Hierarchical temporal organization of speech in children and adolescents who stutter

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Abstract

With 10 to 20 sounds per second, fluent speech requires extremely skilled motor coordination. Therefore, young speakers with an immature or malfunctioning speech production system may be particularly challenged by the temporal aspects of fluent speech. In the present study, we examine nested temporal bout structure (Abney et al., 2014) to investigate how young speakers (children 9-12; adolescents 13-17 years old) who do and do not stutter might differ in their temporal organization of speech during reading. Allan Factor analyses show that nested clustering of peak amplitudes at short time-scales (¡ 300 ms) differs between children and adolescents, pointing to developmental differences in the temporal organization of syllabic structure. Greater nested clustering at longer timescales (¿ 300 ms 10 s) was characteristic of stuttering, particularly in adolescents whose stutter risks to persist into adulthood. We discuss these findings in light of theories of stuttering and the acquisition of fluent speech