Models for Psychological Support." *arXiv preprint arXiv:2405.09300* (2024).
7. Subashini, P., & Krishnaveni, M. (2021). Artificial intelligence-based assistive technology. In *Artificial Intelligence Theory, Models, and Applications* (pp. 217-240). Auerbach Publications.