R E P O R T R E S U M E S

ED 011 611 24

DEVELOPMENTAL SOCIOLINGUISTICS--INNER CITY CHILDREN.

BY- ENTWISLE, DORIS R.
JOHNS HOPKINS UNIV., BALTIMORE, MD.

REPORT NUMBER BR-6-1610-1 PUB DATE MAY 67
GRANT OEG-2-7-061610-0207
EDRS PRICE MF-$0.09 HC-$1.76 44P.

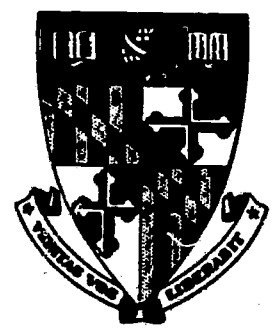
DESCRIPTORS- ASSOCIATIVE LEARNING, *URBAN SLUMS, INTERVIEWS, INTELLIGENCE LEVEL, *VERBAL DEVELOPMENT, *SOCIOLINGUISTICS, LANGUAGE ABILITY, *LANGUAGE DEVELOPMENT, *ENVIRONMENTAL INFLUENCES, SOCIOECONOMIC STATUS, CULTURALLY DISADVANTAGED, BALTIMORE

THE WORD ASSOCIATIONS OF URBAN SLUM CHILDREN, BOTH NEGRO AND WHITE, WERE STUDIED TO DETERMINE WHAT IMPACT EXTREME SOCIOECONOMIC STATUS DIFFERENCES HAVE ON LANGUAGE DEVELOPMENT. THIS STUDY OF CHILDREN FROM THE LOWEST EXTREME OF THE SOCIOECONOMIC SCALE WAS MADE AS A FOLLOWUP TO AN EARLIER STUDY OF CHILDREN REPRESENTING VARIOUS CULTURAL AND SOCIOECONOMIC CLUSTERS. DATA WERE GATHERED FROM 541 CHILDREN ENROLLED IN PUBLIC ELEMENTARY SCHOOLS IN BALTIMORE CITY, MARYLAND BECAUSE IT HAD BEEN OBSERVED PREVIOUSLY THAT RACE-OF-INTERVIEWER AFFECTED THE CHILDREN'S RESPONSES, THE ENTIRE DESIGN WAS REPLICATED FOUR TIMES (NEGRO INTERVIEWER WITH WHITE CHILDREN, NEGRO INTERVIEWER WITH NEGRO CHILDREN, WHITE INTERVIEWER WITH WHITE CHILDREN, AND WHITE INTERVIEWER WITH NEGRO CHILDREN). NO CHILD WAS INTERVIEWED MORE THAN ONCE. THE PRINCIPLE MEASURE OF LINGUISTIC DEVELOPMENT WAS THE NUMBER OF WORD RESPONSES THAT MATCHED PREVIOUSLY DETERMINED PARADIGMS, SUCH AS, THE RESPONSE TO "GO" IS "RUN." FIRST-GRADE WHITE SLUM CHILDREN WERE FOUND TO BE MORE ADVANCED LINGUISTICALLY THAN SUBURBAN CHILDREN OF SIMILAR IQ. FURTHER, EVEN THOUGH NEGRO FIRST-GRADE SLUM CHILDREN ARE NOT AS ADVANCED AS WHITE SLUM CHILDREN, THEY ARE PROBABLY AS MATURE LINGUISTICALLY AS WHITE SUBURBAN CHILDREN OF THE SAME INTELLIGENCE LEVEL. THE RELATIVE ADVANCEMENT OF FIRST-GRADE SLUM CHILDREN DISAPPEARS BY THIRD GRADE, AND THEY LAG BEHIND SUBURBAN CHILDREN AT AGES 8 AND OVER. THIS SUGGESTS THAT THE DEGREE OF URBANIZATION MAY STRONGLY AFFECT VERBAL DEVELOPMENT. IN ANALYSIS OF THE RACE-OF-INTERVIEWER FACTOR, IT WAS FOUND THAT MORE MATURE RESPONSES ARE MADE BY CHILDREN WHEN THEY ARE RESPONDING TO AN INTERVIEWER OF A DIFFERENT RACE THAN THEIR OWN. RELATED REPORTS ARE AA 000 047 AND AA 000 048. (AL)

AA000046

BR-6-1610-1
OEG-2-7-061610-0207

PA-24



THE JOHNS HOPKINS UNIVERSITY

ED011611

Developmental Sociolinguistics: Inner City Children[1]

Doris R. Entwisle[2]

The Johns Hopkins University

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

Developmental Sociolinguistics: Inner City Children[1]

Doris R. Entwisle[2]

The Johns Hopkins University

Developmental Sociolinguistics: Inner City Children

Project No. 6-1610
Contract No. OEG-2-7-061610-0207

Doris R. Entwisle

May 1967

The research reported herein was performed pursuant to a grant with the Office of Education, U.S. Department of Health, Education and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

The Johns Hopkins University
Baltimore, Maryland

CONTENTS

ACKNOWLEDGMENTS

[1]This work was supported by the National Institute of Child Health and Human Development, Grant HD 00921-05 and also aided by support from The Center for Study of Social Organization of Schools, The Johns Hopkins University.

[2]The cooperation of staff and pupils in schools of Baltimore City is gratefully acknowledged. In particular we are grateful to Dr. Orlando Furno, Director of Research, and to the following principals: Mr. Edwin Cohen, Mrs. Maria D. Hammond, Mr. Donald T. Leuschner, Mr. Wilfred M. Seaborne, Mr. Fuller C. Strawbridge, Mr. Henry N. West, and Miss Mildred A. Winter. The paper has benefitted from comments by James Coleman, Robert Gordon, Edward McDill, and Arthur Stinchcombe.

I. INTRODUCTION

Linguists who have contributed to the study of language in its social context have worked mainly on dialect geography. But, as Labov[3] points out, linguistic data bear on a number of problems of sociological theory, including the discreteness of social stratification, integration of ethnic groups into the social system, and the role of exterior reference groups. They are also informative in study of culture transmission and of cultural differences in socialization practices. The last-named areas are the general context for the present paper.

Lately it has become clear that by age 4 the child has somehow acquired knowledge of most of the structural features of his native tongue. By age 8 he has learned a great deal about substitution properties of words. He knows that "little", for instance, will fill the same slot in a sentence as "big", even though he has no acquaintance with the formal definition of an adjective. He can use just about all the constructions present in adult speech, and he possesses a significant fraction of the semantics he will ever acquire. These major developmental changes involving language and manipulation of verbal concepts occur prior to age 8, and so formal schooling may have little impact because development occurs before the child is effectively literate. The influence of the subculture in which the child exists may be the only substantial environmental one because the child's exposure to language is auditory rather than visual. The structure of the social system and of the family moulds the child's language and this in turn shapes his style of thought.

Obtaining free associations to word stimuli is one way to study language development in elementary school children. This method is crude and limited because only a small part of the child's knowledge of syntax and semantics can be revealed by free associations. Evidence is accumulating, however, that these associations are closely related to general linguistic competence and to verbal comprehension. Associations have the advantage of offering a "game" rather than a "test" setting, and they can be employed fairly easily with children who speak another language or dialect. Their chief advantage, however, is that they can be secured in large numbers from many different groups of children and analyzed by machine.[4] This permits cross-cultural study of verbal concepts on a broad scale. Also the emergence and evolution of verbal concepts can be studied by sampling cross-sections of children of different ages.

The validity of associations as indicators of linguistic development derives mainly from the correlation known to exist between appearance of paradigmatic associates and grammatical sophistication, and from the gradual evolution with advancing age of responses typical of adults (therefore mature, by definition). We have gathered associations to very common words ("table", "sell", "black", etc.), and so our data are assumed to be related to very

basic language skills. More refined and elaborate measures, such as sentence length, use of various grammatical constructions, vocabulary size, and so on, might very well demonstrate cleavage among groups that are equivalent on the word association measures, or show differences of another kind from those we find. The reader should bear this in mind.

Prior to 1965 we sampled word associations for various groups of children residing in Maryland and nearby regions of Pennsylvania chosen to represent various cultural and socioeconomic clusters.[5] There were appreciable differences between rural and suburban children, but negligible differences between suburban blue collar and suburban upper middle class groups.

This earlier work has led directly to the present study which focuses on urban slum groups, both Negro and white. In brief, we wished to see if extreme SES differences would have impact on language development, since smaller differences (blue collar vs. upper middle class) had not. The slum groups represent the very lowest extreme of the socioeconomic scale.

At the time this work was started there was much less emphasis than now on social action programs to aid the culturally disadvantaged and particularly the urban poor. The present research has decided relevance, nonetheless, to programs aimed at young children, because it is generally assumed that cultural deprivation is practically equivalent to language deprivation.[6] Remedial work might be more effective if linguistic deficits were mapped with respect to both nature and degree. Often data reported about language disabilities merely confirm the well-known correlation between intellectual endowment and social class. In interpreting research with disadvantaged children one must be careful to appraise the work in terms of its purpose. Disadvantaged children show up poorly on standardized tests for many reasons, some concerned more directly with public health than with strictly sociological factors. Often decrements noted for disadvantaged children on the Illinois Test of Psycholinguistic Abilities[7] or other language instruments are not relevant in causal terms, because social class and intelligence level are confounded. Cultural deprivation, as it will be understood in this paper, implies that the association between environmental conditions and performance decrement is causal and not that social groupings happen to be joint with genetic or other non-social causes.

II. METHOD

Data were gathered from children enrolled in public elementary schools in Baltimore City, Maryland. These children resided in the most depressed socioeconomic areas of the city, in a region contiguous with the downtown business district. Figure 1 shows the location of schools in the survey and the geographic relation of these

schools to the city as a whole.

With very few exceptions, children live within walking distance of the schools they attend. The children studied attend schools within census tracts where median family income is as low as $2400, and are the most severely disadvantaged and economically deprived in the city. Census data show that from 6% to 25% share a bath or have no bath. As many as 3% or 4% of the homes have no heat, and in 4 of the 6 tracts in which schools are located all homes were constructed prior to 1939. In 2 tracts less than 60% of the children are living with both parents, and in 5 of the 6 tracts over 10% unemployment of males is reported. As would be expected the tracts with the highest percentages of Negro residents have the least favorable ratings on most indices. Although reliable data on family background were unobtainable from school records, some principals estimated that 75% of all pupils in their schools were on welfare. Information from school records on educational background of parents was meager and data for only 19% of the children were available. These indicate that the average white child in our sample has a father with 8.7 years of schooling and an average Negro child has a father with 8.4 years of schooling. These estimates are undoubtedly biased, and the averages for the entire sample are probably lower. Census data suggests median schooling around 7.4 years.

In the entire school system of Baltimore City at the time of this survey, there were 38.7% white pupils and 61.3% non-white (mostly Negro). These percentages do not describe the racial distribution in the sampled schools, however. Elementary schools in the downtown area are very imbalanced racially, reflecting neighborhood segregation. The census tracts vary from 0% to 88% Negro and only one tract is anywhere near an equal division. In order to procure children whose living conditions were as similar as possible, even though particular schools could not furnish equal numbers of both racial groups, schools with one racial group predominating were balanced by nearby schools with the other group predominant. For instance, School 19, all Negro, is balanced by School 10, mostly white. The neighborhoods around School 10 are very similar to those around School 19 and the schools are close together geographically.

