

Hearing Aid Use in School Age Children with Hearing Loss

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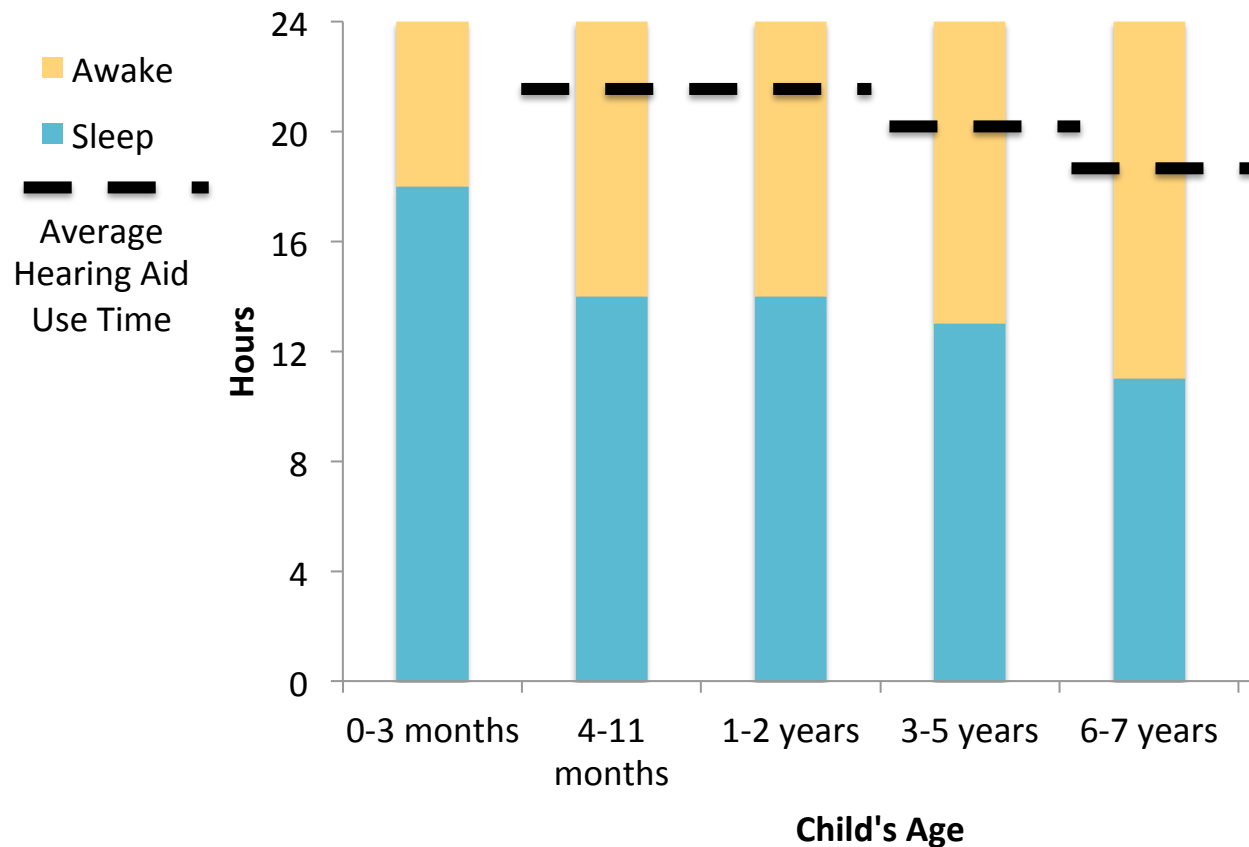
DHSS Research Seminar
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Audiologic Recommendation:

**“HEARING AID USE DURING
ALL WAKING HOURS”**

Are we achieving this goal?

