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ORAL AND MANUAL LANGUAGE SKILLS OF HEARING CHILDREN OF DEAF PARENTS

Rachel I. Mayberry

Central Institute for the Deaf, 818 South Euclid
St. Louis, Missouri 63110

ABSTRACT

The oral, manual and combined language skills of first-born, normally hearing children of manually communicating parents were tested and compared. Eight children between the ages of 3 and 7 were tested. The mode of parent-to-child communication was noted and compared to the test scores. Oral-language skills of the children were within normal limits. The children showed a wide range of manual-language skills. Some vocabulary items were found to be exclusive to oral or manual language. There was no correlation between the parental use of manual and oral language and the children's oral-language skills. However the manual-language proficiency of the children was inversely correlated to parental use of oral language.

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It is generally thought that children learn language from the verbal models present in their environment, usually those of their parents. The inference could be made that normally hearing children of deaf parents who communicate mainly through manual language¹ will experience deficiencies and/or delays in their development of oral-language skills. For example Critchley (1965) studied three normally hearing children of deaf couples and concluded that "fingerspelling did not provide an adequate breadth of experience on which a child can build vocabulary." However there was no evidence that manual communication was used for familial communication and only one of his subjects performed poorly on a vocabulary measure. On the other hand Lenneberg (1967) noted that language did not appear to be delayed in children of deaf parents. There was no data gathered nor a description of parental communication given.

This study was undertaken primarily to measure the oral-language skills of hearing children of manually communicating deaf parents with standardized language tests. Manual language skills of these

¹Throughout this study the term "manual language/communication" refers to American Sign Language interspersed with standard fingerspelling of those items for which there is no standard sign.

children were also tested to compare performances between the two modes of language.

METHOD

Subjects and Evaluator:

Eight first-born, normally hearing children were tested. The parents of these children were reported by their acquaintances to communicate mainly via manual language. The children ranged from 3 to 7 years of age and resided in urban communities in the midwest. No normally hearing adults lived in any of the homes. The evaluator is a native signer, a member of the Registry of Interpreters for the Deaf and was familiar with the communities in which the families lived.

Procedure:

Prior to the testing each couple was asked to describe in detail the means by which they communicated with their child and vice versa. The questions dealt with possible combinations of manual and oral language components, i.e., fingerspelling, American Sign Language, gesture and speech. The evaluator also observed and recorded the amounts and combinations of manual and oral language exchanged between the child and his parents.

The testing took place in the homes of the children on two separate occasions. During the first session oral and manual skills were tested. During the second session combined skills

(speaking and signing simultaneously) were tested. All of the sessions were tape recorded.

One standardized articulation test and four standardized clinical tests of oral-language performance were administered to each child. Production of speech sounds was tested with the Arizona Articulation Proficiency Scale (Fudala, 1970). Ability to relate concepts presented orally was tested with the Auditory Association subtest of the Illinois Test of Psycholinguistic Abilities (Kirk, McCarthy and Kirk, 1968). General expressive and receptive language abilities were tested with the Utah Test of Language Development (Mecham, Jex, Lorrin and Jones, 1967). Receptive vocabulary was tested with the Peabody Picture Vocabulary Test (Dunn, 1965). The syntactical development of the children was measured by scoring the transcribed, spontaneous speech of the children with Lee and Canter's (1971) Developmental Sentence Scoring procedure.

The manual language skills of the children were tested with the Peabody Picture Vocabulary Test (Dunn, 1965) and the Utah Test of Language Development (Mecham, Jex, Lorrin and Jones, 1967). The two tests were administered manually without verbalization; the children were required to respond manually.

The combined language skills of the children were tested using a combined method of administration with the Peabody Picture Vocabulary Test (Dunn, 1965) and the Utah Test of Language Development (Mecham, Jex, Lorrin and Jones, 1967). The children were allowed to respond orally, manually, or any combination thereof.

RESULTS AND CONCLUSIONS

The results of all oral, manual and combined language testing for each child are presented in Table 1.

Articulation Skills:

The children's performance on the Arizona Articulation Proficiency Scale was within normal limits. The youngest child (3-0) achieved a raw score four points below the three year level. Because the conversion scale for the articulation age begins with a three year level, his articulation score could not be converted into an articulation age.² The spontaneous speech of all the children was judged to be intelligible.

Oral Language Skills:

Normal limits for oral-language skills as tested by a single test was performance no less than twelve months below chronological age. A child was considered to have an oral-language deficit if he performed below normal limits on more than one test.

On the Auditory Association subtest of the Illinois Test of Psycholinguistic Abilities seven children performed within normal limits; one child performed below this point. No reasons were obvious for the oldest child's (7-3) poor performance on this task.

²The articulation scores presented in Table 1 appear to decrease with increasing age. This may be accounted for by the fixed number of possible points. Thus an older child with good articulation is not able to score significantly above his chronological age.