The design of the sample of children and the racial composition of the schools they attend is shown in Table 1. Negro and white children of average IQ (95 to 105) and low IQ (85 or less) were selected using school records. IQ for third- and fifth-grade children was the latest IQ recorded in the pupil's folder (in most instances a score from a city-wide Kuhlman-Anderson test given in the second- or fourth-grade, respectively). First-grade children in Baltimore City are given four sub-sections of the Primary Mental Abilities test in September, of their first-grade year. These four scores were used to compute an IQ for all first-graders enrolled in the 7 schools in the sample. Then first-graders with IQ's in the desired ranges were selected and interviewed. For first-graders, then, we have informa-

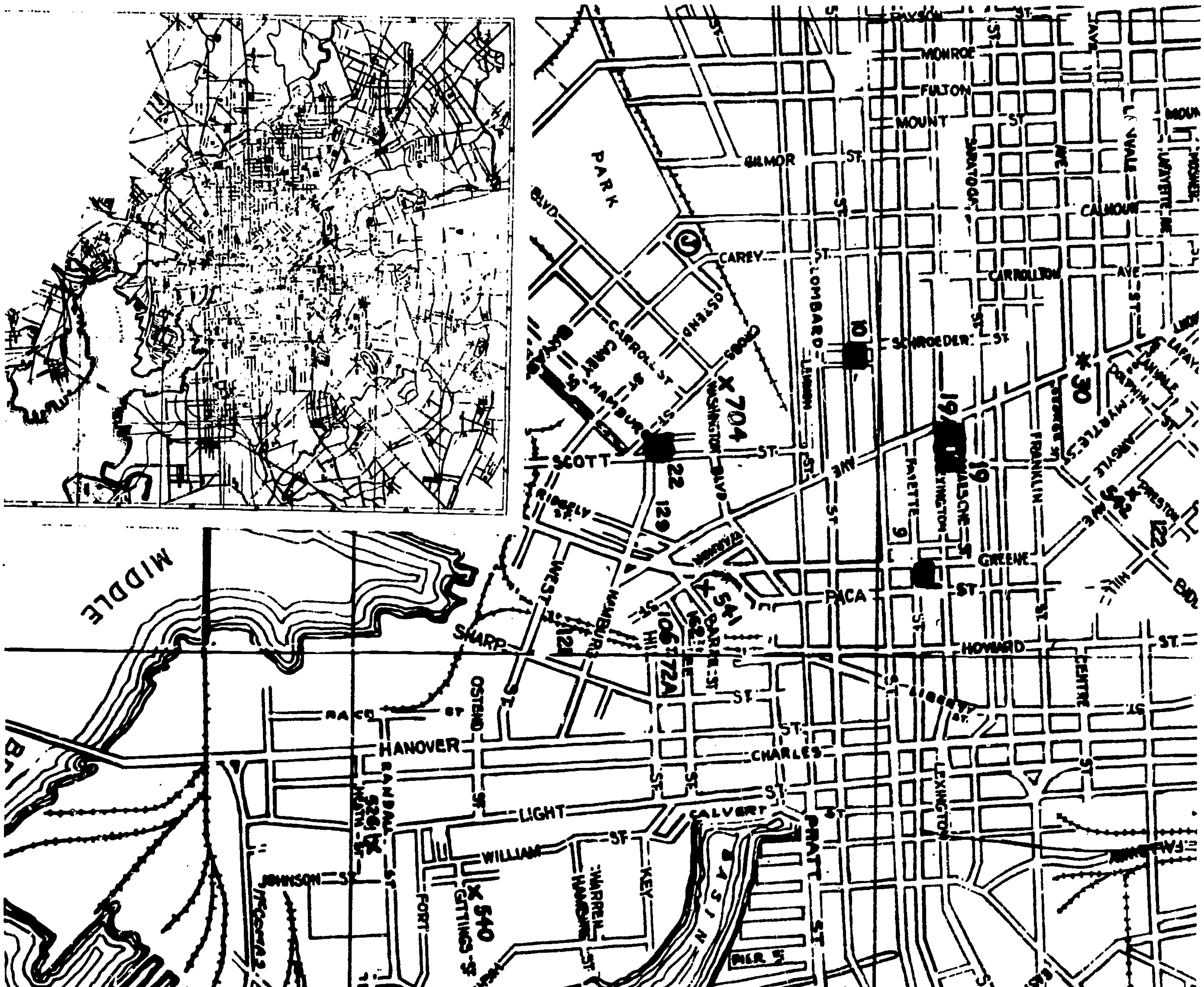

MIDDLE
PARK
SCOTT
HANOVER
LIGHT
CHARLES
CALVERT
WILLIAM
JOHNSON
SHARP
PACA
GREENE
HOWARD
LOMBARD
PRATT
CENTRAL
CAROLINE
BOND
BROADWAY
WASHINGTON
CHESTER
PATTERSON
BALTIMORE
EASTERN
MONTFORD
HUDSON
LINWOOD
MADISON
ORLEANS
JEFFERSON
MCELDERRY
MONUMENT
FAYETTE
LEXINGTON
FRANKLIN
SCHROEDER
CAREY
GILMOR
MOUNT
FULTON
MONROE
PAYSON
CALHOUN
CARROLLTON
AISQUITH
GAY
CENTRE
STILES
GRANBY
WOLFE
ANN
DECATUR
FORT
KEY
WARREN
WEST
OSTEND
NORTH
BASIN
WEST BRANCH
704
22
129
541
540
525
114
125
123
453
27A
27
109
19
30
10
2A
43A

Table 1. Design of Subjects in Sample

	White Children				Negro Children				Grand Totals
	White Int.		Negro Int.		Negro Int.		White Int.		
	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	
Kindergarten No. of Children		20		20		20		20	80
Average IQ									
First Grade No. of Children	20	20	17	20	20	20	9	20	146
Average IQ	100.1	79.5	99.4	80.1	98.7	79.9	97.6	79.9	
Third Grade No. of Children	20	20	19	20	20	20	20	16	155
Average IQ	99.7	80.8	100.3	80.5	99.9	80.6	99.6	81.1	
Fifth Grade No. of Children	20	20	20	20	20	20	20	20	160
Average IQ	99.7	80.3	99.8	80.6	99.5	80.7	99.6	80.5	
									541

Racial Composition of Schools Sampled

School	Nonwhite	White	Total
1	207	3	210
6	1	460	461
10	60	449	509
19 and A	1,447	-	1,447
22	155	620	775
23	-	394	394
114	447	18	465

tion about IQ's in the entire first-grade in a school and scores on various sub-tests, but we do not have this information for children in other grades. No IQ data were available for kindergarten children.

Because it had been observed previously that children's responses are affected by interviewing conditions, the entire design was replicated four times: white interviewers with white children, white interviewers with Negro children, Negro interviewers with white children, and Negro interviewers with Negro children. Racial groups are equivalent in terms of IQ and grade. Interviewers differed in race but were alike in socioeconomic status and education, being middle class with some college training.

No child was interviewed more than once. Race-of-interviewer, race-of-child, grade and IQ level are represented in a factorial design. Each race-IQ group consisted of 10 boys and 10 girls. The sampling plan resembles that used earlier to study suburban and other children.[8]

The interviewing procedure is reported completely elsewhere[9] and so will be reviewed only briefly here. Individual children were escorted from the classroom to another place in the school (usually an unused classroom or office), and told they were going to "play a word game." (Care was taken to avoid describing the procedure as a test. Teachers and other school staff were asked to refer to the procedure as a game.) Stimulus words were said aloud one at a time by the interviewer, and the child was asked to respond orally with the first word that came to mind after hearing the stimulus word. The interviewer immediately recorded the oral response and proceeded to the next word on the list.

The stimulus words, 96 in all, were chosen to represent the several form classes (nouns, adjectives, verbs, pronouns, adverbs, and miscellaneous words). For nouns, adjectives, and verbs, it is possible to stratify on frequency, so that there are 8 high-frequency (over 1,000), 8 medium-frequency (500-999), and 8 low-frequency (499 or less) words according to the Thorndike-Lorge[10] J count. For the other form classes frequency division is not made and there are 8 words of each kind.[11]

Responses were transferred to IBM cards (making a deck of 96 cards for each child), and each response was classified by form class. Data were checked, sorted, and classified by digital computer.

III. RESULTS

The results consist of lists of the verbal responses of the 541 children interviewed. Data derived from these lists, such as frequency of primary responses, number of different responses, percentages of paradigmatics, and so on, are the data analyzed. Responses

are considered in terms of groups of children and in terms of groups of stimulus words. The "number of observations" in any analysis consists of a response measure for a specific group of children (say medium IQ, fifth-grade, Negro children interviewed by white interviewers) to a set of 8 or more homogeneous stimulus words (say adverbs, or high-frequency nouns).

Because it has been widely observed in word association studies that with increasing age there is a concomitant increase in form-class-matching of stimulus and response, especially over the early school years, the number of paradigmatics is the principal measure used.[12] A paradigmatic response to "go" is "run". A syntagmatic response ("home") is generally thought to be a less mature response than a paradigmatic response, and a rhyming response ("dough") is even less mature. Unrelated noun responses like "spoon" or "window", or nonsense words, "yoe", represent very primitive levels of responding. It is often difficult to classify responses (or stimulus words) because of the ambiguity inherent in the language, although with young children it is certainly easier than with adults or other sophisticated speakers. For instance, the oral response "dough" listed as a rhyming response above, could be the homonym "doe", but one would not expect "doe" to be a frequent response for children between 5 and 8 years of age. Some ambiguities are also easily resolved in context with the stimulus ("mean" in response to "pleasant" is taken as an adjective rather than a noun).

Rates of paradigmatic responding for each subsample group are presented in Table 2, with data for nouns, adjectives, and verbs given separately for each frequency level and also for combined frequencies.[13]

Age trends in paradigmatic responding obviously differ by form class. For instance, noun-responses-to-nouns generally increase between kindergarten and fifth-grade but this increment in paradigmatic responses for nouns is considerably less than that for adjectives or verbs. The data in Table 2 are complex, with racial and interviewer effects imposed on age and IQ trends, and several anlayses of variance were performed in order to elucidate them. An analysis of variance of paradigmatic responses to nouns, adjectives, and verbs reveals a significant interaction ($p < .01$) among form class, grade, IQ, race-of-child, and race-of-interviewer. Since this interaction and also several quadruple interactions involving four of these five variables are significant, results can be seen more clearly in terms of individual form class analyses. Paradigmatic responses to adjectives and to verbs were subjected to separate analyses, therefore, and are discussed below.

