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AESTRACT

To develop and test a scheme for analyzing adult-child verbal interaction, tape recordings of such interactions were made in 12 hcmes representing high verbal ability and average verbal ability. Dialogues obtained were coded in nine categories cf utterances, and their frequency and patterning were related to the verbal ability of the 12 7 1/2- to 8 1/2-year-old male subjects. These children were part of a longitudinal study of the pre and post natal period as it relates to learning abilities and disabilities, and had been tested on verbal ability at age 4 and at age 7. A complete medical, social, and psychological history was also available for each child. Data frcm the present research included seven hours of tape from each family, representing 21 20-minute sessions; the family's commentary on each of the sessions; the researcher's notes frcm home visits; and the mothers' attitude responses to a questicnnaire. Apparent within-group differences produced very large standard deviations and hence findings of non-significance. It was ccncluded that further naturalistic study would be productive, but that tighter experimental controls should be established. (NH)

PARENT-CHILD VERBAL INTERACTION:

A STUDY OF DIALOGUE STRATEGIES

AND VERBAL ABILITY

Paper presented at AERA,
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INTRODUCTION

As part of the research for this study I was visiting a mother, two of whose children were at home on the afternoon of my visit. As we talked at the kitchen table, the two children, about six and eight, came into an old fashioned pantry with drawers on either side and asked if they could have some potato chips. The pantry was ten or twelve feet directly in front of the mother as she sat talking to me. She replied to the children, "Yes." The boy asked, "Where are they?" The mother replied, "Over there," giving no gesture or signal to indicate where she meant.

The son tried a drawer and was unsuccessful. He asked again, "Where?" And the mother replied, "Over there" in a louder and more emphatic tone. The boy looked a second time and failed to find the bag of potato chips. Again he asked his mother, "Where?" And for the third time she said, or rather yelled, "Over there." The boy opened a third drawer and found the potato chips.

My hunch is that this kind of interchange, if typical of adult-child dialogue in the family, does not help the child become a skillful or competent user of his language. Living in an environment where the resources of the language are seldom fully exemplified and even less frequently associated with social or interpersonal success, the child learns to disregard these resources as subtle differences that may be perceptible to specialists but need not concern him. At school such a child becomes a layman in a room full of lepidopterists and turns further away from what his experience tells him is an arcane and trivial specialty -- at least that is my hunch and this study is part of an attempt to sort out that hunch.

PURPOSE

This study looks at adult-child verbal interaction as it relates to children's skill in using language. The setting for the interactions, or dialogues that are studied is not the laboratory and not the school, but rather the subjects' homes. Each of the twelve families participating in the study is recorded at home for a total of seven hours, well over 84 hours of dialogue for the entire study. The dialogues are then coded in nine categories of utterances and the frequency and patterning of these utterances related to the verbal ability of the subjects.

There are several reasons for doing this work, each of which reflects the fact that this is a hypothesis generating as contrasted to a hypothesis testing study. First, it is intended to explore such methodological questions as: (a) Are the subject families reliable enough to control the taping themselves and unselfconscious enough to produce uncensored, unscripted dialogue? (b) What is the ideal period of time for the recording device to be in the subjects' homes? (c) Can this kind of dialogue, which cannot be orchestrated and monitored by the absent researcher, be understood on tape and coded by people who have no direct knowledge of the family? A second purpose of the project was to develop and test a scheme for analyzing adult-child dialogue. Unlike earlier language development research, the purpose of the present project is not to study either vocabulary or syntax, but to look for patterns in the exchange of nine different kinds of utterances. Thus, the second purpose of the project is to determine whether the nine categories of utterances were adequate to characterize the full range of dialogue and whether

the descriptions of the nine were sufficiently clear so that they could be used accurately by several different coders. The third and final purpose of the project is to formulate a hypothesis or hypotheses about the relation between the subjects' verbal ability and the kinds of dialogues that take place between them and their parents. Previous research suggests: 1) that the home environment is related to verbal ability, and 2) that in homes of high verbal ability children, parents and children talk a great deal to each other. The present work seeks greater specificity on this subject by describing in terms of utterances and dialogues the kinds of verbal interaction and associated with two types of homes: (1) those having subjects (1 per home) with high verbal ability, and (2) those having subjects with average verbal ability.

BACKGROUND

Research

Earlier related research differs from the present study in both methodology and content. Until quite recently researchers interested in the relationship between verbal ability and home environment have, with precious few exceptions, avoided going into homes and listening to children and adults talk to each other. They have preferred instead to work with proxy variables that were more readily available. One example of this procedure is the work-begun in the 30's and carried on today in the early research on disadvantaged children -- that draws inferences about environmental differences based on differences in revealed performance. One such difference is that favoring singletons over twins

(Day, 1932; Blatz, 1937; Davis, 1937) and girls over boys (McCarthy, 1930). Similar procedures were followed in dealing with differences between children reared in so-called deprived environments and normal children (Brodbeck & Irwin, 1946; Bowlby, 1951; Casler, 1961; Yarrow, et. al., 1962; see also: John & Goldstein, 1964; and Deutsch, 1967). In each instance the research concludes that the relatively poorer language performance originated in a lack of verbal interaction between the child and usually, the mother.

Studies of speech disorders (McCarthy, 1954; and Wyatt, 1969) and of grammatical irregularities (Noel, 1953) also conclude that the quality and the content of the verbal interaction in the home have a marked effect on children's speech. Thus, both speech and performance on standard paper and pencil tests are assumed to reflect differences in the verbal environment of the home.

Studies of reading (e.g., Jackson, 1944) and reading readiness (Milner, 1951) also reflect a tendency to observe proxy variables like the number of books in the home and to draw conclusions regarding the quality, the amount and the content of adult-child verbal interaction.

Methodologically much of this research, as well as later work on cognitive development, e.g., Hess (1969), Dave (1963), and Wolf (1963), is similar in that from laboratory data generating procedures, from test score differences, and from questionnaire data it infers about the relationship between the quality and quantity of adult's and children's verbal interactions and the children's verbal ability.

Studies of the child's acquisition of grammar (Brown, 1968) have depended much more extensively upon naturalistic research into the interactive process.