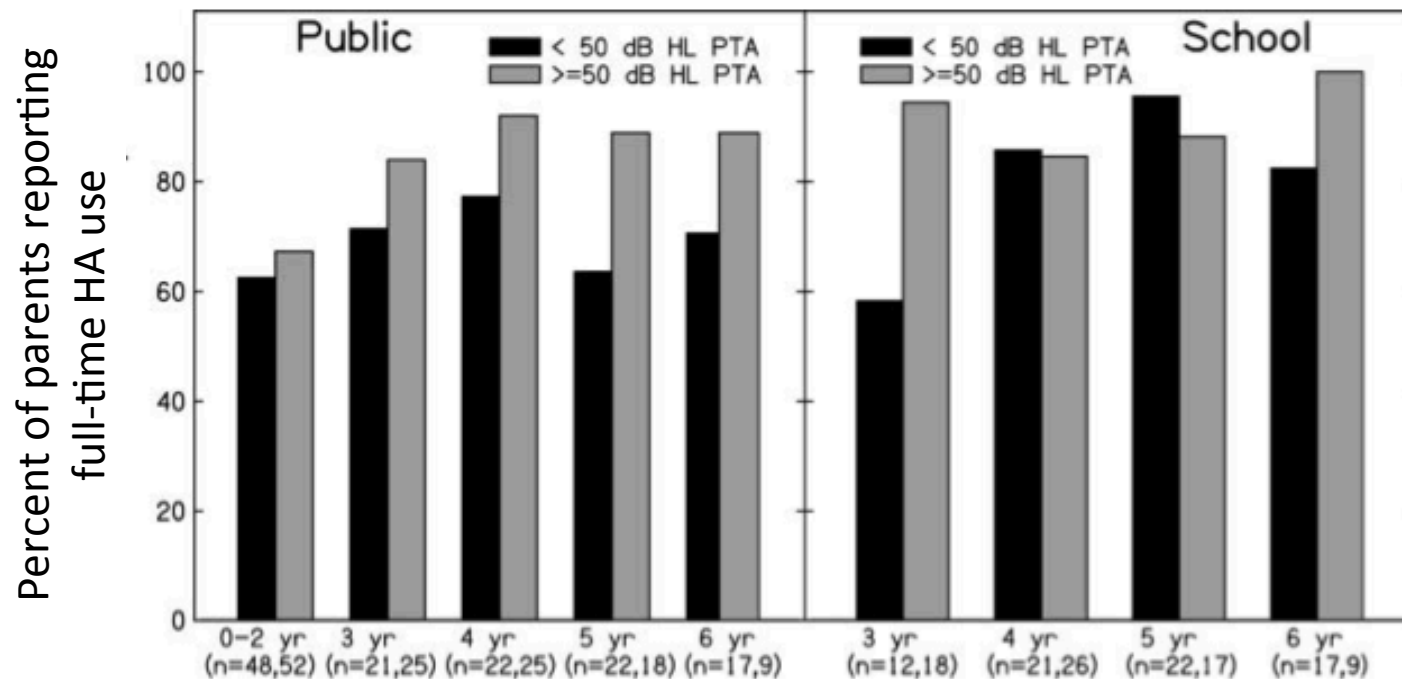
Average hearing aid use time data in children birth to 7 years suggests that we're not.



(Walker et al., 2013; sleepfoundation.org)

