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ABSTRACT
        Preposition usage by students at a secondary school
for the deaf was examined in 'Ss' response to a videotape showing a
young woman using Signed English with a voiceover. A descriptive
essay was collected in response to a question she posed. Essays were
typed verbatim into computer storage and then coded for grammatical
features using a multiple error code. Three types of preposition
users were identified. Errors in preposition usage were rank ordered
(high error/high frequency, high error/low frequency, low error/high
frequency, and low error/low frequency). Sources of confusion in
preposition usage are noted, and a model for preposition development
is briefly considered. (CL)

# The Development of Preposition Usage in the Written English of Deaf Adolescents

Thomas N. Kluwin

1979

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The Development of Preposition Usage in the Written

English of Deaf Adolescents

## Introduction

Two things can be said about previous work on the preposition usage

of deaf children. First, it has concentrated primarily on the syntax of

prepositional phrases. Second, it has generally regarded the problem as

one of deletion of prepositions in appropriate positions. This paper

will attempt to describe the development of the semantics of the

preposition usage of deaf children and at the same time to account for

some of the reasons deaf children have difficulty in using the English

prepositional system.

Charrow (1974), in the development of her test of "Deaf English,"

applied a primary overriding rule to the few prepositions she tested

for. In the case of "in," "at," "to," and "on," she consistently

deleted them in the preparation of her test items. She did present two

instances of redundancies with special verbs. Like all comprehension

tests, the test must have a finite domain of questions; therefore, she

was unable to test for a wide range of prepositional usage. Taylor

(1969) remarked that omissions were the largest single category of

prepositional errors for younger deaf children (p. 74). Although Taylor

claimed that there was improvement over time, she was unable to estab-

lish the process statistically. She did make two pertinent observa-

tions about the development of preposition usage. First, she remarked

that preposition growth has a component of syntactic growth, but it is

also highly dependent on vocabulary development. Second, she remarked

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on the confusion that occurs with prepositions that could be used as part of a verb phrase. Bolinger (1971) describes this structure as the phrasal verb, and Sroka (1973) categorized it as a preposition- adverb on distributional criteria.

The verb-modifying adverb and the preposition are not mutually exclusive categories. This potential for overlap is, no doubt, one of the bases for the difficulty that deaf children have with the prepositional system.

While the use of preposition-adverbs with certain verbs is an interesting topic and one that presents considerable difficulties for deaf children, it will only be mentioned briefly in this paper. The main focus of this paper will be on the development of the semantics of prepositions. This paper presents an analysis of the source of the semantic errors deaf children make; and it presents a developmental sequence that describes the prepositions used in simple phrases as they are first employed and as they are mastered.

If the English prepositional system had been in existence 2,500 years ago, its categorization would have been added to the torments of Sisyphus and Tantalus. The semantic categorization of the English preposition is complicated by the fact that it has at least three syntactic functions:

> (1)  Simple. The meaning of the preposition is that of the minimal relationship that the preposition specifies. This occurs in simple prepositional phrases.
>
> There is a package for Mary.
>
> (2)  Compound. The meaning is extended by the use of the preposition in combination with a verb. This is what Bolinger terms "phrasal verbs" and Sroka calls

"preposition-adverb." Goyaerts (1974) has categorized the semantics of such constructions on six dimensions and points out the complexity of dealing with this type of construction.

I will go up the stairs.

(3) Transformational. The meaning of the preposition is extended by the use of the preposition as a clausal subordinator. The most obvious cases are the formation of passives using BY-INSERTION and the FOR-INSERTION subordination transformation.

John was hit by a rock.

This study deals primarily with the first category: the use of prepositions in prepositional phrases. The problem of "compound" meanings will be mentioned briefly, and transformational uses will not be dealt with. Quirk, Greenbaum, Leech, and Svartvik (1972) and Talmy (1972) provide additional discussion of these topics.

## Method

The data for this study were collected from a secondary school for the deaf in the eastern United States. The data were collected by bringing all the students together during their English classes to a central location and showing them a videotape. On the videotape, a young woman, using Sign English with a voiceover, signed that she was going to be a new student at the school and was interested in knowing about the school. The students were then asked to write a letter to the girl telling her about the school. In this fashion, a descriptive essay was collected from all the students.

The letters were typed verbatim onto computer storage. The stored letters were then coded for grammatical features using a multiple-error

code. This permitted later reanalysis of the corpus, as well as rapid

statistical analysis of the coded letters.

## Findings

In the sample, there were three types of preposition users that

could be described. Permutations could possibly produce five cate-

gories, but three were clearly identifiable. First, there were those

students who apparently had no concept of the use of a preposition, for

they were still functioning with a topic-comment grammar in English.

