

# The impact of exposure to talk and television on the language development of toddlers with hearing loss

Sophie E. Ambrose, Mark VanDam, Mary Pat Moeller

## Background

- 1) Children who are exposed to more talk typically develop stronger language skills than children who are exposed to less talk.
- 2) Mothers, fathers, and siblings each talk differently to young children, which may have varying effects on language development.
- 3) Conversational interactions may be especially important for language development, as they typically occur in contexts involving joint attention, child-directed speech, and contingent responses.
- 4) Television viewing may decrease opportunities for conversational interactions, especially for children with hearing loss, who may have increased difficulty perceiving speech in the presence of background noise.

## Research Tool

The LENA system collects naturalistic, whole day acoustic recordings and performs automated analyses of the acoustic environment. This technology provides estimates of, among other things:

- duration of all utterances spoken near the child by adult females, adult males, and other children (“maternal talk,” “paternal talk,” and “sibling talk”)
- number of back and forth interactions between the child and an adult (“conversational turns”)
- amount of time sound from electronic media was present in the environment, including sound from radio, video games, and toys, but typically television (“television”)



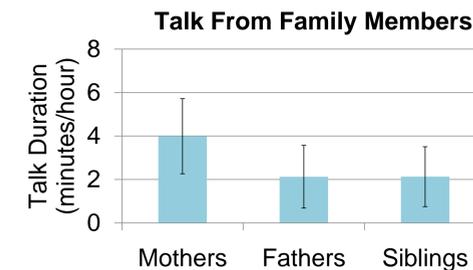
## Methods

31 hard-of-hearing (HH) children, ages 26-to-30 months, with a mean Better Ear PTA of 51.0 dB HL ( $SD = 12.7$ , Range = 28-83)

Measurement tool	Measurement
LENA recording ( $M$ age at recording = 26.6 months) *Recording length ranged from 8.7-15.9 hours ( $M = 12.1$ hours).	<ul style="list-style-type: none"> <li>• Maternal talk duration</li> <li>• Paternal talk duration</li> <li>• Sibling talk duration</li> <li>• Television exposure duration</li> <li>• Conversational turn count</li> </ul>
Mullen Scales of Early Learning ( $M$ age at testing = 25.1 months)	<ul style="list-style-type: none"> <li>• Receptive language ability</li> <li>• Expressive language ability</li> </ul>

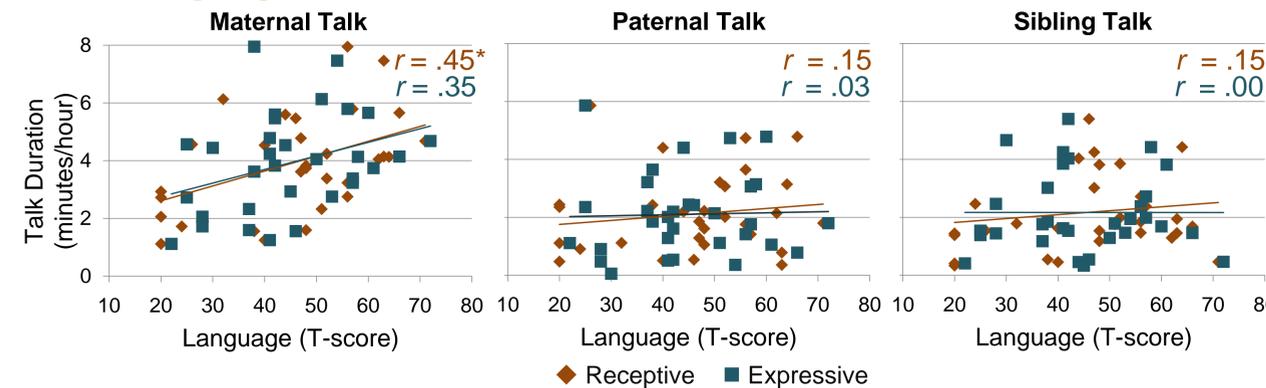
## Questions and Results

- 1 Are HH children exposed to more talk by their mothers, fathers, or siblings?



