

# American Annals OF THE DEAF

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**Advertising:** American Annals of the Deaf, 5034 Wisconsin Ave., N.W., Washington, D.C. 20016. Tel: 202 363-1327.

**Managing Editor:** Ann Gallagher, American Annals of the Deaf, 5034 Wisconsin Ave., N.W., Washington, D.C. 20016.

**Business Office:** 5034 Wisconsin Ave., N.W., Washington, D.C. Second class postage paid at Washington, D.C. Acceptance for mailing at the special rate of postage provided for in the act of February 28, 1925, authorized June 25, 1932. Copyright © by Conference of Executives of American Schools for the Deaf, Inc., and Convention of American Instructors of the Deaf, Inc., 1978.

# Degree and Manner of Acquisition of Written English Language Rules by the Deaf

G. O. Bunch

Some 75 deaf students (age 9-10, 12-13 and 15-16 years) responded to items from Menyuk's *Test of Grammatical Competence* in an investigation of the degree to which deaf individuals draw on internalized grammatical rules and/or memory and the effect of language teaching method, sex and age on written English language ability. Results indicated that the two main language teaching methods for the deaf, the natural and the formal, are not differentially effective. Females performed at a significantly higher level than males. While there was a significant increase in ability with age, the differences were attributable to a limited number of subjects. The majority of subjects of all ages were almost totally unable to correct the agrammatical items presented. The evidence may be interpreted as suggestive of attempted memorization of written language rules as against internalization. The fact that language instruction begins after the optimal period for language learning and then does not allow for normal developmental patterns may indicate that the majority of deaf individuals cannot be expected to acquire adequate written language control under existing methods and procedures.

Studies of the written language ability of deaf children have demonstrated consistently that the average deaf child does not possess the linguistic ability of his normally hearing peers. It is an unfortunate fact that late identification and a paucity of preschools for the hearing impaired deprive the majority of the opportunity to experience language during their earliest years. Language instruction at school entrance is modeled on one of two general types developed for deaf children, the natural system (Groht, 1958; Van Uden, 1970) or the formal system (Caniglia, Cole, Howard, Krohn & Rice, 1972; Fitzgerald, 1969). Both rely extensively on visual presentation of materials and deliberate teaching of grammatical principles. There is little similarity to the sequence of language acquisition experienced by normally hearing children. Lenneberg (1967) asserted that the above methods present "a meta-language, a language about the language which they (deaf children) do not yet have" (p. 322). He went on to query whether existing methods would ever enable the deaf population to deal with language on a normally successful basis.

G. O. Bunch is working with Education of Exceptional Students at York University in Downsview, Ontario, Canada.

A variety of investigations have documented the quantity of the written English handicap of the deaf (Heider & Heider, 1940; Myklebust, 1964; Simmons, 1962). Recent studies based on generative transformational models have attempted to define aspects of the qualitative nature of this handicap. Lowenbraun (1969) explored the syntactic competence of deaf children 6 to 13. She found utterances from holophrastic naming responses to connected language responses. Responses of children to age 10 were largely of the one-word type. Responses of older subjects were expansions of single noun-uninflected verb and uninflected verb-single noun patterns. Though the older subjects used connected language responses, their responses were not consistently grammatically correct. Lowenbraun considered existing language teaching methods for deaf children to deviate from the developmental sequence of other children and to be ill-suited to the acquisition of natural language. Schmitt (1970) found that deaf children 8 to 17 demonstrated a tendency to ignore passive transformation markers, to ignore negative markers and to reverse nouns in transitive verb, reversible sentences. He noted that these deviant rule usages were to be found on the receptive and productive

