The Effect of Speech-Shaped Noise and Speaker's Voice Quality on First-Grade Children's Speech Perception and Listening Comprehension

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Abstract : Children's ability to process spoken language develops until the late teenage years. At school, where efficient spoken language processing is key to academic achievement, listening conditions are often unfavorable. High background noise and poor teacher's voice represent typical sources of interference. It can be assumed that these factors particularly affect primary school children, because their language and literacy skills are still low. While it is generally accepted that background noise and impaired voice impede spoken language processing, there is an increasing need for analyzing impacts within specific linguistic areas. Against this background, the aim of the study was to investigate the effect of speech-shaped noise and imitated dysphonic voice on first-grade primary school children's speech perception and sentence comprehension. Via headphones, 5 to 6-year-old children, recruited within the French-speaking community of Belgium, listened to and performed a minimal-pair discrimination task and a sentence-picture matching task. Stimuli were randomly presented according to four experimental conditions: (1) normal voice / no noise, (2) normal voice / noise, (3) impaired voice / no noise, and (4) impaired voice / noise. The primary outcome measure was task score. How did performance vary with respect to listening condition? Preliminary results will be presented with respect to speech perception and sentence comprehension and carefully interpreted in the light of past findings. This study helps to support our understanding of children's language processing skills under adverse conditions. Results shall serve as a starting point for probing new measures to optimize children's learning environment.

Keywords : impaired voice, sentence comprehension, speech perception, speech-shaped noise, spoken language processing