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Sign Language Studies, Volume 23, Summer 1979, pp. 99-136 (Article)

Published by Gallaudet University Press

DOI: [10.1353/sls.1979.0010](https://doi.org/10.1353/sls.1979.0010)



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SLS 23 (1979), 99-136
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SIMULTANEOUS COMMUNICATION IN THE CLASSROOM:

HOW WELL IS ENGLISH GRAMMAR REPRESENTED?

Gloria Strauss Marmor & Laura Petitto

Abstract. Simultaneous communication as used in classrooms is here analyzed to determine how well it represents English grammar. Samples of the communication used in teaching were collected from two hearing teachers as they conducted regular classes at a large residential school for deaf children. Comparisons were made between teachers' spoken and signed utterance with respect to grammatical construction, including declarative sentences, questions, relative clauses, pronoun use, and verb tense in English, and to such specifics as facial expression, head and body tilt, eye gaze, and use of space in American Sign Language (ASL). Results showed that signed utterances were predominantly ungrammatical with respect both to rules of English and to rules of ASL. The need to institute stricter requirements so that teachers of the deaf become better equipped to use simultaneous communication as well as other forms of communication is made salient by this study. Related issues requiring further research are also considered.¹

The problem. Deaf children for the most part do not master initial reading skills easily, making about as much progress in developing reading comprehension between ages 8 and 18 years as the average hearing child makes between first and fourth grades (Jensema 1975). One major reason, perhaps most crucial, is the deaf child's failure to completely grasp English grammar.² Lacking knowledge of

the grammatical structure of English, the deaf child faces a serious obstacle in learning to read.

Attempts to provide deaf children with good English language models have been accompanied by controversy (Bender 1970). The oral method of communication with the deaf, which predominated in schools for the deaf in the United States since the first part of this century, urges the use of speech and lipreading and forbids the use of sign language. However, empirical research suggests that too little may be perceived through lipreading alone for the method to provide sufficient grammatical information (O'Neill 1954, O'Neill & Oyer 1961). A strongly advocated alternative method has been simultaneous communication, the simultaneous use of speech and signing. Several systems recently designed to render English more fully encoded in manual signs (e.g. Anthony, Gustason et al. 1972, Bornstein et al. 1973, 1974) are now being used as the signing simultaneous with speaking. This presentation of English through speech and signing simultaneously is at the current time enjoying a sharp rise in popularity among educational programs for deaf persons (Jordan et al. 1976), making it timely to examine whether this approach provides a framework through which teachers can transmit to deaf children enough linguistic information to foster their mastery of the structure of English. The aim of the present study is to analyze the linguistic nature of such simultaneous communication. Specifically our question is, How well does simultaneous communication used in educational programs represent grammatical English?

Method. Sources of the data analyzed were two hearing teachers, one male and one female, from a large residential school for the deaf where official school policy was to use simultaneous communication in every aspect of school life. Both teachers had used Manual English in the classroom for more than three years prior to the study (The term Manual English, or MCE, is a convenient cover term for any of the several systems using manual coding). The teachers were judged to have exceptionally good command of Manual English and simultaneous communication by the school administrator who selected them for participation in

the research. One one-half hour language sample was taken on videotape of each teacher during a social studies class. Both teachers conducted class in a similar fashion; they lectured, but during the lecture they asked questions and responded to student-initiated questions. During their lectures both teachers spent some time reading from a prepared chart. The chart conveyed information about the topic under discussion in short sentences that the students could read as the teacher read aloud and signed.

The teachers understood that they were to communicate with their classes being videotaped as they did normally. They were told that they would be participating in a study aimed at analyzing simultaneous communication and that their performances would be used for research purposes only and would not be shown outside our research laboratory. Also they were instructed that their identities would be kept confidential. The teachers seemed relaxed during taping, and a school administrator familiar with the signing styles of both teachers viewed our videotaped records and felt that the teachers had used their customary styles for the camera. The pupils were told that the videotapes were being made of the teachers; their behavior was not out of the ordinary. In sum, neither the teachers nor their pupils had much reason to be disturbed by the camera, and evidence suggests that their performance on tape was typical of their normal classroom communication. During filming, both teachers instructed their regular classes of pupils. The first teacher had a class of seven prelingually deaf children, ranging in age from 11.1 to 13.1 (average age 12.24 years), with average hearing loss of 96db in the better ear (range 82-112db). The second teacher's class also contained seven prelingually deaf children, ranging in age from 12.0 to 13.3 years (average age 12.01 years), with hearing losses averaging 97db in the better ear (range 80-113db).

To transcribe the content of the two videotapes, the spoken portion of each utterance was written out verbatim. The simultaneously signed portion of each utterance was rendered in English glosses for each manual sign, with attention to grammatical inflection characteristic of American Sign Language (ASL); i.e. facial expression, head and body

tilt, eye gaze, and use of space. In transcribing the signed portion of each utterance the citation form of each sign was given an English gloss and recorded in order of appearance on the transcribed "sign line." This sign line was the pivotal component of the transcription system used, because it conveyed basic meaning (the gloss) augmented by additional "inflectional" information. Such information, which included aspects of ASL thought to be grammatical (Klima & Bellugi 1979, Fischer & Gough 1978), was recorded in raised brackets to the right of the sign. Information about the formation of the sign appeared below the sign line. Clarification of the meaning appeared in brackets after an equal sign (=) on the sign line. All pointing was indicated on the sign line inside parentheses. Symbols used in the transcription are presented in Appendix 1, and examples appear in the following discussion.³

Because both teachers freely alternated between lecturing in an unrehearsed fashion and reading aloud from a prepared chart, two analyses were performed, one of "spontaneous communication" and the other of "reading aloud." The spontaneously generated utterances occurring in the first ten minutes of each videotape were examined, yielding a corpus of 183 spontaneously generated utterances for the first teacher, and 116 such utterances for the second teacher. These spontaneously generated utterances were broken down further into "complete sentential utterances" and "all other utterances." To examine the "reading aloud" state, all of the full sentences read aloud by each teacher within the half hour videotaped were analyzed. The first teacher signed and read aloud 31 complete sentential utterances and the second teacher, 11 complete sentential utterances. The analysis of spontaneous communication was restricted to the first ten minutes of each tape in order to keep the number of utterances under examination from becoming too great. Many fewer utterances were read than were communicated spontaneously; thus it was feasible to analyze all the reading aloud utterances in each half-hour tape.

The major divisions in the discussion of results below are Spontaneous Communication and Reading Aloud; the first is subdivided into grammatical categories: Declarative Sentences, Questions, Relative Clauses, Personal Pronouns, and

Verb Tenses. Results for each teacher are presented separately within these divisions.

Spontaneous communication.

1 Declarative sentences.

a First Teacher.