For example, one student wrote: "(school name) are new student.

Student and visitor class." The student was trying to convey the notion

that there will be a new student in the school and that the new student

will come or has come as a visitor to the class. Second, there were

those students who had acquired the concept of the use of prepositions

in English but had not as yet developed a number of them; that is, they

tended to generalize a single preposition into multiple functions, some

of which were clearly inappropriate. Third, there were those students

who had acquired a fairly complete set of prepositions but were using

them in much the same fashion that a foreign speaker would; that is,

they would overgeneralize the use of the preposition into a case where a

special selectional restriction would make it inappropriate.

Errors in preposition usage were rank ordered on two measures. The

first measure was the percentage of preposition errors-per total

prepositions used by the writers. The second was on the basis of the

frequency that a particular preposition appeared in the corpus. Major

semantic distinctions between uses of the same preposition were

employed. Specifically, if a preposition could have a temporal,

locative manner, or partitive meaning, the various meanings were coded

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separately. For example, "in", as "in school," was a high-frequency preposition, but "in", as "in a hurry," was not. Both rankings were divided on the mean to produce four cells. The distribtution is presented in Table 1.

Table 1

Preposition Usage

High Error/High Frequency

| | |
|---|---|
| for | (t) |
| at | (p) |
| in | (p) |
| to | (p) |

High Error/Low Frequency,

| | |
|---|---|
| against | (p) |
| in | (m) |
| from | (t) |
| like | (r) |
| to | (m) |
| of | (m) |
| on | (m) |
| on | (p) |

Low Error/High Frequency

| | |
|---|---|
| with | (r) |
| with | (m) |
| for | (m) |
| of | (r) |
| from | (p) |
| about | (m) |

Low Error/Low Frequency

| | |
|---|---|
| after | (m) |
| behind | (p) |
| instead of | |
| for | (p) |
| without | (r) |
| off | (p) |
| of | (p) |
| up to | |
| beside | (p) |
| on | (m) |
| by | (m) |
| around | (p) |
| during | (t) |
| at | (t) |
| like | (m) |
| as | (m) |
| in | (m) |

(t) temporal (e.g., in one hour)

(p) locative (e.g., in New York)

(m) manner (e.g., in a hurry)

(r) partitive (e.g., the father of John)

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## High-Error/High-Frequency Prepositions

The greatest problems for the children in the sample were the use of "for" to express continuous duration, a confusion of "in" and "at" for stationary location, and, finally, a confusion of "in" and "at" with "to" to express movement toward a location.

"For" was not in free variation with any other preposition, but was often deleted. It was not established as a separate grammatical item within the sample. There is a tendency for deaf children (Taylor, 1969) to use sentence-modifying adverbs for a variety of functions; and there was some confusion among these writers between sentence-modifying temporal adverbs which have specific "ly" endings and the use of a preposition with a temporal noun to express a length of time. For example, "weekly," "week," "for a week" would exist in free variation.

"In," "at," "to" were in free variation and were used to express a general notion of location in space with the verb-specifying motion. About a third of the time, "at" would be used for "in," while "in" was used for "at" only a tenth of the time. "To" was the most stable form, "at" was a somewhat less stable form, and "in" was the most variable form.

It is possible to account for the apparently high degree of variation in the use of "in," "at," and "to" by considering the possible meanings of the prepositions. Hill (1968) lists 72 different meanings for "at," 154 for "in," and 96 for "to." Much of this volume can be reduced by first only considering his "elementary-level" uses and by eliminating those uses that are tied to a verb. The "intermediate" and "advanced" meanings for all of his preposition classifications seem to involve either one or two general principles. Either the more complex

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meaning is a special case of a preposition used with a verb, or it is

some sort of metaphoric use of a more generalized meaning. Occasionally,

he presents preposition usages that are marginally locative; that is, it

is difficult to say clearly whether a spatial relationship is involved

or some other kind of relationship. These will not be considered.

However, this still leaves five meanings for "to," seven meanings for

"at," and six for "in." These various meanings are presented in Table 2.


Table 2

Several Possible Meanings for Selected Prepositions


"TO" used in a locative sense:

1. "to" indicating motion in the direction of and actually reaching a
   point.

   'He went to the post office.

2. "to" combining meanings of motion and purpose followed by a noun
   without an article.

   France went to war with Germany three times in 75 years.

3. "to" meaning "toward" or "in the direction of."

   From here, we will go to the north.

4. "to" meaning "as far as" or some distance.

   It is a long way to the village.

5. "to" indicating direction without motion.