This work is familiar to most readers and far too extensive to be summarized here. One conclusion from that work is, however, particularly germane to the present study. In 1968, Cazden observed: ". . . particular forms of parent interaction have less effect on more strictly grammatical aspects of the total language-acquisition process than on the more cognitive aspects. Basic grammatical structures seem to be learned despite differences in the child's linguistic environment, while how children use language to express ideas may be more vulnerable to environmental variation." (p. 444). Put somewhat differently, adult-child verbal interaction has a differential effect on different aspects of verbal development. Thus there appears to be sufficient research evidence to encourage further investigation into verbal interaction and verbal ability. Other studies that have looked more closely at the verbal aspects of the home environment (e.g., Bossard, 1954; & Schoggen, 1968) but not at specifically verbal outcomes also indicate that such inquiry is both feasible and rewarding.

Theory

If the research background to the problem of verbal interaction and verbal ability is relatively clear, the theoretical background is anything but clear. First, as must already be quite apparent, this study does not operate within the theoretical framework proposed by Chomsky (1957) and others to account for the child's rapid mastery of his grammar between ages two and four. Instead of stressing the role of the child's instinct for language and, for the most part, ignoring the character of the child's language learning environment, this study assumes, along with, e.g., Miller (1963), Brown (1969),

Cazden (1969), Luria (1961), and Bernstein (1961), that this environment does stimulate or inhibit the development of verbal skills. The specific manner in which the environment influences subsequent verbal performance is, however, elusive at best. Just as imitation is not a powerful enough concept to explain the child's acquisition of grammatical skill, so it will not satisfactorily explain a child's reading or writing ability, or even the size of his vocabulary. The same is true of extension (Cazden, 1969), or of the process which Brown calls "induction of latent structure," (Brown & Hanlon, 1968). We are, in short, very much in need of a model to illuminate this very indirect ellusive form of learning.

Before passing on to the details of the project, some clarification of the key terms and concepts is essential. This study considers the subject's language performance in three ways.

(1.) Tested verbal ability: The subject's average score on two tests - the Binet given at age 4, and a specially combined version of the WISC and the ITPA given at age 7. This score is used to indicate high or average verbal ability.

(2.) Verbal Interaction: The form and content of the dialogue between adults and children which is presumed to influence both tested verbal ability, and

(3.) Language skill: The ability to produce or understand spoken or written language that is not only grammatically correct, but also - persuasive, complex, logically precise or felicitous. No data has been generated within this study on which to base any speculative

conclusions regarding the relation between verbal interaction and language skill. The relation between verbal interaction and verbal ability is simply easier to discuss because each is quantifiable. Where an association appears between these two entities, we must guard against inferring anything more - especially in the conclusion section where somehow the atmosphere seems too clear and researchers have been known to come upon connections that had been obscured only moments before.

SAMPLE

Socio-economic features

All twelve subjects are drawn from the Maternal and Infant Health Study, a longitudinal study of the pre and post natal period as it relates to learning abilities and disabilities. Each subject has had not only the two tests mentioned above, but also extensive physical testing. And home visitors established a comprehensive socio-economic profile of the family. (See Table 1)

Boys were selected for the study because of their typically lower scores on tests of language development, particularly black and Puerto Rican boys. If the study turns up anything useful, it might as well relate to those who need the most help. The age bracket - 7 1/2 to 8 1/2 is selected because it is reasonable to assume full mastery of the grammar by that age. And it could also be assumed that the influence of the home - in contrast to the school - would remain relatively strong and that boys this age would stay close enough to home to facilitate taping.

Table 1 indicates the high degree of comparability between the high and average families on almost all measures except family size. This table also shows distinct within-group variations that make some of the results of the study difficult to interpret. The status variables are not more tightly controlled in part because of practical constraints imposed by the make-up of the MIH Study, and in part because tight controls might give a less thorough test to the methodology, chiefly the category system.

Some readers suggested at the outset that the study should include subjects with low rather than average verbal ability. There is little question but that this would have produced a sharper definiation of the two groups. There are two reasons for not including a low ability group. First, is the possibility that subjects with low verbal ability would be reflecting some form of pathology or social disorganization that would reduce the generalizability of the results. Second, given this possibility, these families might show significantly less of the behavior under study and thus not justify the expense in time and money required to collect and analyze the data.

Several practical and theoretical considerations effect the decision to select a total of twelve families. Because of the inconvenience of having the recording equipment in the house and remembering to turn it off and on. it seems unreasonable to ask the families to do more than seven hours of taping (three twenty-minute segments a day for seven days). Nevertheless, it is desirable to record the subject in a variety of family interaction sessions - with and without one parent, at several different times in the day, questioning, teasing, bantering, etc. A week's taping represents a

practical balance between these two considerations - assuming the family follows the recommended schedule and there are no technical failures, two conditions that seldom held true for a full week of taping. If each family does seven hours of taping, the total number of families would have to reflect the number of tapes that could reasonably be processed within the limits of time and money allocated to the project. Since the coders work directly off the tapes, the number of families could be larger than if it had been decided to transcribe each tape. Preliminary estimates show that coding from these tapes takes about four times as long as the actual tape. Hence the entire coding job for twelve families would take about 336 hours (seven hours of tape for each family times twelve families times four hours of coding for each hour of running time). This estimate, which proved to be somewhat conservative, does not include time spent in training the five coders which took, in three cases, three days of elapsed time. In short, the decision to study twelve families was a compromise between practical constraints like time and money and empirical considerations like the representativeness of the data. Seven hours of taping from twelve families proved to be the limit for a study of this magnitude: it gave the parents and the focal child time to "outgrow" their self-consciousness but did not exhaust their patience with the taping routine or overtax the resources of the project.

A final observation will complete the discussion of the sample. The twelve families in the study are in part self-selected. They come from the pool of thirty-two (See Table 1) that is sufficiently homogeneous so that

TABLE I

This table shows the socioeconomic comparisons between the two groups of families -- the high verbal ability and the average verbal ability. The total population being represented, though not in any statistically precise way, is the population of the city of Boston. A smaller sub-sample is the population of the MIH study. This sub-population is skewed toward the center of the socioeconomic scale because of the nature of the populations that the cooperating hospitals typically attract. The table shows a comparison between families based on a group of 32 (which was selected initially for the final sample of twelve families to be drawn from on a more or less random basis) and on the final twelve families who actually participated in the study.