(A simple declarative sentence is defined as expressing an assertion in one independent clause.) Among the spoken spontaneous utterances made by the first teacher in the first ten minutes there were 96 full sentential utterances (Table 1) and 87 other utterances, analyzed as 33 "fillers," 24 incomplete phrases, 14 ungrammatical phrases, 14 lexical items in isolation, and 2 single-word questions. Of the 96 full sentences 40 were simple declarative sentences. The signing accompanying these 40 declarative sentences was categorized thus:

- 1 Exact representations, i.e. signed utterances that completely and exactly represented the spoken utterances they accompanied
- 2 Primary deletions, i.e. signed utterances that failed to include the subject and/or the main verb and/or the auxiliary verb of the spoken utterance
- 3 Secondary deletions, i.e. signed utterances that included the subject, main verb, and/or auxiliary verb spoken but failed to include some other part of the spoken utterance; these included such deviations from grammatical English as omissions of verb tense marking, plural marking, functors, and articles.

Among the signed utterances accompanying the simple declarative sentences spoken by this teacher, 83% showed primary deletions, and 12% showed secondary deletions, leaving exact representation of speech in sign in only 5% of the utterances. Table 2 gives a detailed breakdown of the kinds of deletions made.

According to Table 2, subject deletion (omission of the surface structure subject from the signing) occurred in 5% of Teacher 1's simple declarative sentence utterances. In 1a and 1b below (which are respectively transcriptions of the spoken and signed output) subject deletion is illustrated:

- 1a He just died from being an old man.
 1b — — DIE — FROM — — — OLD MAN/

In 1b, blanks stand for omitted words or suffixes and '/' for a break in the signed portion of the utterance.⁴

Type of spoken utterance	No. of spoken utterances	
	1st tea.	2nd tea.
Full sentential	96	38
All other	87	78
Filler (<u>ok</u> , <u>no</u> , <u>right</u>)	(33	(23
Incomplete phrase	24	16
Ungrammatical phrase	14	20
Lexical item in isolation	14	13
Single word question	2)	6)
Total	<u>183</u>	<u>116</u>

Table 1. Spontaneous communication by teachers.

Primary deletions	Teacher 1	No.	%	Teacher 2	No.	%
Subject	2	5		0	0	
Main verb	10	25		3	25	
Subject & auxiliary verb	2	5		0	0	
Subject & main verb	12	30		0	0	
No signs used	<u>7</u>	<u>18</u>		<u>0</u>	<u>0</u>	
Primary deletions	33	83%		3	25%	
Secondary deletions	5	12%		8	67%	
Exact representations (signs-words)	<u>2</u>	<u>5%</u>		<u>1</u>	<u>8%</u>	
	40	100%		12	100%	

Table 2. Sign representation of speech in simple declarative sentences by teachers.

Main verb deletions, i.e. omission of the main sentence verb from the signing, occurs in 25% of Teacher 1's utterances

and is illustrated here:

- 2a That's prejudice.
2b THAT—PREJUDICE/

In deleting from signing the "apostrophe-s" of the contraction that's, this teacher omitted the copula, the main verb of the spoken sentence, at least according to school grammar. Interestingly, in the entire 10 minute corpus, this teacher used the copula in 22 spoken, grammatical, utterances and deleted the copula in 91% of the accompanying signed utterances.⁵ Sentences 3a and 3b provide an example of "Subject & Auxiliary verb" deletion:

- 3a He was not killed.
3b — — NOT KILL —/

Subject and auxiliary verb deletion occurred in 5% of this teacher's declarative sentences. (Failure in 3b to sign was and the -ed verb marker, which are obligatory in several of the systems of simultaneous communication, means that this sentence is not marked as a passive; Power & Quigley, 1973, document deaf children's great difficulty in learning the active-passive distinction. Here the teacher's deletion effectively conceals it.)

To illustrate "Subject & Main verb" deletion three consecutive declarative sentences have been chosen from Teacher 1's discussion of the word assassination, a vocabulary word in the lesson. The prior context (according to the teacher's spoken output) was, "Do you remember the names of the two Kennedy brothers who were assassinated? Do you remember what their names were?"

- 4a One was in the Navy.
4b — — — — NAVY/
5a His name was John.
5b — — — — J-O-H-N/ (fingerspelled)
6a He was the President of the United States.
6b — — — — PRESIDENT O-F THE 'UNITED STATES'/

Subject and main verb deletion was typical of 30% of this

teacher's simple declarative sentences. Sentence 7b provides another example of subject and main verb deletion. The sign '≠' above the signed representation of 'people' in 7b indicates that the teacher used a sign whose gloss is not the word she spoke:

- 7a The word assass- to kill an important person.
 inate means ≠
- 7b — — — — — TO KILL A-N IMPORTANT PEOPLE/

Note that in 7b the article an and the noun people fail to agree in number. Taking the spoken message into account, it seems that the teacher signed "PEOPLE" while intending to sign "PERSON". The teacher did not correct her error in the sign medium. One might conjecture that had she committed an equally obvious error in her speech she would have corrected it, indicating a differential tolerance of grammatical errors in signing and speaking. The "No signs used" category in Table 2 consists of sentences in which speech is used in the absence of any signing. These were mainly short sentences, generally in reaction to students' comments; e.g. Teacher 1 asked why Hubert Humphrey died: "Why did he die?" and repeated for the class one student's response with the following sequence:

- 8a He got cancer.
 8b — — — — — (no signs)
- 9a That's right.
 9b — — — RIGHT/ (subject & main verb deletion)
- 10a He did.
 10b — — — — — (no signs)
- 11a He got cancer.
 11b — — — — — (no signs)

Deletions of all signs occurred in 18% of this teacher's corpus of simple declarative sentences.

Secondary deletions occurred in 12% of the same teacher's simple declarative sentences; e.g.

- 12a Yes; presidents had mustaches a long time ago.
 ≠
- 12b — PRESIDENT — HAVE — MUSTACHE — — PASTMARKER TIME —/

Sentence 12b illustrates the common lack of verb tense marking in the signed portions of simultaneous communication (a topic to be discussed below in detail) and the lack of inflection of the noun for plural. Within this teacher's 40 simple declarative sentences, nouns made plural in speech failed to be inflected for plurality in the signed portions of the same utterances in 63% of the contexts where such inflection was obligatory according to the grammar of spoken English. Other secondary deletions found in the signed portion of the corpus included (a) the deletion of to from infinitives, which occurred in 25% of the obligatory English contexts, (b) deletion of articles, which occurred in 91% of the obligatory contexts, (c) deletion of the agreement suffix on verbs for third person singular subjects, which occurred in 100% of the obligatory contexts.

Of the 40 simple declarative sentences, two (5%) were judged to be accompanied by an exact sign representation. Sentence 13b is one such sentence.

13a That was violence.

13b THAT WAS V-I-O-L-E-N-C-E/

Spontaneous communication.

1 Declarative sentences.

b Second Teacher.

