

# Evaluating Syntactic Production In Young Children With and Without Language Delays

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## Introduction

- Deriving measures of syntax from spontaneous language samples is an excellent method of determining a child's syntactic ability, developing syntactic goals, and monitoring progress over time (Evans & Craig, 1992). There are a limited number of language sample tools available for analyzing and describing a child's syntactic abilities and each has significant problems prohibiting its practical use in a clinical setting.
- The Index of Productive Syntax (IPSyn; Scarborough, 1990) was created in order to quantitatively, qualitatively, and efficiently measure syntactic development in preschool-aged children. It involves searching a 50 or 100 utterance language sample for the presence of 0-2 exemplars of various syntactic structures organized into 4 subscales (noun phrases, verb phrases, questions and negations, and sentence structures).
- The IPSyn can serve as a valuable goal formation tool because items are developmentally ordered and it can provide a quick "snapshot" of what syntactic structures are and are not yet emerging.
- While the IPSyn's use as a research tool has been growing since its introduction in 1990, its clinical use has, to date, been minimal. Rescorla et al. (2000) found that overall late talkers scored lower on the IPSyn than age-matched peers, but little data have been published describing which structures differ between groups. Scarborough and Dobrich (1990) characterized the use of 28 of the IPSyn's structures for 4 late talking children, and Hadley & Short (2005), using selected structures of the IPSyn, found late emergence of verb forms for children with later language impairments.
- An analysis of the frequency of use of each of the IPSyn structures is needed, both for typically developing and late-talking children.

## Questions

- What is the percentage of typically developing children at 30-months and 42-months of age who produce each structure of the IPSyn?
- How does the production of IPSyn structures of late-talking 30-month and 42-month old children compare to those of typically developing children?

## Method

### Participants

- Participants were drawn from the Weismer corpus of The Child Language Data Exchange System (CHILDES; MacWhinney, 2000), which consisted of typically-developing (TD) children (30-months, N=33; 42-months, N=30) and late-talking (LT) children (30-months, N=12; 42-months, N=14).

### Spontaneous Language Samples

- Spontaneous language samples were obtained from the CHILDES system as CHAT transcripts and were imported into the Systematic Analysis of Language Transcripts (SALT) program (Miller and Chapman, 2000). Transcripts were hand checked by the first two authors for usable utterances (utterances which did not consist of partially or fully unintelligible utterances or were sound effects). Transcripts containing 95-100 C&I utterances were used for this analysis.

### Procedure

- The original IPSyn was slightly revised for consistency of coding. Three research assistants, who underwent an extensive training procedure, were randomly assigned transcripts, which they hand coded for the use of 59 IPSyn structures. Seventeen percent of the transcripts were recoded by a second assistant. Reliability of coding of individual structures was 95%.

## Results and Discussion

### IPSyn Total Score

- As expected, LTs had lower total IPSyn scores than their TD peers at 30 months ( $t(43)=6.8, p<.0001$ ) and 42 months ( $t(42)=2.7, p<.01$ ). TDs at 30 months had lower scores than at 42 months ( $t(18)=6.3, p<.0001$ ).

### Specific IPSyn Structures

- For high frequency structures (those occurring in at least 75% of the transcripts), verb and sentence structures accounted for the majority of IPSyn items differentiating groups from one another.
- With the exception of N8, the structures that distinguished 42 month old TD children from same aged LT children also distinguished them from 30 month old TD children. This suggests that, with respect to syntactic structures, delays are best characterized as developmental lags.

