VARIATIONS IN THE PATTERN OF ACQUISITION OF NEGATION

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INTRODUCTION

I would like to report on a diary study of the acquisition of negation by my daughter Jennifer. The results of this study indicate that children may vary in the routes they follow to achieve adult competence. In particular, as a exception to the pattern described by Bellugi (1967), not all children go through an early phase of sentence-external negation. In addition, not all children show a clear distinction in the order of acquisition according to semantic function (i.e., nonexistence, rejection and denial) as reported by Bloom (1970). I will first describe the general development of negation for Jennifer, which includes sequences in which negative meaning is indicated by a special intonational contour. Then I will compare my findings with those of Bellugi and Bloom.

Jennifer is a first child of native speakers of American English, living in Santa Monica, California. Her physical development is normal; she is talkative and outgoing. Her language contact was almost exclusively with native speakers, primarily adults, prior to age 26 months, which includes the period in which most of the relevant developments occurred. The data consist of free conversation, recorded by me in the home: six hours of recordings from age 19 months to 26 months, and a written diary from 13 months on (in phonetic transcription, with phrasing and intonational contours marked).

INTONATIONAL NEGATIVES

Prior to 24 months Jennifer indicated affirmation or approval by a nod of the head, a smile, or vocalizations like [oy], [hʌ̃hʌ̃], or [mhm]. She indicated negation or rejection by a shake of the head, a frown, or [no].

At 24.0 months Jennifer's mean utterance length averaged about 2.0. No was the only negative word used, and it always occurred alone, intonationally separate from other utterances. There were no instances of sentence-internal no. However, superficially affirmative sentences did occur with obvious negative meaning, as in examples (1)-(4). For example, on the occasion of her second birthday, Mother wanted Jennifer to try on a new dress. (M = Mother, D = Daddy, J = Jennifer, L = Aunt Lynn).

(1) M: We're gonna put it on.
J: No!
(squealing, wriggling)
I wan' put it on! [_ – – – ↘]

(2) (J trying to put on clothes)
D: Come on, you need help.

J: I want need help! [¯¯¯↘]
L: (misunderstanding) I'll help you. You want help?
J: No.

(3) (M starts to put new dress on J)
M: Okay. Here we go.
J: No.
(screeching)
Like it, like it! [¯¯ ¯¯]

(4) (J doesn't want M to read birthday card)
J: No.
Read it! [¯¯]
No.

It is clear from the contexts that Jennifer's utterances in (1) - (4) are semantically negative. (There were more sentences like these examples.) There is no negative segmental morpheme in these sentences; no is her only negative word, and it always occurs alone as a single utterance, never as part of a string.

What utterances like (1) - (4) have in common is an atypical intonation contour. The verb, and often the whole utterance, is produced on an elevated pitch. Sometimes this pitch is near the top of the normal range, and sometimes it is higher than normal, approaching a shriek. Affirmative utterances usually end with the pitch falling to the bottom of the normal range, but in the negatives the terminal pitch usually falls only a little, if at all. The intonation difference between affirmative and negative utterances appears to be consistent, and the elevated intonation may be viewed as the surface manifestation of an underlying Negative component.

The difference between elevated (negative) intonation and normal (affirmative) intonation can be seen by comparing the pitch of read it in (4) and (5). In (4), Jennifer doesn't want Mother to read the birthday card; the intonation is elevated. In (5), Jennifer wants to "read" the card herself; in (5) read it means 'I want to read it,' and the intonation is not elevated.

(5) M: Let's see, who's it from?
J: No!
Read it. [¯ _]

Another example of contrast between negative and affirmative intonation is shown in (6). (The arrow ↑ here indicates pitch elevated above normal range.)

(6) (J is playing with magnetized alphabet letters on side of refrigerator; she has recognized that when you turn the W upside down it looks like an M)

J: Find W.
M: . . . there's a W.
J: I wan' turn it, 'round. [− −↑ − _ ↑ ⌒]
M: (aside, to tape recorder) That was a negative, meaning 'I don't want to turn it around.'
J: I wan' turn it, 'round, to Z. [− _ − _ − − ⌒]
(when a W is rotated only a quarter-turn, it does resemble a Z somewhat)
M: (aside) See, now that was a positive, 'I want to turn it around.'

In (6), the first occurrence of I wan' turn it, round had negative meaning and elevated intonation; the second occurrence had affirmative meaning and normal intonation.

