Language Environment Analysis Of Preschoolers With Autism: Validity & Applications

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Setting:

Family Child Learning Center's Integrated Research Preschool for Children with Autism Combination classroom- and home-based intervention program

- First year preschool classroom:
- Five children with Autism Spectrum Disorders (ASD) (attend 4 days/week)
- Five typically developing peers (attend 2 days/week)

Question #1:

How reliable and valid are LENA recordings in a classroom setting compared to the home? What factors contribute to error?

Previous Research:

•LENA's reliability has been established in the home environment (Xu, Yapanel, & Gray, 2009). •LENA home recordings have been used to compare the language of children with ASD to that of typically developing children (Warren et al., 2010).

Conversational turn count and adult word count are positively correlated with standard ASD and communication assessments.

Children with ASD:

•Have the same number of conversations, but they are shorter and contain fewer child vocalizations and fewer conversational turns

• Show increased vocalizations and conversational turns during intervention Methods:

•LENA recordings were collected from five preschoolers with ASD on both peer days and ASD days.

•Two recordings per child (one ASD day, one peer day) were randomly chosen.

Three random five-minute segments per recording were examined.

Adult word count and number of child vocalizations per segment were recorded by a human examiner and compared to LENA's counts.

◆Inter-rater reliability was calculated by comparing a second rater's counts for four of the segments. • Adult Word Count Agreement = 91.9%

• Child Vocalization Count Agreement = 91.0%

•Kappa Coefficient: $\kappa = 0.903$, $\kappa max = 0.935$

Findings:

 Table 1- Attribution Agreement

			LENAS	System				
		Adult	Key Child	Other Child				
	Adult	65%	4%	12%				
Rater	Key Child	15%	56%	12%	T			
Humar	Other Child	6%	13%	63%	Γ			
<u> </u>	Other	3%	1%	1%				

Table 2- LENA Reliability (Xu, Yapanel, & Gray, 2009) vs. FCLC Preschool Reliability LENA Home Recording FCLC Preschool Recording

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	Adult	Child	Other			Adult	Child	Other
Adult	82%	2%	16%		Adult	65%	16%	19%
Child	7%	76%	17%		Child	9%	73%	18%
Other	14%	4%	82%		Other	3%	2%	95%





•Correlation: r = 0.81, p<.01

- Consistent bias:
- Did not divide separate vocalizations well
- Did not pick up key child during overlap or if noisy

Table 4- What Caused Misattribution In This Group Setting?



•Specific to our situation: vocal self-stimulation, echolalia, and unusual intonation No difference in error between peer and ASD days

Question #2

What is the role of environment (home vs. classroom) on the communication of children with ASD? How does the communication of children with ASD compare to that of typically developing peers? Current Research:

◆The present study is examining the communication of preschool-aged children (children with ASD vs. peers) in both a classroom setting and the home environment. Children's communication will be followed longitudinally over two years.





per child have been collected. Preliminary Findings:





Some Thoughts Based On Preliminary Findings:

- typically developing peers.



al Noise	Silence	Overlap
0.47	-0.31	0.72
0.41	-0.12	0.43
0.32		0.44
0.41	-0.15	0.53
		0.53

•To date, we have collected three months of LENA recordings in both the classroom and home environments. Approximately 48 hours of classroom recordings per child and 45 hours of home recordings

•Recording times were adjusted to take into account nap periods (i.e., Net Recorded Hours were calculated and used to determine average rates per hour).

•The preliminary findings presented use any block that involved the Key Child.

•Block Type was collapsed into three categories that did not differentiate who initiated the conversational turn (e.g., adult with key child and key child with adult are together): (1) Adult with Key Child, (2) Key Child Monologue, and (3) Key Child with Other Child.

Chart 1- Rate Of Communication Per Hour In Children With ASD On ASD Days vs. Home Days

Chart 2- Rate Of Communication Per Hour Of Children With ASD vs. Peers On Peer Days

•Children with ASD have more conversational turns with adults on ASD days than in the home. •Children with ASD have fewer monologues in the classroom than in the home. •Children with ASD have a similar number of conversational turns with adults and monologues as