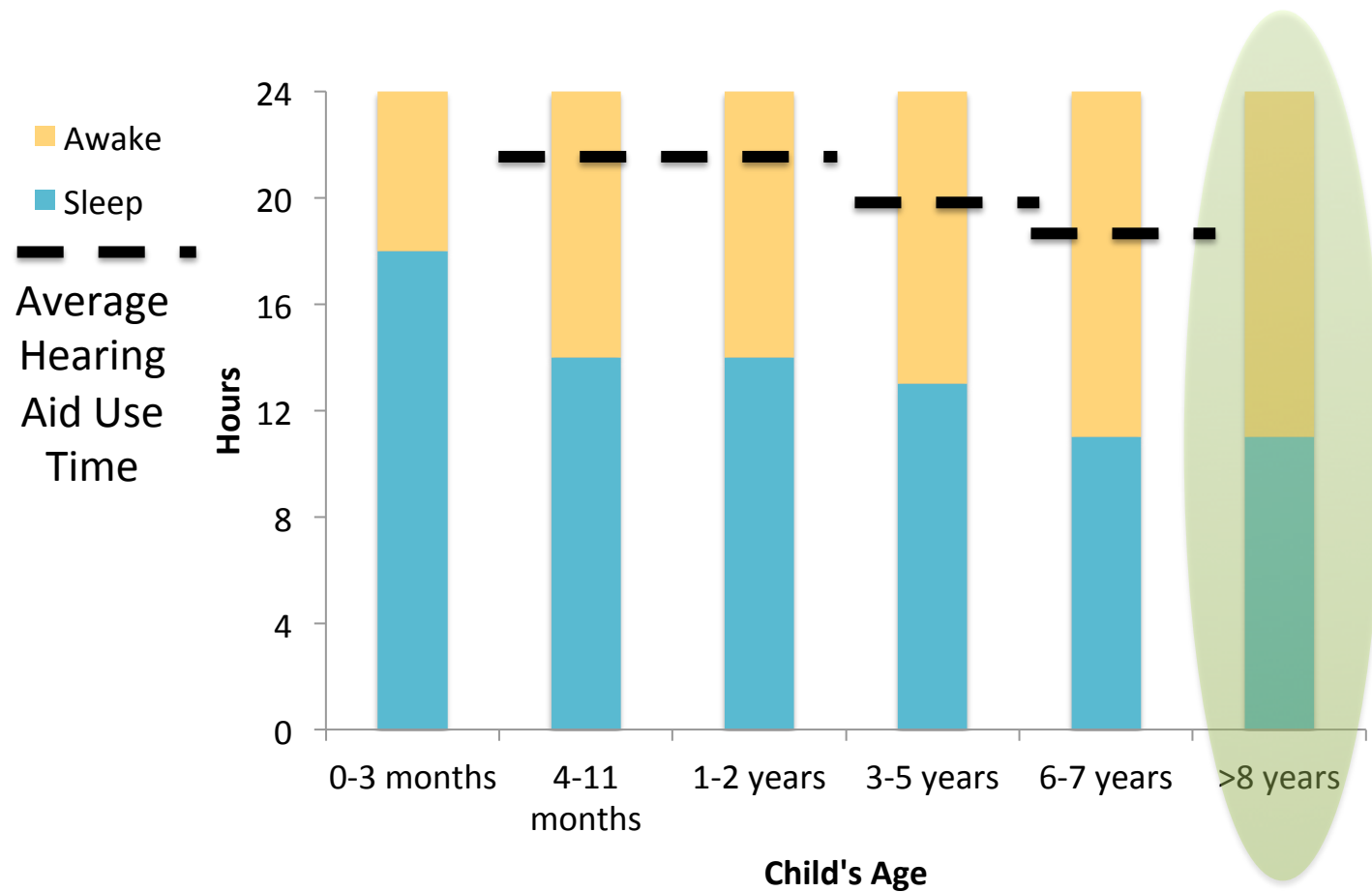
Who is at risk?

Younger children (<3 years old)
Children with mild-to-moderate hearing loss
Children whose mothers did not complete college



(Walker, Spratford, Moeller, Oleson, Ou, Roush, & Jacobs, 2013)

What about HA use time in children beyond 7 years of age?



(Walker et al., 2013; sleepfoundation.org)

Challenges for School-Age Children

- Long school day
- Increased responsibility for HA management
- Large class sizes & high student/teacher ratio
- Multiple classrooms/teachers
- Social pressure

Study Questions

1. How regularly are hearing aids used during regular classroom instruction by children with mild-to-moderate hearing loss between the ages of six and twelve years?
 - Degree of hearing loss
 - Child's age
 - Maternal education level
2. Do parents accurately estimate their child's use of hearing aids in the classroom

Participants

- 6-12 years old
- Mild-to-moderate mixed or sensory/neural hearing loss in the better-hearing ear
- Candidates for the Listening Effort and Fatigue Study
 - No diagnosis of Autism Spectrum Disorder
 - No pharmacologically managed diagnosis of ADD/ADHD
 - Primary language at home must be English

