Preliminary steps to validate Audapter, a software application for online tracking of children's formants

S. Cheung, K. Thompson, S. Orlandi, Y. Yunusova, D. Beal

The study of online speech motor planning and speech motor learning depends on the accurate detection and tracking of children's vowel formant frequencies in near real-time. Formant tracking in children is, however, an extremely challenging task. Audapter is a research software application that has been used to detect and track children's formants for this purpose, but has never been validated for children's speech. Our aim was to validate Audapter using natural and synthesized samples of children's speech. We calculated Audapter's performance on 80 natural speech samples from the North Texas Vowel Database and on synthetic speech samples generated by our group. Audapter detected the presence of formants in 85% ($n = 68$) of the 80 samples from the North Texas Vowel Database. Audapter's performance on natural speech samples is comparable to the performance of other offline formant detection software on synthetic speech samples. Our preliminary analyses therefore suggest that Audapter performs at least as well as these other programs with the added benefit of operating online, an important feature for studies requiring near real-time detection and manipulation of formant frequencies. Analyses of synthetic speech samples is forthcoming.