levels. Power and Quigley (1973) confirmed and expanded on Schmitt's findings. They concluded that the developmental patterns of deaf and normally hearing children in passive voice were similar but that there was a severe delay for deaf children. Quigley, Wilbur and Montanrelli (1974) examined the ability of deaf children 10 to 19 years to respond to and evaluate the grammaticality of yes/no, wh and tag questions. Deaf children experienced severe difficulty responding and evaluating. Developmental differences were noted for the rule of inversion but a general adherence to the sequence of question formation development in normally hearing children was noted. Smith and Wilbur assisted Quigley (1974) in an examination of deaf children's comprehension of sentences containing relative clauses. Their investigation focussed on interpretation of meaning, comprehension of structural forms and copying. They concluded that their deaf subjects deviated more severely from hearing children in the area of syntactic structures than in the area of other variables. The findings of deviant structures and correct forms together suggested that some deaf individuals may draw on two or more parallel sets of rules when producing certain syntactic structures. A similar suggestion was advanced by Sarachan-Deily and Love (1974) as a result of their investigation of the underlying grammatical rule structure of the deaf. They required deaf subjects 15 to 19 years of age to reproduce sentences from immediate recall. They concluded that deep structural differences in syntactic rule application exist between deaf and nondeaf individuals and that method of teaching language does not bear on ability of deaf subjects. Bunch and Clarke (1977) employed a modified form of Berko's *Test of Morphological Rules* to evaluate the success of deaf children 9 to 16 taught under either formal or natural methods. They found the majority of their subjects were unable to demonstrate productive control of the rules examined though a limited number of subjects 12 to 16 did demonstrate considerable ability. No significant difference was found in the efficacy of teaching methods. Bunch and Clark concluded that the majority of their deaf subjects responded as if from memory rather than as if from the basis of internalized morphological rules.

Two suggestions emerge from recent research into the manner in which deaf subjects deal with written English: the average deaf

child follows the normal pattern of language acquisition but at a severely delayed rate; deaf individuals form deviant structural rules and do not, in all areas, follow normal developmental/internalization patterns. The extent of possible delay or degree of development of deviant rules is unknown as is the relative efficacy of language teaching methods.

The present study was conducted to explore the degree to which deaf individuals draw on internalized grammatical rules and memory in dealing with a variety of written structures. Variables of interest were effect of language teaching methods, sex and age.

## METHOD

### Subjects

Subjects were selected from a day-residential school employing the natural method ( $n = 49$ ) and a day residential school employing formal language teaching methods ( $n = 26$ ). Subject grouping was by language teaching method, sex and age ( $A_1$ , 9.0-10.11.;  $A_2$ , 12.0-13.11.;  $A_3$ , 15.0-16.11.). All subjects had an average pure-tone hearing loss of at least 80 dB. (A.N.S.I.) over 500, 1000 and 2000 Hz in the better ear, a tested WISC performance I. Q. between 85 and 115 and were deafened during the pre or perinatal stage. Multi-handicapped children were excluded.

### Instrument

Menyuk (1969) hypothesized that requiring her 34-39, 52-57 and 70-75 month old normally hearing subjects to repeat agrammatical sentences orally as given (Repetition) and then to repeat them making appropriate corrections (Correction) would assess their grammatical competence. Approximately half of her sentences were corrected spontaneously in the Repetition mode by 25% or more of her subjects. Almost all were corrected in the Correction mode by the two older groups. Menyuk concluded that the corrections observed in this experiment supported her position that the child is not merely dependent on memory but that he "actively goes through a process of matching what he hears to structures that he has internalized in order to regenerate or generate sentences." (p. 118).

Menyuk's *Test of Grammatical Competence* was selected for this study since it is considered to differentiate individuals who have or have not internalized common structural rules. A second reason was that it permitted the examination of a variety of common rules formally presented to deaf children by age nine.

A slightly modified Menyuk test (Table 1) was administered.

