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# The Acquisition of Sign Meaning in Deaf Children of Hearing Parents

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# THE ACQUISITION OF SIGN MEANING
# IN DEAF CHILDREN OF HEARING PARENTS

Sue Livingston

**Learning strategies.**  How do deaf children of non-signing parents go about the process of assigning signs to their referents? Analysis of the data for a study that described the development of sign language processes in deaf children of hearing parents made it increasingly clear that the children were using signs in their everyday conversations that did not always mean the referents they were intended to mean (Livingston 1983). These mismatches between sign and referent provided the data from which to hypothesize possible strategies that the children were using in learning to mean. Although this paper focuses on these strategies, a detailed account of the development of sign meaning appears in the study cited.

The findings presented here can be viewed as the result of six case studies of semantic development. Six subjects, all profoundly deaf from birth and born to hearing parents who knew no sign language, were videotaped over a period of approximately fifteen months, starting one year after they entered a "Total Communication" program in a New York City public school for deaf children. Before that they all had been raised and schooled orally. They ranged in age from six to sixteen years, and had either four or five videotaping sessions, in which they explained and described either to the researcher or to a peer pictures in their family photo albums, pictures of activities in their classrooms and on excursions, or stories told to them by their teachers. From eight hours of videotaped data and approximately 3,500 utterances, the following findings are offered.

**Acquisition of meaning.**  Theories about how hearing children learn word meanings are for the most part based on the assumption that children extend labels to referents based on shared or overlapping components or attributes of meaning. Initially, according to Eve Clark (1973), these shared components are only partial entries -- one or two features -- of the adult label for a particular referent. As seen in Table 1, this does seem to be the way the subjects in this study assigned signs to their

| Overextended Signs | Intended Referents |
|---|---|
| MOTHER | wife; witch; Giant's wife in <u>Jack and the Beanstalk</u> |
| FATHER | husband; Giant in <u>Jack and the Beanstalk</u>; Hunter in <u>Little Red Riding Hood</u> |
| GRANDMOTHER | Giant's wife in <u>Jack and the Beanstalk</u>[a] |
| GRANDFATHER | Hunter in <u>Little Red Riding Hood</u> |
| GIRL | sister |
| FRIEND | sister |
| KISS-MARRY | husband |
| MARRY | husband |
| KISS-MARRY | wife |
| WOMAN (wife) | wife |
| WHAT | who |
| WHAT | why |
| WHERE | which |
| PEOPLE | girls |
| PEOPLE | boys |
| NO | can't |

[a]All storybook characters that the subjects labelled either GRAND-MOTHER or GRANDFATHER were depicted with white hair.

Table 1. Confusions due to feature overlap: over-extended signs.

referents; for in their effort to express their intentions, the subjects used signs that reflected only partial features not yet specific enough to label their referents as adults do. For example, in their attempt to mean 'sister' (when they were looking at pictures of their sisters) by their use of the signs GIRL or FRIEND, it can be inferred that it was perhaps the features short, young, female, companion (all components of the meaning of sister) that the subjects were using to label their intention. These features are overlapping and appropriate but not yet specific enough to mean 'sister' in the adult sense. For their intended meanings of 'husband' and 'wife', the children perceived a feature

of meaning perhaps related to kissing. For their
intended meanings of 'who' and 'why' they may have used
a feature of meaning related to general identification.

| Underextended Signs | Intended Referents |
|---|---|
| BROTHER | boy |
| MARRIED (wife) | married |
| WHAT-FOR | what |
| WHO | what |
| THEN | and |
| CAN'T | didn't |
| BEACH | place where you can swim |

Table 2.  Confusion due to feature overlap: under-
extended signs.

These features give us a glimpse at what certain
referents mean to children as well as what their signs
must mean to them. Until more features to differentiate
referents are acquired, these signs and referents mean
essentially the same to the children.
        Conversely, but not as prevalently, when features
of signs and referents overlapped, the subjects would
use more specifically featured signs to mean more
generally featured referents, as seen in Table 2. For
example, in their effort to mean an area in a city park
for wading or swimming, the sign BEACH was used. The
overlapping feature, perhaps swimming, triggered the
sign BEACH, which used in the adult sense had more
restricting features of meaning. The children's strategy
here, however, is essentially the same; for in these
cases, even though their signs are more specific, their
meaning is not because, as inferred from their intended
referents, they are still working with overlapping
features not yet sufficient for the more adult-like use
of their signs. In these cases, however, the children do
show evidence of semantic growth by their use of new,
more specific signs, which they are perhaps "testing
out." However, as stated above, at this point in time,
until more differentiating features are acquired, these
signs and their referents mean essentially the same to

the children.

From the data thus far we can perhaps say that deaf children, like hearing children, use the following general strategy in the acquisition of sign meaning: "When there are overlapping features, label referents either too broadly or too narrowly." If we can think of this as Strategy 1, consider this next as Strategy 1a: "Sign-to-meaning mismatches due to too broadly labelled referents (overextended signs) predict subsequent semantic growth" -- See the seemingly appropriate sign-to-meaning matches in Table 3. In these examples, reading across from the left, when some of the children made sign-meaning "errors," the same intended meaning was expressed with the appropriate sign, at times, by the next older subject. It appears, therefore, that the overextension process is an orderly, building-block process, whereby linguistic expression in an older subject could at times be predicted by sign-meaning errors made by the next younger subject.

