DOCUMENT RESUME

ED 288 366 FL 017 006

AUTHOR Gerken, LouAnn

TITLE Telegraphic Speaking Does Not Imply Telegraphic Listening.

PUB DATE Apr 87

NOTE 9p.; In: Papers and Reports on Child Language Development, Volume 26; see FL 017 001.

PUB TYPE Reports - Research/Technical (143) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS *Child Language; Discourse Analysis; Intonation; Language Acquisition; *Language Processing; Linguistic Theory; *Listening Habits; Morphemes; Phonology; Speech Acts; *Speech Habits; *Stress (Phonology); Toddlers

IDENTIFIERS Nonsense Words; *Telegraphic Speech

ABSTRACT

A study investigated the hypothesis that children are sensitive to functors in language and only omit them due to factors specific to speech production and after having analyzed them as separate morphemes. This hypothesis was tested as an alternative to two existing hypotheses concerning children's selective listening for content words and for stress. The subjects were three groups of toddlers. Their responses on an imitation task were analyzed for omission of functors for English and nonsense words. For one group, the experimenter gave content words more stress than functors. For the second group, the strings were generated on a speech synthesizer to give the same intonation contour to each. The third group was divided into two subgroups, one hearing recorded human speech and one hearing synthesizer speech, but in all cases, the English and nonsense strings to be imitated contained schwa. The results of the three studies contradict both the content attention and stress hypotheses and support the hypothesis under consideration: That children omit functors because they have analyzed them as separate morphemes. Further research on young children's speech production processes is recommended. (MSE)

PRCLD 26
1987

ED288366

Telegraphic Speaking Does Not Imply Telegraphic Listening

LouAnn Gerken
City University of New York, The Graduate Center

The rules of syntax are generally defined in terms of phrasal categories, such as noun-phrase and verb-phrase. Thus, an important task for a child acquiring these rules is to identify phrases in the sentences which he or she hears. How might a child accomplish this task?

One phrase segmentation cue which has been postulated is sentence intonation (e.g., Morgan, 1986). It has been argued that parents produce exaggerated intonation in their speech to young children, and that such exaggerated cues might allow children to determine where major phrases begin and end. Although intonation may allow children to segment one phrase from another, it does not provide information as to a phrase's type. That is, parents don't produce consistently different intonation patterns for noun-phrases than for verb-phrases. Therefore, other cues are necessary to allow children to identify phrases in the sentences they hear.

The cue to phrase identification which I will discuss here is function morphemes, such as articles and verb inflections. Functors have at least three properties which make them potentially useful to a child whose task is to locate phrasal units. First, functors are extremely frequent. For example, the articles 'the' and 'a' combined account for 9% of all tokens. Second, functors in most languages occur in characteristic locations within phrases. In English, they tend to occur at the beginnings and ends. A third property of functors is that they usually have characteristic phonological properties which cause them to interact with sentence intonation. For example, function morphemes in English usually are unstressed and tend to be produced with reduced vowels, thus contributing to English's stress-timed melody.

These three functor properties, frequency, phrase-location, and phonology, might allow a child to segment and identify phrases in a sentence, even when the content words are unknown. For example, in the sentence, 'The zigs riffed the nug' a child could use function morphemes to infer that 'the zigs', 'riffed', and 'the nug' are linguistically relevant units. Furthermore, he or she could lablel 'zig' and 'nug' as nouns, because the both are preceded by 'the', and 'rif' a verb, because it is followed by 'ed'. The child might combine this functor-aided partial analysis with other linguistic and pragmatic information to arrive at a fuller representation of the sentence.

The problem with the view that young children use functors to identify phases is that they often do not consistently produce functors in their own speech. This has lead many researchers to hypothesize that children are not sensitive to functors in the

FL017006

speech they hear. Contrary to this hypothesis, I will present data which suggest that children are in fact sensitive to functors in speech perception. In light of these data, I will postulate an alternative explanation for children's functor omissions.