### Administration and Design

The test was administered to groups of 7 - 10. Each item was displayed singly on an overhead screen for seven seconds, removed and the subjects requested to write the item on record sheets provided. Prior to a second viewing of seven seconds per item, the subjects were informed that each item was incorrect and should

be corrected. A sample item "They saw the dogg." prefaced each series of viewings. The examiner checked to verify that each subject understood the "Repetition" and "Correction" modes. All instructions were simultaneously spoken, signed/fingerspelled, and displayed on an overhead screen.

Scoring was on a correct (1) or incorrect (0) basis.

Analysis of results was effected by 2X3X2 (method X age X sex) analysis of variance. Bonferroni *t* tests (Kirk, 1968) were employed to trace sources of variation for main and interaction effects. An alpha level of 0.5 was selected for all analyses. Quantitative and qualitative analyses were performed. Attention was directed only to the Correction mode since it is this mode which yields the most information regarding knowledge of the grammatical rules

**Table 1. Menyuk's Test of Grammatical Competence: Items, Error Source and Corrections by Age Groups.**

Item	Error Source	Age Groups		
		A <sub>1</sub> *	A <sub>2</sub> **	A <sub>3</sub> ***
1. He wash his dirty face.	verb form omitted		3	5
2. They sleeping in their beds.	auxiliary omitted		3	5
3. They get mad and then they pushed him.	verb tense agreement		5	2
4. The barber cut off his hair off.	preposition redundancy	3	5	6
5. I want to go New York in the morning.	preposition omitted		3	2
6. He likes to look at.	noun phrase omitted			3
7. My daddy has new office downtown.	article omitted		1	
8. He growed bigger and bigger.	verb form		4	
9. He liketed that funny game.	verb form	2	3	4
10. The little boy is washing hisself.	reflexive form		7	7
11. You pick up it.	word order		3	3
12. What name you're writing?	word order		1	1
13. There's three trees.	verb-number agreement		3	7
14. Two brothers and one sister I have.	subject-object inversion		4	8
15. Don't put the hat.	particle		1	4
16. I want a milk.	article inappropriate		4	3
17. He took me at the circus today.	preposition inappropriate		2	2
18. Where are the peoples?	noun form	7	6	4
19. Mommy was happy so he kissed Betty.	subject-pronoun agreement		6	7
20. The teacher writes that numbers.	determiner noun form		9	3
21. It isn't any more rain.	"There" insertion		1	
22. He took his knife from falling.	verb inappropriate			
23. This dress green.	verb omitted		6	7
24. She took it away the hat.	noun phrase redundancy	1	4	7

\*n = 26

\*\*n = 28

\*\*\*n = 21

being investigated. Subjects could not be said to be demonstrating their competence in the Repetition mode due to the instruction only to repeat the stimuli.

**RESULTS**

Statistical analysis indicated that significant differences existed for sex and age but not for

method. Females performed at a significantly higher level than did males. Bonferroni *t* tests for age indicated that the source of variation lay between the A<sub>1</sub> and A<sub>3</sub> and between the A<sub>2</sub> and A<sub>3</sub> groups (Figure 1).

No item was corrected by more than 23% of the subjects. Categories of response were Correction (12.6%), Repetition of the stimulus