		FAMILIES OF HIGH ABILITY BOYS		FAMILIES OF AVERAGE ABILITY BOYS	
		Sub-sample	Study sample	Sub-sample	Study sample
% of intact families		.60	.67	.81	1.00
Yearly income		$8494 $14,160--2600	$7999	$6755 $12,000--600	$8195
Family size		5.66 3-9	5.00 3-9	5.09 4-9	6.5 5-9
Years of education	Fa.	12.7	11.25	9.08	11.83
	Mo.	12.3	12.00	11.50	12.00
Crowdedness ratio	rooms	4.56	4.16	5.10	5.09
	people	4.08	5.00	5.66	6.50
Language scores		132 149--116	135.33 149--125	106 97--113	105.83 94.5--111.50
% of mothers working		.50	.50	.45	.50
Racial mix (no.non-whites)		2	2	3	1
Average age of focal children			8.40		8.40

on the basis of the socioeconomic criteria almost any selection of twelve would be suitable. Nevertheless, the final twelve can not be selected. They have to volunteer and this decision may reflect some characteristic -- something that might be termed talkativeness -- that shows up in the results and further limits their generalizability. Two strategies help to counter this possibility. The first is to pay the families as consultants -- $50.00 for seven hours of taping and forty minutes in which to do a questionnaire-interview -- thus getting some families that might not be high on talkativeness but simply need the money. The other is to make a strong effort to persuade some of the initially reluctant families who presence in the study offsets those who joined for the money or to show off their bright sons.

High and Average Verbal Ability:

The most useful information in the Maternal and Infant Health Study test scores for each child on a Binet (form L-M) given at age four, and a combination WISC-ITPA given at age seven. These scores plus the Wide Range Achievement Test (WRAT) and a Language Age/Score and any notations about verbal ability made by home examiners or teachers are used to select subjects with high and average verbal ability. For the purpose of this study high verbal ability is defined as a score (the average of the Binet at four and the WISC-ITPA at seven) between 125 and 149, averaging 133 for the high ability group. Average verbal ability is between 95 and 112, averaging 106 for the average ability group. Scores on such tests are often referred to as "verbal IQ" and are subject to all the qualifications applied to I.Q. scores.

Clearly they tap only a limited segment of the subjects' language repertoire. Moreover, these scores are particularly open to the criticism that large variability in test scores results from small variations in the number of items right -- particularly with the Binet. As a means of at least partially neutralizing this liability, only subjects whose scores were consistently high or average were selected. In addition, the subjects' average scores had to be consistent with his scores on the reading and spelling sections of the WRAT and with his Language Age score. It must be acknowledged, then, that verbal ability as the term is used in this study refers (albeit informally rather than rigorously) to school performance and to a general consistency factor as well as to the child's list taking ability and his skill in reading and learning words.

DATA GATHERING PROCEDURES

The procedure for collecting the speech samples involves four steps.

First Step: Initially the families must be persuaded to join the study. The twelve families who eventually joined the study were selected for an initial phone call by beginning at the top of the two lists -- able and average boys -- and calling alternatively families from the top and the bottom until the first twelve families volunteered. However the twelve families were not contacted all at the same time. As soon as technical problems with the transmitting equipment began, it was decided to contact the next family on the list only as the preceding family was at the end of their sessions, thereby avoiding an annoying hiatus between the first contact with a family and the time the actual taping began.

Second Step: The first visit usually combined getting the family's approval and teaching them how to use the equipment. In the process of explaining the research contract with the family the equipment was discussed, and the parent(s) encouraged to read the instructions for the equipment and to go through the procedure of turning it off and on. Three pieces of equipment comprise the complete recording outfit. 1) A wireless transmitter designed by two consulting technicians. Originally the subjects were to wear the transmitter and be free to go anywhere in the home during each twenty-minute taping session. This proved to be infeasible because the reception was not uniform throughout any one house. In addition, it also became clear that if they were wearing the transmitter, the subjects would frequently go off to their rooms and converse with their siblings and friends. Since it seemed impossible to prevent this inappropriate (to the project) behavior without revealing the purpose of the research, the stipulation that the boys wear the transmitter was dropped. Of course the parent could still move the transmitter from room to room if the quality of the recording was not affected. One family even recorded a conversation between the focal child and his grandfather, the transmitter having been carried to the second floor and the recording equipment remaining on the ground floor. Four transmitters were built, so that -- in theory at least -- four families could be making tapes at one time. Each transmitter was crystal tuned to a segment of the F.M. band stations. One of the bands later proved to be inoperative because it was shared by a local college radio station that was not broadcasting during the summer when the bands for the transmitters were selected.

2) The second piece of equipment is a Realistic F.M. tuner set at the frequency of the transmitter it was paired with. Because the tuners often drifted off the frequency they had been set to, daily home visits were essential.

3) The tuner is wired to the third piece of equipment, a Uher 4000 Report L portable tape recorder. This tape recorder proved to be the most reliable piece of equipment -- in part because it was plugged in and not run by its batteries.

At the end of the practice session I left the equipment with the family for them to try a practice run in the evening or the following morning. This session was always erased. By the end of that first training session we had also worked out a tentative schedule for recording. While each schedule varied with the exigencies of individual family life, each met the following three requirements: 1) All sessions must total seven hours: twenty-one twenty-minute sessions; 2) One -- but preferably seven -- of the regularly scheduled sessions must be at a meal, and one must be at bedtime; 3) The sessions must include one day of a weekend -- another way of saying that I wanted to get the fathers on tape if it was at all possible. Though no family was able to follow these latter recommendations at all closely, I tried to get all of them to do seven sessions at breakfast, seven at supper, and seven at bedtime. If a family missed a session or if a session was not usable for technical reasons, they had to make up a similar session later -- otherwise they did not get paid. All agreed to this and there was never any complaint about the delays caused by problems with the equipment.