### Selected References

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### Percentage IPSyn structures of 30 and 42 month old children with 2 exemplars

NOUNS					VERBS					QUESTIONS/NEGATIONS					SENTENCE STRUCTURES					Items occurring at 75-100% frequency showing the greatest difference scores between groups									
LT	TD	LT	TD		LT	TD	LT	TD		LT	TD	LT	TD		LT	TD	LT	TD		42vs-42%	42vs-30%	30vs-30%							
30	42	42			30	42	42			30	42	42			30	42	42												
N1	100	100	100	Noun	V1	92	100	100	Verb	Q1	58	100	97	Intonation	S1	100	100	100	Two-words	V6	39.5%	S8	65.2%	V5	70.5%				
N2	92	100	100	Pronoun	V2	83	97	93	100	Particle/preposition	Q2	42	97	100	87	Routine, etc.	S2	83	100	100	100	Subject-verb	S5	32.4%	S5	57.3%	V8	62.9%	
N3	83	94	100	Modifier	V3	50	97	93	100	Prep. phrase	Q3N	67	76	86	77	Not() + X	S3	58	100	100	97	Verb-object	V9	21.9%	N7	35.8%	Q2	55.3%	
N4	92	100	100	2-word NP	V4	33	85	86	97	Copula linking 2 Ns	Q4	17	70	93	73	Wh question + verb	S4	42	91	100	97	Subject-verb-object	S6	21.4%	N9	35.5%	S6	55.3%	
N5	67	94	93	Article before noun	V5	8	79	79	100	V + infinitive	C5N	25	46	64	70	Neg. between S + verb	S5	0	39	64	97	Conjunction (any)	V5	21.4%	N8	29.1%	Q4	53.0%	
N6	42	91	93	100	2-word NP after verb	V6	25	70	57	97	Auxiliary be, do, have	C6	8	42	64	70	wh- w/ inversion	S6	8	64	79	100	Any two Vs	N9	18.6%	V6	27.0%	V4	51.5%
N7	33	58	79	93	Plural suffix	V7	33	61	43	40	Progressive -ing	Q7N	17	42	50	70	Neg copula, modal, aux	S7	0	15	36	50	Conjoined phrase	N7	14.8%	V9	26.7%	N6	49.2%
N8	25	58	93	87	2-word NP before verb	V8	25	88	86	97	Adverb	Q8	8	30	29	43	Y/N inverted cop., aux	S8	0	18	57	83	Infinitive	V3	47.0%				
N9	8	55	71	90	Three-word NP	V9	8	67	71	93	Modal before V	C9	0	0	0	3	Why, when, which, whose	S9	0	18	7	13	Let/Make/Help/Watch	V6	44.7%				
N10	0	9	7	10	NP adverb	V10	8	39	57	60	3 <sup>rd</sup> person sing. present	Q10	0	0	0	0	Tag question	S10	0	9	36	50	Subord. conj. + clause	S3	41.7%				
N11	0	3	0	3	Other morph. N/adj.	V11	0	18	21	43	Past tense modal	Q11	0	0	0	3	Q/w/ negation + inversion	S11	0	9	7	40	V-nominal clause, m.state	N5	27.3%				
					V12	0	9	21	0	Regular past tense						S12	0	3	0	37	Conjoined clauses	V7	27.3%						
					V13	0	3	7	3	Past tense auxiliary						S13	0	3	0	23	If or wh-clause	S2	16.7%						
					V14	0	27	57	57	"Modal" adverb						S14	0	3	0	3	Bitransitive predicate								
					V15	0	21	14	23	emphasis or ellipsis						S15	0	0	7	30	3 or more (non aux.) Vs								
					V16	0	0	7	13	Past tense copula						S16	0	3	0	3	Relative clause								
					V17	0	0	0	0	Other morpheme v/adv.						S17	0	0	0	3	Infinitive clause: new sub								
															S18	0	0	0	0	Gerund									
															S19	0	0	0	3	Front, center subord.									
															S20	0	3	7	0	Passive or full tag cmnt.									

**Acknowledgments:** We are grateful to Susan Ellis Weismer for making this data available through the CHILDES database. Thanks also to our wonderful research assistants, Kasey MacPherson, Amanda Thompson, and Cara Walker, for all their efforts.

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