Within the 10-minute sample collected from the second teacher, there were 38 full sentential utterances in speech and 78 other spoken utterances (See Table 2). Of the full sentential utterances in speech, there were 12 simple declarative sentences, and of these only 8% were represented exactly in the accompanying signing; 67% were signed with secondary deletions, and 25% were signed with primary deletions (Table 2). All of the primary deletions were deletions of the main verb; e.g.

14a That's important.

14b THAT — IMPORTANT/

Secondary deletions included (a) deletion of to from infinitives, which occurred in 100% of the obligatory English contexts, (b) deletion of articles, which occurred in 75% of the obligatory

contexts, and (c) deletion of the agreement affix for verbs in the third person singular, which occurred in 100% of the obligatory contexts.

Both teachers deviated from grammatical English in the signed portion of their utterances in more than 90% of their simple declarative sentences. Their deviations differed, however; the first teacher made more primary deletions, and the second teacher made more secondary deletions.

Spontaneous communication.

2 Questions.

a First Teacher

In English, questions take four syntactic forms: wh- questions, yes-no questions, tag questions, and declarative sentence forms with rising intonation; e.g.

- What day is it? (wh- question)
- Are you ready? (yes-no question)
- You take sugar, don't you? (tag question)
- You take cream and sugar? (question intonation)

Of the corpus of 96 full spoken sentential utterances, 25 were questions, of which 11 were wh- questions. Table 3 shows the distributional analysis of the kinds of deletions made in the signing accompanying wh- questions.

<u>Primary deletions</u>	<u>Teacher 1</u>	<u>No.</u>	<u>%</u>	<u>Teacher 2</u>	<u>No.</u>	<u>%</u>
Subject	1	9		0	0	
Subj., Main and/or Aux. verb	4	36		1	11	
Wh- word, Main and/or Aux. verb	1	9		1	11	
Wh- word, Subj. and Aux. verb	1	9		0	0	
No signs used	<u>2</u>	<u>18</u>		<u>0</u>	<u>0</u>	
Subtotal	9	82%		2	22%	
<u>Secondary deletions</u>	1	9%		7	78%	
<u>Exact representations</u>	<u>1</u>	<u>9%</u>		<u>0</u>	<u>0%</u>	
TOTAL	11	100%		9	100%	

Table 3. Sign representation of speech in wh- questions.

An illustrative utterance from each category is listed below. The presence (+) or absence (-) of quizzical facial expression (QF) or questioning voice (QV) is shown above the signs in this transcription:

- +QV
- 15a Where did you see that before? -QF
- 15b WHERE D-I-D — SEE THAT PASTMARKER (= before)
(Subject deletion)
- 16a What did you learn about a neighborhood?
- 16b WHAT ~~-QF~~ — LEARN ABOUT — FRIEND+AREA/
(Subj. & aux. del.)
- 17a What were their names? +QV
-QF
- 17b — — — NAME — / (Wh- word & main v. del.)
+QV
- 18a Why did he die?
-QF ≠ -QF
- 18b WHY — — HOW/ (Subj., aux., & main v. del.)
+QV
- 19a What is that?
- 19b — — — (No signs used)

Utterance 18b is one of a limited number of instances of "leakage of meaning" in which what is signed expresses an idea that is collaterally related to what is said rather than expressing the same idea as that expressed in speech.

Table 3 shows that the signed portion of 82% of the wh-questions contained primary deletions. Secondary deletions were found in 9% of the signing, with deletion of plural noun inflection in 100% of the obligatory contexts, deletion of articles in 80% of the obligatory contexts, and deletion of tense markers.

In the light of Woodward's discussion (1973) of the prevalence of mixing ASL conventions with those of English grammar, an analysis was performed to compute the frequency with which ASL conventions appeared in questions. In four yes-no questions the teacher used head tilt, body tilt, and eye gaze as these would be used to form questions in ASL. However, the questioning facial expression, which is obligatory in ASL questions did not accompany this teacher's sign questions; e.g.

- +QV
- 20a Do you remember... -QF
- 20b — — REMEMBER...

In sum, a small portion of this teacher's questions were "ASL-like" in form; however, without appropriate facial expression they cannot be considered quite grammatical in ASL.

b Second Teacher

Of the second teacher's corpus of 38 full spoken sentences, 9 were wh- questions. Primary deletions occurred in the signing accompanying 22% of his wh- questions. One example:

- +QV
- 21a How does it hold the plant?
- +QF
- 21b HOW — — HOLD — — PLANT/ (Subj. & aux. v. del.)

Secondary deletions occurred in the signing accompanying 78% of his wh- questions. Secondary deletions included (a) deletion of inflection of nouns for plurality, 75% of obligatory contexts, (b) deletion of articles, 100% of obligatory contexts, and (c) deletion of affix for agreement of verbs with third person singular subjects, 100% of the obligatory contexts, also (d) deletion of verb tense marking.

The second teacher accompanied each wh- question with the kind of quizzical facial expression and head and body tilt that is obligatory in ASL questions. Facial expression of questioning coincided with the signing of the wh- word in 22% of the sentences, or came at the end of the sentence, in 56% of the cases. Forward body tilt without quizzical facial expression appeared in 22% of the questions. It is common in ASL to form questions with sign equivalents of wh- words at the end of the utterance. The second teacher combined this ASL convention with English grammar, producing the kind of question here:

- 22a Plants are food for who? +QV
- 22b PLANT—ARE FOOD FOR WHO/ +QF

These questions were classified as "ungrammatical spoken utterances," yet they serve to show the influence of ASL conventions on the spoken as well as on the signed portion

of the second teacher's utterances. There were nine such questions in this teacher's 10-minute corpus.

To compare the use of simultaneous communication by these two teachers, both failed in more than 90% of their questions to reflect English question formation appropriately in the signed portions of their full spoken utterances. The first teacher made more primary deletions, and the second teacher made more secondary deletions. The second teacher also clearly incorporated more aspects of ASL, especially facial expression, into the signed portion of his full sentential utterances.

Spontaneous utterances.

3 Relative clauses.

Traditionally, parts of sentences that begin with the relative pronouns who, when, which, or that have been called relative clauses. Relative clauses usually contain both a subject and a verb and in this way resemble sentences themselves, although they are actually parts of surface structure sentences. According to generative grammar, a relative clause is a complete sentence in deep structure that has become embedded in the surface structure of another sentence. In 23 the relative clause consists of the underlined portion:

23 The tugboat that had pushed the ship returned to the dock.

The sentential quality of relative clauses is shown by replacing the relativizing pronoun that with the noun for which it stands, tugboat; this literally yields one sentence embedded in another.

a First Teacher

Of the corpus of 96 full spoken sentences, 11 contained relative clauses. The nature of the deletions in the signed portion of the utterances is presented in Table 4. These deletions are similar to the deletions found in questions and declarative sentences. Examples of each kind of deletion follow:

24a First word is the word called prejudice.

