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A Developmental Investigation of Standard and Nonstandard English among Black and White Children[1]

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Abstract. Data are reported and interpreted involving language imitation, comprehension, and free production of two English dialects. The major subgroupings of 360 subjects involved two races (black and white), sex, socioeconomic level (low SES and middle SES), and age (5, 8, and 10 years). Rate of improvement measures indicated that blacks improve at the same rate as whites in responding to standard English sentences. According to correlational results, the two dialect systems function behaviorally as separate cognitive systems. In a communication task, blacks and whites produce and comprehend messages of about the same quality.

Key Words
Dialect
Race
Socioeconomic level
Communication
Comprehension
Free production
Imitation

Poor classroom performance as well as low scores on standardized tests among poor and many Black-American children continue to plague the American public school. To be sure, various programmatic procedures, and attempts to implement relevant research findings, have been successful in alleviating many of these problems. Unfortunately, many of these programs and their research designs have been influenced by either a social pathology or a deficit model. In the last few years, we have witnessed a shift away from these approaches to a newer one that focuses on differences instead of deficits and pathologies. This can be observed rather forthrightly in research on Black-American dialect, i.e. nonstandard English. Despite some politically motivated reluctance to acknowledge the existence of a Black dialect [LABOV, 1969, p. 33], there is general agreement that many inner-city children use consistent forms of nonstandard English. We believe that focusing on language differences as one source of poor performance will help to clarify some steps in improving the education of black children.

[1] This paper represents a condensed version of one presented at the NIMH Invitational Conference on Cognition and Language Development of the Black Child, St. Louis, Mo., January 14–16, 1973. The research reported herein was funded by a grant to Princeton University for WILLIAM S. HALL by the Carnegie Corporation of New York. This paper was prepared in part while author WILLIAM S. HALL was a Visiting Scholar, Department of Psychology, Stanford University, Stanford, Calif., 1972–1973, and author ROY O. FREEDLE was a Visiting Scholar at the Institute of Human Learning, University of California at Berkeley, Berkeley, Calif., 1972.

Our concern in the present paper is with untangling some of the cognitive operations involved in these language differences. Until these operations are fully understood, we contend that the resolution of practical problems, for example education, are both premature and potentially destructive. It is not our purpose here to specify the details of these applications, but rather to suggest what some of these operations might be. We use cognitive operations here in an information-processing sense [e.g., LINDSAY and NORMAN, 1972; TRABASSO, 1972]. Our starting point is that many of these operations are common to the various dialect speakers. However, they may differ in the degree to which the various steps are employed within a particular dialect. Thus, the differences in dialects and underlying cognitive operations we contend are primarily of degree rather than kind.

Most of the research on variations in American English dialects falls broadly into two areas: (1) research concerned with structural differences, and (2) research treating communication possibilities.

Regarding structural differences, the research has primarily revolved around descriptions of how the language of children from low economic groups differs from that of those from middle income groups. Specifically, the concerns in this regard have been two: (1) a *general linguistic description* of language differences across socioeconomic status lines at various stages of development and (2) an attempt to describe the *function of language* in different dialect-speaking communities.

General linguistic description. The structural differences observed have been phonological, semantic, and syntactical. For example, LABOV and ROBINS [1965] noted the following phonological differences in the low income dialects of New York City: (1) reduction of [r] intervocalically before a consonant and finally; (2) reduction of [L] before a consonant, finally and intervocalically; (3) reduction of final consonant; (4) substitution of initial [ð] by [d] (as in 'dis' for 'this'); (5) substitution of initial [θ] by [f] (as in 'bof' for 'both'); and (6) substitution of final [ð] by [v] (as in 'wiv' for

'with'). Moreover, these researchers found that phonological context plays a role in the simplification of final clusters; for example, clusters containing [t] and [d] are simplified before a word beginning with a consonant but may be preserved, depending on the vowel, before a word beginning with a vowel. More recent reviews of phonological differences [BARATZ, 1969a, b] support these earlier observations of LABOV and ROBINS [1965].

Research on syntactical differences has further focused on differences in the speech production of low income children when compared with that of children from middle income backgrounds [BARATZ and POVICH, 1967; STEWARD, 1967].

All of the foregoing research emphasizes the fact that nonstandard dialect is different, but not deficient. This is so because many grammatical relationship can be expressed with equal facility in each of them. Some examples adapted from BARATZ [1969a] will both serve to illustrate this point as well as specify some of the forms which will be reported in the studies below.

While table I may suggest that the syntactic differences are invariably used by speakers of these respective dialects, some recent work by MITCHELL [1969] cautions us that their occurrence is somewhat contingent upon particular linguistic environments at a level larger than the phonological. As one example of this, MITCHELL mentions that *copula delection* sometimes occurs for *predicate adjective usage,* as in, 'He all right'. However, it may not always occur in this environment, for example, 'She is stubborn'. MITCHELL has also listed noun phrase, locative, negation, and two other environments in which the copula may or may not be preserved. The probabilistic aspects of the various environments in which the nonstandard dialect can be observed is not necessarily a problem for the linguist [SUPPES, 1971]. However, it is one for the psychologist. We suggest that one way to study this is through information-processing procedures which build into the underlying cognitive steps probabilistic assumptions. This issue, too, will be touched upon in the studies to be reported below.

