An Analysis of Adult Language in Classrooms Serving Young Children with Autism Spectrum Disorders

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Project Context

Gathering LENA data as part of a larger project

 The Comparison of Two Comprehensive Treatment Models (CTMs) is a project designed to examine the efficacy of high quality TEACCH and LEAP preschool classrooms operating within the public school system in comparison to "business as usual" (BAU) classrooms. It is a 4-year, multi-site project across
CO, FL, MN, and NC. <u>http://www.fpg.unc.edu/~asdtc/</u>



Project Context



Project Status

Final year of data collection (3rd cohort of students)
Project data includes:

- 71 teachers across 3 classroom types
- 208 preschool children with ASD & their families
- LENA data includes NC subset:
 - 21 teachers across 2 classroom types
 - 66 preschool children with ASD
 - Note: Current data looking at 2 of the 3 years (14 teachers & 40 children)
 - (14 teachers & 40 children)
- Not yet looking at outcomes or model differences

Current Questions

- Initial analysis of the AWC of preschool teachers of children with ASD, as well as an exploration of variables that may influence or predict AWC
 - Descriptive information on child & teacher variables
 - Relationship between AWC & child characteristics
 - Relationship between AWC & teacher variables
 - Explore teacher variables that predict AWC

Our Sample- Preschool Children with ASD



	Ger	Gender			Race				Ethnicity		
	М	F		White	Black	Asian		Hispanic	Non- Hispanic		
Total	32	8		29	7	4		6	34		
(n=40)	80.0%	20.0%		72.5%	17.5%	10.0%		15.0%	85.0%		

	LENA	P	LS-4	Mullen			ADOS
	Chronological Age (mos.)	Total SS	Total Age Equivalent (mos.)	Total SS	VR - Age Equivalent (mos.)		Severity Score
Mean	48.3	62.9	25.6	60.7	32.1		7.6
SD	6.9	14.7	11.3	16.3	14.4		1.6
Range	36 - 59	50 - 97	6 - 50	49 - 108	6 - 69		4 - 10

Note: ADOS = Autism Diagnostic Observation Scale;VR = Visual Reception;AE = Age Equivalent; PLS4= Preschool Language Scale-4

Our Sample-Teachers of Preschool Children with ASD

Inclusion Criteria



Preschools must be in public schools Teachers must be certified Teachers in TEACCH or LEAP classrooms must have had formal training in the model Teachers in TEACCH or LEAP classrooms must have implemented to model for 2 years prior to study participation Teachers in BAU classrooms must have taught in a preschool classroom with children with autism in the two years prior to study participation Teachers in each classroom must agree to a pre-study observation and must meet scoring criteria on observational measures

	Ge	Gender		ender Race		Ethnicity Educat		Education	on				Years in		
	м		F	White	Black	Asian	Hispanic	Non-		BA/BS	Masters+		Years Experience		Current Position
			-					Hispanic				Mean	11.08		48
Total	0		14	14	0	0		13		6	8	Tican	11.00		1.0
(n=14)	0 %	%	100%	100%	0 %	0 %	7 %	93%		43%	57%	Range	2-28		1-13

LENA recordings & variables



Total	
Time	109 hours
Total AWC	202,395
Total CV	20,526
Total CT	6789

	Time I- Raw Data					
	Range	Average				
Recording Time	I h, 53 m -3 h, 35 m	2 h, 39 m				
AWC (N=14)	1,771 – 10,898	4,936				
CV (N= 40)	94 – 1,231	500.63				
СТ	22 – 440	165				

		Time I- Rate Data				
		Range	Average			
AWC ((N=14)	17.20 – 42.75	32.0			
CV (N	= 40)	0.59 – 6.41	3.19			
СТ		0.12 – 2.38	1.04			

Relationship between AWC and teacher variables

- Correlation between teacher experience and mean adjusted AWC was r=.058, p=.0845
- Explore influence of education level
 - Warren's findings for parents of TD children
 - Current sample

	AWC Rate				
	Range	Average			
BS/BA (N=6)	24.8 - 39.8	31.4			
Masters+ (N=8)	17.2 - 42.7	32.7			

Comparing

AWC across studies

Note: Different setting, different age range, different adults

	Hume et al. ASD sample	Warren et al. (2010) ASD sample	Lena Foundation Typical Development sample (as described in Warren et al.)
Average	32.0 (N=14)	17.98 (N=26)	18.96 (N=78)
AWC Rate	teachers	parents	parents

Relationship between AWC and child variables

AWC rates were significantly correlated with age equivalents on the VR and EL scales of the Mullen

Error on the printed abstract - r (partial) =.33

	Mullen VR_AE	Mullen RL_AE	Mullen EL_AE	PLS Total_AE	PLS AC_AE	PLS EC_AE	ADOS Severity
AWC	0.33	0.21	0.26	0.14	0.23	0.19	-0.05
	0.009	0.094	0.044	0.281	0.066	0.114	0.701

Note: Partial correlations controlling for chronological age at TI of LENA measurement. Bold text indicates significance

Note: ADOS = Autism Diagnostic Observation Scale; VR = Visual Reception; AE = Age Equivalent; RL/EL = Receptive/Expressive; PLS4= Preschool Language Scale-4; AC/EC = Auditory Comprehension & Expressive Communication

Teacher variables that predict AWC

Neither teacher experience nor teacher education variables were significantly associated with AWC

The model intercept represents the average adjusted word count for a teacher with a bachelor's degree and an average amount of experience (11.088 years).

Variable	Parameter (SE)	Р
Intercept	31 532 (3 323)	< 001
Teacher Ed = MS	1.416 (5.172)	0.790
Teacher Ed = MS+	-1.768 (9.678)	0.859
Teaching Experience (vears contered)	0.035 (0.323)	0.916

Challenges & Limitations

- LENA use in schools
 - Multiple adults
 - % of meaningful data (26.2%)
 - Shorter recording times
- LENA use in current study
 - Small N (teachers & students)
 - No comparison group
 - Minimal recording time
 - Vest "resistance"

Conclusions & Future Questions

- Link between child characteristics and AWC
- No relationship between teacher variables and AWC
- Change in LENA variable rates between TI & T2
- Exploration of relationship between standardized measures & LENA variables (Mullen EL)
- Exploration of child & teacher variables that may predict the rate of change (child=inattentiveness & social unresponsiveness;? teacher=responsiveness?)
- Model differences (child N=45 TEACCH, 21 BAU; teacher N=12 TEACCH, 9 BAU)
- Other (your ideas):