24b FIRST WORD — — — — — PREJUDICE/

We counted sentence 24a as grammatical although the obligatory article the fails to begin the sentence. Notably in 24a the relative pronoun that and the verb is have been deleted in a way that is grammatical in English, so that the underlying relative clause "that is called prejudice" actually appears in speech as "called prejudice." In 24b the verb was omitted from both the relative clause and the main clause leaving no trace of the embedding apparent in 24a.

<u>Primary deletions</u>	<u>Teacher 1</u>	<u>No. %</u>	<u>Teacher 2</u>	<u>No. %</u>
Main or auxiliary verb		9 82		0 0
Subj. & main and/or aux. verb		<u>1</u> <u>9</u>		<u>0</u> <u>0</u>
Subtotal		10 91%		0 0%
<u>Secondary deletions</u>		<u>1</u> <u>9%</u>		<u>1</u> <u>100%</u>
TOTAL		11 100%		1 100%

Table 4. Sign representation of speech in relative clauses.

- 25a Poor people all live together in one place
that's called a ghetto.
- 25b POOR PEOPLE ALL LIVE TOGETHER IN ONE PLACE
THAT — CALL— A G-H-E-T-T-O/ (Aux. verb deletion)

The auxiliary is and verb marker -ed were deleted from 25b, making the predicate of the relative clause ungrammatical.

- 26a These are the vocabulary words
that we are going to find now in the story.
- 26b THESE ARE — 'V' WORD—
THAT — — — — — FIND NOW IN — STORY/
(Deletion of subject and aux. verb)

In 26b the structure of the spoken relative clause "that we are going to find now in the story" was disturbed, because the subject we and the auxiliary "are going" were deleted. In addition, to was deleted, disturbing the infinitive form "to find." Notably there was not a single instance in which the relative pronouns who and that (when and which did not appear in the corpus) were deleted from signing, except where the deletion also occurred grammatically in the spoken part.

Spontaneous communication.

3 Relative clauses.

b Second Teacher

Of the second teacher's corpus of 38 full spoken sentences, only one contained a relative clause. In the signing accompanying that clause, the verb, in the third person singular, lacked the obligatory agreement affix.

To compare the use of relative clauses by both, the first teacher used many more such constructions than did the second. Because of the high frequency of primary deletions, the first teacher failed to show the sentential nature of the relative clauses in the signed portions of her utterances.

4 Personal pronouns.

Noun phrases can be replaced in English surface structure by pronouns, and the substitution, whether obligatory or stylistic, reduces redundancy. Pronouns must agree with their referents in four ways: (1) case (subject, object, possessive adjective, possessive pronoun, or reflexive), (2) number (singular or plural), (3) person (first, second, or third), and (4) gender (masculine, feminine, or neuter in the third person singular). In order to accomplish pronoun-referent agreement, English uses a system of 50, in some cases lexically repeated, personal pronouns (Table 5). Artificial Manual English systems (Anthony 1971, Gustason et al. 1972) provide signs for glossing most, if not all, of the 50 instances in Table 5. The sign for 'he', for example, is represented by a fingerspelled "E" signed initially at the temple and subsequently moved forward and slightly to the right. The sign for 'him' is a fingerspelled "M" moved forward from the temple in the same way (Gustason et al. 1972). For these and other pronouns in Manual English, case, number, person, and gender are indicated by signing, as they are in English through choice of lexical item.

In ASL lexical choice does not play the same role that it plays in Manual English. In contrast to English, ASL relies on such conventions as pointing to the referent or to its established locus in the signing space, directing one's eyes toward the referent, using head tilt and body shift to indicate the established location of the referent in the signing space, and pronoun incorporation (Fischer & Gough 1978). To present

		CASE	Subject	Object	Possessive Adjective	Possessive Pronoun	Reflexive	
NUMBER	PERSON							
	First		I	me	my	mine	myself	
	Second		you	you	your	yours	yourself	
Singular	Third	GENDER						
		Masculine	he	him	his	his	himself	
		Feminine	she	her	her	hers	herself	
		Neuter	it	it	its	—	itself	
Plural	First		we	us	our	ours	ourselves	
	Second		you	you	your	yours	yourselves	
	Third	Masculine	they	them	their	theirs	themselves	
			Feminine	they	them	their	theirs	themselves
			Neuter	they	them	their	theirs	themselves

Table 5. Personal pronouns in English (Adapted from Quigley, Montanelli, & Wilbur 1976).

in one's own Manual English a good model of English pronoun usage, one should choose the appropriate sign from the Manual English pronoun lexicon or perhaps fingerspell the appropriate English pronoun. Use of ASL conventions or deletion of pronouns from signing will provide poor models of English grammar for deaf children.

b First Teacher.

With respect to the signing accompanying the 79 instances of personal pronoun usage in the first teacher's full spoken sentences, 25% was signed according to Manual English conventions, 1% was signed according to ASL conventions, 11% was signed using gestures foreign to Manual English and ASL conventions, and 63% was omitted from the signed portion of utterances. This teacher used 18 of the 50 different pronoun types of Table 5 in the spoken portion of her utterances. However, in the signed portion of these utterances, she used only six different Manual English pronouns: "I", "me", "you-ss" (singular, subject), and "you-spa" (singular, possessive adjective form). In one instance she used the ASL convention of pronoun incorporation (Fischer & Gough 1978) by signing "show you-po" (plural object) by moving the sign glossed 'show' in the direction of the persons being addressed.

Accompanying a wide range of spoken pronouns, including "you-ps" (plural subject), "he", "him", "his", and "it", the first teacher used a gesture foreign to both Manual English and ASL, which might be characterized as a "random point" (i.e. pointing in an arbitrary direction and at nothing in particular, rather than pointing at the object or person under discussion or at a previously established locus in the signing space). The random point clearly lacks the linguistic specificity of pointing at the addressee, a gesture used for "you-ss" (singular subject) and "you-so" (singular object) in both Manual English and ASL, or of the "distributive point" used for "you-ps" or "you-po" (plural subject or object) in Manual English (Anthony 1971) and in ASL. Consider the following illustration of the random point as used by the first teacher:

27a . . . people loved him . . .
 27b . . . PEOPLE LOVE- (pt: random) . . .

In the parentheses, the letters pt indicate that the signer pointed, and the word random indicates that the signer made a random point rather than pointing at a referent or location. In 27b the object of the people's love is unclear, in part because the random point fails to agree either with its referent in number, case, person, and gender as it must in English, or to indicate the referent's locus in space, as is done in ASL.

Most characteristic of the first teacher's use of pronouns was the high frequency of pronoun omission from the signed portions of her utterances. Because pronouns replace noun phrases in English, pronoun deletion usually results in serious agrammaticality, contributing to the high frequency of subject deletion in declarative sentences (Table 2), in questions (Table 3), and in relative clauses (Table 4).

Spontaneous communication.

4 Personal pronouns.

b Second Teacher.