Responses to Adjectives. The variance analysis for paradigmatic responses to adjectives is given in Table 3. The grade x IQ x race-of-interviewer x race-of-child interaction is highly significant and percentages of paradigmatics for this cross-tabulation are

Table 2
Percentages of Paradigmatic Responses
Baltimore City Children, 1965-66

	First Grade							
	White Children				Negro Children			
	White Int.		Negro Int.		Negro Int.		White Int.	
	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ
High-freq. nouns	65.0	62.5	50.0	66.3	56.9	45.0	54.4	60.0
Med.-freq. nouns	62.5	58.8	56.3	68.7	61.9	44.4	66.9	58.7
Low -freq. nouns	60.6	58.8	50.6	61.9	54.4	48.7	48.7	53.1
Total nouns	62.7	60.0	52.3	65.6	57.7	46.0	56.7	57.3
High-freq. adj.	49.4	36.3	52.5	42.5	40.0	21.3	44.4	28.7
Med.-freq. adj.	44.4	35.0	46.9	36.3	40.0	26.3	37.5	26.9
Low -freq. adj.	43.7	26.9	38.7	26.9	34.4	17.5	37.5	25.0
Total adjectives	45.8	33.7	46.0	35.2	38.1	21.7	39.8	26.9
High-freq. verbs	34.4	28.7	31.3	26.9	20.6	28.1	25.0	29.4
Med.-freq. verbs	27.5	21.9	19.4	22.5	15.0	13.7	20.6	21.9
Low -freq. verbs	20.0	20.0	23.1	20.0	16.3	17.5	23.7	23.1
Total verbs	27.3	23.5	24.6	23.1	17.3	19.8	23.1	24.8
Adverbs	28.7	10.6	25.0	19.4	13.7	11.3	18.1	13.1
Pronouns	51.3	28.1	40.0	36.3	33.1	26.9	41.9	35.0
	Third Grade							
High-freq. nouns	69.4	68.7	76.9	70.6	73.7	61.9	66.9	62.5
Med.-freq. nouns	75.0	70.6	76.3	68.1	76.9	64.4	75.0	65.0
Low -freq. nouns	75.6	75.6	90.0	68.7	67.5	66.3	75.0	61.9
Total nouns	73.3	71.7	81.0	69.2	72.7	64.2	72.3	63.1
High-freq. adj.	73.7	77.5	85.0	74.4	76.9	68.7	64.4	59.4
Med.-freq. adj.	64.4	61.3	71.9	63.1	70.0	63.7	62.5	46.9
Low -freq. adj.	53.1	53.7	66.3	55.0	55.0	48.1	53.1	43.1
Total adjectives	63.7	64.2	74.4	64.2	67.3	60.2	60.0	49.8

continued

continued

Table 2
Percentages of Paradigmatic Responses
Baltimore City Children, 1965-66

	Third Grade							
	White Children				Negro Children			
	White Int.		Negro Int.		Negro Int.		White Int.	
	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ
High-freq. verbs	55.6	50.6	55.0	42.5	57.5	39.4	50.0	48.1
Med.-freq. verbs	34.4	30.0	35.0	28.1	35.0	25.6	27.5	22.5
Low -freq. verbs	25.6	33.1	23.1	23.7	31.9	23.7	30.0	28.1
Total verbs	38.5	37.9	37.7	31.5	41.5	29.6	35.8	32.9
Adverbs	44.4	35.6	36.9	43.7	38.1	30.6	31.9	30.0
Pronouns	66.9	65.0	72.5	63.1	75.0	63.1	65.0	58.7
	Fifth Grade							
High-freq. nouns	73.7	72.5	75.6	65.6	78.7	75.6	76.3	71.3
Med.-freq. nouns	80.6	75.0	75.6	76.9	80.6	75.0	85.0	81.3
Low -freq. nouns	89.4	84.4	93.7	84.4	88.1	83.1	85.3	83.7
Total nouns	81.3	77.3	81.7	75.6	82.5	77.9	82.3	78.7
High-freq. adj.	93.7	85.0	90.6	88.1	85.6	87.5	91.9	91.3
Med.-freq. adj.	79.4	76.9	86.3	71.9	75.0	75.0	79.4	76.9
Low -freq. adj.	75.0	73.8	78.7	76.3	81.9	72.5	77.5	75.6
Total adjectives	82.7	78.5	85.2	78.7	80.8	78.3	82.9	81.3
High-freq. verbs	79.4	64.4	79.4	69.4	66.3	55.6	78.7	75.6
Med.-freq. verbs	49.4	36.9	43.7	38.7	41.9	36.9	52.5	43.1
Low -freq. verbs	53.1	44.4	43.7	51.9	45.0	45.6	64.4	46.3
Total verbs	60.6	48.5	55.6	53.3	51.0	46.0	65.2	55.0
Adverbs	61.9	50.6	57.5	53.1	62.5	44.4	58.1	54.4
Pronouns	77.5	71.9	80.6	72.5	66.9	75.0	73.1	85.6

Table 3
Analysis of variance, Paradigmatic Responses to Adjectives
Negro and White Children of Baltimore City (1965-66)

Source	d.f.	SS	MS	F	p(f)
Frequency	2	5511	2756	244.11	<.01
Grade	2	63848	31924	2827.63	<.01
IQ	1	2900	2900	256.86	<.01
Race Interviewer	1	153	153	13.55	<.01
Race Child	1	1326	1326	117.45	<.01
Freq X Grade	4	951	238	21.08	<.01
Freq X RC	2	101	51	4.52	<.05
Grade X IQ	2	745	373	33.14	<.01
Grade X RI	2	639	319	28.25	<.01
Grade X RC	2	561	281	24.89	<.01
IQ X RI	1	46	46	4.07	N.S.
RI X RC	1	33	33	2.92	N.S.
Freq X Grade X RI	4	123	31	2.75	N.S.
Freq X Grade X RC	4	108	27	2.39	N.S.
Grade X IQ X RC	2	108	54	4.78	<.05
Grade X RI X RC	2	161	81	7.17	<.05
IQ X RI X RC	1	28	28	2.48	N.S.
Freq X Grade X IQ X RI	4	142	35	3.10	.05
Freq X Grade X IQ X RC	4	105	26	2.30	N.S.
Freq X IQ X RI X RC	2	52	26	2.30	N.S.
Freq X Grade X RI X RC	4	136	34	2.91	<.05
Grade X IQ X RI X RC	2	188	94	8.33	<.01
Aggregated Residual[a]	21	237	11.29		

[a]This term includes the highest order interaction plus other sums of squares selected according to the procedure of Bert Green and John W. Tukey, "Complex Analysis of Variance: General Problems", Psychometrika (June 1960). pp. 127-152

Table 4

Average Percents of Paradigmatic Responses to Adjectives
Grade X IQ X RI X RC Interaction
1966 Data

	White Children				Negro Children			
	White Int.		Negro Int.		Negro Int.		White Int.	
Grade	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ
1	45.8	32.7	46.0	35.2	38.1	21.7	39.8	26.9
3	63.7	64.2	74.4	64.2	67.3	60.2	60.0	49.8
5	82.7	78.5	85.2	78.7	80.8	78.3	82.9	81.3

presented in Table 4. By fifth-grade rates are stable, and differences associated with IQ, or with racial groups, are comparatively small.[14] At first-grade, however, there are large and consistent differences associated with IQ. At both first- and third-grades, medium-IQ Negro children respond at a rate close to that observed for low-IQ white children. At fifth grade racial effects appear to be negligible.

For first-grade children it does not seem to make much difference whether an interviewer is of the same race as the child or of a different race. When races of interviewers and children are mixed, Negro interviewers elicit more paradigmatics from white children than white interviewers elicit from Negro children.

Another summary of the developmental pattern for adjectives is shown in Figure 2, with percentage of paradigmatic responses for white and Negro children given separately for the two kinds of interviewers. For children of both IQ levels, race appears to be influential mostly at first-grade, where a difference of about 10% favors white children. Differences between the races decrease with age, being no more than 4% at later grades. There is even a reversal in one instance, Negro children exceeding white at third-grade.

Included also in Figure 2 are rates of paradigmatic responding for children interviewed in Baltimore suburbs in 1961-63.[15] Suburban children were selected to meet the same IQ requirements, and so are matched on tested IQ although of very different socioeconomic status. It is very surprising that rates for first-grade slum children exceed rates for first-grade suburban children with IQ held constant. The suburban children represented two socioeconomic levels. One group consisted of "High SES" suburban children from homes with average income about $9200, with fathers whose average schooling amounted to 13.8 years, and where over 97% of children live with both parents. Another group consisted of "Low SES" suburban children who came from families with about $6200 average income, whose fathers had about 10.5 years of schooling. Both groups lived in suburbs of Baltimore, Maryland, the first middle or upper middle class, and the second in working class neighborhoods. Earlier work showed extremely small differences in rates of response for suburban children of these two SES levels with IQ held constant. In fact, it was concluded from variance and other analyses that the differences associated with SES were negligible.

As mentioned earlier, the present study was partly undertaken in an effort to extend the variability on this social-class or socioeconomic dimension. It was thought that with a much more deprived group (family income at about $3000), language deficits might appear even though no differences had been found between upper middle and working class groups. Just the opposite seems

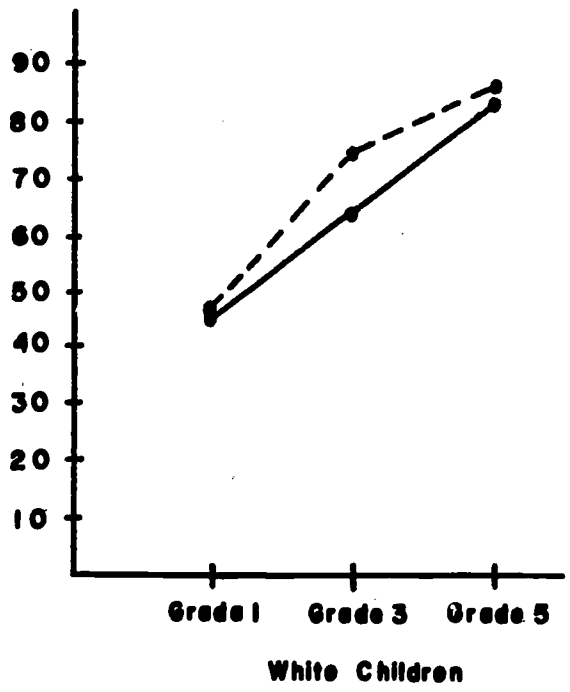
Race of interviewer

same ——

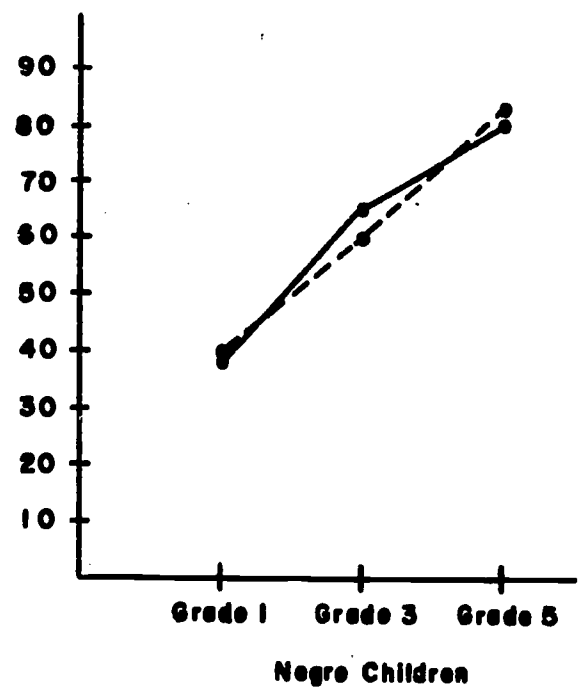
different - - -

SUBURBAN BALTIMORE CHILDREN - ADJECTIVES
(1961 - 63)

	High SES			Low SES	
Grade	High IQ	Med IQ	Grade	Med IQ	Low IQ
1	45.7	29.3	1	30.1	21.7
3	74.2	71.4	3	73.3	62.8
5	81.0	78.2	5	78.1	77.1