   He stood with his back to the fire.


"AT" used in a locative sense:

1. "at" used to show relative position in space indicating a point.

   We'll meet at my house.

2. "at" used with proper names of places which are considered transitory points.

Our train stopped at New Haven.

3. "at" meaning positioned in relation to a three-dimensional object.

He was standing at his desk.

4. "at" meaning positioned in relation to a surface that is to be bisected.

There is someone at the front door.

5. "at" meaning participating in a function or activity.

George is at school.

6. "at" meaning a street address.

I live at 4716 S. 29th Street.

7. "at" indicating motion toward, often with an additional meaning of opposition.

We ran at the door.

"IN" used in a locative sense:

1. "in" used for a place or position implying limits.

We live in houses.

2. "in" meaning motion toward an interior.

We are going in the house.

3. "in" before the proper names of continents, seas, etc.

John lives in America.

4. "in" used before a countable noun without an article.

John is in class.

5. "in" used in opposition to "on" when items of furniture have vertical boundaries.

He sat in the chair. He sat on the chair.

6. "in" used for position on a surface without limits.

There is an island in the middle of the lake.

It is possible to differentiate, within each of the sets of preposition meanings, all the various meanings with a sample set of binary features. The features of +motion, +direction, +completion, +distance, +position, +relative, +dimension, +surface, +function, +specific, +limits, and +interior can be used to differentiate all the meanings within a single preposition. However, when this relatively simple system is applied to three different prepositions, the source of deaf children's problems with these prepositions become clear.

Table 3

Contrastive Feature Analysis for Selected Prepositions

| | TO 1 | TO 3 | AT 7 | AT 2 | TO 2 | IN 2 | TO 4 | TO 5 | AT 3 | AT 4 | AT 1 | IN 3 | IN 6 | IN 1 | IN 5 | IN 4 | AT 6 | AT 5 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Motion | X | X | X | X | X | X | | | | | | | | ✓ | | | | |
| Direction | X | X | X | | | | X | | | | | | | | | | | |
| Completion | X | | | X | | | | | X | X | X | | | | | | | |
| Distance | X | | | | | | X | | X | X | X | X | X | X | | X | | |
| Position | | | | | | | | | X | | | | | | | | | |
| Relative | | | | | | | | | | | X | | | | X | | | |
| Dimension | | | | | | | | | | | | | | | | | | |
| Surface | | | | | | | | | | | | X | X | | | | | |
| Function | | | | | | | | | | | | | | | | | | |
| Specific | | | | | | | | | | | | | | | | | X | X |
| Limits | | | | | | | | | | | | | | X | X | | X | |
| Interior | | | | X | | | | | | | | | | X | | | | |

Table 3 shows the various prepositions with numbers assigned to reference them to Table 2. One would expect that if the prepositions in question each defined a unique piece of semantic space and hence were nonredundant, they would exhibit a continuum where all meanings of one preposition would be together. This, however, is not the case for Table 3. Clearly, "TO 1" is at one end of such a continuum, and "AT 5" is at the other end, but in between the distribution is quite scattered. This simple system is incapable of distinguishing certain meanings. Specifically, it groups "TO 3" with "AT 7", and "IN 3" with "IN 6."

Consider the sentences:

(1) We ran to the north.

(2) We ran at the door.

Both sentences imply motion and direction. Motion is an optional feature of "at," but an obligatory feature of "to." What distinguishes the two meanings is that an additional and unique specification of opposition must be added to the meaning of "at." Hence, a deaf child intending to write Sentence 2 could apply the rules for Sentence 1 and produce the meanings of "TO 1" which includes not only motion and direction, but completion as well.

The combining of "IN 3" and "IN 6" may, or may not, be a redundancy in the earlier presentation. If one could define continents, seas, oceans, etc., as surfaces without limits, then the failure of the category system is due to the inclusion of a special case in the original specifications.

The interesting point about Table 3 is not the inconsistencies or special cases, but the overall pattern of meanings. Meanings for one preposition come very close to another.

Sentences 3 to 8 illustrate the shifting of meaning that occurs with the set of prepositions presented in Table 3.

    (3) He ran to the store.    "TO 1"

    (4) He ran to the north.    "TO 3"

    (5) He ran at the door.     "AT 7"

    (6) He stopped at the door.  "AT 2"

    (7) He went to war.       "TO 2"

    (8) He went in the house.   "IN 2"

Since the major definable features for these prepositions are often identical, and the basis for selecting different prepositions is based on smaller and often subtle distinctions, it is apparent why deaf children have problems when they use these prepositions. What may have happened is that during the analysis of the sample, actual errors were missed because the usage fit within the general sense that the coder had derived for the context.

