

Adolescent First-Language Acquisition of Word Order in American Sign Language

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Introduction

- Age of Acquisition (AoA) effects: lacking early environmental input has negative effects on learning outcomes, especially at the morpho-syntactic level¹.
- Deaf children often suffer from early language deprivation, and show deficits in their first language (L1), American Sign Language (ASL)².
- ASL employs word order variation³ and child native learners show a U-shaped learning curve⁴, but basic word order is unaffected by AoA⁵.

Background

ASL word order variation

- Basic word order: Subject-Verb-Object (SVO)
 - BOY LIKE APPLE 'The boy likes apple.'
- Sentence-final subject-pronoun copy (VS)
 - (BOY) SLEEP HIM 'The boy is sleeping.'
- Object topicalization with certain information structure or modulated verbs (OV)
 - ICECREAM_{top} WOMAN GIVE_[agr:3_1] 'As for the ice-cream, the woman gave it to me.'

Child acquisition of ASL word order

- Around 2 years old: Use variable word orders (64%-75% SV; 46%-59% VO); Tend to use OV order with OV sensitive verbs and verbs commonly used in yes-no questions (e.g. WANT, LIKE)
- Around 3 years old: Become more canonical over time (83% - 92% SV; 80% - 88% OV)
- Beyond 3 - 4 years old: use more varied word order, similar to adults

Late L1 acquisition of ASL

- Native-like production and comprehension of basic word order
- Deficits in other morpho-syntactic structures
- Similar initial vocabulary development

Research Questions

- How do deaf adolescent first language (L1) learners of ASL acquire basic word order from varied input?
- Does their developmental trajectory resemble that of child L1 learners?

Methods

Data collection

- Filming spontaneous productions: casual conversations with familiar native signers
- Deaf or hearing researchers with highly proficient ASL skills transcribed the films in ELAN

Data analysis

- Select intelligible and unambiguous verb-noun combinations
- Separate utterances into verb-subject combinations and verb-object combinations
- Code word order preference and relevant conditions

Table 1. Age of Acquisition (AoA) and year of exposure (YoE) to ASL at each visiting time point.

Subject	AoA	YoE at T1	YoE at T2	YoE at T3
Carlos	13;8	2;0	3;8	5;6
Shawna	14;7	1;0	2;8	4;6
Cody	14;8	1;6	3;2	NA
Chris	12;10	2;11	5;10	NA

Table 2. Total number of verb-noun combinations for each subject at each visiting time point.

Subject	Verb with Subject			Verb with Object		
	T1	T2	T3	T1	T2	T3
Carlos	12	15	9	31	13	11
Shawna	10	13	11	20	19	15
Cody	16	10	NA	14	9	NA
Chris	77	146	NA	51	59	NA

Results

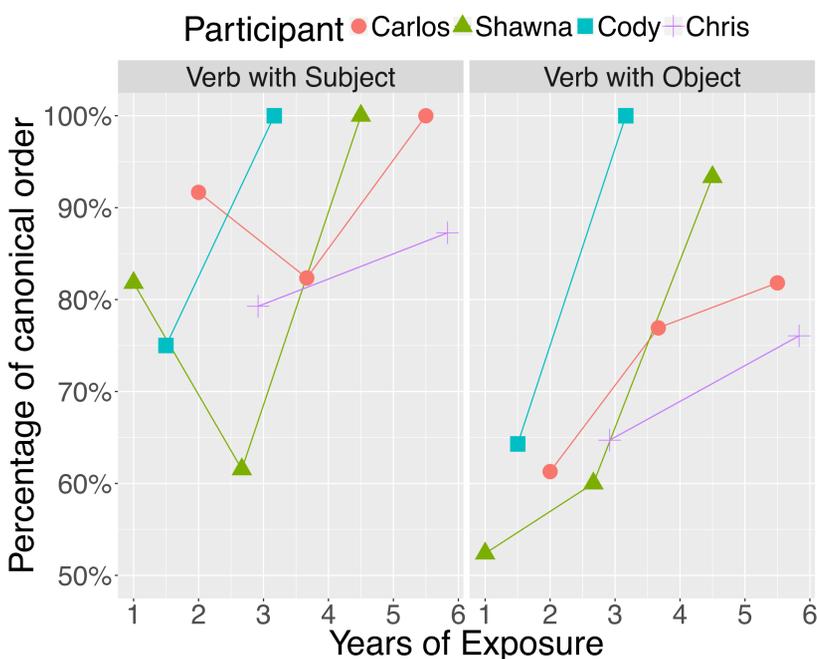


Figure 1. Percentage of canonical word order as a function of years of exposure

- Late L1 learners show more varied word order patterns in the beginning, but later preferred the canonical word order.
- The percentages of canonical word order are comparable to those of child native learners.

Table 3. Distribution of utterances with OV prominent structures: modulated verbs (aspectual, spatial, handling) or with object-biased information structure (agreement, yes-no questions).

	Carlos			Shawna			Cody		Chris	
	T1 **	T2	T3	T1	T2 **	T3	T1	T2	T1	T2 **
	(2;0)	(3;8)	(5;6)	(1;0)	(2;8)	(4;6)	(1;6)	(3;2)	(2;11)	(5;10)
Aspectual	0	0	0	0	1	0	0	0	0	0
Spatial	0	1	0	1	1	1	4	3	0	2
Handling	3	0	0	0	0	0	0	0	0	0
Agreement	5	2	0	3	0	2	3	0	2	2
Yes-no question	0	0	0	1	0	0	0	0	1	4
Others	11	7	9	6	9	11	2	6	30	46
VO total count	19	10	9	11	11	14	9	9	33	54

** : Fisher Exact test P < 0.01

- Late learners mostly used pronouns as subject in their VS productions, compatible to the subject-pronoun copy rule, although they preferred pronominal subjects in general.
- Late learners show increased sensitivity to OV-prominent structures, but their production lacks appropriate non-manuals.

Discussion

- Is basic word order really resilient? Yes, but...
 - Yes: late learners generally prefer basic word order; they show a generalization trajectory similar to child learners; they are sensitive to some word order constraints
 - But: late learners take longer to generalize the basic word order despite of their fast initial vocabulary development

- Implications:
 - Adolescent L1 learners are capable of generalizing basic grammatical relations from varied input
 - Initial grammatical developmental trajectory is less affected by AoA, but development is prolonged for late learners, and seems to be limited to basic word order

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