#00507

HEARING AIDS

Ecological Momentary Assessment in Adolescents with and without Hearing Loss

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Background

- Studies using retrospective questionnaires have suggested that individuals who are hard of hearing may be more fatigued than their peers with typical hearing, though the effects of hearing loss severity and hearing loss interventions on fatigue are unclear.
- Ecological momentary assessments (EMA) are repeated collections of data that happen within a short period of time of the event being studied.

Research Goals and Hypotheses

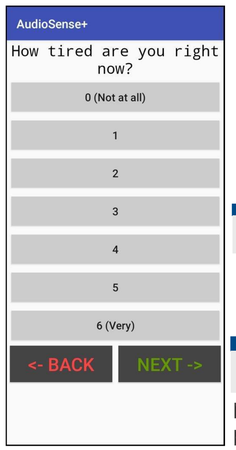
- The goals of this study were to use EMA to determine whether adolescents who are hard of hearing (HH) are more fatigued than their peers with typical hearing (TH) and examine the moderating effects of hearing loss severity and hearing aid use on fatigue.
- We hypothesized that 1) fatigue would be higher in adolescents who are HH than adolescents with TH and greater in school than summer and 2) greater severity of hearing loss and fewer hours of hearing aid use would be associated with greater fatigue.

Participant Demographics

Group	Age in Years (Mean, SD)	Hearing	Gender	Race	Ethnicity	Maternal Education	Number on IEP/504
Typical Hearing (n = 10)	16.8, 1.12	PTA < 15 dB HL	7 female 3 male	10 white	10 non-Hispanic or Latino	1 HS degree 3 some college 1 college degree 6 post-graduate	0/10
Hard of Hearing (n = 10)	15.6, 1.58	mean PTA = 44.5 dB HL (SD=10.3)	4 female 6 male	10 white	9 non-Hispanic or Latino 1 Hispanic or Latino	2 some college 3 college degree 5 post-graduate	8/10

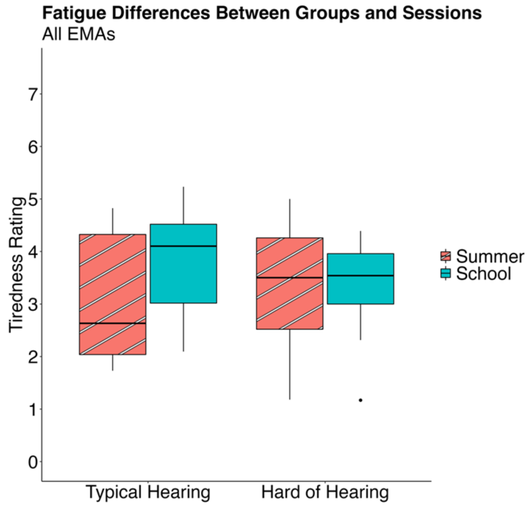
Methods

- Participants received Android phones with the Audiosense+ app (Hasan et al., 2013).
- Sixteen participants completed two sessions (summer and school); 1 participant completed the summer session but not school and 3 participants completed the school session but not the summer.
- Push notifications were sent to the phone 8 times per day for 7 days. The survey was available to complete for approximately 90 minutes. Once a survey was started, participants had 5 minutes to complete the survey.
- Compliance was defined as the percentage of surveys completed out of surveys delivered. For summer session, the overall mean compliance rate was 84.7% (SD=6.6%). For school session, the overall mean compliance rate was 95.6% (SD=8.1%). There was no difference in number of EMAs completed by TH or HH groups.



Results

Do adolescents who are hard of hearing report greater overall fatigue on EMA than adolescents with typical hearing?

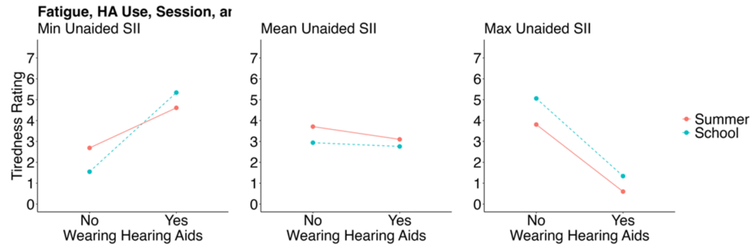


Overall there were no differences in fatigue between adolescents who are hard of hearing and adolescents with typical hearing, but there was a significant interaction between session and hearing status. Adolescents with typical hearing reported greater fatigue in the summer, whereas adolescents with hearing loss reported no significant different in fatigue by session.

Fatigue by Group and Session: All EMAs			
Term	Est.	SE	p-value
(Intercept)	3.01	0.35	<0.001
Hard of Hearing	0.75	0.50	0.150
Summer	0.47	0.12	<0.001
HH * Summer	-1.01	0.15	<0.001

Fatigue by Group and Session: Active Listening EMAs			
Term	Est.	SE	p-value
(Intercept)	3.39	0.33	<0.001
Hard of Hearing	-0.65	0.47	0.185
Summer	-0.31	0.11	0.005
HH * Summer	0.97	0.19	<0.001

Is fatigue in adolescents who are HH related to hearing loss severity and hearing aid use?



Each panel shows tiredness ratings for different unaided SII values: lowest observed SII on the left, mean SII in the middle, and highest observed SII on the right. Greater hearing aid use was associated with lower fatigue ratings for adolescents with less hearing loss, with larger effects in the summer.

Conclusion

Listening-related fatigue may be moderated by hearing aid use, particularly for adolescents with higher levels of unaided audibility (i.e., less hearing loss).

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