Another source of confusion of these forms may be the fact that in manual communication, place relationships are signed strictly in terms of the actual physical relationships. For example, "The helicopter is over the hill" would not be ambiguous in manual communication. A skilled signer would first locate the hill within his or her signing space, then he or she would locate the helicopter in relation to the position of the hill. If the helicopter was above the hill, it would be signed as being above the hill and stationary. If the helicopter was traversing the hill's crest, the signer would move the hand indicating the helicopter across the area originally designated as the hill. The relationship between the two objects, hill and helicopter, always would be explicit from the relative positions of the signs.

## High-Error/Low-Frequency Prepositions

The high-error/low-frequency prepositions may be a phenomenon of the topic of the composition. This group contains other semantic uses of "in" and "to," as well as the temporal and locative meanings of other prepositions. It is possible that in a larger sample or in a closer study of individual writers, many of these prepositions would appear with greater frequency.

Again, "in" and "to" appear in the group of prepositions, although with different meanings. "On" appears with both its temporal and locative meanings. Before discussing the other prepositions in the group, it would be useful first to discuss how "on" is related in meaning to "in," "at," and "to" and second to discuss how temporal and locative prepositions are related in English.

Dealing first with the locative meanings of "on," we find that Hill (1968) presents six meanings for them based on the criteria defined earlier.

1. "on" meaning above and in contact with.

   He was lying on the floor.

2. "on" indicating contact with a nonhorizontal surface.

   The picture was on the wall.

3. "on" indicating position in relation to a place or thing.

   John was on the other side of the road.

4. "on" meaning covering an object.

   The drape was on the chair.

5. "on" meaning a generalized locale or place.

   He was hit on the chin.

6. "on" introducing the object of an action.

   Rust has a bad effect on iron.

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These six uses are hardly comprehensive, but they do provide some
basis for comparison with "in," "at," and "to." They can be mapped onto a
system as in Tables 2 and 3 and compared to the meanings of the other
prepositions. "To" has a generalized meaning of +motion and +direction.
"In" has a generalized meaning of +position and +limits. "At" contains the
feature +position. "On" has the primary features +position and +relative.
If these were the only meanings for these prepositions, the problem would
not arise; however, as has been shown previously and can be seen from the
meaning of "on," these simple specifications are inadequate. First, they
do not describe all the meanings of a single preposition; and second, they
do not differentiate the apparently identical meanings of different
prepositions. With "at," the meaning system is extended toward the
meanings of "against." With "on," the meanings of "upon" and "above" are
approached. What is needed in order to account for the system of English
prepositional meanings is some kind of field theory or system of Venn
diagrams.

So far we have dealt only with the locative meanings of the preposi-
tions, but that was based on simple expedience. It would have been diffi-
cult to account for all the different meanings at one time.

Single prepositions can vary their meanings across seemingly broad
categories such as time, place, or manner. While that is an entire topic
in itself, the variation across time and place is of interest to us, for
that is the basis for the difficulty that deaf children have with the
prepositional system. Konig (1974) remarks on the relationship of temporal
and locative meanings of prepositions. He wishes to regard temporal
prepositions as ultimately a special case of locatives. Unfortunately, he
limits himself to a discussion of two prepositions that the sample did not
use: "by" and "until."

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The temporal meanings of "in," "at," "on," "to" are much more restricted than the locative uses. A sequence of "at," "on," "in" can be devised for temporal durations of increasing length. For example: He will arrive at nine o'clock on a Thursday in June. "To" has a limited set of temporal usages and seems to be a subset of "until." "To" can be ignored for that reason and, for the reason that it did not appear in the corpus in that use. The systematicity of the temporal meanings would account for the fact that "at" was a low-error usage, but would not account for the fact that "on" was a high-error usage. Topic may have had a considerable effect on the frequency of these prepositions; for example, "in" did not appear as a temporal preposition.

Errors in the use of temporal prepositions by deaf children may have two sources. First, they may be due to the low frequency of use of such expressions, but that has not been proven. Second, they may be due to interference from the locative system. If the child is confusing two lexical items in their locative uses, this error pattern may generalize to other meanings.

Low-Error/Low-Frequency Prepositions

The low-error/low-frequency prepositions seemed to be highly idiosyncratic; that is, they were used by only a single writer and generally, the individuals using them had a better command of the syntax. This suggests that at some fairly high minimal point of skill, syntax and preposition usage may be related. Another explanation is that those who use the low-error/low-frequency prepositions were as a group simply better than the others across all language skills. Such a result would not be inconsistent either with the earlier classification of three types of preposition users in the corpus or with Taylor's observations (1969) about preposition usage in a younger sample. Her main observation was that

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for younger children, prepositions were regularly omitted. The generaliza-
tion for this corpus is that there was an identifiable group that regularly
omitted prepositions, but once past that point, semantic confusion was a
more serious problem.