Because this subject's performance on all other tests of oral language were within normal limits, he was not considered to have an oral-language deficit.

On the Peabody Picture Vocabulary Test six children performed within normal limits; two children scored below this point. One child (3-10_a) scored two months below normal limits, another (4-7) scored one month below this point. Both of these children performed within normal limits on all other tests of oral-language skills and thus were not considered to have an oral-language deficit.

The transcribed, spontaneous speech of the children was scored with Lee and Canter's (1971) Developmental Sentence Scoring procedure. Seven children scored within the acceptable range; one child (4-2) scored two-tenths of one percent below the tenth percentile for his age range. This subject's performance on all other tests was within normal limits and thus he was not considered to have an oral-language deficit.

Although four subjects performed below normal limits on three tests, three performed only slightly below this point. In none of the instances did a child perform below normal limits on more than one test. It is concluded that none of these children show any performance patterns of oral language indicating deficits or delays in oral-language development.

Comparison of Oral and Manual Language Skills:

On the Peabody Picture Vocabulary Test four children had higher scores on the manual presentation and four children had higher scores

on the oral presentation. On the Utah Test of Language Development one child scored better on the manual presentation, one child had identical scores on both presentations, and six children performed better on the oral presentation. In summary these children show a wide range of manual-language skills.

Comparison of Oral, Manual and Combined Language Skills:

On the oral, manual and combined presentations of the Peabody Picture Vocabulary Test seven of the children performed best on the combined presentation; one child performed best on the manual presentation. On the oral, manual and combined presentations of the Utah Test of Language Development five children performed best on the combined presentation; three children performed equally well on the combined and oral presentations and less well on the manual presentation.

Analysis of Vocabulary Items:

Item analysis of the children's performance on the manual and oral presentations of the Peabody Picture Vocabulary Test showed some vocabulary items were recognized by the children only in one modality. For example one child recognized "barber" manually but not orally. The same child recognized "argument" orally but not manually. There was a large variation among the children as to which vocabulary items were recognized manually or orally. For all of the children the number of items recognized orally but not

manually ranged from zero to thirty-two. The number of words recognized manually but not orally ranged from zero to twenty. Thus these children generally perform better on vocabulary tests administered both orally and manually because their vocabulary consists of some exclusively oral and some exclusively manual items.

(Insert Table 2)

Parental Communication and the Children's Language Skills:

On the initial questioning all of the parents reported themselves to be manual communicators, but a wide variation in the mode of parental communication was observed. The dominant types of parent-to-child communication were as follows: two parents signed without vocalization; five parents signed with nonlinguistic vocalization; seven parents signed and spoke; two parents only spoke. None of the parents fingerspelled to their children in the presence of the evaluator.

Four children were found to represent opposite ends of the oral-manual spectrum of parental communication. Two children received continuous oral input from their parents: the 4 year, 7 month old child received speech and sign from his mother and only speech from his father; the 5 year, 3 month old child received speech and sign from both parents. Two children received no oral input from their parents: the 3 year old child received sign accompanied by nonlinguistic vocalization from both parents; the 3 year, 10 month (b) old child received only sign from his mother and sign accompanied

by nonlinguistic vocalization from his father. The remaining four children received manual language from both parents and varying amounts of oral language from one parent.

The oral and manual test scores of the two children who received no oral input from their parents were compared with the oral and manual test scores of the two children who received continuous oral input from their parents (see Table 2). The two sets of children cannot be differentiated on the basis of their oral-language test performances. The manual-language test performances of the children who received no oral input from their parents averaged twenty-six months better on the Peabody Picture Vocabulary Test and thirteen months better on the Utah Test of Language Development than those of the children who did receive such input. Thus the parental use of oral or manual communication was not related to the children's oral-language proficiency. However parental use of oral communication was inversely correlated with the children's manual-language proficiency.

(Insert Table 2)

DISCUSSION

The results of this study suggest that children raised in an environment of predominately manual communication are not deficient or delayed in their acquisition of oral-language skills. Although some of the children performed below normal limits on a test, none of the children performed below normal limits on more than one test.

It is the overall performance patterns which illustrate the normal rate of acquisition of oral language by these children.

Some important variations in the language environments of the children should be noted. Most of the parents did talk to their children in varying amounts. Of special interest are the two children who received very little oral input from their parents. These parents reported that their children made frequent contacts with hearing peers, although neither child had ever participated in a nursery or preschool. Both families reported having visits with hearing friends and relatives about once a month.³

Clearly these two children had considerably less exposure to the oral language of adults than the typical child, yet their oral-language performance was equal to that of children reared in typical oral-language environments. Apparently the amount and type of oral-language exposure available outside the home coupled with the early parental use of a structured communication system was sufficient for the acquisition of oral language.⁴ This is not to say that a child reared in such an environment which is also completely isolated from a hearing community would not experience deficits and/or delays in oral-language acquisition.

