

Background

- Quantity of linguistic input, especially within conversational interactions, has been shown to contribute to children's linguistic achievement (Huttenlocher et al., 1991; Hoff & Naigles, 2002).
- Many early intervention programs encourage parents of children who are hard of hearing (HH) to increase their linguistic input to children as a way to facilitate children's language development.
 - We do not know if this results in parents who talk more to their children who are HH than to children with normal hearing (NH).
- There is a traditional belief that children who are HH vocalize less and are less engaged in conversational interactions than children with NH, although evidence has not supported this belief (Nathani, 2008; Moeller et al., 2007). Larger scale sampling from direct empirical studies is needed to examine this issue.

Research Questions

- 1) Are children who are HH exposed to more or fewer words than children with NH?
- 2) Do children who are HH participate in fewer turn-taking interactions or vocalize less frequently than their NH peers?
- 3) Do adult word count, child vocalization count, or number of conversational turns account for variance in the receptive and expressive language abilities of children who are HH?

Methods

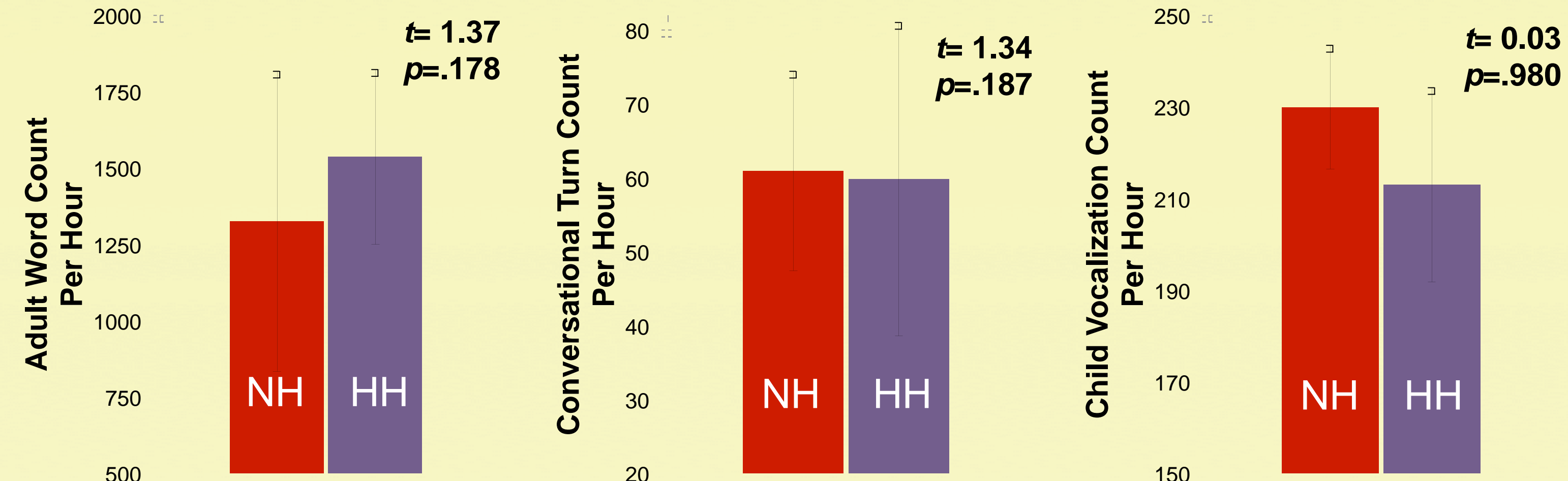
Procedures:

- LENA recordings were collected at consecutive 1-month intervals. Key variables were calculated per hour for each recording and averaged across recordings for each child to control for day to day variability.
- Receptive and expressive language scores were collected via the Mullen Scales of Early Learning (MSEL) near children's 1st or 2nd birthdays as part of the Outcomes of Children with Hearing Loss study.

