Perceived listening difficulty in the classroom, not measured noise, is associated with subjective fatigue in children

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INTRODUCTION

High classroom noise levels are problematic for children with hearing loss, as they show poorer speech understanding in noise when compared to children without hearing loss. This additional difficulty is thought to lead to increased cognitive effort and elevated stress levels—ultimately resulting in fatigue.1 Compared to their peers with normal hearing, children with hearing loss report more cognitive fatigue and have been found to report more difficulty hearing in their classrooms.2,4 It is unknown if this perceived classroom listening difficulty is directly related to elevated reports of fatigue in children with hearing loss.

The purpose of this study was to examine the role of classroom noise and perceived listening difficulty in listening-related fatigue.

PARTICIPANTS

Children ages 6-12 years were recruited as part of a larger study examining listening effort and fatigue in school-age children with hearing loss. All children were monolingual English speakers and spent at least two hours per day in a general education classroom. Children with a diagnosis of cognitive impairment, autism, or other developmental disorders were excluded. Children in the control group had normal hearing sensitivity, bilaterally <15 dB HL from 250-8000 Hz. Children with hearing loss had mild-to-moderately severe sensorineural hearing loss, bilaterally.

DISCUSSION & CONCLUSIONS

Children who reported more listening difficulty in their classroom also reported more fatigue. Perceived listening difficulty ratings, not measured noise levels, grade level, or presence of hearing loss, significantly predict subjective fatigue in all domains and in total. This finding is consistent with work conducted with adults who have hearing loss that showed perception of hearing difficulties was strongly associated with fatigue.7 For adults and children, perceived challenges with listening appears an important factor to consider in future work examining listening-related fatigue.

Lower language abilities were related with higher reports of fatigue. This finding is consistent with our previous work showing that lower receptive language and reading skills are associated with cognitive fatigue in children with hearing loss.8 Children with and without hearing loss did not differ in reported fatigue. This is inconsistent with our previous work that found increased reports of cognitive fatigue for children with hearing loss compared to those without hearing loss.2 Importantly, using generic measures to understand the linkage between hearing loss and fatigue has been mixed.9 Our results add to the emerging body of research suggesting that current generic fatigue measures may not be optimal for detecting listening-related fatigue in individuals with hearing loss.

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REFERENCES