Third Step: The actual recording begins as soon as the mother has practiced and done the whole routine correctly and confidently. The mother also keeps a record of each session by noting the time, the names of participants, the general topic of conversation, and any distracting background noises. At each home visit the researcher checks these reports, requesting additional detail if they seem uninformative. After the first complete reel of tape is completed by the family a coder begins work. This does not always happen quite so programmatically. Occasionally there is a considerable hiatus between taping and coding; as a consequence, important opportunities are lost for checking certain difficult tapes with the mother. Under ideal conditions the coding should not be done directly off the tapes; the tapes should be transcribed. Under the real conditions associated with the present study, transcription involved too great an expenditure of time and money.

Fourth Step: Toward the end of the taping sessions, the mothers were given a questionnaire/interview. This instrument is adapted from a similar one used by Basil Bernstein in his studies of mothers' attitudes toward school, language, and authority (Bernstein, 1964). Like the other parts of the study the questionnaire was designed as an hypothesis generating instrument. It was not designed to elicit parents' speech in an interaction session different from those on the tapes. What is elicited is the parents' reports (filled in on the questionnaire by the examiner) of how he or she interacts with the subject across a variety of issues and situations. With the exception of two brief sections in which the mothers simply check a response, the questionnaire is open ended. This is consistent with the primary objective of gathering information about unfamiliar situations and relationships. The argument has

been made that the use of the questionnaire as part of a fishing expedition is not justified. It is, of course, true that there are existing hypotheses to be tested. There is the issue of positive affect that is left unresolved by, for example, Milner (1951) and Wyatt (1969) on the one hand and Hess (1969) on the other. The former claims an association between positive affect and success on the criterion measure of language skill -- reading readiness -- the latter claims no relationship between positive affect and the subject's cognitive and language skills. Nevertheless, this hypothesis did not seem especially relevant to the present study; nor did it seem clearly formulated enough to justify the effort that would be required to test it rigorously. These two reservations also applied to other hypotheses that might have been tested in the questionnaire.

With the conclusion of the taping, the data on the twelve focal children and their families is complete. This data consists of: a two-page summary of each focal child's medical, social and psychological history to date, seven hours of tape from each family, the family's commentary on each of the twenty-one twenty-minute sessions, the researcher's notes from home visits, and the questionnaire.

THE CATEGORY SYSTEM

Underlying all of the data in the study - except the family background and the questionnaire - is the category system. This system emphasizes several narrow functions of language. It reveals nothing about syntax, vocabulary, emotional quality or content. Instead, it divides all utterances by all speakers into nine categories, each of which indicates the degree to which a particular utterance either promotes or inhibits further conversation. This system is based on two notions that proved false. First, the idea that there would be a greater quantity of dialogue in the homes of able boys; and second, the idea that individual adult-child dialogues would be longer in these same homes. Though neither of these hunch's is born out by the data, the system serves to point out certain interesting patterns of dialogue that seem peculiar to one or the other of the two groups of families in the study.

The Category System is based on a number of terms that should be defined at this point.

Definitions

1. Category System: the generic term that covers the set of terms used to describe adult and child speech in this study.

2. Utterance: something said by a speaker which begins when he starts talking and ends when he stops talking about the topic he started with. Thus an utterance can be one word -- sometimes even one sound -- or it can be a string of highly elaborated sentences, so long as they are all on the same topic. Utterances are related to speakers; once a given speaker stops talking, his utterance is over, and a new utterance is assigned to the next speaker.

3. Dialogue: a string of utterances between two or more speakers on the same topic. A dialogue can be broken by another speaker raising an unrelated topic or an interruption like a phone call and then resumed by the same two or another configuration of speakers.

4. Moves and Stops: the two principal divisions of the category system. A move is an utterance by an adult or a child that moves the dialogue ahead or continues it. A stop is an utterance that impedes the progress of the dialogue.

5. Coding: to assign an utterance to one of the nine categories of moves and stops. This is done by a coder listening to the tape and placing a letter denoting that category in the column below the name of the speaker.

The Intent and the Effect of an Utterance

One feature of the system used in this study is that it generally requires the researcher to look at the tapes in two different but complementary ways. The first stresses the actual effect of the utterance -- does it continue the dialogue or does it stop it? This is the molar distinction between a move and a stop. The second way of looking at an utterance requires the researcher or the coder to think about the utterance in less bipolar terms. That is, he must take into consideration the speaker's intentions. While such a procedure threatens to become a highly private and "unscientific" enterprise, it is nonetheless true that intentions are central to the speaker's decisions about what he will say and how he will say it. Baumrind's (1964) arguments for the importance of intentions are too detailed to discuss here -- except to note her main point that until the formal features of intention are revealed, the researcher's intuitions provide the only means of dealing with this critical aspect of an utterance.

In many instances, of course, intent and effect are mixed. When an adult's intent is obvious -- as when he tells a child to be quiet -- the effect may not always follow from that intent. On the other hand, there may be instances in which the adult's intent is either neutral or positive with respect to the continuation of the conversation but the effect is negative, i.e., he stops the dialogue without intending to. With this neutral or positive intent, an adult may, for example, give a careful, detailed description or definition in response to a direct question or to a child's apparent confusion. The effect, though not necessarily the intent, of such an offering is often to end the conversation.

Hence the final determination about the appropriate coding for a given utterance often involved a consideration of both effect and intent. In the case of the adult inadvertently stopping the conversation, his final utterance is coded as a stop -- based on its effect. In the case of the adult's unsuccessful attempts to end the conversation, his utterance would be coded as a stop -- based on intent; and the child's immediately succeeding utterance would be an unsolicited extension of the dialogue. As a general rule covering cases of this kind, it is assumed that an adult or a child is furthering the dialogue unless he gives additional evidence (e.g., sarcastic tone, etc.) of intending to stop it.

It may appear from these examples that the category system is designed only for making complex judgements based on inference about the speaker's motives. Generally, however, most coding decisions are routine and clear even most coding decisions are routine and clear even to someone without extensive

experience with the category system. The most common kinds of utterances are those that require simple identification rather than a more subtle discrimination. As an instance, the use of questions by both adults and children can almost invariably be seen as a move with both the intent and the effect of provoking further response.

Development of the System

The moves in this system represent a rough adaptation of Bellack's four psychological moves in his Basic System for Analysis (Bellack, 1966). Bellack's categories of Structuring, Soliciting, Responding and Reaction are intended to show how teachers manage their teaching. The present study, while interested in the mother's structuring or control procedures, is more concerned with their function and the effect rather than with their content. Thus -- with the exceptions noted above -- all of the categories for this study stress the effect of a given move or stop on subsequent dialogue. And the categories are defined so that they reflect a faster paced, freer dialogue than is customary in most classrooms.

