The Prosodic Organization and Implementation of Weak Function Words in Australian English-speaking Children with Speech Sound Disorder

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Background: Prosodic organization and its phonetic implementation remain relatively understudied in children with speech sound disorder (SSD) (Bernthal et al., 2022), despite their fundamental role in structuring connected speech. Weak function words provide a useful test case because their realization depends on integration into surrounding prosodic structure. Earlier work on typically developing (TD) English-speaking children has identified two relevant patterns of article prosodification: Following a monosyllabic verb, such as *SEE the CAT*, the article may cliticize leftward onto the preceding stressed monosyllabic verb, forming a strong–weak foot. When following a disyllabic verb, as in *FOLlow the CAT*, the preceding word already forms a complete foot, leaving the article unfooted (e.g., Gerken, 1996; Demuth & McCullough, 2009; Redford, 2018). Our previous acoustic studies showed how these patterns are implemented in TD children. Leftward cliticization was reflected in shortening of the preceding verb when an article followed it (Cai et al., 2024), while footed articles are less prominent than unfooted articles (Cai et al., in preparation). It remains unknown whether children with SSD show comparable patterns of prosodic organization and acoustic implementation. The present study therefore asks whether children with SSD show acoustic evidence of leftward cliticization and whether they differentiate between footed and unfooted articles.

Methods: Participants were 19 Australian English-speaking children with SSD (age range: 4;04–12;10; mean age = 7;05) drawn from the AusKidTalk corpus (Ahmed et al., 2021). Two subsets of that project's sentence-repetition task were analysed. The verb-shortening task compared sentences in which a monosyllabic verb was followed by the article *the* (e.g., *Boys often cut the cards*) or followed directly by a noun (e.g., *Boys often cut cards*). The vowel duration in the verb was measured to test whether the presence of the article induced shortening of the preceding verb, providing acoustic evidence of leftward cliticization. The article-prominence task compared the realization of *the* when it followed a monosyllabic verb (e.g., *see the cat*), or a disyllabic verb (e.g., *follow the cat*). Article duration and intensity were combined using principal component analysis to derive a composite measure of article prominence. Linear mixed-effects models tested effects of prosodic condition while accounting for age, speech rate, and task-specific predictors (target verb identity in the verb-shortening task and utterance length for the article-prominence task). The final analyses included 91 productions for the verb-shortening task and 146 for the article-prominence task.

Results: Overall, the findings show partial alignment with patterns previously observed in TD children. In the verb-shortening task, verb durations are shorter when the verb was followed by an article than when followed directly by a noun. In the article-prominence task, however, no reliable difference in article prominence is found between footed and unfooted contexts.

Conclusion: The verb-shortening task finding provides acoustic evidence that children with SSD, like their TD counterparts, cliticize articles leftward and implement this prosodic organization through fine-grained adjustment of the preceding content word. By contrast, children with SSD do not show a reliable footed–unfooted prominence contrast. Two explanations are possible. First, they may differentiate the two contexts, but the present data are insufficient to establish the pattern reliably. Second, the relatively subtle acoustic contrast carried by weak articles may be implemented less consistently in children with SSD. Overall, the findings suggest that children with SSD can establish prosodic organization across word boundaries, while their phonetic implementation do not show the same systematic pattern observed in TD children. Despite the limited sample, these findings broaden our understanding of prosody production in children with SSD and motivate further research on individual variability, SSD subtypes, and the potential value of acoustic measures in clinical assessment.

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