With respect to the signing accompanying 48 instances of personal pronoun usage in the second teacher's full spoken sentences, 33% was signed according to Manual English conventions, 50% was signed according to ASL conventions, and 17% was omitted from the signed portion. In contrast to the first teacher, the second teacher omitted fewer pronouns from the signed portions of utterances and relied more heavily on the conventions of ASL to form pronouns in the signed portions of his utterances.

The second teacher used 10 of the 50 different pronoun types of Table 5 in speech but used only 3 different pronoun types from Manual English ("I", "you-ss", and "your-pa"). The remaining 7 pronoun types used in speech were glossed according to ASL conventions. Among the ASL conventions used to form pronouns in sign were (1) pronoun incorporation for me, you-plural obj., and her-sing. obj.; (2) directed eye gaze, for you-sing. subj., you-pl. subj., and you-pl. obj.; (3) pointing to the actual referent (you-sing. subj., he, she, and it); and (4) pointing inflected for number, for you-pl. subj., and you-pl. obj. The following sentences show use of directed eye gaze, pointing to the referent, and pointing inflected for number, respectively:

- +QV
- 28a Do you remember before . . .
 (+QF, +Rep. EG →child =you)
- 28b — — REMEMBER PASTMARKER (=before). . .

The presence of repetition (+Rep.) of the sign meaning 'remember' is indicated above the sign line in this transcription. The record also indicates that the teacher expressed the ASL equivalent of the English pronoun you by gazing toward the child being addressed (EG →child).

- 29a She wants to add something.
- 29b (pt:→child) WANT— — ADD SOMETHING/
 +QV
- 30a What do you think?
 +QF
- 30b — — (pt:→class=you -plural) THINK/

In 29b the teacher pointed toward a child and thereby conveyed the equivalent of 'she'. In 30b the teacher pointed in a sweeping motion to all the children in front of her (pt:→class), and thereby conveyed the plural you. In general, deletion of pronouns from the signed portion of the second teacher's utterances occurred only for the pronouns I, me, and it; and 75% of the deletions involved omission of the pronoun it.

To compare the two teachers' use of pronouns in the signed portions of their utterances, both formed pronouns according to Manual English conventions in less than half of their signed utterances. The first teacher used only six Manual English pronouns, and the second teacher, only three. In short, the way that the English-speaking person using simultaneous communication might select from a system of some 50 personal pronouns that agree with their referents in number, case, person, and gender was not clearly demonstrated in the signing of either teacher.

Spontaneous communication.

5 Verb tense.

In English, tense is represented by an affix that marks the verb as either past or present (Akmajian & Heny 1975).

Past tense is usually indicated by adding the suffix -ed to the main verb; however, past tense may be indicated by a vowel change, as in run/ran, or by using a different past tense form, as in go/went. The form used for the present tense in some languages can depend on the subject of the sentence through subject agreement, so that a tensed verb is conjugated to agree with the sentence subject in person and number. An overwhelming majority of English verbs are not modified for subject agreement, however. In fact, only verbs with subjects in third person singular are conjugated to agree with their subjects, as in He runs/They run. This process here will be called number agreement.

When an auxiliary verb is used, it is said to carry the tense and dictate the form of the verb immediately following it. The auxiliary of the sentences recorded include (a) the modals will/would, shall/should, can/could, and may/might; (b) the have auxiliary have/has/had; and (c) the be auxiliary is/am/are/was/were. The modal prevents the verb following it from acquiring tense. Thus the verb following a modal appears in the infinitive, uninflected, or citation form, as in I may go. The have and be auxiliaries require the verb that follows to take the suffixes -en and -ing respectively. Akmajian & Heny (1972) describe the affixation of the suffixes -en and -ing as accomplished through an obligatory rule they call "affix hopping."

a First Teacher.

Among the 96 full spoken sentences made by this teacher, there were 126 spoken expressions of tense marking on main verbs (regular and irregular), auxiliary verbs (modals, have, and be), and obligatory affixes on verbs following auxiliaries. The occurrence of tense in the signed portion of these utterances is represented in Table 6. The table shows that of the 126 spoken expressions of tense, the present tense was spoken in 54% (68) of the utterances, the past tense in 45% (57), and the future tense (will modal with infinitive) in 1% (1). Of the 68 spoken expressions of present tense, 57% were completely omitted from the signed portion of the utterance; 32% expressed tense appropriately; and 10% omitted number agreement; e.g.

<u>Type of spoken utterance</u>	<u>Teacher 1</u>		<u>Teacher 2</u>	
Expressions of tense	126	100%	51	100%
Present tense	68	54%	37	73%
Verb deletion in sign	(39	57)	(13	35)
Number agreement deleted	(7	10)	(7	19)
Signed correctly	(22	32)	(17	46)
Past tense	57	45%	14	27%
Verb deletion in sign	(21	37)	(0	0)
Signed incorrectly	(29	51)	(13	93)
Number agreement deleted	(1	2)	(0	0)
Signed correctly	(6	10)	(1	7)
Future tense	1	1%	0	0%
Signed correctly	(1	100)	(0	0)

Table 6. Verb tense expression in two teachers' signing.

31a . . . a person who teaches about God.

31b . . . - PERSON WHO TEACH- ABOUT GOD/

From this teacher's 57 spoken expressions using past tense the verb was omitted in 37% of the signed accompaniment. In 51% of the instances, the verb was signed without any kind of past tense marking, thereby leaving the verb in present tense by default. The following example shows anagrammatical tense deletion:

32a . . . I decided that 8-B was a good choice.

32b . . . I DECIDE--THAT 8-B W-A-S A GOOD CHOICE/

In all of this teacher's past tense spoken expressions, only 10% of the signed portion had the past tense signed correctly. Interestingly, verbs like talk that take the regular past-tense affix -ed and verbs irregular in the past like catch/caught were not given past tense marking in sign. The 7 verbs that were signed for past tense correctly were instances of be,

have, and modal auxiliaries. Obligatory "affix-hopping" was not supplied in other expressions;

- 33a . . . words that maybe you have not seen before.
 33b . . . WORD- THAT MAYBE (pt:→class) HAVE NOT SEE-
 PASTMARKER (=before)/

In sum, of the 126 spoken expressions of tense, about half were completely omitted from the signed portion, and of those rendered in sign only 23% were expressed entirely correctly.

b Second teacher.

There were 51 spoken expressions of tense among the second teacher's 38 full spoken sentences, including main verbs (regular and irregular), auxiliary verbs (be, have, and modal), and all obligatory affixes. Table 6 shows that 73% (37) of the spoken expressions of tense occurred with present tense and 27% (14) with past tense. Among the former, the verb was deleted in sign in 35% of the cases, signed without the obligatory agreement affix in 19% of the cases, and signed correctly in 46% of the cases. Among the 14 utterances spoken in past tense, 93% of the second teacher's signing was without any past tense marking and thus appeared inappropriately in the present tense. Only in one instance was the verb—the verb in this case was have—signed correctly in the past tense. Thus of 51 spoken expressions of tense in this teacher's grammatical spoken sentences, only 35% were signed correctly.