However, with Strategy 1a comes Strategy 1b: "Appropriate sign-meaning matches, although indicative of semantic growth, are at times only tentative hypotheses about more fully featured meanings not yet fully understood." For, as seen in Table 4, appropriate use of a sign was not necessarily evidence of mastery of its meaning. Instead, sign-meaning mismatches that occurred after appropriate meaning sign-matches further substantiate the claim that sign meanings, like word meanings, are initially only partly learned and that appropriate matches, although indicative of semantic growth (the children experimenting with new forms), are essentially tentative hypotheses about more fully featured sign meanings not yet fully understood.

Strategy 2, "New features spark the appearance of other new signs possessing similar features," was formulated after observing that when new signs with new features of meaning appeared, these new features at times sparked the appearance of other new signs with similar features, either at the same age or at a subsequent age. For example, the signs and features on the left in Table 5 either simultaneously appeared with, or were precursors to, the signs on the right, which incorporated those same features as listed. These examples do seem to point to the crucial importance of feature acquisition as a spur to the acquisition of new sign meaning reflecting perhaps a certain conceptual readiness to interpret and use perceptual and linguistic input.

| Subject and Age | Expressed Sign | Intended Meaning |
|---|---|---|
| LV (7;5) | GIRL | sister |
| LV (8;2) | FATHER | husband |
| FL (8;2) | MOTHER | wife |
| DR (9;6) | MARRIED | husband |
| DR (10;3) | WHAT | who |
| SL (14;0) | WHERE | which |

| Subject and Age | Expressed Sign | Intended Meaning |
|---|---|---|
| FL (8;3) | SISTER | sister |
| FL (8;3) | HUSBAND | husband |
| DR (10;3) | WOMAN (wife) | wife |
| MS (11;9) | HUSBAND | husband |
| MS (11;9) | WHO | who |
| TW (16;7) | WHICH | which |

| Subject and Age | Expressed Sign | Intended Meaning |
|---|---|---|
| FL (8;3) | SISTER | sister |
| FL (8;3) | HUSBAND | husband |
| TW (16;1) | WHY | why |

| Subject and Age | Expressed Sign | Intended Meaning |
|---|---|---|
| FL (9;0) | FRIEND | sister |
| FL (9;0) | FATHER | husband |
| TW (16;7) | WHAT | why |

(Tables 3 & 4 vertically placed)

| Subject and Age | New Sign(s) | New Feature(s) | Subject and Age | Other New Sign(s) Possessing Similar Feature(s) |
|---|---|---|---|---|
| DR (9;6) | WITH | "accompaniment" | DR (10;3) | BRING |
| MS (10;10) | FIRST | "order" | MS (10;10) | THEN |
| SL (14;0) | FIRST SECOND THIRD | "order" | SL (14;0) | THEN |
| SL (14;0) | ALMOST | "little bit of time/ distance" | SL (14;0) SL (14;9) | YESTERDAY NEAR SOON |
| TW (15;4) | SOON | "little bit of time/ distance" | TW (16;1) TW (16;7) | ALMOST YESTERDAY NEAR MISS |
| TW (16;1) | WHY | "reason" or "purpose" | TW (16;7) | FOR[a] |
| TW (16;7) | WHICH | "option" | TW (16;7) | OR |

[a]This manifests the feature "reason" or "purpose" in the sense of needing money for food.

Table 5.   New features of meaning that sparked the appearance of new signs with similar features.

A final strategy can be expressed, Strategy 3: "Concatenate signs to express more specific meanings." Klima and Bellugi (1979) speak of how in ASL simplex signs are strung together to express previously undesignated concepts. As seen in Table 6, three of the children in this study chose to concatenate signs to express very specific meanings. Of interest here is that the children created these expressions just as Klima and Bellugi's subjects "freely invented" signs for streaker, Jacuzzi, D.D.T., genetic engineering, and heart transplant. Their expressions show that these children possess a powerful grammatical process for the creation of new vocabulary. Perhaps of greater significance, however, is the way the children's concatenated signs reflected various semantic relations: attribution (SMALL FATHER), function (mimes dancing with a partner EAT-FOOD), time and function (SUMMER SHOES), and a combination of attribution and function (BLUE SWIM), again pointing to the acquisition of sign meaning as a process with roots in the cognitive-perceptual system of active learners. In addition, since these children had no adult models for their sign concatenation, it would appear that the acquisition of sign meaning stems from

their rather independent interpretation of perceptual
input.

| Subject and Age | Sign Concatenation | | Lexical Meaning |
|---|---|---|---|
| LV (8;2) | SMALL FATHER | | midget |
| DR (9;6) | mimes dancing with a partner | EAT-FOOD | nightclub |
| SL (13;7) | SUMMER SHOES | | sneakers |
| | BLUE SWIM | | pool |

Table 6. Sign concatenation.

Conclusion.   Deaf children learning the meaning of
            signs, much like hearing children learning
the meaning of words, extend to their referents signs
that while sharing features with the referents are
either too broad (less featured) or too narrow (more
featured) in meaning to label those referents
accurately. When sign-referent matches occur, they are
at times only tentative hypotheses about the meaning of
a sign, and although indicative of semantic growth from
the experimentation with new forms, they reveal children
in the process of learning new sign meanings but still
using new signs to stand for earlier, more familiar and
less-featured meanings.
     The active perception of features was seen as a
spur to new sign development, and the self-created
concatenation of signs seen as evidence of children
learning to mean via the independent interpretation of
perceptual input-reflecting strategies that are much the
same among first language learners, whether or not they
can hear.