Moves and Stops Defined: Moves

(A) Initiating Move: An utterance which introduces a new topic of conversation. The purpose of using this relatively small -- in terms of number of utterances covered -- category is to discover which participants in which ability groups are initiating dialogue and how. If there is an interruption and the dialogue returns to a former topic, that is not scored as an initiating move.

The majority of initiating moves will be soliciting (S), that is, requesting verbal response. (An exception would be a command directing the recipient to take some form of non-verbal action; this would be scored as an initiating, non-soliciting move (A/N S) as it does not request a verbal response.) About three-quarters of the initiating moves are the obvious interrogatives or imperatives: "How are you?" "Tell me what the teacher did then." An utterance whose content is clearly soliciting is scored (S) even though the respondent does not reply.

(B) Direct Response: An utterance set off by a prior utterance in the form of a prior move that does not necessarily immediately precede (B). A direct response must be solicited (S) by a question or other form of direct address. Since a direct response (B) must be preceded by some other utterance -- as distinct from a non-verbal event -- there are few if any occasions on which a (B) could be confused with an (A). A (B) can be a one-word answer or an elaborate explanation that requires several separate utterances. In either case it is most likely to follow a (A/S) or an extending move (D, below) and in a typical short dialogue to precede an indirect response (C).

(C) Indirect Response: An utterance set off by other utterances which are addressed to the topic of the dialogue but which do not solicit. This move is usually found in the middle of dialogue; hence it will appear less frequently if the dialogue is essentially question and answer. In such a sequence additional comments beyond the answer (B) are not required by conversational convention: their omission would not be considered rude, whereas the omission of a response to a question would be. An indirect response (C)

characteristically appears in an argument or other conversation after one speaker has made a point that does not solicit. The indirect response (C) follows, directed at the other speaker's arguments or statements rather than at some specific solicitation. The indirect response (C) differs from an extending move (D, below) in that it is directed at the statements of a prior speaker rather than being directed at the general topic of the conversation. An indirect response (C) may have the effect of promoting further conversation, but if it directly solicits a response it becomes an extending move. In other words any unsolicited utterance that seems to be (C/S) is in fact (D), an extending move. An indirect response is the only coded response to a non-verbal act. This category appears very infrequently.

(D) Extending Move: An utterance that looks forward in the sense that it generally has soliciting function -- especially when used by an adult to a child. An extending move is different in degree from an indirect response (C). It occurs when the conversation could end, when the stimulus-response momentum of the dialogue has dropped and no one but the extender seems to have an interest in prolonging the dialogue. Neither (C) nor (D) is solicited, but (D) is the only one of the two that solicits. It is important to note that solicitation can take two forms: 1) direct or overt questioning or a request for the speaker to continue speaking ("You haven't finished the story."), or 2) an unsolicited move that extends the dialogue without asking directly for a rejoinder. This kind of (D/N-S) often occurs when a speaker extends his own remarks after an interruption (which may or may not have been intended to stop his conversation).

Extending moves are more likely to appear after a series of moves that would begin with an initiation followed by a direct response and a set of indirect responses. Extending moves are particularly significant to this research since they are assumed to be essential for the kind of dialogue allegedly associated with high verbal ability.

(E) Phatic: Utterances that may or may not take the form of sentences, are usually spoken quietly and are intended to convey the fact that the listener is still listening. They may also convey skepticism, assent, or opposition. These utterances should not automatically receive a solicitation subscript. An example of a phatic move which does solicit is a father's response when his son says, "Um, Steven hit me." The father replies, "Yeah?" A non-soliciting phatic move might come from a father who was watching a baseball game but responding periodically with, "Umm. . ." or "uhu. . ." to his son's narrative.

Stops Defined:

(W) Direct Stop: An utterance whose intent is clearly to stop some speaker from speaking, i.e., "Shut up!" The effect of the utterance will be clearly shown in the presence or absence of a response. This kind of stop can also refer to a specific kind of talking: arguing, freshness, complaining, gossiping, etc., or it can be some statement like "and that's final!" intended by the parent to end an argument.

(X) Indirect (unintentional) Stop: An utterance that was not necessarily intended as an end to a dialogue but which has that effect.

(Y) Open Stop: An utterance (usually by a parent) ostensibly directed at ending the dialogue. An open stop leaves the child room to negotiate or bargain. Sometimes this bargaining will take the form of a flip remark; at other times the bargaining will involve some very careful persuasion by both parents and children.

(Z) Interruption: An utterance or noise that threatens to end or in fact does end a dialogue or a single speaker's speech. An interruption may take the form of a parent finishing a child's sentences or some other speaker attempting to insinuate himself into the conversation.

CODING

As researchers in this and similar fields have discovered, transcription of taped dialogues is tremendously expensive in both time and money. In the interaction study by Mishler and Waxler (1968) where the recording conditions were carefully controlled for high fidelity and a minimum of interference from simultaneous speech, transcription required an average of 18 hours for each 50 minute family session. Such expense is clearly inappropriate for an exploratory study. The compromise procedure adopted for this study was to code directly from the tapes. A total of five research assistants did this coding and each had to learn the category system from the beginning.

As the first step each assistant would read over the description of the system, resolving with the experimenter any ambiguity or confusion. Next she would apply the system to several dialogues that had been transcribed in the pilot stage of the project. The experimenter checked this coding and

resolved any uncertainties that arose. After the first assistant was trained in this way, she helped train her successor. This procedure continued throughout the study so that -- after the first girl became familiar with the system -- the next step was to reconcile the work of the girl in training with that of her predecessor. This was done on both transcribed and taped sessions.

