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AUTHOR	Ingram, David
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ABSTRACT

Analysis of the questions asked by normal children suggests that there are cognitive stages of question development. Samples of spontaneous questions asked by normal children and linguistically deviant children were compared in this study in order to determine if linguistically deviant (aphasic) children suffer primarily from a syntactic impairment. If this were so, the questions asked by a deviant group matched to a normal group on a syntactic measure would not show the same cognitive stages if the aphasic children were all significantly older than the normal children. The results of this study indicate, however, that the asphasic children do show the same cognitive stages and suggest that aphasia in children is not simply a syntactic impairment, but a cognitive deficiency in those features of cognition that are prerequisites for language learning. (Author/PMP)

THE ACQUISITION OF QUESTIONS AND ITS RELATION TO COGNITIVE DEVELOPMENT IN NORMAL AND LINGUISTICALLY DEVIANT CHILDREN: A PILOT STUDY

David Ingram
Institute for Childhood Aphasia

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INTRODUCTION*

The following study presents an analysis of spontaneous questions asked by ten normal children and its implications for understanding the linguistic delay in children with language problems. The approach will be as follows: first I will present results from normal children's questions which suggest that there are cognitive stages of question development. These will be outlined in some detail. Next, I will present a hypothesis about what we might find from a similar analysis of questions in linguistically deviant children. That hypothesis is this: if linguistically deviant children (aphasic children) suffer primarily from a syntactic impairment, the questions asked by a group matched to the normal group on a syntactic measure should not show the same cognitive stages if the aphasic children are all significantly older than the normal children. The results indicate that the aphasic children do show the same cognitive stages, and suggest that aphasia in children is in fact not just a syntactic impairment, but a deficit in those aspects of cognition necessary for language.

QUESTIONS IN NORMAL CHILDREN

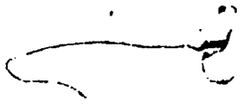
To begin, the ten normal children observed were between 2-1/2 and 3 years of age, with one child 1-1/2 years old.[1] From earlier accounts from the literature it was apparent that the third year of life is a significant one where all possible question words appear. Consequently, it was felt that this age range was a good one for observing the appearance of question words. The language samples used were collected under naturalistic conditions between the child and an adult. The total sentence corpus for the ten children was over 2,000 sentences with a mean of 224 sentences per child. The samples were scanned for all the questions that the children asked. There were a total of 424 questions; consequently, 19% of the children's utterances were questions. This figure compares favorably to those given in the literature. Madorah Smith (1933) found 16% for her extensive study of 219 children. This percentage, though consistent when considering several children at once, varies from child to child. The range for the ten children was from 5% up to 35%.

The 424 questions were then divided into seven kinds of questions. There are:

1) Yes-No
   a) intonation
   b) inversion
   c) tag
   d) how about
2) Where
3) What
4) Why
   a) why
   b) how come
   c) what for
5) How
6) Who
7) When

A breakdown into percentages revealed the following results for the use of these questions.

Yes-No	47%
Where	18%
What	18%
Why	8%
How	5%
Who	2%
When	1%



These figures compare favorably for Smith's figures for the 3-year old children she observed, except here there was a higher incidence of "why" and "how" questions, which may be accounted for by the precocity of the group.

These seven kinds of forms were then observed in each subject to see which ones did and did not occur individually. These results were placed in the form of a Guttman scale and are shown in Table 1, with an X indicating at least one such question. The Subject numbers indicate mean length of utterance, with 1 being the shortest mean. As you can see, the occurrences suggest four stages of using questions. I have labeled these

		YES-NO Q	WHERE	WHAT	WHY. HOW	WHO	WHEN	
	7	X	X	X	X	X	X)	
S	5	X	X	X	X	X	X)	IV
U	4	X	X	X	X	X	X)	
B	10	X	X	X	X	X)		
J	9	X	X	X	X	X)		III
E	2	X	X	X	X)			
C	8	X	X	X	X)	II		
T	6	X	X	X	X)			
S	3	X	X	X)				
	1	X	X	X)	I			

Table 1 Normal Children

I through IV. The stages are:

I. Where, what
II. Why-how
III. Who
IV. When

There are several things to be noted. First, "why" and "how" were placed together because it was hard to see a real progression from one to the other. Rather, children appeared at the same point in question usage to use one or the other, or both. Second, there appears to be a low correlation between syntactic development and cognitive stage of questioning. The subject numbers represent rank order of increasing length of utterance. These bear out observations by child linguists that younger children with an advanced syntax nonetheless appear to have less to say than older children with a less developed syntax. This can be exemplified from the subjects here.