Methods

Classroom Observation

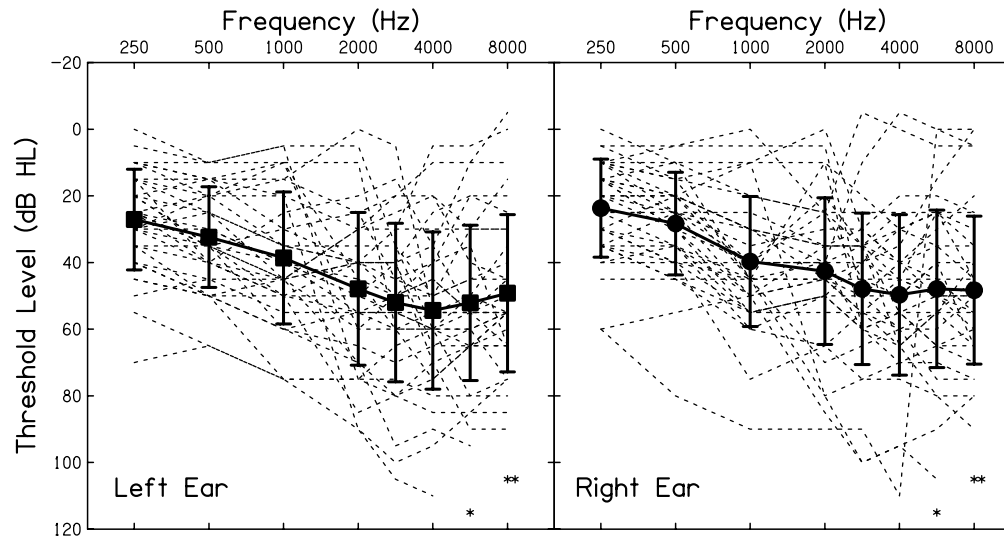
- Research assistants visited classrooms on two typical school days
 - 10:00 am and 2:00 pm
 - Documented if the child was wearing his/her hearing aids
 - Device-Use classifications:
 - Nonuser – never observed using the device(s)
 - Variable user – observed 1-3 times using the device(s)
 - Consistent user – observed all 4 times using the device(s)

Parental report

- Estimate of child's average HA use time during a typical school day
- Highest education level completed

Study Sample

- 38 participants
 - Mean age 10.11 years (6;6 to 12;11)
 - 1st through 7th grade
 - Six children (15.8%) were reported to have repeated a grade
- 42% of participants had mothers who reported having graduated from college

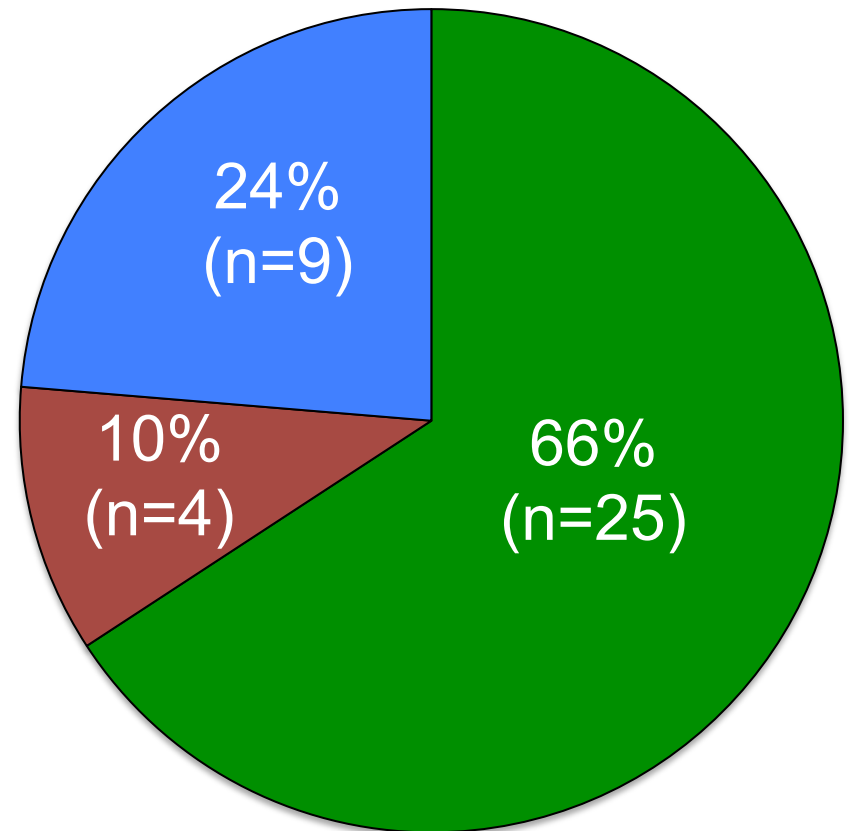


Overall Classroom Hearing Aid Use

The majority of participants were observed wearing their hearing aids during all four classroom visits.