Why should Jennifer select intonation rather than a segmental morpheme like no or not to indicate sentence negation? Difference in intonation (pitch) is a parameter of speech that is perceived very early by infants. For a child her age it is likely that intonational contour is perceptually a more salient aspect of speech than is the inclusion of a particular segmental form in a string. Much of the speech that a young child hears is concerned with teaching, directing, admonishing. Negative instructions to children are often spoken with elevated intonation and increased force.[1] In my own speech at least, negative instructions typically occur with elevated intonation, especially on the verb phrase as in

(7) When we eat dates, we don't eat the seeds. [− − −⌒ − − − − ⌒]

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[1] Some adults may use something other than elevated intonation for negative sentences directed to children. For example, an adult may indicate disapproval of a child's actions by a sentence with falling intonation, such as

We don't do that at our house. [− − − _ _ − _]

or Please don't do that. [− _ − _]

In fact, Thelma Weeks (personal communication) has noted a child whose negative utterances are systematically indicated intonationally, but by falling intonation rather than elevated intonation (to be described in her forthcoming Stanford University dissertation.)

Negative instructions can occur with intonation raised beyond the normal range, particularly when Mother is exasperated or alarmed, as in

(8) Jennifer, I told you not to pull on the plant! [– – – _↑– – – – – – –\]

From the situational context (i.e., in the case of the dates, Mother fishes the seed out of Jennifer's mouth, or Mother leaps up and grabs Jennifer before the potted plant falls over on her), it is clear to the child that the primary semantic message of Mother's utterance was negative. Perceptually, the most salient aspect of the speech signal was elevated intonation. Not surprisingly, negation and elevated intonation come to be associated by the child.[2]

CAN'T AND DON'T IN SEQUENCES

Jennifer continued to indicate negative meaning in sequences by means of elevated intonation from about 24.0 months to 26.0 months; there were occurrences as late as 28 months. However, at about 25.0 months she started to use can't and don't in sequences to indicate negation also. At first the elevated intonation occurred simultaneously with the new negative form, but later the negative form occurred in sequences with normal intonation (Jennifer apparently soon learned that this new word got across her negative meaning even without the elevated intonation).

The use of can't was limited to sentences with I as the understood subject. Can was tried out as a negative marker, but can't was soon found to communicate more effectively, as in:

(9) (J trying unsuccessfully to get nut out of shell)

M: Can you do it?
J: Can do it. [◝ – _]

M: Can you do it?
J: Can't do it. [↑\ ◝ _]

Note that elevated pitch was used the second time to make her response clearly negative. Other examples of can't (or can) with negative meaning and I as understood subject include

(10) Can't see it.
Can't
Can't say it.

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[2] Further instances of negation indicated by elevated intonation come from Dan Slobin (personal communication). His two children produced early negative utterances with elevated intonation on the verb. In Turkish negatives, the verb has a negative infix, and the first syllable of the verb receives stress; one Turkish child at an early stage consistently left out the infix, leaving only stress to indicate negation.

Don't was used for sequence negation at this time when the understood subject was something other than first person singular, as in (11) and (12):

(11) (J tries to put cup on top of glass; it doesn't fit)

J: Don't fits.

(12) (J dials toy telephone)

M: Who is it?
J: That's Grandma Lord.
M: What does she say?
J: Don't say anything.

Whereas the understood subject of can't is always I, the understood subject of don't is always something else; in (11) it is probably cup, and in (12) it is Grandma Lord.

NO AND NOT IN SEQUENCES

At 24.1 months Jennifer suddenly began to use not as a single-word utterance. At 25.0 months she started to use both not and no in sequences. At first, no or not was followed by a single morpheme; later it was followed by more than one morpheme. Her uses of not and no in sequences can be differentiated semantically to some extent. Not was used primarily for denial, and no indicated protest or rejection, but these differences were not completely consistent. Examples include (13)-(16):

(13) (M turns on tape recorder)

No recorder.
I want take it away.

(14) (J wants M to take a nap with her; M wants to read about Senator Eagleton in the newspaper)

J: Take a nap. Take a nap.
No Eagleton. No Eagleton.

(15) (There is no juice; J suggests we buy some at the store)

J: I want buy 'em juice store.
D: (misunderstands) You want some vitamins?
:
J: Not vitamins.

(16) (Noise of street-sweeper going by is heard)

M: I think that was the street-sweeper.
J: Street-sweeper?
Not street-sweeper.

For nonexistence, Jennifer tried out nothing at 25.1 months, as in

(17) (There are no toys on the rug)

J: Nothing toys!
M: Hm?
J: No toys!
M: Mm. No more toys! You moved them all away.

She did not continue to use nothing in sequences, however. Although no was usually used for protest or rejection, she occasionally used it for nonexistence as in (17); this use corresponds to No any toys at a later period.

FORMAL ACCOUNT

Superficially, the occurrence of not and no in sequence parallels the occurrence of can't and don't in sequences. The negative words come first in the sequence. But can't and don't are always followed by verb phrases (usually expressed, sometimes unexpressed but understood). The identity of the understood subject is always clear from the context. In contrast, no and not are followed by nouns or noun phrases.

