

The Impact of Rise Time Discrimination on Speech Understanding in Noise and Reading Ability in Australian and Thai School-Aged Children

Ponsuang Luengtaweekul

Department of Linguistics, Macquarie University

Department of Communication Sciences and Disorders, Faculty of
Medicine Ramathibodi Hospital, Mahidol University

Abstract

The ability to understand speech in noise is crucial for everyday communication, particularly for children's learning. The rate of change of the temporal envelope at onsets, known as "rise time," plays a vital role in speech understanding by conveying information related to syllabic segmentation, phoneme distinction, and prosodic and rhythmic perception. Previous studies have reported relationships between rise time perception, phonological awareness, and reading ability. However, some studies have found no significant associations in typically developing children, suggesting that rise-time perception may be particularly relevant to children with reading or phonological difficulties. Although background noise can degrade performance by masking speech, the role of rise time in speech understanding in noise remains unclear. This study therefore aims to investigate the relationships between rise time sensitivity, speech understanding in noise, and reading ability in Australian and Thai school-aged children. Examining these relationships across English, a non-tonal language, and Thai, a tonal language, may provide insight into the contribution of rise-time perception to children's speech understanding and reading-related abilities.