



UNIVERSITY OF MINNESOTA

# Comparing Language Structure of Children with PLI or ASD Using SPELT-3 and Conversational Language Sampling

Timothy Huang M.S. CCC-SLP & Lizbeth H. Finestack Ph.D. CCC-SLP  
Department of Speech-Language-Hearing Sciences, University of Minnesota



## Introduction

- Children with primary language impairment (PLI) and a subset of children with autism spectrum disorder (ASD) demonstrate weaknesses in the production of morphologic and syntactic language forms (Condouris et al., 2003; Leonard, Eyer, Bedore, & Grela, 1997; Rice & Wexler, 1996; Roberts, Rice, & Tager-Flusberg 2004).
- Limited cross-population comparisons of the morphosyntactic profiles of PLI and ASD that exist suggest considerable overlap (Tager-Flusberg, Levy, & Schaeffer, 2003).
- This study further compared the morphosyntactic profiles of these groups using the Structured Photographic Expressive Language Test (SPELT-3; Dawson, Stout, & Eyer, 2003) and conversational language sampling.

## Research Questions

- Are there differences in the morphologic and syntactic structures that are most difficult for children with PLI and those with ASD based on the SPELT-3?
- Are there differences in the morphologic and syntactic structures produced by children with PLI and those with ASD based on the conversational language sampling?

## Participants

- 40 English-speaking children: 24 with PLI and 16 with ASD
- Matched for age (4:4-9:6) and nonverbal IQ SS (67-135)

FULL GROUP	PLI (n=24)		ASD (n=16)	
	Mean	SD	Mean	SD
Age (years)	6.54	0.83	5.81	1.38
Nonverbal IQ (Leiter SS)	91.38	17.03	98.63	19.61
SPELT-3 (SS)	75.75	16.38	75.44	13.29
Male : Female	16:8		14:2	

## Method

- All participants completed the norm-referenced, standardized SPELT-3 assessment which examines verbal production of various morphologic and syntactic structures.
- We grouped the 53 test items on the SPELT-3 into 25 unique grammatical forms, and those with an average accuracy rate lower than 40% in each population were identified as difficult.

- We coded the 53 test items based on the IPSyn classification (Scarborough, 1990), and employed nonparametric statistical analyses to compare the PLI and ASD language profiles as shown in standardized testing.
- 36 children (21 PLI and 15 ASD) completed a 20-minute conversation with a clinician, which we transcribed and coded using the IPSyn conventions.
- We conducted a series of nonparametric statistical analysis to compare the PLI and ASD language profiles in spontaneous conversation.

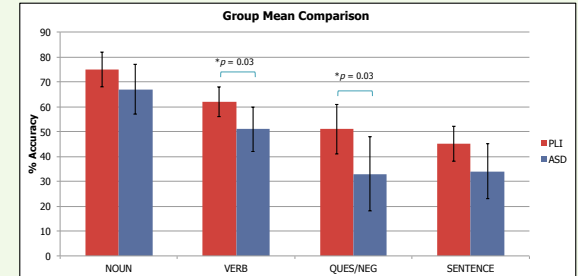
## Results

- The highlighted morphologic and syntactic structures can be identified as most difficult to the two populations:

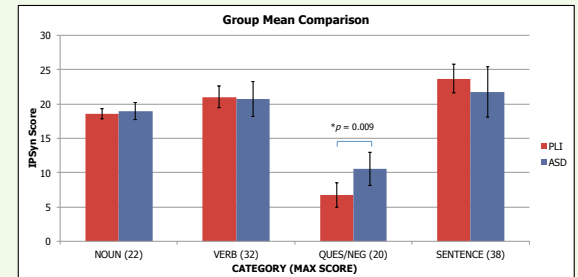
Form	PLI % Accuracy	ASD % Accuracy	Overall % Accuracy
Propositional clause	17	6	11
Passive	13	19	16
Relative clause	17	25	21
Reflexive pronoun	29	19	24
Wh-clause	25	25	25
Wh-question	38	15	26
Irregular past tense verb	27	31	29
Past tense copula be	28	31	30
Infinitive	46	27	36
Copula+complement	50	25	38
Y/N interrogative	58	33	46
Participle	69	31	50
Embedded clause	58	44	51
Third person singular "s"	63	44	53
Negative	58	50	54
Past "ed"	77	47	62
Direct/indirect object	63	63	63
Future modal "will"	71	63	67
Conjunction "and"	83	50	67
Progressive	75	61	68
Prepositional phrase	73	72	72
"Because"	83	63	73
Plural	72	77	75
Possessive pronoun	82	70	76
Possessive of a noun	85	69	77

Many thanks to our wonderful IPSyn coders: Alana Sullivan, Hannah Eldridge and Asher Crawley, and to the children and families who participated in this study. Study supported by R03 DC 11365-3 from the National Institutes of Health. The authors have no financial or nonfinancial relationships to disclose.

- The SPELT-3 analysis revealed that children with PLI scored significantly higher than children with ASD on **Verb Phrases** [ $t(38)= 2.29, p= 0.03$ ] and **Questions and Negatives** [ $t(38)= 2.34, p= 0.03$ ]:



- The conversation analysis indicated that children with ASD scored significantly higher than children with PLI on **Questions and Negatives** [ $t(34)= 7.72, p= 0.009$ ]:



## Conclusions

- For both children with PLI and those with ASD, the syntactic propositional complement clause, passive, and relative clause structures were most difficult. Both groups had the greatest difficulty with the morphological forms marking reflexive pronouns, irregular past tense, and past tense copula be.
- In standardized testing, children with PLI performed better than those with ASD in every IPSyn category, where Verb Phrases and Questions and Negatives were significantly better. However, children with ASD demonstrated significantly better skills using Questions and Negatives in conversation than those with PLI.
- While there was a tendency for children with PLI to outperform those with ASD in standardized testing, children with ASD appeared to have a similar conversational language profile as their PLI peers.