In terms of syntactic structure, then, the not and no sequences should be differentiated from the can't and don't sequences, as represented in

(18) $\left\{\begin{matrix}\text{no}\\\text{not}\end{matrix}\right\}$ - NP $\qquad\qquad$ $\left\{\begin{matrix}\text{can't}\\\text{don't}\end{matrix}\right\}$ -VP

For the three children in her study, Bellugi identifies a Period A, at MLU just under 2.0, during which the form of the negative is no or not (sometimes don't). In sequences the negative occurs either before or after a word or phrase which Bellugi calls the "sentence nucleus." This sentence nucleus can be a NP, VP, or S, as in

(19) a. No a flag.
b. No go back.
c. No the sun shining.

Bellugi represents the structure of negative utterances at Period A as

(20) $\left[\left\{\begin{matrix}\text{no}\\\text{not}\end{matrix}\right\}\text{ - Nucleus}\right]$ $\qquad$ or $\qquad$ [Nucleus-no]

According to Bellugi, it does not seem to be the case that this form is the primitive version of some later structure which adds constituents to form longer utterances. She suggests that the structure in (20) is a primitive abstraction which later drops out and is replaced by a much more complex system of negation.

If we try to identify Bellugi's Period A for Jennifer, we encounter difficulties. Jennifer began to use no and not with noun phrases at 25 months, when her MLU was about 2.0. But at the same time she also began to use can't and don't with verb phrases. She produced no structures of the form [Neg-S] or [S-Neg] like (19c). We could revise Bellugi's representation, (20), to something like (21) for Jennifer:

(21) $\left[\left\{\begin{matrix}\text{no}\\ \text{not}\\ \text{can't}\\ \text{don't}\end{matrix}\right\} - \text{Nucleus}\right]$

But this would obscure the generalization that for no and not the Nucleus is a NP, and for can't and don't the Nucleus is a VP.

For the three children in Lois Bloom's study, the structural form of the first negative sentences was a negative particle before nominal or predicate forms. It is interesting to note that, like Jennifer, the children in Bloom's study did not produce [Neg-S] sequences like (19c). There were some sequences that were superficially of the form [no-S], but information about the accompanying discourse and the situation in which the utterance occurred showed Bloom that, in all such cases, the no was clearly anaphoric and applied to a previous utterance or situation; the no did not apply to the remainder of the sequence, which was an affirmative statement. For example, in:

(22) no Lois do it

the situation is that the child is unable to connect some train cars and is giving them to Lois to connect.

Bellugi chose to focus on the syntax of the strings produced by the children. She did not take into consideration paralinguistic features, information arising from discourse relations, or information from the setting or situation. Given the lack of [Neg-S] negatives in the speech of Jennifer and the Bloom children, we may wonder whether some of the [Neg-S] sequences reported by Bellugi are in fact anaphoric negatives followed by affirmative statements, i.e., like (22).

The occurrence of several unequivocal examples of [Neg-S] utterances for Bellugi's children would constitute an important difference between their development of negation as opposed to that of Bloom's children and Jennifer.

Bellugi suggests that, at the earliest stage (Period A), the negative element is outside the sentence nucleus in the underlying structure, as in (20). This early abstraction is later replaced by a separate, more complicated system. Bloom argues that this is not the case, and that the system of negation at the earliest stage is just a simpler, generalized and fragmented version of the adult model--for the children in her study, at least. Evidence from Jennifer's early stage is consistent with Bloom's general position.

In the course of her discussion, Bloom cites a number of sentences with negative meaning but no negative form, as in

(23) (child shakes head) me like coffee
(child can't find block) ə find it
(Kathryn has no socks on) Kathryn have ə socks on
(child down't want to go on roller coaster again, and shakes his head) like to

These sequences are interesting, because they resemble the early Jennifer sequences with negative intonation. Bloom does not mention whether these sequences were given special intonation. If not, it may be that Bloom would choose to consider these sentences as having an underlying negative element that is deleted by an extension of her reduction transformation. Bloom does not discuss this analysis, however, and although her reduction transformation specifies a structural description for the deletion of subjects of negative sentences, it does not provide for the deletion of Neg.

Bloom claims that within negation in general there are three distinct kinds of semantic function: nonexistence, rejection, and denial. The children in Bloom's study reportedly acquired them in this order, and this same order was followed in progressive development of syntactic complexity. The data for Jennifer have defied my efforts to categorize her negative utterances in this fashion; I have been unable to discern the kind of progression reported by Bloom. This suggests that not all children follow this progression.[3]

CONCLUSION

Bellugi and Bloom each analyzed data from three children. Each observed similarities in the development of negation in her children,

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[3] In the discussion period following the presentation of this paper at the Sixth Annual Child Language Research Forum, Stanford University, April 5-6, 1974, a number of participants commented that the children in their studies, representing a number of different languages, did not follow the progression Bloom claims to have found.