## Low-Error/High-Frequency Prepositions

Low-error/high-frequency prepositions were those expressing manner
relationships. "From" is an exception to this trend. A consideration of
the possible meanings of "from" suggests that its possible uses are highly
restricted and not likely to generalize across other meanings. One would
expect that errors in its use would tend to be omissions. This is
precisely what appeared in the corpus. "With" and "for" as prepositions of
manner may be fairly stable because they have clear manual signs whose
meaning is the same as the English prepositions. This is opposed to a
preposition like "over" which can have nine distinct meanings (Bennet,
1969); all of which would be signed differently.

## Redundant Prepositions

So far we have dealt with only simple prepositional phrases and
generally ignored verb and preposition-adverb usages. In so doing, we have
accounted for all the cases of semantic confusion between prepositions, as
well as most of the cases of preposition deletion. Redundant prepositions
are a low-frequency but regular feature of the writing of deaf children.
In this corpus, they seemed to be fairly systematic in their syntactic
function, although they were too infrequent to permit a description of a
semantic pattern for the errors.

Redundant prepositions seemed to be overgeneralizations of the use of
compound verbs or verb particles (Bolinger, 1971) since they invariably
appeared after a verb and seldom as a dual marker for a prepositional

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phrase within a sentence. The following verbs regularly appeared with
redundant prepositions:

> visit (transitive) used with "at," "to," or "in"
>
> play (transitive) used with "with"
>
> like (transitive) used with "to" and "at"
>
> study (transitive) used with "in"
>
> teach (transitive) used with "of"
>
> help (transitive) used with "with"
>
> go or go back (intransitive) used with "to"

The rule seemed to be that transitive verbs that could become
intransitive by the addition of a preposition-adverb particle were
overgeneralized as a verb + particle verb into a transitive usage.

This is an interesting observation when considered in conjunction with
Taylor's remarks (1969, p. 78) that in the early stages of English
development, the verb contains the functional elements for the preposition.
The most frequently deleted prepositions for the younger deaf child are
those that are structurally required but semantically redundant.
Apparently with increased development and the generation of the syntactic
rule for the use of prepositions, the rule becomes overgeneralized to the
point of redundancy. Since many active verb signs in American Sign
Language (ASL) contain a relational component, there is also the
possibility that a child simultaneously developing both ASL and English is
alternating verb and preposition rules.

### A Possible Model for Preposition Development

The three groups of preposition users described might provide the best
basis for a model of preposition development in deaf children. The first

stage for such a model is the use of verbs which contain a semantic feature that makes the preposition semantically redundant but structurally necessary. This is the kind of child that Taylor (1969) describes in her survey of deaf writers from grades three through nine. A deaf adolescent may exhibit this kind of written English for one of two reasons. Either the child is still at the same stage of development in his or her English grammar or he or she is overgeneralizing rules from ASL. Since the basic syntax (topic-comment grammar) may or may not be present, it makes assigning adolescents to this stage difficult. The options for the syntax of a child at this stage are either a low level of English syntax which is also the child's functioning language or a "translation" of English using ASL syntax. The problem for the teacher or curriculum writer is that one problem would call for a language development approach, while the other would call for a foreign language teaching approach.

The second stage is the acquisition of the function of the preposition. Apparently, the first prepositions to be acquired are the locatives: "at," "in," "on," "to," "from," and the manner or partitive prepositions: "with," "about," "for." Although the child at this level has acquired the syntactic rule of using prepositions, he or she has still not developed all the semantic features for the system nor a full set of prepositions. Simple proximity between words, as well as verbal meanings, are still used to carry some relationships. The child exhibits some redundancy in the use of prepositions after verbs.

The third stage is the use of a somewhat expanded prepositional system but with increased use of redundant prepositions. In this case, some idiosyncratic prepositions may appear as the result of special experiences such as training programs. This is accompanied by increased sentence

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length. A few specifications have been added to the locatives, but the
system is still in free variation for some meanings.

The fourth stage is the elimination of the redundant prepositions
except for a few outstanding cases, e.g., "look like" for "look." There is
an increase in the total number of prepositions and a stabilization of
locative meanings. The overall impression is that it was not written by a
"native speaker," for there are some special usages that are incorrect and
an absence of some more "rhetorical" usages.

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