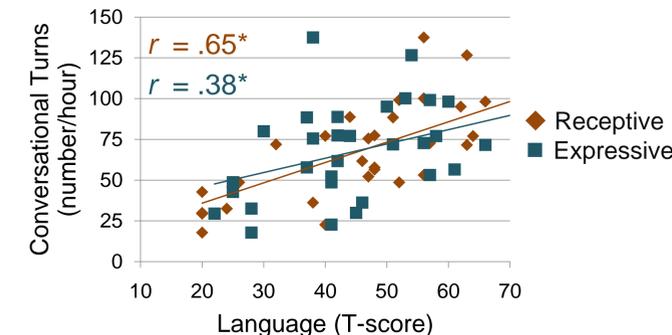
HH children were exposed to significantly more talk by their mothers than fathers or siblings during full-day recordings ( $t = 4.71$  and  $t = 5.31$ , respectively,  $ps < .01$ ).

- 2 Does quantity of talk from mothers, fathers, or siblings contribute to the language outcomes of HH children?



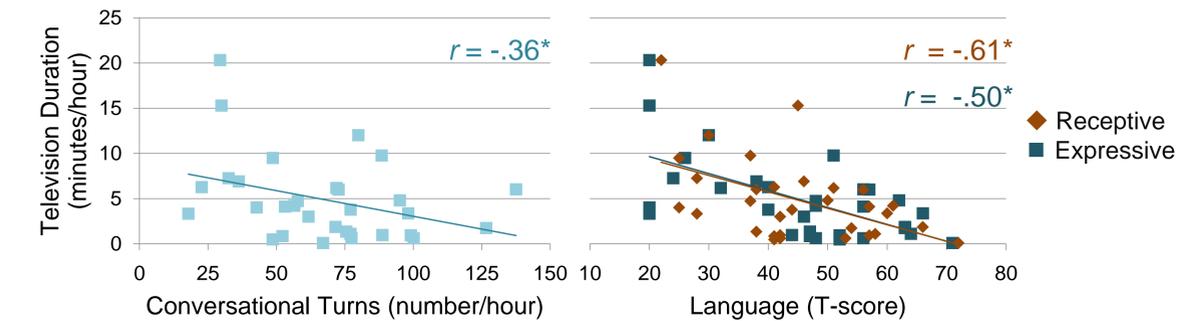
Quantity of maternal talk contributed significantly to children’s receptive language outcomes ( $*p = .01$ ). No other significant correlations were found ( $ps > .05$ ).

- 3 Does quantity of conversational turns contribute to the language outcomes of HH children?



Conversational turn count was significantly correlated with receptive and expressive language ( $*ps < .05$ ).

- 4 How does television exposure relate to talk by family members, conversational turns, and language outcomes for HH children?



- Duration of television exposure was not significantly correlated with maternal, paternal, or sibling talk ( $*ps > .05$ ), but was negatively correlated with both conversational turns and receptive and expressive language outcomes.
- Regression results indicated that duration of television exposure was negatively related to language development and the effects were beyond those that can be attributed to the relationship between television exposure and conversational turn count (Receptive:  $\Delta R^2 = .167$ ,  $p < .01$ ; Expressive:  $\Delta R^2 = .152$ ,  $p = .02$ ).

## Conclusions

- 1) HH children were exposed to more talk from mothers than fathers or siblings. Exploration of differences in family members’ time in the home, roles in child rearing, views on child development, or general talkativeness may shed more light on this finding.
- 2) The amount of language provided by mothers, but not fathers or siblings, was associated with improved receptive language outcomes. Further research may examine such factors as how individual family members adapt their speech when talking to children and how frequently they converse with young children.
- 3) Children who were frequently engaged in conversations demonstrated the strongest language outcomes. This may be related to the increased presence of joint attention, child-directed speech, or contingent adult responses in these interactions.
- 4) Conversational interactions were less frequent in homes with high rates of television viewing, which in turn predicted weaker language skills for HH children in those homes. However, the impact of television exposure on children’s language skills was only partially explained by the decrease in conversational exchanges.