SUBJECT	STAGE	EXAMPLES
8	II (only 1 "how" Q)	What are you writing?
i.e., advanced syntax, cognitively less rich,		Where did my teacher go? How does he walk?
4	IV	What is this? What this? Where this go? Where this goes? How you open it? How you take this out? Who puts this on? (Who put this on?) When you buy this?

What we are seeing here is subject 8 using more elaborate syntactic rules for inserting "do" and using the correct tense (e.g., did) and inflection, while at the same time not asking "who" or "when" questions. Subject 4, on the other hand, uses these questions, but with a reduced syntax. Consequently, what we see is the cognitive features of questions following stages somewhat independent of syntactic development.

QUESTIONS IN LINGUISTICALLY DEVIANT CHILDREN

With the above results presented, I would now like to turn to the use of questions by linguistically deviant children. From our earlier study, language samples were available for ten linguistically deviant children that matched the ten normal children on the syntactic measure of length of utterance. The corpuses were also of comparable sizes. The first significant difference observed was the lower frequency of questions in the language samples of the linguistically deviant children. While the normal group used questions 19% of the time, the linguistically deviant children did so only 6%. The range for the latter was 0 to 17% as compared to 5 to 35% for the normals. Consequently, a smaller number of questions were used, this being 105.

Concerning the breakdown into kinds of questions that made up these 105 questions, the following percentages occurred:

Yes-No	48%
What	28%
Where	13%
Why	8%
How	1%
Who	1%
When	1%

This was similar to the normal children, except that "what" questions were much more frequent (28% as compared to 18% for the normal children).

The seven kinds of questions were then observed individually for the ten linguistically deviant children. Since this group ranged in age from five to ten years, it was concluded that these children were well beyond the age when these seven kinds of questions are cognitively developed. Consequently, it was expected that the Guttman scale for these children would be considerably different, revealing a scattering effect throughout all the subjects. This, however, did not occur. The linguistically deviant children's questions revealed the same stages as the normal children. The only blanks here are in subjects 2 and 10. A later sample of comparable size was

		YES-NO Q	WHERE	WHAT	WHY-HOW	WHO	WHEN	
S	5	X	X	X	X	X	X)	IV
U	9	X	X	X	X)			
B	6	X	X	X	X)			
J	4	X	X	X	X)	II		
E	2	X	0	X	X)			
C	10	X	0	0	X)			
T	7	X	X	X)				
S	3	X	X	X)	I			

None for 1, 8

Table 2 Aphasic I

available from 2, which showed the same stage except that "Where" was no longer blank. In the case of 10 there was only one "wh" word (why).

To check these data further, language samples were observed from four other linguistically deviant children, these samples also of comparable size (i.e., around 200 sentences per child). On length of utterance, these children were comparable to the middle range of the other subjects; i.e., 3 to 6. These children also showed the same cognitive stages of the normal children. As you can see, stage III occurs with this group, although it didn't for aphasic I.

		YES-NO Q	WHERE	WHAT	WHY-HOW		WHO		WHEN
S	6	X	X	X	X		X)	III	
U	4	X	X	X	X		X)		
B	5	X	X	X	X)	II			
J	3	X	X	X	X)				
E									
C									
T									
S									

Table 3 Aphasic II

SUMMARY

While the stages of question development are still subject to further substantiation, these preliminary results cast some doubt on the notion that linguistically deviant children suffer primarily from a linguistic deficit. Rather, they suggest that linguistically deviant children may in reality be suffering from a cognitive deficiency in those features of cognition that are prerequisites for language. Consequently, we may well have to shift from worrying about how correctly these children speak, to what they have to say. In doing such, we need to face the problems of whether or not teaching syntax will help cognitive development, and how much of cognitive development can be taught anyway.

FOOTNOTES

* This paper was presented in April, 1970, to the Annual Meeting of the Western Psychological Association in San Francisco.

[1] See Morehead and Ingram (1970) for details on the subjects and linguistic sampling.

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