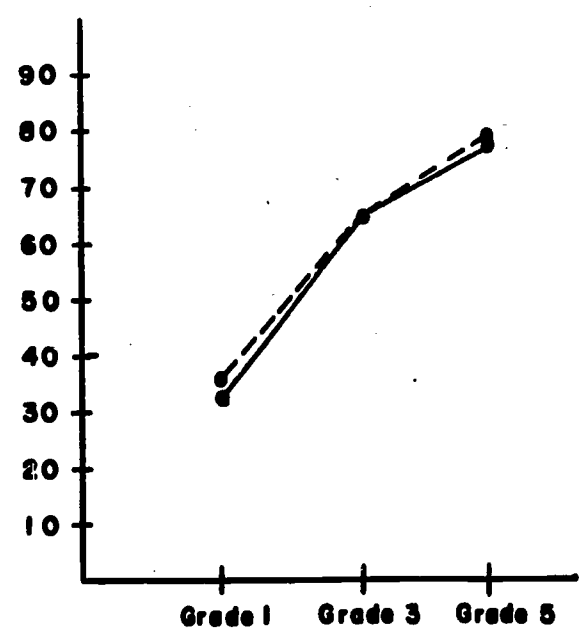


White Children

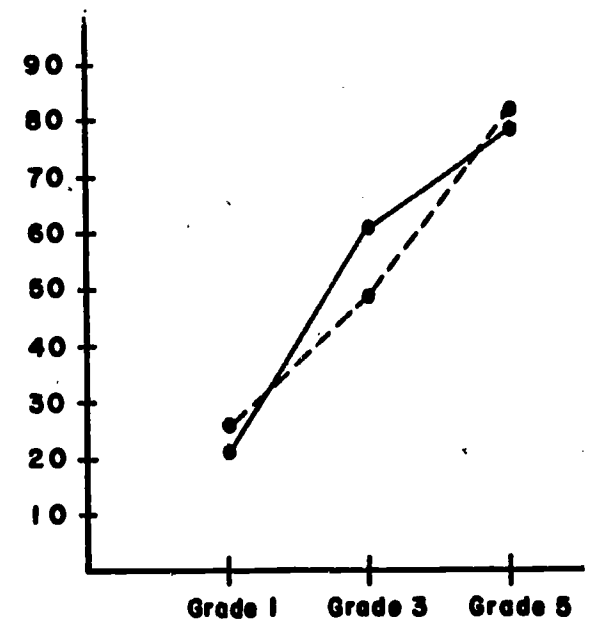


Negro Children

MEDIUM IQ



White Children



Negro Children

LOW IQ

Percent of paradigmatic responses to adjectives — slum children

Baltimore City, 1965-66

FIGURE 2

to be the case. The medium-IQ slum children respond to adjectives much like the high-IQ (over 130) suburban children; and although the Negro slum children are less advanced than the white slum children, those of average-IQ are responding at rates close to 10% higher than either the high or low SES suburban white groups. The low-IQ white slum children, are responding at rates close to those for the medium-IQ white slum children, and the low-IQ Negro slum children are about the same as low-IQ white suburban children.

By third-grade, however, the picture changes. Medium-IQ slum children of both races lag behind suburban children. By fifth-grade, differences associated with IQ are small, rates differ little among groups and all children appear to attain the same asymptotic rate. Even though rates of development differ, eventually all children attain the same level, no doubt because the verbal concepts presented are very basic and needed by all persons in American society. At later grades, then, the early advantage of the slum children in terms of paradigmatic response rates to adjectives is lost.

Verb Development. Previous work suggests that verbs continue to develop after fifth-grade, perhaps until about eighth-grade. (Adjective development is practically complete at third-grade.)[16] The major portion of development in verbs occurs by fifth-grade, however.

An analysis of variance of paradigmatic responses to verbs is presented in Table 5. The significant higher order interactions are different from those observed for adjectives. Although grade x race-of-child x race-of-interviewer is highly significant, there is no effect involving these three variables plus IQ as there was for adjectives.[17] Frequency is apparently a more important variable as far as verbs are concerned, because the frequency x grade x IQ x race-of-interviewer interaction is significant. The means for these interactions are shown in Table 6.

The growth of paradigmatics for verbs, depicted in Fig. 3, shows separate rates for white and Negro slum children of two IQ levels. Again, first-grade slum children appear more advanced than first-grade suburban children at both IQ levels. Again, also, there is a reversal at third-grade, and the relative advantage of the slum children disappears. At fifth-grade Negro slum children are about 5% higher than white slum children or white suburban children of both IQ levels. Generally the same patterns with age and the same relative position of slum children with respect to suburban children are seen whether adjectives or verbs are analyzed.

Development of High Frequency Responses to Nouns. So far only paradigmatic response rates have been considered. As mentioned earlier, paradigmatic response rates to nouns are not very informative and so they are not treated in detail. This section concerns primary responses (the single response with the highest frequency) to nouns.

To deal with individual responses is difficult because the

Table 5
Analysis of Variance; Paradigmatic Responses to Verbs
Negro and White Children of Baltimore City (1965-66)

Source	d.f.	SS	MS	F	P(f)
Frequency	2	13286	6643	198.72	<.01
Grade	2	30822	15411	1156.98	<.01
IQ	1	875	875	65.69	<.01
Race Interviewer	1	572	572	42.94	<.01
Race Child	1	131	131	9.83	<.01
Freq X Grade	4	2690	673	50.53	<.01
Freq X IQ	2	153	77	5.78	<.01
Freq X RC	2	192	96	7.21	<.01
Grade X IQ	2	417	209	15.69	<.01
Grade X RI	2	162	81	6.08	<.01
Grade X RC	2	79	39	2.93	N.S.
RI X RC	1	142	142	10.66	<.01
Freq X Grade X IQ	4	132	33	2.48	N.S.
Freq X Grade X RI	4	120	30	2.25	N.S.
Freq X IQ X RI	2	108	54	4.05	<.05
Freq X IQ X RC	2	205	103	7.73	<.01
Grade X IQ X RI	2	425	213	15.99	<.01
Grade X IQ X RC	2	145	73	5.48	<.05
Grade X RI X RC	2	507	253	18.99	<.01
IQ X RI X RC	1	27	27	2.03	N.S.
Freq X Grade X IQ X RI	4	186	47	3.53	<.05
Freq X Grade X RI X RC	4	120	30	2.25	N.S.
Aggregated Residual	22	293	13.32		

number of different responses that can be triggered by one stimulus word is tremendous. Also there is no natural mutually exclusive and exhaustive way to categorize responses. (The form-class categorization has drawbacks too, but it has the advantage of being related to the syntactic-paradigmatic shift that occurs over ages 5 to 10.) In single responses, however, one can observe the gain in strength of high-frequency adult responses with increasing age of the child. For instance, "chair", the primary adult response to "table", appears more often as a response at age 10 than at age 5. Frequency of primaries is a measure of maturity that is independent of other measures previously considered.

The relative advancement of first-grade slum children is independently corroborated when high frequency responses to nouns are studied (see Table 7). Responses that increase in frequency between first- and third-grades in the large suburban samples are arbitrarily defined as "mature", and the prevalence of "mature" responses in first-grade slum and suburban groups is compared. For instance, the

Table 6
Means in Percents for Interactions Involving Verbs

	Grade 1				Grade 3				Grade 5			
	White Int.		Negro Int.		White Int.		Negro Int.		White Int.		Negro Int.	
	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ
High-freq.	29.7	29.1	25.9	27.5	52.8	49.4	56.3	40.9	47.8	70.0	72.8	62.5
Med.-freq.	24.1	21.9	17.2	18.1	30.9	26.3	35.0	26.9	50.9	40.0	42.8	37.8
Low -freq.	21.9	21.6	19.7	18.7	27.8	30.6	27.5	23.7	58.7	45.3	44.4	48.7

Grade 1				Grade 3				Grade 5			
White Int.		Negro Int.		White Int.		Negro Int.		White Int.		Negro Int.	
White C.	Negro C.	Negro C.	White C.	White C.	Negro C.	Negro C.	White C.	White C.	Negro C.	Negro C.	White C.
25.4	23.9	18.5	23.9	38.2	34.4	35.5	34.6	65.3	60.1	48.5	54.5