To compare the teachers with respect to expression of verb tense in signing, both fail to sign the verb tense correctly in the majority of instances. It is worth note that deaf children have great difficulty with verb tense and agreement affixes in written English (Quigley, Montanelli, & Wilbur 1976).

Use of American Sign Language.

Analyses of question formation and personal pronoun use indicate that the communication of both of these teachers was influenced to some extent by the conventions of ASL.

a First Teacher.

Accompanying the first teacher's 96 full spoken sentences,

3 instances of ASL usage (excluding pronouns and questions) occurred; one example:

- 34a That's all.
34b 'ZERO'/

The teacher made the sign for "zero", which in ASL can mean 'none' and 'nothing' as well as 'that's all.' Using an ASL idiom, utterance 34b carries the same meaning as 34a. Among the utterances classified as "All other" in Table 1 (p. 104) there were no occurrences of ASL.

b Second teacher.

Accompanying the second teacher's 38 full spoken sentences, 11 instances of ASL usage were found; e.g.

- 35a Okay; watch Debbie.
(IX: you→at me, you→at 'her'/Debbie)/
35b O-K LOOK

The teacher did not sign LOOK in citation form but inflected it for person (IX:)(see Appendix). Instead of moving the hand near his eyes, the teacher moved it from the addressee to self (you→at me) and then from self toward the second child, Debbie. Before the final movement the orientation of the signing hand was changed so that the teacher's palm faced outward from his body toward Debbie (you→at 'her'/Debbie). This sign conveyed the meaning 'look at me and from me to Debbie' (or 'watch Debbie not me'). In this signed utterance the teacher used one lexical item to convey more than one proposition in a way that is typical of ASL and of course not typical of English.

Of the material falling in the "All other" category of Table 1 (p. 104), 12 of this teacher's utterances were signed in ASL; e.g.

- 36a Help.
(IX: each one of you→me plurality)
36b HELP/

The teacher signed HELP as in ASL signing; i.e. inflecting the movement and location of the sign (IX:). Initially the signing

hands were held away from the signer's body, then moved inward toward the signer, conveying 'You help me.' Also the sign was repeated consecutively in horizontal rays in front of the signer's body, thus conveying 'each of you.' In its entirety the sign conveyed 'Each of you help me' as the parenthesized notation in 36b indicates.

To compare the two teachers, the first used aspects of ASL in the signed portion of only 3% of her full spoken sentences. The second used ASL constructions in the signed portion of 29% of the signed utterances accompanying his full spoken sentences and in 15% of the signed utterances classified as "All others." ASL constructions were used infrequently in the signing of both teachers, with the second using more of them than did the first.

Interestingly, knowledge of ASL influenced the teachers' use of spoken English in some instances; e.g. the second teacher found a child, David, daydreaming instead of attending to discussion contributed by another, Debbie. He signed and said:

+QV

37a David; right or wrong? — dreaming; what she say?

37b { EG: David } RIGHT-WRONG (pt:→ch.=Debbie),
 { gesture: hits desk }
 (mime: teacher mimics David; looks around) +QF
 DREAM, (pt:→ch.=David) WHAT (pt:→ch.=Debbie) SAY/

Utterance 37a contains several ideas, but none of them are expressed in well-formed English. Had the teacher used full English sentences to convey the meaning of 37a, he might have said, "David, is Debbie right or wrong?" Instead, the teacher seems to have interpreted a well-formed ASL utterance into speech in 37a. While speaking thus (37b), the teacher hit his desk and looked at David. He then signed RIGHT WRONG in succession and pointed to Debbie, meaning 'Is Debbie right or wrong?' The teacher then imitated a person daydreaming as if to say, 'You are daydreaming again.' Finally he pointed to David, signed WHAT, pointed to Debbie and signed SAY, meaning 'David, what did she say?' The second teacher made 78 spoken utterances classified as other than full spoken sentences. Of these 12 seemed to be utterances in which ASL conventions governed both sign and

speech. No such instances appeared in the first teacher's language corpus of spontaneous utterances.

Reading aloud.

a First Teacher.

The first teacher read 31 full spoken sentences aloud from a chart, of which 81% (25) were simple declarative sentences. Some 64% (16) of these simple declarative sentences were represented exactly in signing. Recall that only 5% of this teacher's declarative sentences were signed exactly during spontaneous communication. Among the remaining 9 read aloud sentences (36%) there was one instance of primary deletion in signing and 8 instances of secondary deletion. The former consisted of an instance of subject deletion; the latter consisted of deletion of articles, which occurred in 17% of the obligatory contexts; deletion of inflection for plural nouns, which occurred in 32% of the obligatory contexts; deletion of prepositions, which occurred in 5% of the obligatory contexts; deletion of the possessive affix on nouns, which occurred in 100% of the obligatory contexts; and deletion of past tense markers.

One wh- question was read aloud and represented exactly in sign and without any ASL facial expression or body tilt. Three sentences with relative clauses were read aloud, one of which was represented exactly in sign; the other two were represented correctly in signing except that past tense markers were deleted.

Although this teacher deleted pronouns from the signed portion of her spontaneous utterances 63% of the time, there were no pronoun deletions in the signed portions of the utterances she read aloud. Of the pronouns read aloud, the three he, his, and him occurred in the spoken portion 89% of the time; these pronouns were fingerspelled rather than signed 75% of the time. In the signed portions accompanying spontaneous speech, fingerspelling was used to represent the pronouns he, his, and him only 14% of the time.

In the utterance corpus derived from reading aloud there were 38 spoken expressions of tense, of which 87% (33) were past tense and 3% (1) was in the future tense. Among the past tense verbs, 1 (3%) was deleted in sign, and 7 (21%) were signed inappropriately in the present tense. The remaining

verbs in past tense (76%) were signed correctly. All of the verbs spoken in present and future tense were signed appropriately. Thus in contrast to this teacher's spontaneous utterances where tense was expressed appropriately in sign only 23% of the time, 79% of the expressions of tense were correct in signing when reading aloud.

Reading aloud.

b Second teacher.

The second teacher read aloud 11 full spoken sentences of which 10 (90%) were simple declarative sentences. Some 7 (70%) of these were represented exactly in signing. In the remaining 3, inflection for noun plurality was inappropriately deleted from the accompanying signing. Deletion of plural markers occurred in 29% of the obligatory contexts. Deletion of plural inflection also occurred in the single wh-question read aloud from the chart. The teacher used one pronoun, you, which he inflected for plurality, as Anthony (1971) recommends and as is done in ASL. Moreover, he made 13 spoken expressions of tense, all of which were represented correctly in sign.