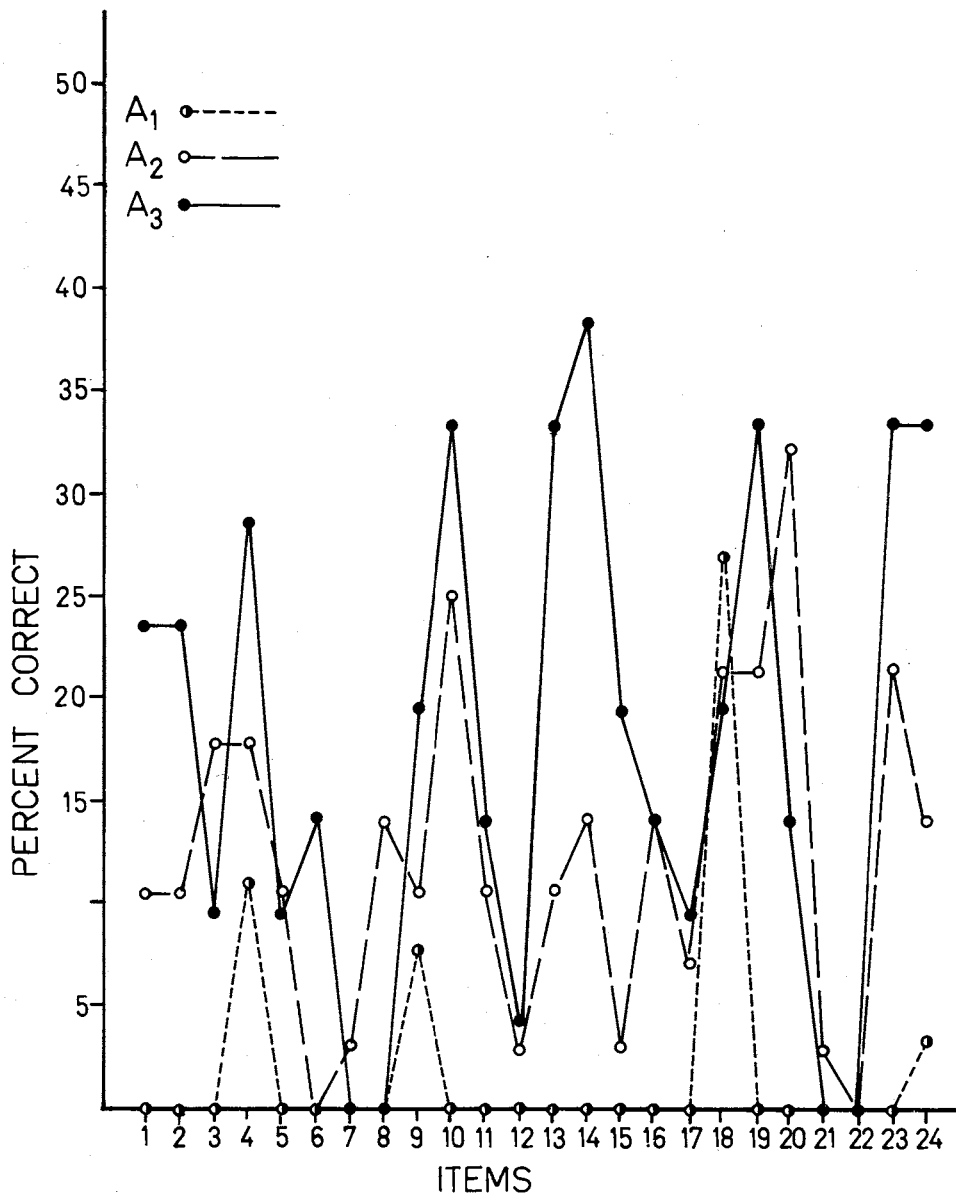


Figure 1: Percentage of correct responses to Menyuk items by age groups.

(46.2%), Omission (19.4%), Substitution (7.6%), Non-response (6.6%), Attempted Correction (5.4%), Addition (2%) and Word Order errors (1%).

A limited number of subjects in the two older age groups (3 in  $A_2$ ; 7 in  $A_3$ ) corrected half or more items. All age groups contained a majority of members, including all of the  $A_1$  group, who were unable to correct either, most, or all Menyuk items. Though quantitative analysis indicated significant differences for ages, there is not a gradually increasing ability across age group members in response to the stimuli. Excluding those few  $A_2$  and  $A_3$  group members noted above as demonstrating considerable competence, average correction of error source was 1.1 for  $A_1$ , 2.3 for  $A_2$  and 3.6 for  $A_3$ .

