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Use of ultrasound biofeedback in speech intervention for children with hearing loss and cleft palate

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Speech-language pathologists frequently provide visual feedback during treatment to help clients visualize articulatory gestures and movements for various speech sounds. While traditional visual feedback approaches incorporate visual cues using mirrors, figures or diagrams, alternative methods of visual feedback are gaining more attention in current research. These alternative methods include the use of acoustic analysis, electropalatography and ultrasound biofeedback. Several speech-language pathologists and researchers have begun to investigate the effectiveness of ultrasound in intervention for speech sound disorders. Current research, however, is limited in populations investigated (e.g., normal hearing, articulation disorders, CAS), error sounds targeted (e.g., primarily residual /r/) and participant age ranges (e.g., late elementary and adolescents) included. The objective of this study was to evaluate the efficacy of ultrasound biofeedback as a tool for speech intervention in young children with hearing loss and with cleft palate. Two female children with cochlear implants and two male children with cleft palate, whose age ranged from 4 year 10 months and 6 years 5 months, participated in two single subjects multiple baseline design studies. A GE Logic E ultrasound with an 8c transducer was used. 30-minute treatment sessions were conducted twice a week for 10 weeks. Various speech sounds were targeted. We found gains in production accuracy for target sounds that were previously resistant to treatment in the children with hearing loss. Speech intervention for children with cleft palate is still in progress and will be fully completed by May 2017. Based on currently available results, ultrasound is indicated as a potentially effective tool for the treatment of speech error sounds in young children. The findings in this study were consistent with the findings of previous studies.

Biography

Sue Ann S Lee is an Associate Professor in the Department of Speech, Language & Hearing Sciences at Texas Tech University Health Sciences Center, USA. She has earned her Master's degree from The Ohio State University and her PhD in Speech Pathology at the University of Texas at Austin. Her research interest lies in speech characteristics in children with and without speech sound disorders and bilingualism. Her recent research focuses on examining speech therapy efficacy using various technologies such as ultrasound and telepractice. Her work has been published in multiple high impact journals such as the *Journal of Child Language* and *Journal of Speech-Language and Hearing Research*. She currently serves as an Editorial Board Member of *Clinical Archives of Communication Disorders and Journal of Communication Disorders and Assistive Technology*.

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