5-2011

Infants at Risk for ASD Show Aberrant Preferences for Speech at Six to Nine Months

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Introduction

- Typically developing (TD) infants listen longer to (i.e., prefer) child-directed speech (CDS) than to adult-directed speech (ADS; See Jusczyk, 1999; Thiessen, Hill, & Saffran, 2005 for review), as do toddlers with Down Syndrome (Glenn & Cummingham, 1983).
- Studies of young children with ASD show differences from TD in preference for attending to speech stimuli (Kuhl et al., 2005; Paul et al., 2007).
- These preferences have been shown to be linked to language development (Paul et al., 2007; Tsao et al., 2004).

Purpose

- To examine auditory preferences for speech stimuli in infants at risk for ASD due to the presence of a diagnosed sibling.

Methods

Participants

- High Risk (HR) infants
  - Sibling of a child diagnosed with ASD
    - Proband diagnosis confirmed with ADI-R interviews
- Low Risk (LR) infants
  - No sibling with any diagnosis of developmental disorder
  - No family history of ASD
- Participants seen at:
  - 6 mo. (41 HR and 20 LR)
  - 9 mo. (35 HR and 26 LR)

Methods

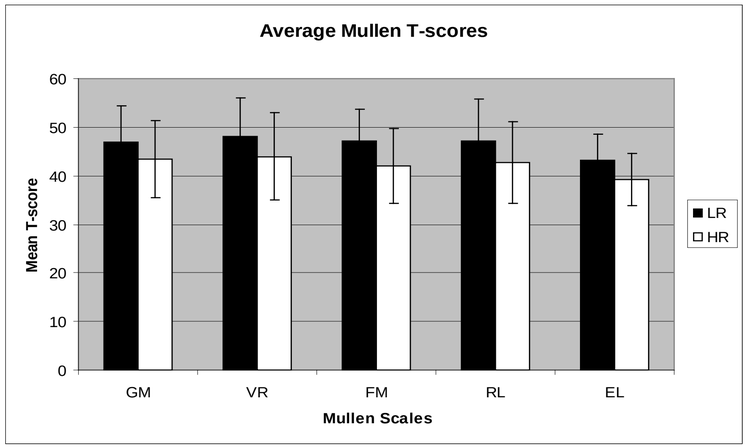
- Child seated on parent's lap
- Views monitor with checkerboard
- Auditory stimuli begin when child looks at checkerboard
- Continues playing as long as child looks
- When child looks away for 2 seconds, auditory stimuli stop
- Child receives 4 training trials
- Time spent looking during each stimulus is recorded

Auditory Stimuli

- Female speaker reading nursery rhymes with CDS intonation or ADS intonation.
- 6 CDS trials and 6 ADS trials
- Intonation quality of the recordings verified by ten typical adult listeners.

Participant Developmental Levels

Figure 1. Mean (and SD) MSEL* T-Scores for High- and Low-Risk Groups at Six Months.



- Mullen Scales of Early Learning (Mullen, 1995):

GM=Gross Motor Scale
VR=Visual Reception (non-verbal problem solving) Scale
FM=Fine Motor Scale
RL=Receptive Language Scale
EL=Expressive Language Scale
HR=High risk LR=Low Risk

Results

Figure 2. Mean looking times for **Low Risk** infants listening to nursery rhymes with CDS and ADS prosody.

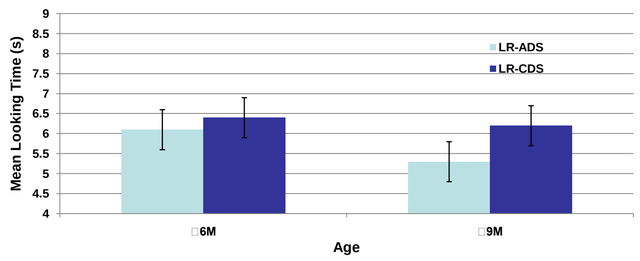
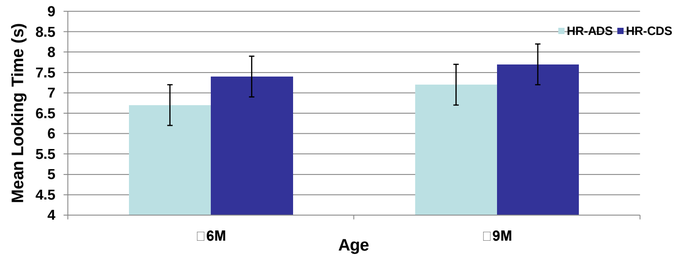


Figure 3. Mean looking times for **High Risk** infants listening to nursery rhymes with CDS and ADS prosody.



Conclusions

- Infants at HR for ASD show differences in preference for speech-like stimuli in the first year of life, when compared to LR peers; that is:
  - LR infants failed to show a preference for CDS at 6 months, consistent with recent reports (McRoberts et al., 2009), but did show a preference for IDS at 9 months.
  - HR Infants showed the reverse pattern; 6-month-old HR infants had, like typical in younger infants (Pegg et al., 1992), a significant preference for CDS; 9-month-old HR infants did not.
- These results suggest that **infants at risk for ASD** begin to show a **delay in the pattern of attention to speech as early as 6 months**
- This preliminary investigation suggests an aberrant pattern of auditory preference that points to the need for continued research on the origins and consequences of developmental differences in this population.

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Acknowledgements

This research is supported by P01-HD03008 from NICHD; P50 MH81756 from NIMH; and the Simons Foundation.
COI: None