

Phonological development of hearing children of Deaf adults

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Introduction

- Do children with normal hearing, and Deaf, signing parents, develop spoken language in ways parallel to children in typical environments?
- In particular, how do they develop in the area of speech sounds, i.e., phonology?

Participants

BEN	1;11	2;06	3;00
TOM	2;00-2;02	2;03-2;04	2;06-2;07
LEX	3;00	3;03	3;05

All three children have normal hearing, no diagnosed disabilities, and Deaf parents.

Results

Phonemic Inventory:

- By 3 years of age, BEN, TOM and LEX have mastered all stops as well as nasals in word initial position.
- All 3 children produce at least some affricates, fricatives, glides, and liquids which is to be expected of children around 3 years of age.

Syllable structure:

- BEN and LEX both had very high percentages of correct syllable structure as compared to target syllable structure.
- TOM showed decreased variation of syllable structure as compared to the other 2 children in the study.

	cv	cvvc	cvcc	ccvc	ccvcc	vc	vcvc
Lex 3:00	0.98	0.96	0.83	0.8	1	1	1
Lex 3:03	0.98	0.96	0.41	1	1	1	1
Lex 3:05	0.95	0.90	0.79	1	1	1	1
Ben 1:11	0.88	0.81	0.88	0.75	0.25	1	0.9
Ben 2:06	0.94	0.87	0.94	1	1	1	0.6
Ben 3:0	1	0.92	1	1	0.90	1	0.9
Tom 2:00-2:02	0.67	0.48	0.33	0*	0*	0.86	0.6
Tom 2:03-2:04	0.79	0.5	0.48	0.56	0.38	1	0.67
Tom 2:06-2:07	0.98	0.74	0.55	0.2	0.63	0.4	1
Tom 3:01	0.95	0.84	0.48	0.7	0.92	0	0.95

* if ≤ 2 observations

Phonological Processes:

- BEN had low occurrences of all phonological processes which is consistent with the typical findings of 3 year old children. His adult-like utterances were 79% by 3:0.
- Similarly, LEX had low occurrences of all phonological processes. By age 3;05, he had adult-like utterances of 77%.
- However, TOM was still producing some phonological processes by age 3;01, including final consonant deletion and stopping. His adult-like utterances were 47%.

Child	Year	Final	Initial	Final	Initial	Stopping	Weak Spt	Consonant	Stopping	Year	Deletion	Cluster	Comments
BEN	1;11	100	100	100	100	100	100	100	100	1;11	100	100	
BEN	2;06	100	100	100	100	100	100	100	100	2;06	100	100	
BEN	3;00	100	100	100	100	100	100	100	100	3;00	100	100	
TOM	2;00-2;02	100	100	100	100	100	100	100	100	2;00-2;02	100	100	
TOM	2;03-2;04	100	100	100	100	100	100	100	100	2;03-2;04	100	100	
TOM	2;06-2;07	100	100	100	100	100	100	100	100	2;06-2;07	100	100	
TOM	3;01	100	100	100	100	100	100	100	100	3;01	100	100	
LEX	3;00	100	100	100	100	100	100	100	100	3;00	100	100	
LEX	3;03	100	100	100	100	100	100	100	100	3;03	100	100	
LEX	3;05	100	100	100	100	100	100	100	100	3;05	100	100	

Methods

- Videotapes used were part of a larger study being done at Gallaudet University and the University of Connecticut examining the bimodal bilingual development of hearing children of deaf adults.
- Children were videotaped in naturalistic settings, alternating between communicating with hearing adults and deaf adults, weekly from 18 months to 4;06 (years, months of age).

- For this study, videotapes with hearing adults, at approximately 24, 30, and 36 months of age were analyzed.
- TOM had a greater amount of videotaped sessions selected due to his production of fewer linguistic utterances per session.

- Eian software, a language archiving system, was used to view the videos and accompanying transcripts.
- The 50 most frequently used words were derived from each transcript and further analyzed using Microsoft Excel.

Phonemic Inventory:

- Phonemic inventories were collected for each session for word initial, medial, and final position.
- This information was compiled into a Microsoft Excel spreadsheet

Syllable structure:

- The child's syllable structure for each token was compared against the target syllable structure to determine percentages of correct syllable structure.

Phonological Processes:

- The phonological processes used by each child were identified and then summed against the total number of tokens during the videotaped session.

Background

- Over 90% of children born to deaf parents (CODAs) are hearing
- Schiff and Ventry (1976) studied 52 CODAs; found 21% were developing language atypically.
- Bregle (1971) found that 56 CODAs had normal receptive vocabulary and above average articulation.
- Stoel-Gammon and Stone (1991) – typical phonological development of a 24 month old child:
 - Words of form CV, CVC, CVCV, and CVCVC
 - A few consonant clusters in word initial and potentially 1 or 2 in word final position
 - 9 or 10 different consonantal phones in word initial position, including stops, nasals, fricatives and glides
 - 5 or 6 different consonantal phones in word final position (mostly stops with some from nasal, fricative, and liquid classes)
- The American Speech Language Hearing Association (ASHA) defines disordered or delayed speech as speech that includes difficulty making sounds, including substituting or adding sounds, as well as patterns of sound errors.

Conclusions

- The 3 CODA children examined in the study are developing language in a pattern that is consistent with children in typical linguistic environments.
- TOM, however, did present at the low end of the normal range of linguistic development. This may be due in part to his linguistic environment but this can not be determined until further research has examined his language at an older age.

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