This process usually took a total of a day and a half but might extend over a week. All assistants were required to reach an 85% level of agreement with the examiner and the previous assistant before starting to code on her own. As an additional check on consistency, the examiner made periodic reviews of the coding as it proceeded. Most of the discriminations were made easily and consistently by all assistants. The most difficult problem lay in maintaining consistency with respect to the indirect response (C) -- extending (D) distinction. This aspect of the category system underwent the greatest amount of modification in the pilot stage and continued to cause uncertainty when new situations arose. Usually, however, the experimenter and assistant worked in the same room or building so these problems could be resolved by a brief consultation. Such a procedure does introduce an additional degree of bias into the coding. For this reason and because of the difficulty of distinguishing between indirect responses and extensions, it was decided to lump these two measures together for some calculations. In no case did a consideration of the two moves together reverse a trend established by a single move.

TREATMENT OF THE DATA

In its coded form the data provides a running record of all the dialogues in all twelve families. Every utterance by every speaker is identified by a

letter representing one of the moves or stops from the category system. To facilitate further analysis, certain kinds of dialogues are grouped together.

Four Schemes for Organizing Coded Data:

1) Total Utterances: This procedure, already partially described, involves coding and counting all utterances of all speakers in all families -- a total of 54,034 utterances. Coding these utterances by speaker makes possible two kinds of comparison -- by utterance category and by speaker. In the first comparison the question is -- what are the relative percentages of the different moves and stops in the different families and in the two ability groups? The answers to the question would indicate the percentage of the total utterances for a family or group which is represented by, say, indirect responses. These comparisons are carried out between the two groups for all utterance categories.

A second comparison examines the roles of different speakers -- mainly the focal child vis-a-vis the adults in the family. This comparison answers questions like -- which member of the family does most initiating, most extending, most direct responding, etc.? This form of organization also makes it possible to analyze the data in terms, for example, of the effect of family size -- or parent-child ratio -- on both the amount and the kind of focal child participation in conversation.

There are a number of difficulties in this broad gauge presentation of the data. First, it includes all siblings and visitors and other relatives, making any isolated focus on the focal child himself, or the focal child and

his parents, extremely difficult at best. Second, each family produced different total amounts of dialogue -- ranging from 721 utterances in the Fast family to 10,161 in the Stig family. Even the between-group differences in mean total output of utterances is substantially different 3383 for the able group, and 5622 for the average group. While the use of percentages makes certain between-group comparisons possible, it is misleading to include the extreme families in these comparisons. And even without the extreme families, percentages disguise real differences.

2) 500 Utterances: In order to get comparable absolute figures rather than percentages, a sequence of 500 consecutive utterances was selected from the middle of each family's taping schedule -- between sessions ten and fifteen. The only stipulation to the selection was that it should include the focal child. These sub-samples are counted and indexed so that the number of all moves for focal child, mother and father and others is recorded.

3) Adult-Focal Child Dialogues: In order to reduce the informational noise of siblings and others, utterances in all dialogues involving only the focal child and one parent were counted and divided into appropriate utterance categories. Dialogues between two parents and the focal child were excluded from this count because it seemed from an informal check of these kinds of dialogues that the two parents would perform differently if they had the other to refer to and not just the focal child. These data are also organized by speaker and by utterance category, making possible comparisons with the total sample and the 500-utterance sub-sample. To pursue the earlier illustration, the relative percentage of focal child extending in conversations with one parent can be compared across groups and compared with percentages of focal

child extending from the other two schemes described above. While controlling (albeit, not in any formal sense) for situation, this means of organizing the data also increases the likelihood that it will reflect certain situational influences from the home. Thus smaller families can be expected to provide more occasions when the focal child can be alone with a single parent and hence a greater proportion of parent-focal child dialogue. Briefly, then, adult-focal child dialogues are particularly appropriate for estimating the effect of some situational variables on dialogue patterns since these influences can be presumed to be greatest on these kinds of interchanges.

4) Longer-Than-Average Dialogues: This organizational scheme emphasizes length as the salient criterion for cataloguing a given dialogue. "Average" in this case is average for the individual family. If the average for the whole group were used, some families would have no dialogues longer than that average. While length is the critical feature, the tabulation does not overlook speakers. It is still possible to tell which speakers are contributing what kinds of utterances to these dialogues.

The difficulty with this fourth way of viewing the data -- like the others -- is that it is at least potentially subject to the influence of situational factors that necessarily vary a good deal from family to family. For example, the mean length of longer-than-average dialogues may fluctuate with family size, season of the year, crowdedness ratio, and parent-to-child ratio in a given home. With the shorter dialogues that are alleged to predominate in larger families there is less opportunity to hear from the focal child -- especially if he is among the youngest. Hence comparisons across groups which show focal child utterances as a proportion of total utterances for

longer-than-average dialogues will probably reflect situational variables.

The organizational schemes described above generate group means which indicate the amount or percentage of a certain utterance produced by (a) the high or the average, (b) a type of speaker within either of these groups, or (c) a specific speaker. For reasons that are discussed below, the differences between most of these group means proved to be non-significant. There are, however, consistent trends which indicate the necessity for supplementary analyses. These trends indicate differing roles for the mothers and the focal children in the two groups. They also indicate the apparent importance of a quality which we will call directness - direct adult-child dialogue as contrasted to dialogue which includes the child as a minimal or passive participant.

As a means of looking more closely into these two trends, the data are arranged in the following two ways.

Composite Adult-Focal Child Dialogue Rating. Based on the trend in the data which suggests that a critical feature of the home language environment is the extent to which the focal child engages in direct 1:1 conversation with his parents, it was decided to combine several of the scores which make up Adult-Focal Child Dialogues and compare them with the focal children's measured verbal ability. The large standard deviations which marked the group means for each of the measures comprising AFC dialogue (e.g., mean length of dialogue or percentage of two-utterance dialogues) suggested that a rating system which compared a total AFC score with the focal child's verbal ability score might indicate more accurately whether or not there was any

association between verbal ability and adult-child dialogue.

The combined AFC rating was produced by assigning each family to a position on a scale of one to twelve based on the following five measures: 1) percentage of adult extensions; 2) percentage of adult extensions and indirect responses; 3) percentage of dialogues of eight or more utterances; 4) percnetage of two-utterance dialogues; 5) average length of AFC dialogue. These ratings were then averaged for a combined rating that would fall between one and twelve. The lowest scores indicate the most extensive adult-child dialogue.