Race of interviewer

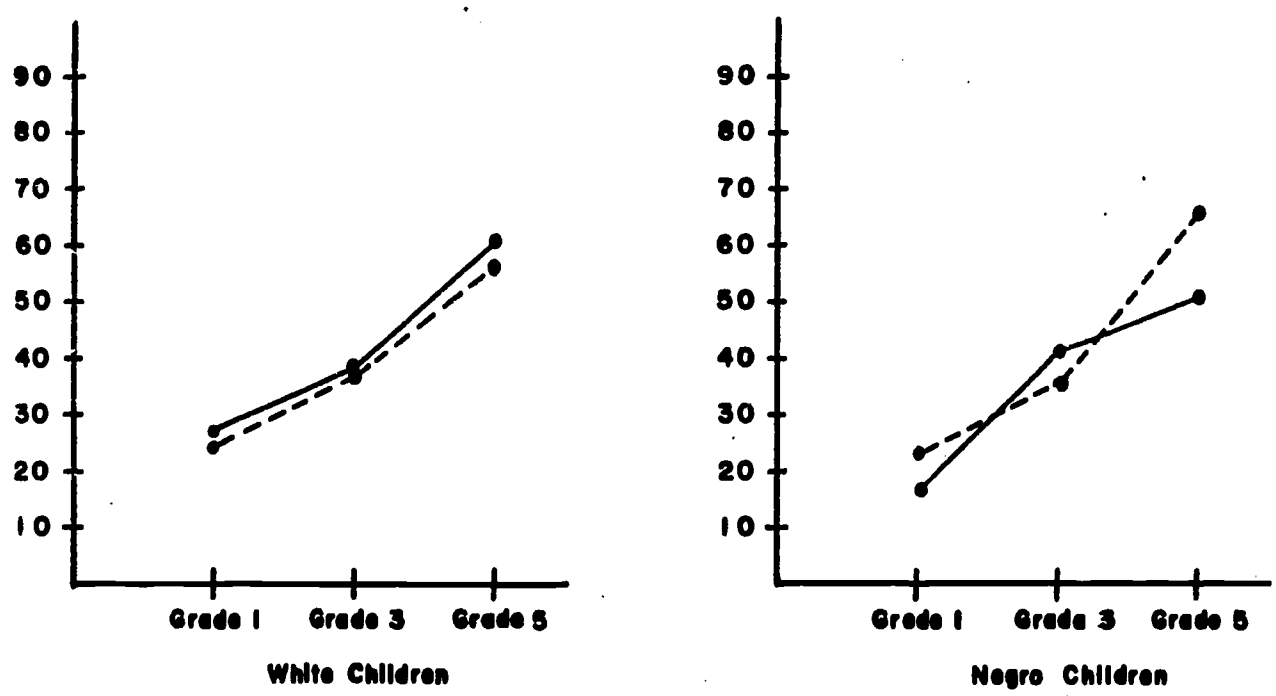
same ——

different – – –

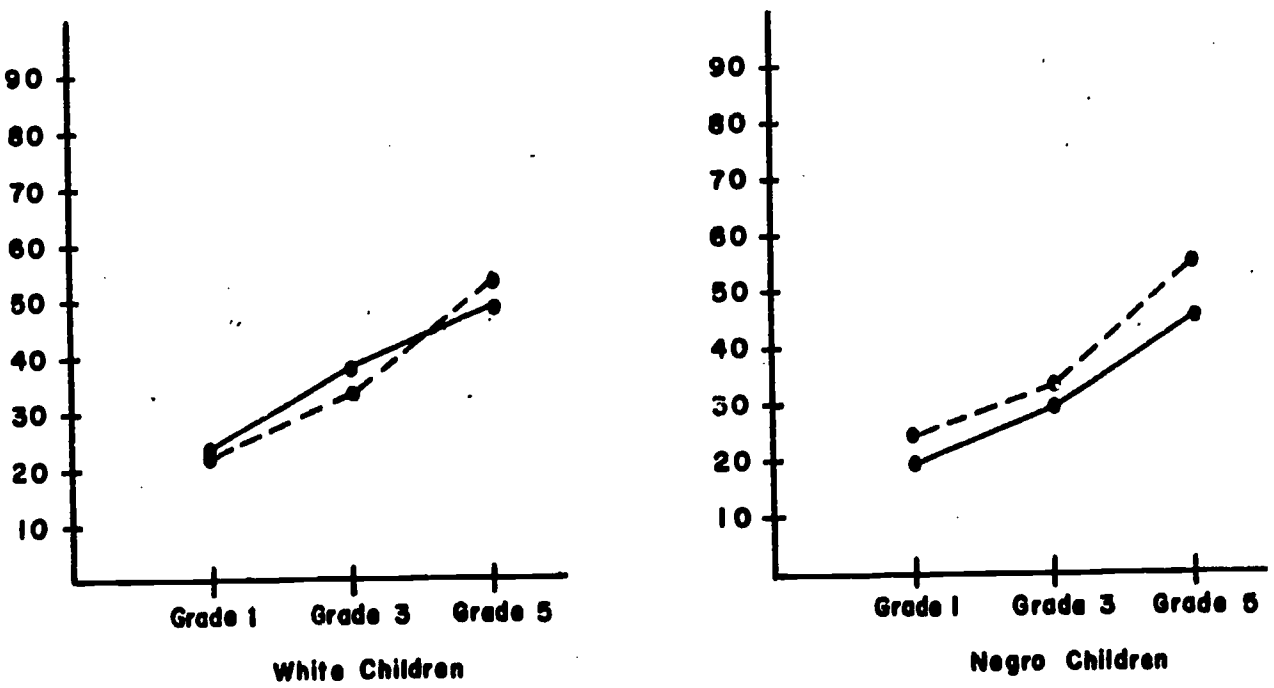
SUBURBAN BALTIMORE CHILDREN – VERBS

(1961 – 63)

	High SES			Low SES	
Grade	High IQ	Med IQ	Grade	Med IQ	Low IQ
1	22.4	21.1	1	18.7	19.2
3	57.1	47.4	3	49.8	35.5
5	66.6	60.2	5	57.0	53.6



MEDIUM IQ



LOW IQ

Percent of paradigmatic responses to verbs – slum children

Baltimore City, 1965 – 66

FIGURE 3

Table 7
Mature Responses to Nouns
(For High-frequency and Medium-frequency Stimuli.)

Stimulus	Response	Suburban First Grade	Suburban Third Grade	Slum First Grade White	Slum First Grade Negro
Bird	Fly	37.2	35.0	25.0	15.0
Chair	Table	20.8	18.9	15.0	15.0
Color	Red	12.1	18.9	10.0	20.0
	Crayon	8.6	0.0	10.0	0.0
Flower	Rose	6.4	12.9	20.0	15.0
Fly	Walk	0.0	17.2	20.0	0.0
Fruit	Apple	5.7	22.8	20.0	10.0
Hand	Arm	3.6	18.2	25.0	20.0[a] (Finger)
Man	Woman	12.9	43.5	25.0	20.0
Music	Sing	11.4	12.9	10.0	20.0[a] (Dance)
	Song	0.0	10.0	15.0	0.0
Ocean	Water	19.0	21.8	20.0	15.0
	Sea	10.0	40.0	15.0	0.0
River	Water	18.6	21.7	25.0	15.0
Salt	Pepper	44.3	56.4	50.0	40.0
Sheep	Lamb	15.7	22.5	35.0	30.0
Square	Circle	7.1	15.7	10.0	0.0
	Triangle	0.0	6.4	15.0	20.0
Table	Chair	36.1	51.4	60.0	30.0
Wing	Fly	22.5	39.0	25.0	15.0
	Bird	15.0	19.6	15.0	10.0[a] (Chicken)

[a]High-frequency responses given by Negro children only, with high-frequency response of white children absent.

response "pepper" to "salt" increases in frequency from 44% to 56% in suburban children between first- and third-grades. First-grade slum children give this response 50% of the time, and so exceed first-grade suburban children in this primary response. For this one response, the first-grade slum children are between first- and third-grade suburban children. All the responses listed in Table 7 increase in suburban children between first- and third-grades except "fly", "table", and "crayon", so all responses except these are mature. For the responses that decrease, "fly" and "table", slum rates are lower than suburban rates, which is consistent with the notion that slum children are giving "more mature" responses. Slum children exceed suburban children at first-grade on all other responses except for "color" and "bird".

Negro slum children give some responses that are very different from white children, for instance, "chicken" to "bird", and "dance" to "music". Such differences may signify a different subcultural semantic structure and will be the topic of a future report. The Negro slum children do manifest many of the same mature responses as the white slum children ("triangle" in response to "square") and the Negro slum children show rates ahead of white suburban children for half of these noun responses.

The slum children include equal numbers of medium and low-IQ respondents whereas the suburban children include high (130) as well as low-IQ respondents. In average IQ the suburban children are about 10 points higher, a difference that would lead one to predict a higher rate for suburban children rather than the reverse. Effects of IQ are most pronounced at earlier grades.

Adverbs and Pronouns. Adverbs and pronouns each account for eight stimulus words[18] (compared to 24 stimulus words for nouns, adjectives, and verbs). Previous work shows that pronouns develop most rapidly between kindergarten and third-grade, while adverbs develop more slowly. Adverbs, like verbs, continue to develop up to fifth-grade, and probably thereafter. Table 8, comparing suburban and slum children of different IQ levels on responses to adverbs and pronouns, again documents the superiority of first-grade slum children and a falling behind at third-grade. First-grade white slum children exceed Negro slum children at both IQ levels. White slum children of medium IQ (100) closely resemble white suburban children of high IQ (130) for both adverbs and pronouns. The relative positions of various IQ and racial slum groups are fairly consistent from grade to grade for both adverbs and pronouns.

Suburban children are undoubtedly superior to slum children in paradigmatics to adverbs at fifth-grade. With this exception the findings altogether for pronouns and adverbs are reminiscent of findings for adjectives and verbs, respectively.

Kindergarten Children. Data for kindergarten children are much less satisfactory than data for older children, mainly because there is

Table 8
Percentages of Paradigmatic Responses
to
Adverbs and Pronouns

	Slum Children (1965-66)				Surburban Children (1961-63)			
	White		Negro		High SES		Low SES	
Grade	Med. IQ N=40	Low IQ N=40	Med. IQ N=40	Low IQ N=40	High IQ N=70	Med.IQ N=70	Med.IQ N=70	Low IQ N=70
				Adverbs				
1	26.8	15.0	15.9	12.2	30.9	15.5	16.4	8.8
3	40.6	39.6	35.0	30.3	63.0	50.2	49.1	42.7
5	59.7	51.8	60.3	49.4	70.0	65.2	59.8	53.6
				Pronouns				
1	45.6	32.2	37.5	30.9	43.0	30.2	27.0	19.1
3	69.7	64.0	70.0	60.9	64.6	67.3	64.8	64.6
5	79.0	72.2	71.5	80.3	72.0	63.6	57.5	67.7

no way to stratify the kindergarten children on IQ. No intelligence testing is done prior to first-grade in Baltimore City and in earlier work with suburban kindergarteners no IQ data were available either. One would expect IQ gradients in kindergarten children like those found in first-graders, i.e. very steep. This makes social class comparisons suspect, because of the high correlation between social class or father's occupation and intelligence, which practically guarantees that children of higher SES will have higher intelligence.

The magnitude of this correlation is borne out by our experience in trying to recruit children to fill the quotas of our design. There were too few children of low IQ in the high SES suburban schools and too few of high IQ in the low SES suburban schools to obtain suitable subsamples. ("Too few" is probably less than 2%.) Furthermore, considerable searching was required to locate medium IQ children in the inner city schools.

To neglect IQ in making comparisons across different kindergarten groups is an assumption completely unwarranted by all the evidence for older children.

One estimate of kindergarten slum children's IQ can be obtained by assuming the mean IQ in the kindergarten classes of a school is equal to the mean of the first-grade classes in the same school. The means are 90.5 for white children and 76.6 for Negro children. This permits comparison of Negro inner city kindergarten children and

inner city first-grade children of "low IQ", although first-grade children are still of a little higher IQ. There is no way to make valid comparisons between slum and suburban groups. The kindergarten slum children are not in advance of suburban kindergarteners,[19] but the mean IQ's of these groups probably differ by 50 points. Low IQ slum groups show some increase in paradigmatic responses to adjectives and pronouns, but changes are slight.

Frequency. Frequency of the stimulus words was determined from the Thorndike-Lorge[20] J count based on frequencies of words from a set of children's books appropriate for grades 3 to 8. This count has other drawbacks besides its age, the most serious from our point of view being that written rather than oral material is the basis for the count. The preliterate child, whose language occurs only via the spoken word, may be sampling a rather different universe of words from that sampled by the count. There is no doubt, for example, that pronouns are much more frequent in oral than in written language.[21] Thus frequencies estimated from the count may not be at all representative of the verbal environment of the child. One might expect, nevertheless, that the relative ranking of words within one category would be preserved, so that there is still a gain in precision from stratifying on frequency. That is, "table" should exceed "insect" in frequency in oral speech even though the actual number of occurrences of each of these words in the child's environment is unknown.

One would think that certain low frequency words on our list ("butterfly", "cocoon", etc.) occur less often in the verbal environments of slum children than of suburban children. This sharper frequency differential might be one cause of the lag displayed by the slum children at third-grade and fifth-grade. The data do not support this conjecture. Suburban children are superior in terms of high frequency words as well as generally superior at later grades.

Frequency does appear to be a more unitary variable for the slum children than the suburban children, though. Ranges between high and low frequency stimuli for slum children are larger, especially for verbs (see Table 9). An interaction with frequency was noted with verbs (Table 6), suggesting that prior to age 10 slum children may be exposed to the low frequency stimuli on our list less often than suburban children. An impoverished verbal environment may thus not delay acquisition of the very common verbal concepts by a preschooler but it may impede vocabulary extension along particular lines. It may delay appreciation of substitution properties of the less common words, although the sample of words we study is so small that this conclusion is highly tentative. There might be other "low frequency" words (say "roach") that are learned earlier by slum children than suburban children. (It turns out that slum children give the response "roach" 6 times as often as suburban children.) The frequency counts in the low ranges are probably least reliable and also least appropriate for inner city children. The data suggest lags in development for all frequencies with more

Table 9

Range in Percent Paradigmatic Responses between Stimuli of Different Frequency

Form Class of Stimulus	Suburban Baltimore Children (1961-63)								
	First Grade			Third Grade			Fifth Grade		
	High SES	Low SES		High SES	Low SES		High SES	Low SES	
	Med. IQ	Med. IQ	Low IQ	Med. IQ	Med. IQ	Low IQ	Med. IQ	Med. IQ	Low IQ
Adjectives	8.2	10.0	7.9	13.8	16.2	18.6	8.1	7.1	14.2
Verbs	2.9	4.6	3.1	22.2	20.9	24.3	18.4	15.9	20.9

	Urban (Slum) Baltimore Children (1965-66)											
	First Grade				Third Grade				Fifth Grade			
	White		Negro		White		Negro		White		Negro	
	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ	Med. IQ	Low IQ
Adjectives	9.7	12.5	6.2	5.4	19.6	21.6	16.6	19.5	15.2	12.1	11.6	15.4
Verbs	11.4	7.8	5.0	10.9	30.9	18.1	22.7	19.7	32.9	29.1	35.3	25.6

noticeable lags for low frequency words, but this may be entirely owing to the particular sample of low frequency words.