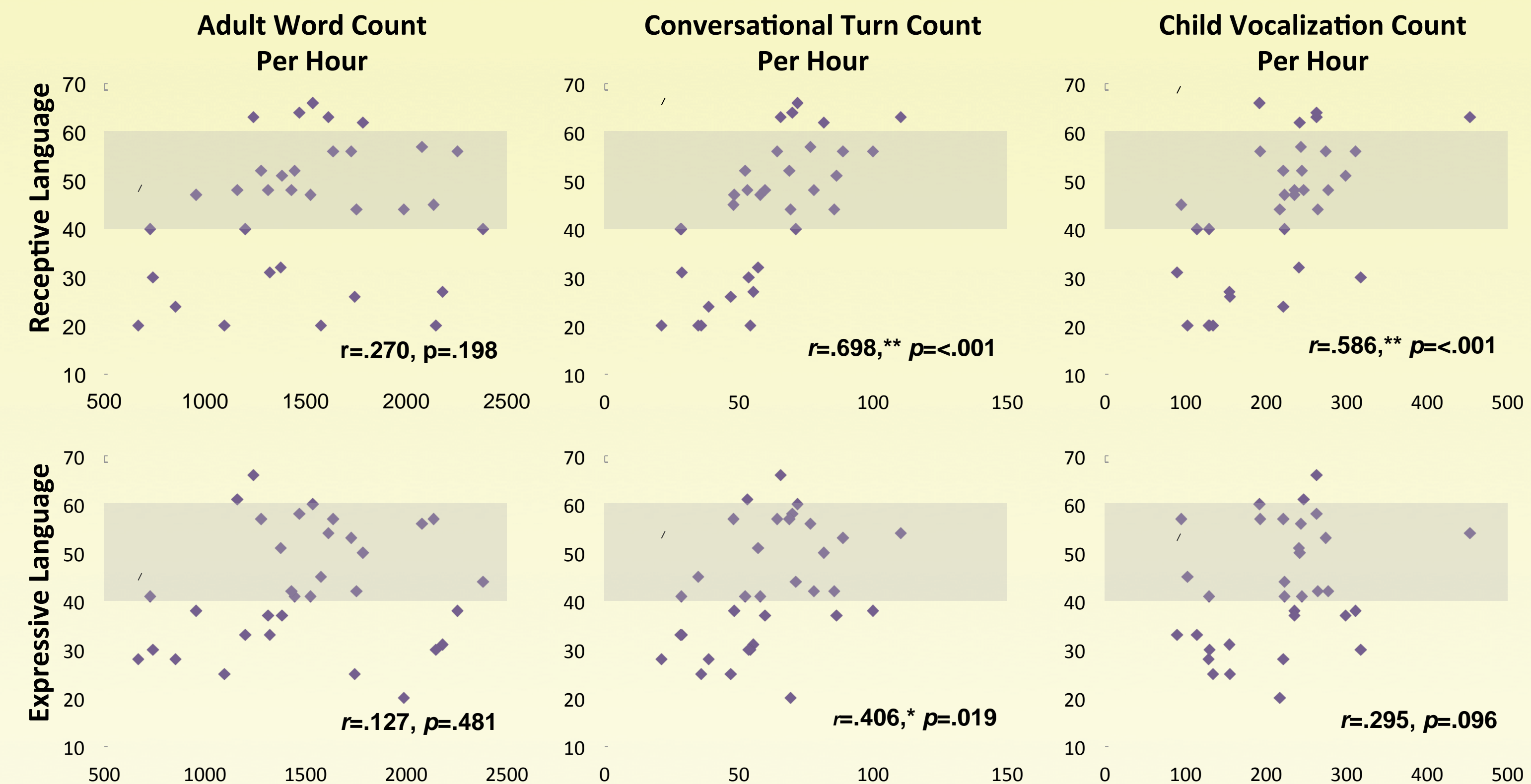
Subjects:

- NH group: 11 children with normal hearing
 - Age at 1st recording: $M=27.4$ mo, $SD=6.3$
 - Age at MSEL administration: $M=25.6$ mo, $SD=5.1$
- HH group: 33 children with mild to severe hearing loss (BEPTA: $M=50.4$ db HL, $SD=12.4$)
 - Age at 1st recording: $M=23.6$ mo, $SD=4.8$
 - Age at MSEL administration: $M=23.1$ mo, $SD=4.8$

Results: Between Groups



Results: HH Group



The shaded areas indicate 1SD above and below the normative mean on the language measures. The HH group's mean T-score was 43.6 for receptive language and 42.7 for expressive language. These scores were significantly below the normative mean of 50 ($p=.001$ and $p=.016$, respectively).

Results: HH Group

- Conversational turns account for significant variance in receptive language outcomes after controlling for child vocalizations ($\Delta R^2=.146$, $p=.006$).
- However, child vocalizations do not contribute any unique variance beyond that accounted for by conversational turns ($\Delta R^2=.001$, $p=.776$).

Conclusions

- Children who are HH and NH are exposed to about the same amount of talk from their caregivers/parents, and input isn't strongly related to outcomes.
- Despite weaker receptive and expressive language skills, children who are HH do not participate in less conversational turns or vocalize less than their NH peers.
- For the HH group, an increased number of child vocalizations and participation in conversational turns was correlated with stronger language abilities.
- The relationship between conversational turns and language outcomes is not simply a matter of children with stronger language skills being more vocal and thus more likely to engage in conversations.

Future Directions

- Examine whether adult females, adult males, or other children engage differently with children who are HH vs. NH and if those interactions contribute differently to children's language outcomes.
- Examine how LENA variables, and the relationships between LENA variables and outcome measures, change over time for children who are HH and NH.

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