Two specific hypotheses stating that children are not sensitive to functors have been proposed. One of these I will call the content attention hypothesis. It states that children selectively listen for familiar content words, and thereby ignor the surrounding functors in the sentences they hear. This view is consistent with a host of theories in which the child's initial approach to syntax is based on categories of concretely referential words (e.g., Grimshaw, 1981; Pinker, 1984).

Another position on which children are not sensitive to functors is the stress hypothesis. It states that children selectively attend to stressed words and syllables and ignore unstressed elements. Since functors in English and other languages are typically unstressed, children ignore them (e.g., Gleitman & Wanner, 1982).

The alternative to these two hypotheses which I will argue for, is that children are sensitive to functors and only omit them due to factors specific to speech production. In particular, I will argue that children omit functors only after they have analyzed these elements as separate morphemes. On this view, children may have some production limitation which specifically limits the number of morphemes (as opposed to the number of syllables) which they can produce. This is consistent with observations that many children include functors as unanalyzed syllables in their early speech, then omit them, and finally use functors productively sometime in their second year (Bates, Bretherton, & Snyder, in press; Peters, 1983).

In order to test the content attention and stress hypotheses, children were asked to imitate strings which varied on two dimensions (see Table 1). The content words were either English or nonsense, and likewise, the functors were either English or nonsense. The measure of children's imitations examined was the frequency of functor omissions.

The content attention hypothesis predicts that when children hear strings with English content words, they will selectively listen to these words, and ignore surrounding functors, regardless of whether these functors are English or nonsense. In reading the strings, the experimenter attempted to give the content words (both English and nonsense) more stress than the functors (both English and nonsense). Therefore, the stress hypothesis also predicts that children will attend to the content (stressed) words and ignore the functors (unstressed syllables), regardless of whether functors are English or nonsense.

The subjects for this study were 16 children with a mean age of 2;2. The experimenter visited them in their homes and played with them for about one half hour before beginning the imitation task. Each child's MLU was calculated from the spontaneous speech

Table 1

Sample strings for Experiment 1

	string	content word	functor
1a	Pete pushes the dog	English	English
1b	Pete pusho na dog	English	nonsense
1c	Pete bazes the dep	nonsense	English
1d	Pete bazo na dep	nonsense	English

Table 2

Percent functors omitted by low MLU children in Experiment 1

	content word	
	English	nonsense
functor		
English	41%	33%
nonsense	33%	20%

that he or she produced during this initial warm-up period. The mean MLU was 2.82 morphemes. In order for an imitation to count as a functor omission, both content words must have been produced correctly. And, imitations in which functors were replaced by filler syllables were not counted as functor omissions.

Children were divided into 2 groups based on their MLU's. The higher MLU group made very few omissions at all, and therefore the data presented here are for the low MLU group alone. Their average MLU was 1.73 morphemes. An analysis of variance showed that these children omitted significantly more English functors than nonsense functors ($F(1,7)=8.27$; $p=.02$; see Table 2). This result did not interact significantly with whether content words were English or nonsense ($p=.75$).

Children's ability to distinguish between English and nonsense functors suggests that they are not ignoring these elements, and contradicts both the content attention and stress hypotheses. Furthermore, the fact that they omitted English functors more frequently than nonsense functors supports the view that they omit functors because they have analyzed them as separate morphemes. However, these data are not entirely conclusive. It is possible that English functors were presented to children with weaker stress than nonsense functors, causing children to omit the former more frequently than the latter. The stress hypothesis must be more completely ruled out before we can conclude that children are, in fact, sensitive to functors.

In the second experiment, the strings were generated on a DECtalk speech synthesizer so that all string types would have the same intonation contour. Briefly, DECtalk first assigns each string a phonetic representation. It then imposes an intonation template on the this representation, by giving the string a fundamental frequency contour, augmenting the stress on the content words, and decreasing the stress on the functors. Because the same template was applied to all strings, we can be certain that nonsense functors received the same weak stress as English functors.

Fifteen subjects with a mean age of 2;2 participated in the study. The experiment followed the same procedure used in the previous one. Children were again divided into high and low MLU groups based on their spontaneous speech. As before, high MLU children omitted very few functors from their string imitations, and the data presented are for only the low MLU group. Their mean MLU was 2.07 morphemes.