TABLE II

COMBINED ADULT-FOCAL CHILD DIALOGUE RATING

Combined Rating Score	Family Name	Ability Group	Verbal Ability Score
1.4	Page	Average	102
4.4	Cash	High	148
4.8	Main	High	125
5.2	Boyd	High	138
5.2	Stag	High	131
6.4	Zale	Average	113
6.4	Mayo	Average	94
6.8	West	Average	108
6.10	Dame	High	137
8.0	Stig	Average	106
8.4	Ross	Average	111
10.0	Fast	High	133

r = .02543 (not significant)

One immediately striking feature of Table II is the apparent divergence of the Page and Fast families. Their dissimilarity from their respective groups shows up in other measures but never so clearly as it does here. It would appear that the reversal of their positions contributes materially to the insignificance of r.

A fuller explanation for this apparent reversal comes out in listening to the tapes. Here it is sufficient to indicate that the ratings for the two families seem to be reversed for two quite different but understandable reasons. The Fast family scores consistently low on all indicators except the focal child's measured verbal ability. This discrepancy may be attributable to a measurement or clerical error in the MIH data gathering and processing procedures, or to a real dampening effect of the home environment -- comparable to the phenomenon of "cumulative deficit" which allegedly affects poor children's test scores and school performance.

On the other hand, the Page family's top rating seems to reflect their ambition for their son as well as their perception of what they "should" be doing in terms of informal tutoring. Mr. Page, the only parent with any association with a university (MIT lab technician), may have developed a particularly acute sense of what the research was looking for. Whatever the reason, the tapes show both the mother and the father spending above average amounts of time "interviewing" the focal child, playing games like GHOST with him, and quizzing him on baseball rules and scoring. Moreover, they add to the apparent artificiality of the situation by seemingly requiring the other children to remain outside -- for all but the last few tapes when the parents

responded to broad hints from the experimenter.

Though the composite ratings produce a non-significant r, there is a close enough relationship to merit further speculation and investigation. This would not be a sound approach if the indications from the composite AFC ratings were at odds with the qualitative features revealed in the dialogues. The tapes, however, consistently support these ratings. Indeed, the composit ratings are one of the most consistent indicators of verbal ability in the entire study.

Mother Initiation Followed by
Focal Child Direct Response

This measure provides a modest corroboration of the notion discussed above, namely that parent child 1:1 verbal interaction is a highly significant feature of the home language environment. In contrast to the AFC rating, this measure includes only the mothers and thus does not adequately reflect the adult-child interaction pattern in homes where the father did much of the taping (e.g., Mayo, Stag) or where the father and mother were both present most of the time (Dane).

Each percentage shows the relation between 1) Initiations by the mother which are directly responded to be the focal child (Mother A/Focal Child B) and total initiations by all speakers, 2) Initiations by the focal child which are directly responded to by the mother (Focal Child A/Mother B) and total initiations. The resulting figures are consistently small -- none larger than .15 -- because the base figure, total initiations, is so large. This figure was used so the percentage would be comparable to other measures

based on the total production of any move or stop and because the number of focal child to mother and mother to focal child initiations was expected to be larger.

When these two sets of percentages are compared for the two ability groups, the high ability group mothers can be seen to solicit their sons' direct responses more than do the average ability group mothers.

TABLE III

COMPARISON OF MOTHER INITIATIONS FOLLOWED BY FOCAL CHILD DIRECT RESPONSES AND FOCAL CHILD INITIATIONS FOLLOWED BY MOTHER DIRECT RESPONSES

	High Ability Families			Average Ability Families	
	Mother A/ FC/B	FC-B/ Mother A		Mother A/ FC/B	FC-B/ Mother A
Cash	.255	.081	Mayo	.038	.047
Boyd	.107	.074	Page	.413	.042
Dane	.022	.038	Ross	.035	.056
Fast	.043	.103	Stig	.070	.122
Main	.112	.064	West	.105	.153
Stag	.036	.206	Zale	.041	.125

Despite the very small percentages and the often small differences between them, the trend in Table III follows that which appeared in the composite AFC ratings. Even the anomalous families are the same, probably for the same reasons. This is particularly interesting finding given that this measure is limited to two forms of initiation that are different (to a greater or lesser degree depending on the family) from AFC dialogues. So that even with two more or less different sets of dialogues as a data base, the two measures support the proposition that direct 1:1 communication between adult and child may

The data showing the relative participation of adults and children in family conversations adds further detail to the picture of the verbal environment which prevails in the homes of the able subjects. These data indicate that the two types of families do not differ in length or amount of dialogue. This is true for both the total sample and for the sub-sample of 500 utterances. What does differ is the conversational output of the participants -- the mothers and their sons. In the average group the mother consistently produces more of all but one kind of utterance -- the direct response. In the able group, on the other hand, the focal child is the conversational leader. These relationships emerge from the figures for both the total sample and for the sub-sample in which each utterance is identified by speaker and type.

This pattern of the able mothers producing fewer utterances than either the average mothers, the average boys or their own sons, is consistent with the one question on the questionnaire which served to distinguish the two groups. This question asked, "Should children ever have the opportunity to influence their parents or change their minds on a particular subject?" With one exception, the able families said "yes," the average families, "no." At the risk of ignoring my own advice about drawing unwarranted conclusions I would suggest that the figures showing a high output for able boys reflect a parental attitude about children's roles in family affairs. Certainly this attitude is consistent with Coleman's (1966) notion of "fate control" as it relates to school success.

From the preceding observations we can construct the following hazy picture of the verbal interaction in the able homes, The mothers speak directly to the focal children, requiring a response from them when they speak together. In addition, the able mothers set up the ground rules for conversation in such a way that their sons have more opportunities for conversation than is the case with the average families. The questionnaire also suggests that one lesson that conversation with their parents teaches the able boys is that words count, they give the subjects power to affect their world.

Other Findings

Size and Ordinal Position: The assumption has often been made that family size, ordinal position of the given child, and father presence/absence are significant features influencing the amount of parent-child verbal interaction (e.g., Baldwin, 1969; Nisbet, 1953). The data from the present study suggest a need to reconsider and refine these views.