In sum, both teachers conveyed English grammar better in their signing when reading aloud than when communicating spontaneously. It is as if the written word prompted them not to ignore what the teachers considered subordinate words in sentences. Alternatively, being relieved of the need to generate the content of their sentences at the time of presentation, they had perhaps more available attention with which to focus on making signed utterances correctly.

Discussion. In recent years educators have tended to turn their backs on pure oralism and to accept simultaneous communication, a form of communication that combines oral communication with Manual English (Jordan et al. 1976). The hope of those initiating the change was that deaf children would learn the English language more effectively if reception did not depend so heavily on lipreading. Believing that manual representation of English would make English more accessible, these educators established Manual English in the classroom. Their decision may well turn out to have been a wise one. Nevertheless, the danger that confronts

all innovations is that they will fail because of improper implementation. The role of "applied research" in education, and of the present study specifically, is to determine how well implementation is proceeding. Our research has yielded surprising and unsettling results in that it suggests that simultaneous communication, as it currently is used in schools, may do little to bring English grammar to deaf children.

Simultaneous communication should, in theory, better present the structure of English to deaf children than did lipreading. The reason is ostensibly that in lipreading the child does not perceive every word in the utterance, but because simultaneous communication should present all words both orally and manually, the child should have a better chance of perceiving grammatically complete utterances. Our results suggest that there may be essentially less difference between what deaf children receive through lipreading and through simultaneous communication than might have been expected. Hart and Rosenstein's description (1964) of the deaf child's reception of linguistic structure through lipreading is instructive.

In lipreading—the chief avenue through which the deaf child develops language—the child does not perceive every word in an utterance, but rather catches the key words, or even only the root parts of words (e.g. boy instead of boys, walk instead of walked). The words that are ignored are words that are not understood, as well as function words (e.g. to, the, at, for) that tie the communication together (1964:680).

Our data show that deaf children in classrooms where Manual English is used, like the child dependent on lipreading, in many instances perceive key words or root parts of words only, missing function words and other obligatory parts of English grammar. Moreover, in the case of primary deletions, even the key words may be missing. For the child in the Manual English classroom, the difficulty lies perhaps not so much with his or her ability to receive language but with the unsophisticated use of Manual English on the part of the teacher.

In the present study we examined the way in which Manual English was used in the classroom by two experienced teachers, looking closely at five major aspects of English grammar: declarative sentences, questions, relative clauses, pronouns, and verb tense. Uniformly across all linguistic constructions we found the teachers' signed utterances to be predominantly ungrammatical. Specifically, declarative sentences and questions were signed incorrectly more than 90% of the time. Relative clauses were ungrammatical in all instances, and pronouns and verb tenses were handled inappropriately about two-thirds of the time. In light of these results, one must ask "How can the students absorbing these utterances gain anything but a distorted picture of what English grammar is?" If deaf children are learning such poor English, one should not be surprised that they fail to read adequately.

Analysis of simultaneous communication must be extended in the future to a wider sample of teachers and schools. Informal observation, however, suggests that the present results will not be atypical of simultaneous communication used in schools across the country at this time. The source of the poor grammar in the Manual English signing—at least in our sample—was not the mixing of the grammars of English and ASL, because neither teacher used much ASL, and in fact the first teacher seemed unacquainted with it. Instead, grammatical errors stemmed from gross omissions of obligatory words and morphemes from signing. Different patterns of omission emerged from the signing done by the two teachers. As just one of many possible examples, the first teacher made predominantly primary deletions; the second teacher, however, made predominantly secondary deletions. Given our scoring procedure, the difference reflects frequent omissions of subjects and verbs by the first teacher and omissions of verb tense and plural markers and functors and articles by the second teacher. Although the pattern of omissions made by the second teacher would probably interfere less with the communication of ideas, his signing nonetheless failed to provide an accurate model of English grammar. We found the percentage of total utterances by both teachers that were signed entirely in correspondence with the rules of English grammar pitifully small. Neither teacher signed more

than 10% of his or her utterances in accord with the rules of English grammar. The main problem in both cases was the omission from signed utterances of words and morphemes that one is obliged to use in English.

Why did these teachers make such extensive omissions from their signing? There are several plausible answers to the question. First, Bellugi and Fischer (1972) have found that the rate of articulation for speech alone is near twice the rate of articulation for signs alone. When speech and signing are used simultaneously, the rate of speech articulation averages 1.65 times faster than that for signs. The teachers observed here perhaps deleted signs to obtain simultaneity. If so, however, simultaneity might be achieved with less grammatical disturbance if teachers spoke more slowly and were able to coordinate this speaking with a faster more expert rate of signing.

Second, simultaneous production of English in two modalities, speech and manual signing, may overload the human intellect. In other words, casting a thought simultaneously in both an oral and a manual vocabulary may tax to excess the capacities of the human mind. Aspects of our findings are consistent with the notion of overload. For instance, both teachers conveyed English grammar better in their signing when reading aloud than when communicating spontaneously. If simultaneous communication were to result in intellectual overload, then removing one mental task, namely deciding on the content of the discussion, should leave more intellect available to handle correctly the grammatical properties of the utterance. As support for a hypothesis that there is cognitive overload, simultaneous communication requires its user to encode consciously in gestural signs all the grammatical affixes that are obligatory in the spoken portion of the utterance. Thus hearing teachers must analyze each utterance for grammatical patterns, such as subject-verb agreement, when such analysis does not require conscious analysis in oral discourse. Moreover this unusual analysis must be carried on in conjunction with decisions about meaning, selection of vocabulary from two different lexicons (oral and manual), and overall sentence structure. Those interested in pursuing research necessary

to test the overload hypothesis might begin by training a group of expert signers, with years of experience, to represent each aspect of English grammar manually as well as orally. The training should be followed by much supervised practice of the kind typical of practice in learning to play a musical instrument while simultaneously singing. Only after expert signers have been given a chance to adjust to the rigorous demands of putting all properties of English spoken grammar in manual form while speaking can we begin to explore the notion of overload. If simultaneous communication were in fact to overload the processing powers of the human intellect, one might find, for example, that effective training led to elimination of primary deletions but not of secondary deletions. In any case, the overload hypothesis has yet to be tested.

Third, it is also quite possible that the teachers in this study neither received adequate training in Manual English during their years of preparation for their careers nor received adequate on-the-job training. Our research suggests that if simultaneous communication is to be used in schools for deaf children, the communication skills of teachers may well be in need of improvement. To upgrade the Manual English used by teachers, the analytic techniques developed in the present study could be adapted for use with individual teachers to provide feedback as to the correctness of the language model they provide for their pupils. It would be well worth while for teachers to videotape and analyze their own simultaneous communication techniques. In-service filming and linguistic analysis may go a long way toward upgrading a teacher's use of simultaneous communication.