³All of the families studied had television sets.

⁴Because both children were reported to begin signing and talking between 13 and 16 months of age (in neither instance was the first word and the first sign the same), it cannot be assumed that they generalized early non-verbal items into verbal items.

The children who did not receive oral input from their parents performed significantly better on the manually administered tests than those who did receive such input (see Table 2). This suggests that these children's proficiency with manual language is not directly correlated with the amount of manual input from their parents, rather it is inversely correlated with the amount of oral-language input they receive from their parents. It could be that the innate, cognitive language functions of the human are activated more easily by the organizing principles of the auditory system than by those of the visual system when the former is intact. It is also possible that when auditory language stimuli are presented simultaneously with visual language stimuli, the auditory learning task interferes with the visual.

It is tempting to compare the oral and manual language acquisition process of these children to those of bilingual children. But bilingual acquisition entails two systems of auditory language stimuli, whereas the simultaneous acquisition of manual and oral language does not. Therefore such comparisons are impossible to make until more is learned about manual communication not as an oral-aural variation, but as a manual-visual phenomenon.

The combined administration of the Peabody Picture Vocabulary Test resulted in better receptive vocabulary performances than resulted from the oral administration. Future study of the vocabulary skills of such children should test all items both orally and manually. This would result in a more accurate description of

the number and type of single words which are specific to oral language or manual language. If such a child is seen by a speech pathologist for language therapy, this testing procedure should be used. The speech pathologist can then tap existing manual vocabulary items and facilitate their transfer to oral language. Of course if both the oral and manual language skills are well below age expectations, the problem may not be one of language.

Manual language may be dependent upon cognitive and neural structures not necessarily common to oral-aural communication. Thus its acquisition needs to be studied not only as parallel to oral-language acquisition, but as a separate manual-visual phenomenon. New insights into general cognitive development may be gained by studying children in environments of manual communication. The response of manually communicating parents to both the manual and oral communicative efforts of their children may offer an alternative environment in which to study the role of parental modeling and expansion in language acquisition.

SUMMARY

All of the children studied show normal oral-language development. The manner in which parents were observed to use oral or manual communication with their child was not related to oral language proficiency. When the parents used both oral and manual communication the amount of oral communication used was inversely correlated with the manual language proficiency of the children. It was also found

that the best reflection of vocabulary size results from an examination utilizing both oral and manual modes of communication because many vocabulary items of these children are specific to manual or oral language.

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Requests for reprints should be addressed to the Librarian, Central Institute for the Deaf, 818 South Euclid Avenue, St. Louis, Missouri 63110.

Table 1. Summary of the test scores reported in months difference from chronological age (Developmental Sentence Scoring reported in percentile for age).

Chronological Age (Years - Months)	3-0	3-10 _a	3-10 _b	4-2	4-7	5-3	5-6	7-3
Arizona Articulation Proficiency Scale	-	+19	+19	+10	+5	+2	-1	-3
Auditory Association (ITPA)	-6	0	+3	-1	-6	-2	+1	-22
Developmental Sentence Scoring Grammar	10%	25-50%	above 90%	below 10%	50-75%	50-75%	50%	25%
Peabody Picture Vocabulary Test (oral)	-6	-14	-10	-9	-13	-2	0	-3
Peabody Picture Vocabulary Test (manual)	-2	-12	+15	-4	-31	-35	-7	-28
Peabody Picture Vocabulary Test (combined)	0	-5	+48	-6	-10	+1	+14	+19
Utah Test of Language Development (oral)	-2	-9	+6	+7	-6	+3	+13	-2
Utah Test of Language Development (manual)	+2	-16	+6	-6	-15	-19	-48	-32
Utah Test of Language Development (combined)	+4	-7	+9	+10	-6	+3	+7	-2

Table 2. Oral and manual performance of children with and without parental-oral input (scores reported in months difference from chronological age; Developmental Sentence Scoring reported in percentile for age).

		Parental Oral Input		No Parental Oral Input	
		4-7	5-3	3-0	3-10b
Chronological Age (years-months)		4-7	5-3	3-0	3-10b
Oral Language Tests	Peabody Picture Vocabulary Test	-13	-2	-6	-10
	Utah Test of Language Development	- 6	+3	-2	+ 6
	Auditory Association (ITPA)	- 6	-2	0	+ 3
	Arizona Articulation Proficiency Scale	+ 5	2	-	+19
	Developmental Sentence Scoring	50-75%	50-75%	10%	90%
Manual Language Tests	Peabody Picture Vocabulary Test	-31	-35	-2	+15
	Utah Test of Language Development	-35	-19	-2	+ 6

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