As Table 3 shows, children continued to omit English functors more frequently than nonsense functors, even when intonation was stringently controlled ($F(1,6)=15.24$; $p=.007$). There was a significant interaction with content word, so that the omission difference between English and nonsense functors was larger for strings with English content words ($F(1,6)=9.31$; $p=.02$). However, the effect was also significant for strings with nonsense content words.

Table 3

Percent functors omitted by low MLU children in Experiment 2

	content word	
functor	English	nonsense
English	52%	26%
nonsense	18%	13%

These data allow us to confidently rule out the stress explanation for children's omissions. However, one other explanation for children's omissions is possible. Note that the English functors both contain the reduced vowel schwa, whereas the vowels in the nonsense functors are unreduced. Perhaps it isn't stress, per se, which causes children to omit functors, but rather the reduced vowel correlate of weak stress.

In the final experiment, this possibility was tested by having children imitate strings in which both English and nonsense functors contained schwa (see Table 4). Half of the children heard tape recorded human speech and half heard DECtalk. There were 16 children with a mean age of 2;3. The procedure used was the same as the other two studies. As in those studies, children were divided into high and low MLU groups, based on their spontaneous speech. Children in the high MLU group omitted very few functors, and therefore only the low MLU children will be discussed. They had a mean MLU of 2.21 morphemes. Because the form of stimuli children heard (either voice or DECtalk) did not interact with the number of functor omissions, these data are collapsed across the two stimulus groups.

As in the previous experiments, children omitted significantly more English functors than nonsense functors ($F(1,7)=5.50$; $p=.05$; see Table 5). This effect did not interact with whether content words were English or nonsense ($p=.62$). Hence, children appear to distinguish familiar functors from phonologically very similar syllables. Therefore, we have good evidence that children are indeed sensitive to function morphemes. In addition, the hypothesis that children omit functors because they have analyzed them as separate morphemes is consistent with the data obtained from all three studies.

I would like to draw two conclusions from these studies. First, I believe that we should accord more importance to distributional cues, such as functors, in our language acquisition theories. In many current theories, functors are only given a role after much of the child's linguistic knowledge is already in place. I think that these data suggest that function morphemes may be important earlier in the language learning process.

The second conclusion I would like to suggest is that we need a better understanding of young children's speech production processes. Language acquistion researchers have traditionally accepted the notion that children's production probably doesn't mirror their mental representation of language. The data presented here are certainly consistent with this position.

However, it is usually assumed that there is simply a temporal lag between a when a child 'discovers' some bit of linguistic information, and when that information is reflected in his or her speech. Contrary to this view, the production-based explanation of functor omissions which I have offered, suggests that speech production processes may distort a child's linguistic knowledge in very specific ways. It is only through understanding these

Table 4

Sample strings for Experiment 3

	string	content word	functor
4a	Pete pushes the dog	English	English
4b	Pete pusheg le dog	English	nonsense
4e	Pete bazes the dep	nonsense	English
4f	Pete bazeg le dep	nonsense	nonsense

Table 5

Percent functors omitted by high MLU children in Experiment 3

functor	English	nonsense
English	50%	25%
nonsense	29%	19%

processes that we will be able to determine what the child's underlying linguistic representation is.

References

Bates, E., Bretherton, I., & Snyder, L. From first words to grammar: individual differences and dissociable mechanisms. New York: Cambridge University Press, in press.

Gleitman, L. & Wanner, E. The state of the state of the art. In E. Wanner & L. Gleitman (eds.), Language acquisition: the state of the art. Cambridge, England: Cambridge University Press, 1982.

Grimshaw, J. Form, function, and the language acquisition device. In C.L. Baker & J.J. McCarthy (eds.), The logical problem of language acquisition. Cambridge, MA: MIT Press, 1981.

Morgan, J.L. From simple input to complex grammar. Cambridge, MA: MIT Press, 1986.

Pinker, S. Language learnability and language development. Cambridge, MA: Harvard University Press, 1984.