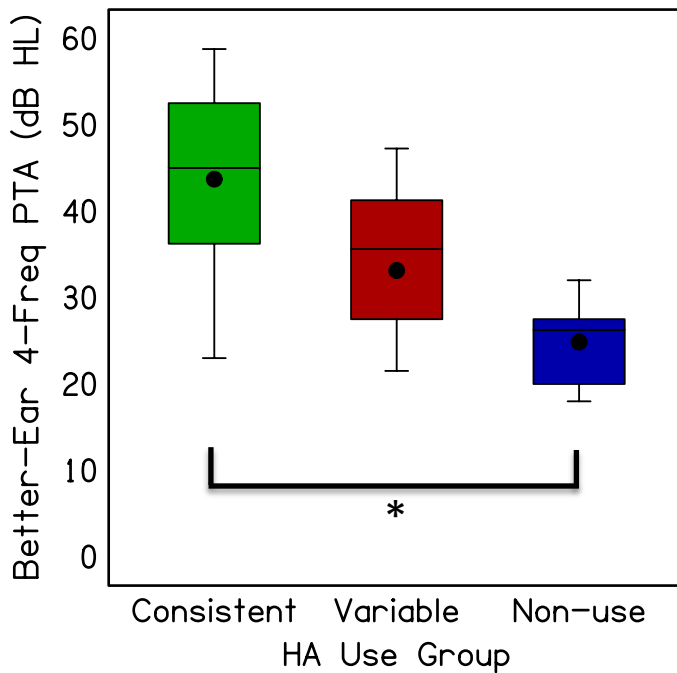
Nine participants were not observed wearing their prescribed HAs during any classroom observation.

There was no significant effect of gender on HA use category ($p > .05$)



- Consistent user
- Variable user
- Nonuser

Degree of Hearing Loss



Consistent users had poorer thresholds when compared to non-users ($p < .001$).

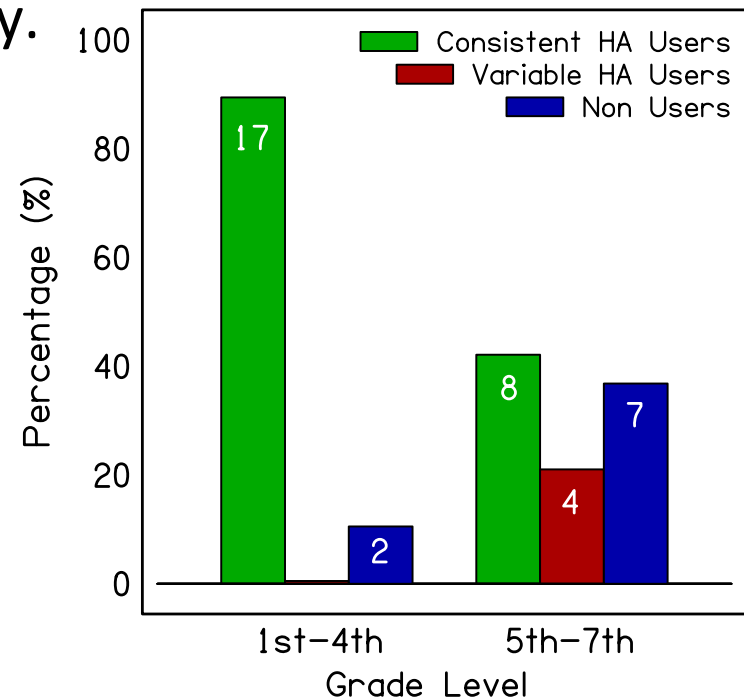
Group differences were apparent ($p < .006$) for frequencies 2000-8000 Hz.