IV. DISCUSSION

Until now the empirical findings have been presented without much interpretation. It has been demonstrated that, generally speaking, disadvantaged white and Negro children living in the slums of Baltimore manifest developmental rates that are somewhat different from one another, and different from suburban groups previously studied. The slum groups are accelerated at first-grade but relatively retarded by third-grade compared to suburban children. Trends of development, IQ gradients, the hierarchical position of the various form classes, and asymptotic rates of responding are all consistent with previous work.[22]

It cannot be over-emphasized that, while paradigmatic response rates and other measures derived from word association data do parallel general linguistic development in elementary school children, samples of language we obtain are limited and certainly do not measure all kinds of linguistic competence, especially in the older children. We find practically no differences between subcultural groups at fifth-grade, for instance, but there could be important differences between groups at this age on other measures. Word association data are probably most valid over the early school years for studying relative rates of development.

As mentioned earlier, the present study was prompted in part by the observation of minimal differences between suburban blue collar and upper middle class groups. Study of the slum groups was undertaken in an effort to extend the socioeconomic dimension. The outcomes anticipated were: (1) again no difference between socioeconomic groups, which would suggest a minimal influence of cultural factors, especially those linked to economic position, or (2) a retardation in the slum groups because their cultural deprivation is greater than that of children from blue collar homes. Several different kinds of evidence, all derived from word association data (paradigmatic responses to adjectives, verbs, pronouns, and adverbs, as well as primary responses to nouns) suggest that first-grade white slum children are more advanced in linguistic development than suburban children of similar IQ. Furthermore, even though Negro slum children are not as advanced as white slum children, they are probably as mature linguistically as white suburban children of the same intelligence level. To find slum children superior is both unanticipated and exciting, because such an outcome raises a number of important questions about cultural deprivation, and also about the role of cultural factors in early linguistic development.

Before we can consider the implications of the findings, however, it is necessary to examine systematically three explanations for superiority of slum groups other than the explanation that they

are indeed advanced compared to suburban children: (1) measurement error; (2) school differences; (3) test bias.

1. Error in Measurement. The first explanation, and the one we are best equipped to comment upon, is that observed differences are spurious, stemming from measurement and other error. This explanation cannot be dismissed out of hand for several reasons. The data on suburban children were gathered over a 2-year period, 1961 to 1963, by different interviewers from those who gathered the slum data in 1965-66. The usual precautions were taken to keep procedures standard, but logically it is impossible to separate year-to-year effects from slum-suburban differences. Such effects could include true "secular" effects which have been extensively documented.[23]

There are four strong counter-arguments.

(a) Any systematic year-to-year secular trends would be expected to raise (or lower) measures across the board. Trends favoring observation of higher rates in 1965-66 than in 1961-63 should be consistent across grades. The differences favor slum children at first-grade, suburban children at third-grade, and are negligible by fifth-grade. They are thus not at all consistent across grades.[24]

(b) Year-to-year changes in scoring criteria and general unreliability are much less likely to afflict the adverb and pronoun patterns than the adjective or verb patterns. There are few pronouns in the language, and their definition is unambiguous. The number of high frequency adverbs is not large. There is little uncertainty in assigning form class of pronoun and adverb responses, therefore, and certainly much less equivocation than for nouns, adjectives, and especially verbs. The fact that similar patterns appear in the adverb and pronoun responses, especially the high rates for first-graders and the subsequent decline of these rates by third-grade, strengthens one's confidence that the observed differences are real.

(c) The data on high frequency responses to nouns are independent of paradigmatic response rates. Paradigmatic rates have weaknesses in terms of reliability because determining form class of responses is far from objective, and good inter-judge reliability in one year is no guarantee that standards have not shifted from one time period to the next. But high frequency responses to nouns are defined to be "mature" if they are empirically observed to increase in suburban children between first- and third-grade. (First-grade slum children are giving responses ("pepper" to "salt", "chair" to "table", etc.) that are more characteristic of third-grade than first-grade suburban children.) This measure is derived in such a way as to be immune to year-to-year changes in scoring judgments. Other evidence is the maturity of certain responses (even though its detailed study is a future project) that too confirms the difference favoring slum children. For instance, "round", "circle" and "triangle" comprise 25% of slum children's responses to "square" whereas only 7% of suburban children give these responses to "square" at first-grade and 22% do so at third-grade.

(d) A general lack of reliability should be reflected in inconsistencies between sexes, years, or IQ groups. No such inconsistencies are observed. When data are broken down in terms of subgroups within years, they are orderly and almost perfectly consistent.

2. School Differences. Earlier rural-urban differences[25] were found between children who were all enrolled in one large school system, Baltimore County. The comparison of suburban and slum children involves two different large school systems, Baltimore County and Baltimore City. Slum and suburban differences could therefore be attributed to differences in school quality. The contrast in school facilities is marked because not only are county schools generally superior in physical condition to city schools but the schools in the inner city attended by slum children are among the oldest in the City system (with one exception). First-grade slum children, however, who attend schools with generally poorer physical facilities, are more advanced.[26]

Kindergarten attendance may help slum children, but a very high proportion of the upper middle class children (whom the slum children excel) also attended kindergarten. Kindergarten attendance varies more between the middle and working class suburban groups (who show no difference) than between the middle class and slum groups. The third-graders' slowed pace of development could reflect poorer school conditions or poorer home conditions, or both. With large differences in cognitive functioning (perception, abstraction, time perspective, and so on) between "primitive" children who do not attend school and those who do,[27] it would hardly be surprising to find differences between American children whose school experiences differ as much as those of the inner city Negro child and the suburban upper middle class youngster.

3. Bias on IQ Tests. Instead of concluding that slum groups are linguistically advanced, one might conclude that slum children actually are more intelligent than their IQ tests suggest. If the "average IQ" slum groups in fact are above average in intelligence, what is labeled a subcultural difference might merely reflect an IQ testing bias. It does seem likely that the "true" IQ of slum children testing at 100 may be higher than 100, yet two pieces of evidence are inconsistent with the notion that this kind of test bias can entirely account for the findings. (a) A test bias should operate in approximately the same way on both Negro and white slum children. If the bias argument is correct, then Negro first-grade children should be as highly selected as white first-graders because they must meet the same numerical criteria. This would lead to a negligible difference between racial groups, or even a result showing Negroes to be higher. Negroes are consistently and noticeably below whites at both IQ levels, however. (b) It is hard to see why a test bias present at first-grade has evaporated by third-grade.[28] By third-grade the medium IQ slum children resemble the low IQ suburban children. Third-grade children of average tested IQ should also be advanced on measures (verbs and adverbs) still displaying strong IQ differentials at age 8 if the test bias argument holds. Such is clearly not the case; the slum children are behind on all measures by third-grade.

Of course, test bias cannot be ruled out entirely, but it is

hard to see how test bias could produce the present results involving patterns across cultural groups, or across ages, or how a bias as strong as that required at first-grade (say 30 IQ points) would disappear, or even change in direction.[29]

The several possibilities considered -- general lack of reliability, school-differences, and test bias -- do not seem to account for the relative advancement of first-grade slum children. Therefore we will take the position that first-grade slum children are advanced compared to suburban children and discuss the implications of this finding.

An Urbanization Gradient. Previous study of word associations of children from different subcultural or socioeconomic groups suggests that degree of urbanization (perhaps because of its relation to opportunities for verbal interaction) may strongly affect verbal development in young children. Briefly it was found that rural Maryland children were behind suburban Maryland children, and Amish children, residing in nearby rural areas of Pennsylvania, were behind rural Maryland children. All children were equated in terms of IQ and all except the Amish attended similar schools. There were negligible differences between blue collar and upper middle class suburban Maryland children, who dwelt in areas of similar urbanization.

The major differences among these groups is residential locus. It was concluded that verbal interaction is less likely for the rural children than the suburban children but equally likely for blue collar and higher status children. Subcultural customs of the Amish (few conversational exchanges between parents and children, lack of mass media such as radio and TV, marked separation from neighbors, etc.) probably discourage interaction even further than would rural living by itself. This was suggested as a reason for the rural-Maryland Amish difference. Subsequently data for rural German groups shows them to lag in development compared to American groups.[30] The factor of residential locus, again degree of urbanization, seems more important than language difference per se between the German and American children, because some data for Parisian children[31] show urban French children to be advanced, if anything, compared to American children. It seems that urbanization rather than national identity is the crucial factor.

Subsequently, some very comprehensive and imaginative work on general cognitive development in a cross-cultural context has been reported by Bruner and his co-workers.[32] Rural-urban differences are reported over and over, even when an ethnic group (like Eskimos) do not show differences from the dominant group if they have migrated to the city. The work on schooled and unschooled children shows a difference like the rural-urban differences, only more pronounced.

Conditions of life in the urban American slum may favor rapid development of basic language skills, like learning properties of

common words. Homes are crowded, with many children sharing one bed or bedroom, and time outside the home is spent on the street or playground. There are many other children as potential targets for speech. The wide prevalence of television sets, in spite of low income, cannot be doubted. In a survey of very poor New York children, with 50% of Negro families on public assistance, all homes had radio and TV,[33] and 75% of the children spent at least two hours a day watching TV (a sizeable proportion spent as many as five hours). Only about half these children regularly ate at least one meal a day with a parent, and about half had 5 or more siblings.[34]

Bailyn[35] documents the higher exposure to TV of lower class compared to middle class children, and reports pictorial and non-pictorial media to be mutually exclusive in terms of exposure. This may come down to unrestricted television for slum preschoolers vs. limited exposure for suburban preschoolers. The slum child's verbal environment may be considerably enriched by television and his unrestricted access to this medium may be the most important cause of the observed acceleration.[36]

Lower class women are more often employed[37] than suburban women, forcing the young slum child to acquire sophisticated verbal skills because his needs must be met by persons other than his mother. His needs may not be anticipated and he may need to interact verbally with a far greater number of different persons because several persons may serve as mother surrogates. Although there is little evidence to cite, and certainly our data shed no light on the point, the pressures upon young slum children to become verbally proficient may be much more powerful than those impinging on the suburban child. The slum child often needs to find his own way around, and the lack of close supervision must force him to develop skill in verbal communication. Anecdotes are often told of 4-to-5-year-old slum children who are very articulate when stopped on the street and asked for directions by strangers.