## DISCUSSION

The effectiveness of English language teaching methods for the deaf has been called into question (Garber, 1967; Lenneberg, 1967; Lowenbraun, 1969). Indeed, it is difficult to understand how proponents of major existing language methods continue to defend these methods as leading to normal language levels in the light of research over the past 40 years. Sarachan-Deily and Love (1964) suggest that neither formal methods nor natural methods bear on the language ability of deaf subjects without preschool training. Bunch and Clarke (1977) state that formal and natural methods are not differentially effective in the acquisition of written English morphological rules. The results of this study add support to the hypothesis that neither method yields language levels comparable to those of hearing children and that the methods are not differentially effective.

The reasons for minimal English language development are unknown. There are supporters of the concept that early intervention programs will result in higher levels of language ability though research studies have not documented lasting change as a result of preschool experience. A considerable number of individuals subscribe to the view that early and continuous exposure to manual systems of communication will result in increased language skills. A number of studies (Meadow, 1968; Stuckless & Birch, 1966; Vernon, 1970) in-

dicate that children experiencing early, continuous manual communication are statistically significantly ahead of other children. Unfortunately, the differences in terms of functional language ability are minimal. An unbiased viewer can conclude only that researchers and educators have not yet created a method or combination of methods which will lead the average deaf child to an adequate command of English language.

Female subjects performed at a significantly higher level than did males. Of the 24 items 10 subjects corrected half or more. All 10 were female. Though differences between male and female normally hearing subjects in language arts have been noted in the literature, no mention has been made of significant differences between male and female deaf subjects in the area of written language. The finding of a significant difference in this case must be interpreted with caution due to the lack of similar findings elsewhere.

The finding of significantly increasing ability to correct grammatical errors with age suggests that the rate of increase is slow at the younger ages but picks up in the teenage years. This finding agrees with indications that there is a significant rate of increase with age in the ability to inflect nonsense words (Bunch & Clarke, 1977; Garber, 1967), to produce grammatically acceptable statements (Lowenbraun, 1969) and to demonstrate syntactic competence (Schmitt, 1970). However, response patterns in this study suggest that the finding of significant increase with age cannot be taken as indicating general increase in language ability for the majority of deaf subjects. With the exception of a limited number of  $A_2$  and  $A_3$  subjects, the majority demonstrated total or almost total inability to deal successfully with the constructions investigated. Subjects did not actively go through a process of matching what they read to structures they had internalized in order to correct agrammatical sentences. Rather they repeated the sentence as given, omitted words or parts of words or made other types of errors. These characteristics are much more suggestive of dependence on recall than on internalized grammatical rules. Bunch and Clarke (1977) arrived at a similar conclusion as a result of their study of morphological abilities among deaf subjects.

Little evidence of a simple delay in development of English grammatical rules was apparent in the results. As noted above, a limited

number (10 of 75) demonstrated ability to deal successfully with half or more of the structures examined. Menyuk found that 75% or more of her 52-57 and 70-75 month old normally hearing subjects dealt successfully with the majority of her items when requested to correct them. The majority of deaf subjects did not demonstrate such ability even at 16 years of age. If it can be said that ability to deal successfully with an item suggests internalization of the rule governing that item, one might be prompted to suggest that inability suggests lack of internalization. Such a statement would be rejected as unsubstantiated by the data. What can be stated is that a limited number of older subjects demonstrate ability to deal successfully with a variety of items in the written form and that this demonstration of ability is suggestive of internalization. Concomitantly a larger number of subjects demonstrated little evidence of internalization but responded in manners suggestive of memorization.

Conclusions based on the results of this study are limited in that written English expression of a selected number of rules only was investigated. Not investigated were receptive abilities or possible differences in expressive abilities of manually and nonmanually experienced groups. A restricted area of written English ability was studied and generalizations regarding the broad field of language learning ability must be made with caution and due regard for other investigations. Considerable effort must be directed toward further study of the language ability of hearing-impaired children to clarify English language acquisition so that educators might devise methods to maximize competence in the basic communication system of the world about us.

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