Grade Level

Most consistent HA use was observed in children in grades 1-4.

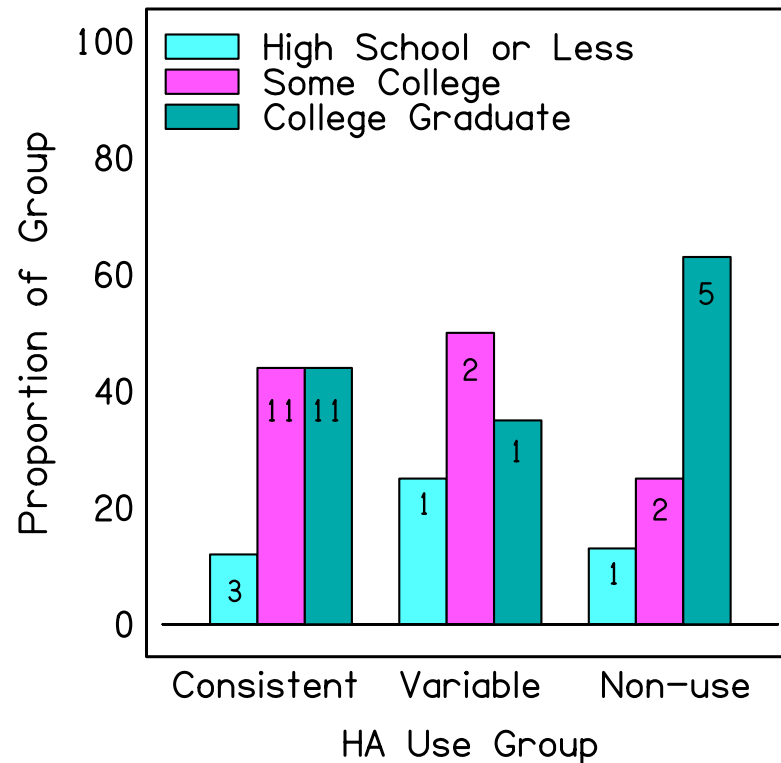
- Of children in this grade level range, 89.5% were found to be consistent users.
- Conversely, only 42% of participants in grades 5-7 were observed wearing HAs consistently.

Children in grades 1-4 have different HA use patterns compared to those in grades 5-7, **regardless of the severity of hearing loss ($F=4.882$, $p<.05$).**



Maternal Education Level

No significant effect of maternal education level on observed hearing aid use in the classroom ($F=.349$, $p=.708$)



Accuracy of Parent Report

HA Use	Consistent	Variable	Non-Use
Reported	32	1	5
Observed	25	4	9

Grades 1-4: Parental reports of HA use in the classroom were consistent with 95% of observations

Grades 5-7: Parents were less accurate, with only 63% accurately reporting use/non-use

33% of parents with children who were not wearing hearing aids during any of the observations reported consistent device use at school

Conclusions

The following factors were observed to potentially influence HA use in the classroom:

- **Degree of hearing loss:** Consistent HA users had significantly more hearing loss than variable and non-users
- **Grade level of the student:** Children in grades 1-4 were more likely to be consistent users than children in grades 5-7

Parents of older children tended to overestimate classroom hearing aid use more than parents of younger children.

Implications

- Counseling
 - Child
 - Parent
 - Teachers
- Closer monitoring of hearing aid use in older children
- Negative consequences?

Limitations & Discussion

Limitations of the current study:

- Small sample size
- Limited & anticipated observation times

Future studies should consider including:

- Datalogging results
- Longer and randomly assigned observation periods
- Psycho-social barriers to device use
- Rates of malfunction
- Knowledge of teachers and school staff related to hearing assistive technologies

THANK YOU FOR LISTENING!

**Questions?
Comments?
Suggestions?**

Thank you to Drs. Bess, Hornsby, & Camarata for their comments during data analysis and interpretation. These data were previously presented at the 2014 EHDI conference by Amanda Headley & Emily Fustos and at AudiologyNOW! 2015 by Hilary Davis.

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