There is increasing feeling among psycholinguists, who have so far concentrated their effort mainly over the period of early childhood up to about age 4, that language acquisition proceeds in line with some kind of internal monitoring.[38] To state the idea in an oversimplified way, the child is disposed to accept certain word orders and to ignore the numerous possibilities that do not occur. He seems genetically tuned to decode the sequences he hears. For simple verbal concepts then, particularly those involving very common words like those we have studied, a certain amount of verbal interaction may be required to support language acquisition activities. In some ways the very young slum child's environment may be more favorable for this than a suburban milieu.

There is some research specifically relevant to the language environment of preschoolers from different social classes in work by Hess and his associates.[39] They have observed the detailed verbal interaction occurring between Negro mothers and children

from four social classes (college-educated to welfare) as mothers attempt to teach their children simple tasks involving sorting or copying. By and large, upper status mothers use more speech, and more elaborate speech with clauses expressing alternatives and contingencies, whereas lower class mothers use simple short sentences and gestures. Use of abstract words was directly related to social class level. The lower class mothers are more apt to see the child's action as part of a role prescription and so the range of choices open to the child and the time required to make a choice are both narrowed. This prevents reflection and weighing of various possible outcomes and also prevents analyzing a stimulus into its component parts. Mothers differed relatively little in affective elements of interaction with their children. It was in the verbal and cognitive environments they represented to their children that gross differences appeared.

Such class-specific modes of verbal interaction suggest mechanisms whereby the course of development observed by us could evolve. Simple short sentences, much redundancy, and lack of verbal elaboration could all aid acquisition of early verbal skills at the expense of more sophisticated skills. The first-grade middle class child could be temporarily at a disadvantage, his exposure to more complicated models not being optimum for acquisition of the very simple concepts embodied in our stimulus list. There is some suggestion in Table 2 that this is true, for the first-grade slum children, in spite of their superior position in most ways, are <u>not</u> superior on low frequency verbs.[40] At third-grade, where they are generally inferior, the inferiority is much more noticeable for low frequency verbs (20%) than for high frequency verbs (7%). In addition, at third-grade adverbs are noticeably depressed, especially for Negro children. Pronouns, by contrast, are not depressed at third-grade, and seemed to be the most highly developed of any form class at first-grade. Pronouns are by far the most frequent class in spoken conversation and their relative frequency must be higher for simple short interchanges than for complex utterances. Adverbs, on the other hand, express much more subtle meanings.

The findings for slum children fit in with previous speculation about the role of verbal interaction. The Negro-white difference needs more detailed study. It is not clear what subcultural differences in verbal interaction could produce the difference in paradigmatic rates. It may be a matter of dialect cleavage that operates when children are being interviewed (especially the youngest children). The responses to "since" indicate this is heard as "sense" or "cents". Such ambiguity might produce more interference for Negro than for white children. The dialect cleavage between middle class Negro interviewers and lower class Negro children may be greater than that between these same interviewers and lower class white children. The speech of Negro college girls resembles that of the white community more than that of the Negro slum.

Another kind of dialect cleavage may operate when the Negro preschooler attends to verbal models presented via television. He

is almost always hearing utterances of a person outside his own cultural group, and this could make TV a less effective tutor for him.

Racial Differences. Racial differences fall into two categories, those arising from interaction with interviewers of different races and those differentially characteristic of Negro and white children. These will be discussed in turn. Differences in rate of paradigmatic responding favor white over Negro slum children at the first-grade, but rates are equivalent by fifth-grade. (As mentioned previously, fine-grain differences have not yet been completely analyzed and will form the topic of future report.)

The racial difference, with white slum children ahead of Negro, may be a rural-urban gradient in a different guise. Census data show highest rates of in-migration in the two tracts with the highest proportions of Negroes (47% and 88%). For all groups, in-migration was predominantly from the South, but whereas almost 10% of Negroes had lived outside the standard metropolitan area five years previously, the highest rate noted in predominantly white tracts is 4%. Thus many more Negroes than whites have migrated recently, although most of the in-migrants of both races come from the South.

Both Negro and white interviewers were used, since previous work had uncovered large interviewer effects, apparently related to the social pressure generated.[41] Because race is such an important and obvious personal characteristic, it was thought it might generate considerable social pressure, especially when race-of-child and race-of-interviewer differed.

The data suggest that racial mixing is potent, especially for low IQ students, and especially at first- and fifth-grades. At third-grade mixing seems to depress performance. The effect may be a little stronger for Negro children and white interviewers than the reverse, but it generally appears stronger than effects linked to differences in race between children. For instance, for low IQ fifth-grade children a 6-point difference favors white children when race-of-interviewer and race-of-child are matched. When race-of-child and race-of-interviewer are mixed, both rates increase and Negro children slightly exceed white children. Rhyming responses and immature responses to common nouns are given four times as often by first-grade Negro children to Negro interviewers as to white interviewers .

These data on mixing have some rather direct relevance to educational practice. Much evidence exists that Negro teachers generally are less well educated and poorer than whites on measures relating to family background, travel, number of books owned, and so forth. Coleman's[42] survey of educational opportunity, the most recent and also the most comprehensive assessment of Negro teachers and contextual effects, hints that pupil achievement increases when minority children are placed in white schools, but that more privileged children do not seem to regress when placed in less favorable

schools. This would suggest that an effective deployment of resources might be to use the most highly qualified teachers with the most deprived children, and to use Negro teachers with more privileged children (who are apt to be white). (There are clearly practical and geographical questions that we choose to ignore.) To the extent that interviewers can be regarded as teacher surrogates, our data support a similar course of action but for different reasons. We find the highest rates of paradigmatic responding when race-of-interviewer and race-of-child are not matched. Not only do Negro children display more mature behavior with a white interviewer but white children give more mature responses to a Negro interviewer. There is a considerable jump from the interviewer to the classroom, and also from eliciting associations to teaching language skills, but responses must be evoked by some means before they can be reinforced, and even evoking strengthens responses. Our data indicate that cross-racial groups are more efficient for evocation.

A related matter, but one that we have no direct evidence on, is the reducing of dialect cleavage by racial crossing of teachers and students. Minority dialects may have more far-reaching and hampering properties than has heretofore been thought, not only for communication but for problem-solving.[43] It has been suggested that minority-group children benefit from majority-group schools partly because they absorb the values and aspirations of their more highly privileged classmates. Another reason for this benefit could be that they begin to absorb the majority dialect from their white instructors.

Consistency With Other Data. It must be pointed out that our results are not as unexpected or as isolated as one might first think. For instance, Deutsch and Cherry-Peisach[44] report that lower class and Negro children, when tested on comprehension of paragraphs of children's speech, did as well as middle class children and white children. John,[45] using form class matching in a word association test as an index of maturity for first- and fifth-grade Negro children from lower-lower (slum), upper-lower, and middle class families, finds no class differences at first-grade or fifth-grade, although middle class children have significantly larger vocabularies by fifth-grade. IQ differences of 8 to 11 points favor middle class over slum children in her study.

Linguistic differences associated with social class often fade away when IQ is held constant. This conclusion was reached from a study of speech quality in lower class and middle class children, where variety of output in a timed speech sample showed a difference between lower-class and middle class only when children also differed in IQ.[46] Also socioeconomic and class differences as reported on some parts of the Illinois test are very small and probably attributable to IQ bias, according to our re-analysis of some data for first-grade children obtained in Schenectady, New York. [47]

In another way our results are curiously consistent with earlier

work. We find a retardation at third-grade which most affects those form classes last to develop verbs and adverbs. Also at fifth-grade there is a very wide range in response to verbs over the three frequency levels. Some work[48] with lower-class Negro children age 4 showed that action words ("digging", "typing", "pouring", etc.) were particularly difficult, perhaps because the lower-class child must rely on the co-occurrence of label and referent rather than active dialogue involving feedback.

Actually there is little research directed at class differences in children's language behavior and general cognitive style that cannot be explained by the association between socioeconomic status and intellectual level. Although recent research points up the importance of environmental influences on the IQ, a diffuse measure such as IQ does not lend itself either to fruitful hypothesis-shaping or to fruitful practical recommendations. In other words, little is done either to advance theory or to cope with current social problems after the initial epidemiologic-type studies of IQ have once been done. These normative studies neglect to pose two important questions: whether there are differences in more specific areas of cognitive functioning, and how such deficits (or advantages) are related to specific features of the environment.

Our results seem to indicate that slum children are not at all retarded in a very basic and low level kind of verbal functioning, and in fact are probably advanced. To score at an average level on an IQ test while being advanced in one area (language) covered by the test might suggest that performance in other areas (number concepts, space perception) is below par. We were able to check a little on this conjecture by comparing mental ages in the various subtests of the IQ test used to select first-graders. The verbal subtest was not consistently the highest nor were there large differences in mental age between subtests.[49] The implication is that smaller cognitive domains need to be investigated. Failure to identify specific areas and types of deficit may be one reason why programs for culturally disadvantaged children have so far seemed to have so little impact. Also more specific measures would definitely aid the process of formulating causal sequences. The thrust of research needs to be toward considering social class as a discrete set of experiences and cognitive activities as discrete processes. Some of these notions have been taken into account in an academically-oriented preschool that has received wide attention.[50] Language is divided into aspects which serve social communication (lexical terms) and those which serve logical thinking (manipulation of statement patterns according to rules of grammar and syntax). The curriculum emphasizes mastery of the formal aspects of language rather than building up the child's repertoire of concrete words. This distinction is especially interesting in view of our finding that first-grade slum children are <u>not</u> deficient in form class mastery, and Hess's demonstration that slum mothers use speech that is impoverished in terms of formal structure.

A specific cognitive deficit that can be class-related is a low level of auditory discrimination. Children who live in very noisy environments may not develop the requisite auditory discrimination abilities to learn to read well.[51] Some fragmentary data of ours point to poor auditory discrimination -- "since" is often responded to as "sense", and "deceive", as "receive" by slum children, for example.

This paper deals almost entirely with rates of form class development and compares rates for different groups. The data, which consist of more than 50,000 responses, can also be studied to yield information about associative hierarchies. That is, a list of responses to a word can be taken to express the meaning of the word, and then meanings can be compared between subcultural groups or age groups. Two groups who develop at a similar pace might have different response hierarchies. Varying semantic systems could be very important in language and communication, not only for children but for older people. It has been repeatedly shown, for instance, that associative strength (measured by free association response frequency) is an important determiner of recognition time or learning difficulty. If reading primers are constructed on the basis of middle class response strengths and these strengths are inappropriate for lower class semantic systems, then a further burden is given the lower class child. Although this middle-class orientation is often pointed to, very little direct effort has been aimed at defining precisely what a lower-class orientation consists of.[52] On the other hand, as Coleman says,[53] the lower-class child will eventually be required to deal with the larger society and to a great extent the rewards he captures and his entire success in life will depend on his aptitude in middle-class verbal interaction. If, as our data mildly suggest, it is in the low frequency verbal concepts that slum children are most deficient and in the verb-adverb segments of language, specific remedial efforts might be concentrated in these areas, and directed toward older children in addition to the ones currently being attended to most in social action programs.

V. SUMMARY

Word associations of Negro and white children living in the slums of Baltimore were collected in 1965-66. Children are comparable in grade (first, third, fifth) and IQ (medium, 95-105; low, 85 or less) to suburban children studied in 1961-63. First grade white slum children appear to be more advanced than suburban children, of the same age, but by third grade the slum children lag noticeably. In general white slum children are somewhat in advance of Negro slum children, but this may reflect a rural-urban differential. The relative advancement of inner city first graders may be a consequence both of lower class speech structure and high exposure to television.