A simple breakdown of the kinds of ungrammatical signed utterances, along with a conscious choice of a way to eliminate these errors from the signed portion of utterances, would undoubtedly yield important improvements. Thus, for example, a teacher who habitually omits pronouns in signing (as did the first teacher in this study) may, upon realizing the error, resolve to fingerspell each pronoun, so avoiding the extra burden of trying to recall the correct form of pronoun sign in the particular Manual English system in use. With awareness of a personal weakness in Manual

English expression, a teacher can choose from many methods of remedy. There certainly is more to evaluating teachers' manual language skills than testing how many signs teachers know. Attention must be paid to how well English grammar is represented in the signed portions of utterances. It is also important for teachers to present as wide a range of English constructions as is appropriate to their pupils' stage in acquiring English. The teachers observed here used many simple declarative sentences and few grammatical complexities, such as relative clauses. Russell, Quigley, & Power (1976) show that deaf children often misunderstand the meaning of complex grammatical constructions. Appropriate and consistent use of such constructions in the context of classroom discussion should help deaf students become acquainted with them.

The findings reported here suggest that simultaneous communication requires further consideration, discussion, and research. Any method of communication as currently used by schools and educational programs for deaf children has at the very least two main goals, namely to provide a means by which the deaf child can communicate, while at the same time to provide examples of English grammar from which the child can learn English grammatical structure. To determine how well simultaneous communication meets these goals more empirical research is needed.

First, it would be important to determine if in fact a high level of accuracy in the signed portions of utterances is feasible, inasmuch as the joining of two fundamentally different expressive modalities may overload the intellect. Second, the effect of simultaneous communication on the deaf pupil must also be investigated. Simultaneous communication may be so cumbersome a method compared to American Sign Language that the overtaxed learner may lose motivation to learn the system and thus fail to master it. For example, deaf children who know American Sign Language know that often what one can communicate in ASL with one or two signs (in combination with other, non-manual devices) requires perhaps a half dozen signs to put in simultaneous communication. Consider the statement, "She is weak minded," which requires five signs in Manual English but only two in ASL (i.e. a sign for 3rd person singular plus the sign WEAK

made with fingertips touching the head at the temple). Future investigation might seek to enumerate what features, if any, of simultaneous communication tax the learner, and in addition might delineate which cognitive processes (such as short-term memory in sentence integration) might be influenced. Simultaneous communication is only one means by which to reach the dual goals of offering deaf children a communication system and provision of exposure to English grammar in order to facilitate their reading and writing. An alternative might be to begin to teach children about the give and take of communication with American Sign Language—which may be more appropriate to the visual mode of perception and so more congenial to them; then after the child has learned to communicate in ASL, English might be taught as a second language. For the latter process, simultaneous communication might be used as one of several tools for presenting the structure of English grammar. As linguistic research makes American Sign Language easier and easier to teach to hearing and deaf people (see e.g. Klima & Bellugi 1979), the latter plan becomes increasingly practical. With respect to motivation, much of the child's desire to learn language is born of his or her wish to become part of a social unit. Since there is no natural community of language users for any invented manual system, and since its use is most often restricted to the classroom and interaction with the teacher, the child's interest in learning the method may be less than desirable, and less than might be the case with American Sign Language, which has a large community of users. Moreover, it may be the case that the best deaf pupils, those who achieve the greatest mastery of Manual English, may grow up outside any language community, having access neither to hearing society nor to deaf society, where currently American Sign Language predominates.

Third, it is widely assumed that if deaf children are taught with simultaneous communication, they will learn English better, but more research is needed to test whether simultaneous communication facilitates acquisition of English better than do alternative methods of instruction. Longitudinal research comparing the English language skills of children being taught to use "exact" Manual English and children being taught to use alternative systems, such as American Sign Language perhaps with English taught as a second language,

would be useful in evaluating the merits of using simultaneous communication in the classroom.

NOTES

¹ This research was supported in part by Alcohol, Drug Abuse, and Mental Health Administration National Service Award 1F3 MH 05453-02 from the National Institute of Mental Health to Gloria Strauss Marmor, and by a grant from the Rehabilitation Services Administration, Department of Health, Education, and Welfare, to the Deafness Research and Training Center, New York University. We are grateful to Jerome D. Schein of the Center, and to Dennis Cokely of Gallaudet College.

² This is amply documented; see Cooper 1967, Cooper & Rosenstein 1968, Charrow 1975, Fusfeld 1955, Goda 1964, Hart & Rosenstein 1964, Heider & Heider 1940, Myklebust 1960, Russell, Quigley, & Power 1976, Sarchan-Deilly & Love 1974, Simmons 1962.

³ Part of the transcription notation was developed while the second author was at the Salk Institute and the University of California; she is grateful to Ursula Bellugi and Edward Klima.

⁴ Sentences showing primary deletions are counted as such. They were not counted as secondary deletion sentences if they also showed such deletions, but were included in the tally of obligatory contexts; e.g. article deletion in lb was not counted as secondary deletion in Table 2 but was counted in the tally of obligatory contexts on page 107.

⁵ Deaf children lag behind hearing children in learning when to use and when not to use the verb be. Prelingually deaf children of age 10 tend to judge sentences like "the girl sick" to be correct in written English despite the omission of the verb be, a mistake that few hearing 10-year olds would make (Quigley et al. 1976). By her frequent omission of the verb be in Manual English, the first teacher is buttressing the common misimpression among her deaf pupils.

APPENDIX: TRANSCRIPTION SYMBOLS

(pt:)	Information about pointing, especially pronouns, is enclosed in parentheses.
→	Indicates direction of signer's pointing, from signer to referent.
Random	Pointing that does not use signing space systematically.
CS, RS,	Denote location of eye gaze and pointing (central
LS	space, right front of signer, left front, respectively).
EG	Used to denote eye gaze.
QF	Used to denote quizzical facial expression with sign.
H/BT	Head and/or body tilt; most frequently during ASL question formation.
+QV	Indicates that speaker-signer used question intonation.
(+)	Indicates feature accompanying sign; or use of two
SIGN	signs to render one English word; e.g. 'neighbor-
	+ hood' as FRIENDAREA.
(-)	Also above sign line, means feature did not occur.
—	Shows that signing did not appear with the spoken material directly above the blank in the transcript.
/	Indicates a break in the signed portion of utterance.
S-I-G-N	Indicates fingerspelling.
≠	Indicates difference of signed item from spoken item.
SIGNSIGN	Indicates that two spoken words are rendered by one sign.
{ }	Indicates simultaneous expression of two messages, usually by different signs with right and left hands.
I	Indicates that the sign was inflected by ASL conventions; for ASL inflection, see Klima & Bellugi (1979).
X	Indicates that the signed verb was inflected for person; see Fischer & Gough (1978).
Rep	Indicates that a sign or action of a sign was repeated.
PASTMARKER	Indicates that the ASL sign denoting past time was used. The specific intended meaning (as determined by the context and spoken portion of the utterance) appears in parentheses adjacent to the PASTMARKER entry, as in PASTMARKER (=Before).

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