TABLE IV

ORDINAL POSITION AND FAMILY SIZE

High Ability Families	Ordinal Position	Adult-Child Ratio	Size/Position Code
Boyd	2nd of 2	1:3	5
Cash	4th of 4	1:3	13
Dane	2nd of 3	2:3	6
Fast	4th of 7	2:7	15
Main	2nd of 2	1:2	6
Stag	1st of 3	2:3	3
			48 average = 6

Average Ability Families	Ordinal Position	Adult-Child Ratio	Size/Position Code
Mayo	3rd of 3	2:3	8
Page	2nd of 3	2:3	6
Ross	2nd of 4	2:4	7
Stig	1st of 4	2:6*	4
West	3rd of 6	2:6	11
Zale	4th of 4	2:4	12
			48 average = 6

*The two additional children in the Stig home are foster children. Two is an average; the number fluctuates from none to three additional foster children at any given time.

The table above was constructed to demonstrate the relative importance of ordinal position and family size. The size/position code brings these two factors together in a single figure. On the scale below the numbers run from one to fifteen, with several steps left out. Low numbers represent a supportive language environment; higher ones indicate a condition that has been assumed to be less advantageous.

Size/Position Code

Code Number		Code Number	
1.	1st of 1	9.	3rd of 4
2.	1st of 2	10.	3rd of 5
3.	1st of 3	11.	3rd of 6
4.	1st of 4	12.	4th of 4
5.	2nd of 2	13.	4th of 5
6.	2nd of 3	14.	4th of 6
7.	2nd of 4	16.	4th of 7
8.	3rd of 3		

In addition to the numerical representation of the ordinal position and size, the code also accounts for differences in the adult-child ratio. If, as in the case of the Cash and Miles families in the high ability group, there is only one parent at home, that family is assigned the next lowest number on the scale. The Cash family should be represented by the number 12 since the focal child is the fourth of four. However, since the father is not at home, the family receives a higher number on the scale. Some would argue that one additional number is not sufficient to represent the effects of father absence. This may be true in a more general sense for a larger population, but the analysis of the data from these families indicates that the fathers' contributions to family conversation are quite modest and hence that his absence will not have a profound effect on that aspect of the family environment.

TABLE V

ORDINAL POSITION AND FAMILY SIZE IN RELATION TO FREQUENCY AND LENGTH OF ADULT-FOCAL CHILD DIALOGUES

High Ability Families	Average Length of Adult-Focal Child Dialogues	% of Total Dialogues that are AFC	Size/Position Code
	13.65*	20	6 2nd of 3
	7.38*	19	13 4th of 5
	6.69	16	5 2nd of 2
	4.00	16	15 4th of 7
	4.00	10	3 1st of 3
	4.50	06	6 2nd of 3

*In these two families there is only one parent at home. Hence they both have been assigned a number in the size/position code that is one more than they would have based simply on family size and ordinal position.

Average Ability Families	Average Length of Adult-Focal Child Dialogues	% of Total Dialogues that are AFC	Size/Position Code
	9.55	42	12 4th of 4
	5.73	27	8 3rd of 3
	12.43	21	6 2nd of 3
	6.50	14	11 3rd of 6
	4.48	06	7 2nd of 4
	3.59	06	4 1st of 4

Table 2 illustrates the relationship between family size and organization and the amount of conversation between parents and focal child. The first two columns support the intuitively sound proposition that the more conversation between one parent and one child the greater are the odds that some of that conversation will take the form of a long dialogue. One would assume from that proposition that small families would provide a better language learning milieu than large families. In fact, however, the right hand column indicating size and ordinal position seems to bear little relation to either the amount that parents talk to their focal children or the length of their conversations.

Whatever relationship may exist between family size/ordinal position and the frequency and length of parent-child dialogues is unclear from the figures above. In fact, at least two of the generally accepted truths about these relationships are challenged by these figures. First, in the able family group the two families in which the father is not at home show the highest percentages of adult-child interchange -- as contrasted to adult-adult or child-child dialogues. If the presence of the father is important for adequate

language development, it would seem from these data that he does not have his effect through stimulating verbal interaction with his children -- at least not this sample of boys at about eight years and four months. (See also the total figures for 500 utterances which indicate the relatively minor role that present fathers play in verbal interchange with their sons.) The second point is the apparent non-effect of size/ordinal position. No matter whether this concept is expressed through the use of the code or through the more complete statements on the right, there semms to be no consistent relationship between size/ordinal position and either the frequency or the length of parent-focal child dialogues.

CONCLUSIONS

Methodology

One clear issue for further research of this kind is experimental control. While study does come to some conclusions which seem to emerge naturally without torturing the data, a large number of questions remain unresolved because the apparent within-group differences produced very large standard deviations and hence findings of non-significance. It goes without saying that tighter experimental controls would have resulted in less spread in these figures. More importantly, tighter experimental controls would help to sort out situational sources of variation from what could be called interactive influences -- whether they are common to a group or are family-specific. To further clarify the role of interactive factors, some base line data must be obtained by simulating family interaction in a setting common to all subjects. (Some

adaptation of Mishler & Wexler's (1968) concensus reaching task would be quite useful for this purpose). Such a divice could also screen out families whose interactive modes were too extreme or too unstable to warrant their inclusion in the study. This is not to conclude that further naturalistic study is unproductive. On the contrary, it is increasingly clear that the only way to come to sound conclusions about the role of adult-child verbal interaction is to watch it happening, to watch it very carefully for a long time.

I would like to conclude by imagining the boy from the potato chip vignette in the interactive milieu of his school. If the characterization of verbal interaction in the able homes has any heuristic value, the boy is getting inadequate verbal enrichment from both his family and his school. At home the language is imprecise and refinements or differences in emphasis seem to depend upon variations in tone of voice. At school there is little or no direct adult-child dialogue. The teacher's talk directed at the class as a whole would appear to be insufficient to compensate for the poor quality of language interaction in the home.

The boy in the vignette is from the Fast family, the one repeatedly grouped with the average families despite the subject's high tested verbal ability. To supplement what appears to be a less than nurturant home language environment, the boy should be spending a considerable portion of each day talking with a more mature speaker, someone (a teacher aid, an older student, or a teacher) who would talk directly to and with him. Without this kind of interaction, the lessons he learns about language through verbal interaction

at home will be the ones to shape the verbal skills the schools are trying to teach. And when he can't turn up the volume of his reading book he will become a frustrated and unsuccessful reader.

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