Footnotes

[3]William Labov, The Social Stratification of English in New York City, Washington, D. C.: Center for Applied Linguistics, 1966.

[4]Also there are several atlases, previously compiled that aid study of responses. One atlas for children at kindergarten, first-third- fifth-grades is Doris R. Entwisle, Word Associations of Young Children, Baltimore: The Johns Hopkins Press, 1966. Another for fourth- fifth- and sixth-grade children is David S. Palermo and James J. Jenkins, Word Association Norms, Minneapolis: University of Minnesota Press, 1964. Atlases for other groups are listed in bibliographies of these books.

[5]Entwisle, 1966, op. cit. See also Doris R. Entwisle "Developmental Sociolinguistics: A Comparative Study in Four Subcultural Settings", Scoiometry, 29 (March 1966), pp.67-84. Hereafter these are distinguished as Entwisle 1966a and 1966b.

[6]There are few concrete data to support this identity, the scant work available being devoted mainly to young adults. An exception is Basil Bernstein's study of lower and middle class English children, "Linguistic Codes, Hesitation Phenomena, and Intelligence", Language and Speech, 5 (January-March 1962), pp. 31-46.

[7]James J. McCarthy and Samuel A. Kirk, "Illinois Test of Psycholinguistic Abilities" (Experimental Edition), Urbana, Illinois: University of Illinois, 1961.

[8]Entwisle, op. cit., 1966a

[9]Ibid.

[10]Edward L. Thorndike and Irving Lorge, The Teacher's Word Book of 30,000 Words, New York: Bureau of Publications, Teachers College, Columbia University, 1944.

[11]A complete description of the stimulus list and its properties, as well as the method of determining form class of stimulus words and response words, may be found in Entwisle, 1966a, op. cit.

[12]Roger Brown and Jean Berko, "Word Association and the Acquisition of Grammar", Child Development, 31 (March 1960), pp. 1-14. Susan Ervin, "Changes with Age in the Verbal Determinants of Word Association", American Journal of Psychology, 74 (September 1961), pp. 361-72. Entwisle, 1966a, op. cit. Also for elementary school children, restricted and free associations are more highly related than for older persons (Klaus F. Riegel, Ruth M. Riegel, Helen E. Smith, and Carole J. Quarterman, "An Analysis of Differences in Word Meaning and Semantic Structure between Four Educational Levels", Department of Psychology, University of Michigan, November, 1964). In grade school children there is close to 80 per cent overlap be-

tween free associations and associations given to instructions to produce superordinates, coordinates, contrasts and so on. Thus free associations are highly related to comprehension of the word and ability to place words in appropriate contexts. Another kind of validation is that normal children more often match form class than retarded children of the same age. See Loren S. Barritt, Melvyn L. Semmel, and Paul D. Weener, "A Comparison of the Psycholinguistic Functioning of 'Educationally Deprived' and Educationally Advantaged Children", presented at meetings of American Educational Research Association, Chicago, Illinois, February, 1965.

[13]In cases where subsamples were not equal to 20 (medium IQ first-grade Negro children by white interviewers, medium IQ first- and third-grade white children by Negro interviewers, low IQ third-grade Negro children by white interviewers) the response rate was adjusted proportionately.

[14]These findings are consistent with earlier work. See for example Entwisle 1966a, 1966b, op cit. Also Doris R. Entwisle and Daniel F. Forsyth "Word Associations of Children: Effect of Method of Administration", Psychological Reports, 13 (July 1963), pp. 291-99; Doris R. Entwisle, Daniel F. Forsyth, and Rolf Muuss, "The Syntactic Paradigmatic Shift in Children's Word Associations", Journal Verbal Learning Verbal Behavior, 3 (February, 1964), pp. 19-29.

[15]Entwisle, 1966a, op. cit.

[16]See Entwisle, 1966a, op. cit. Also see Palermo and Jenkins, op. cit.

[17]This can be interpreted to mean that the effects of race and grade are the same for both IQ levels. For adjectives, low IQ children were more sensitive to interviewer effects than medium IQ children.

[18]Response percentages for these form classes are based on 320 responses for the slum groups and 560 responses for the suburban groups.

[19]Kindergarten attendance of individual suburban children previously studied is now being investigated. This would provide a retrospective estimate of IQ's of suburban kindergarteners to aid comparisons.

[20]Thorndike and Lorge, op. cit.

[21]See N. R. French, C. W. Carter, and E.W. Koenig "The Words and Sounds of Telephone Conversations", Bell System Technical Journal, 9 (January, 1930), pp. 290-324.

[22]Entwisle, 1966a, 1966b, op. cit.

[23]James J. Jenkins and Wallace A. Russell, "Systematic Changes in Word Association Norms, 1910-1952", Journal of Abnormal and Social Psychology, 60 (May 1960), pp. 293-304; Entwisle, Forsyth and Muuss, op. cit.; Robert H. Koff, "Systematic Change in Children's Word Association Norms, 1916-63", Child Development, 36 (March 1965), pp. 299-305; James J. Jenkins and David S. Palermo, "Further Data on Changes in Word Association Norms", Journal of Personality and Social Psychology, 1 (April 1965), pp. 303-309; Davis S. Palermo and James J. Jenkins, "Changes in the Word Associations of Fourth- and Fifth-Grade Children from 1916 to 1961", Journal of Verbal Learning and Verbal Behavior, 4 (June 1965), pp. 180-187; Entwisle, 1966b, op. cit.

[24]This kind of reasoning also applies to explanations involving coaching by teachers. Coaching, although presumed to be unlikely, particularly because there are no "right answers", would be expected to operate to produce a uniform increase, or one favoring older rather than younger children.

[25]Entwisle, 1966a, 1966b, op. cit.

[26]Because data are obtained very early in the pupil's school career, they may be very little affected by school quality. Thus poor schools may inhibit optimum development, but the first-graders have not yet had sufficient exposure for the effect to be felt.

[27]See citations by Jerome S. Bruner, A Theory of Instruction, Cambridge: Harvard University Press, 1966, p.152, for South African, Liberian, Senegalese, Mexican, and Eskimo children. Also see Jacqueline Goodnow, "A test of milieu differences with some Piaget's tasks", Psychological Monographs, 76 (1962), Whole No. 555.

[28]At third-grade verbs and adverbs, still considerably below asymptotic levels, are sensitive indicators of development. Sizeable IQ differentials associated with verbs and adverbs are present at both third- and fifth-grades for both the suburban children and the slum children.

[29]Clearly a regression effect would work in a direction opposite to the observed results.

[30]Doris R. Entwisle and Rolf Muuss, "Word Associations of Rural German Children", Journal of Verbal Learning and Verbal Behavior, in press.

[31]Mark R. Rosenzweig and Ruth Menahem, "Age, Sexe et Niveau d'Instruction comme Facteurs Déterminants dans les Associations de Mots", L'Année Psychologique, 62 (1962), pp. 45-61.

[32]Jerome Bruner, Rose Olver, and Patricia Greenfield, Studies in Cognitive Growth, New York: John Wiley, 1966.

[33]Suzanne Keller, "The Social World of the Urban Slum Child", American Journal of Orthopsychiatry, 33 (October, 1963), pp. 823-831.

[34]A recent survey (J.D. Kettele, paper presented at 30th National Meeting, Operations Research Society of America, October 18, 1966) shows 47% of Baltimore families have at least four children. This survey covers the whole city, and not just the very poor areas we sampled in.

[35]Lotte Bailyn, "Mass Media and Children: A Study of Exposure Habits and Cognitive Effects", Psychological Monographs, 73 (Whole No. 471, 1959), pp. 1-48.

[36]A more detailed discussion of television vis-à-vis subcultural differences in linguistic development is contained in Doris R. Entwisle "Subcultural Differences in Children's Language Development" to appear in the International Journal of Psychology.

[37]In Census tracts where slum shcools are located up to one-third of the "married women with husband present and children under 6" are working. Since in some of these same tracts less than 60 per cent of the children live with both parents, it seems very likely that working mothers are considerably more numerous than one-third. Keller's survey found about 50 per cent of Negro children to be supported solely by the father.

[38]See, for example, George A. Miller, "The Psycholinguists: On the New Scientists of Language", Encounter, 23 (July, 1964), pp. 29-37. Eric H. Lenneberg, New Directions in the Study of Language, Cambridge: MIT Press, 1964. David McNeill, "Development Psycholinguistics", mimeographed, Center for Cognitive Studies, Harvard University, 1966.

[39]See Robert D. Hess and Virginia C. Shipman, "Early Experience and Socialization of Cognitive Modes in Children", Child Development, 36 (December, 1965), pp. 869-886.

[40]This is consistent also with observations of Cazden (Courtney B. Cazden, "Environmental Assistance to the Child's Acquisition of Grammar", unpublished Ph.D. dissertation, Harvard University, 1965), that sheer exposure to speech at an early age is perhaps just as beneficial as expansions by the parent on incomplete utterances of the child.

[41]Entwisle and Forsyth, op. cit., Entwisle, 1966a, op. cit.

[42]James S. Coleman, Equality of Educational Opportunity, Wahsington, D. C.: Office of Education, 1966.

[43]Kenneth Stafford, "Problem Solving as a function of Language", Final Report, Cooperative Research Project 2944, Office of Education (August, 1966).

[44]Martin Deutsch and Estelle Cherry-Peisach, "A Study of Language Patterns", The Instructor (March, 1966). See also, Estelle Cherry-Peisach, "Children's Comprehension of Teacher and Peer Speech", Child Development, 30 (June, 1965), pp. 467-480.

[45]Vera P. John, "The Intellectual Development of Slum Children: Some Preliminary Findings", American Journal of Orthopsychiatry, 33 (October, 1963), pp. 813-822

[46]Martin Deutsch, Alma Malirer, Bert Brown, and Estelle Cherry, "Communication of Information in the Elementary School Classroom", Cooperative Research Project No. 908, Office of Education, 1964.

[47]Vito M. Gioia, "A Comparison of Language Abilities in First-Grade Children from Differing Socioeconomic Groups", unpublished Ph.D. dissertation, St. John's University (New York, 1965).

[48]Vera P. John and Leo S. Goldstein, "The Social Context of Language Acquisition", The Merrill-Palmer Quarterly, 10 (July, 1964), pp. 265-275.

[49]Lesser finds ethnic differences in space and verbal abilities but feels that social class results mainly in a raising or lowering across the board. (Gerald S. Lesser, Gordon Fifer and Donald H. Clark, "Mental Abilities of Children in Different Social and Cultural Groups", Monographs of the Society for Research in Child Development, 30 (No. 4, 1965), Serial No. 102.)

[50]Carl Bereiter, Siegfried Engelman, Jean Osborn, and Philip Reidford, "An Academically Oriented Pre-School for Culturally Deprived Children", in Pre-School Education Today, Fred Hechinger (Ed.), New York: Doubleday and Co., Inc., 1966.

[51]See Cynthia P. Deutsch, "Auditory Discrimination and Learning: Social Factors", The Merrill-Palmer Quarterly, 10 (July, 1964).

[52]An exception is Lawton's Study of working class and upper class English boys which documents the existence of two linguistic codes and describes them in some detail. See Denis Lawton, "Social Class Language Differences in Group Discussion", Language and Speech 7 (July-September, 1964), pp. 183-204.

[53]Coleman, op. cit., p. 218