Other research which has studied dialect differences has been concerned with word associations [ENTWISLE, 1966], use of the cloze procedure [PEISACH, 1965], word identification [EISENBERG *et al.,* 1968] and sentence repetition [BARATZ, 1969a] and comprehension as assessed through picture identification [OSSER *et al.,* 1969]. The last two studies are of special concern to us here. The results these investigations are not uniform. OSSER *et al.* found that low income children repeated sentences with a significantly greater mean number of total errors as well as critical errors than did the white middle income children, even when errors due to known dialect differences were

eliminated. Moreover, they incorrectly identified the appropriate picture in the comprehension task with significantly greater frequency. BARATZ [1969a], on the other hand, using a sentence repetition task, found racial differences in favor of one's own dialect. White children did significantly better with certain standard English forms, whereas black children did significantly better with certain forms restricted to their own dialect.

The function of language. Some investigators have focused on the function of language. While it is possible to study the function of language via age, race, and SES, most of the literature to date has selected SES as the primary independent variable. Especially prominent in this regard is the work of BERNSTEIN [1964]. BERNSTEIN compared the language of low and middle income British speakers. He conceptualized the language of these groups as reflecting two codes, a restricted or an elaborated one.

LEWIS and FREEDLE [1972] studied the developmental origin of language functioning for infants age 3 months to 2 years with SES and sex as the primary variables. Their findings suggest that the mother's influence on the infant may be a prime determinant in yielding significant SES differences at these early ages, although the reciprocal effect of the infant's behavior eliciting particular maternal responses by situations was also noted. WILLIAMS and NAREMORE [1969] elicited sentences in home interviews from 40 fifth- and sixth-grade children from low and middle to high income backgrounds. Both black and white children were studied. They found that socioeconomic status and the topic of the discussion were more significant factors in the proportion of usage of certain elaborated structures than race. Low income black children used these structures substantially less frequently than low income white children.

An additional group of studies have employed age as a primary variable. KRAUSS and GLUCKSBERG [1967] investigated the ability of kindergarten, first-, third-, and fifth-grade children to communicate information to a peer. They found that initial performance did not differ for the four groups. As the number of trials increased, the third- and fifth-grade children made fewer errors, whereas the kindergarten and first-grade children showed virtually no improvement over trials. These results were interpreted as indicating that it was the speaker's failures in encoding the messages which led to errors rather than the listener's failures in decoding the messages. Moreover, these researchers suggest that encoder ability increases over the age range studied and that decoder ability increases from fifth grade to adulthood. HEIDER *et al.* [1968] examined the ability of low income white and

black children and middle income white children to encode the properties of the abstract figures used in the KRAUSS and GLUCKSBERG [1967] research. They found differences in the encodings of middle income and low income children. The middle income children were much more fluent and gave many more images per picture.

All of the above studies have investigated the function of language by employing at least one and at the most two of the following variables: SES, age, and race. One of the studies to be reported below has examined all three variables.

Two main studies will be reported here. In both, SES, race, age, and sex were major variables. The first of these focuses primarily on whether or not blacks and whites do better within one dialect or the other (standard or nonstandard English). The second of these studies focuses on measures of production and comprehension in language functioning as revealed by a communication task.

Experiment I

Materials and Procedure

A total of 360 subjects were used in this experiment, 180 males and an equal number of females. One half of the subjects were from the lower socioeconomic group and the other half were from the middle socioeconomic group as determined by the HOLLINGSHEAD scale [HOLLINGSHEAD and REDLICH, 1958]. The subjects were equally distributed in groups of 15 with regard to the aforementioned classifications, as well as across three age categories (5, 8, and 10 years). Each subject was required to listen to stimulus sentences, one half of them given in standard dialect and the other half in nonstandard dialect. These two types of sentences were randomly distributed throughout the task. The responses of each subject were tape-recorded and scored for the presence of the following structures [BARATZ, 1969a]: (1) third person singular; (2) presence of copula; (3) negation; (4) If + Subject + Verb; (5) past markers; (6) possessive marker; (7) plural; (8) nonaddition of third person -s; (9) zero copula; (10) double negation and 'ain't'; (11) zero If + Verb + Subject; (12) zero past morpheme; (13) zero possessive morpheme; and (14) use of 'be'. Examples of these types can be found in the first eight entries of table I.

Results

Regression analyses using all 360 subjects allow us to evaluate the relative contribution of the four main variables in the sentence-imitation task. The

Table I. Some examples of syntactic differences between standard and nonstandard English[1]

Variable	Standard English	Black nonstandard English
Linking verb (copula)	He *is* going.	He ..... goin'.
Possessive marker	John*'s* cousin.	John.. cousin.
Plural marker	I have five cent*s*.	I got five cent..
3rd person singular (verb agreement)	He live*s* in New York.	He live.. in New York.
Past marker	Yesterday he walk*ed* home.	Yesterday he walk..... home.
'If' construction	I asked *if he did it.*	I ask *did he do it.*
Negation	I *don't* have *any.*	I *don't* got *none.*
Use of 'be'	statement: He is here *all the time.*	statement: He *be* here.
Subject expression	John moved.	John, *he* move.
Verb form	I *drank* the milk.	I *drunk* the milk.
Future form	I *will go* home.	I'*ma go* home.
Indefinite article	I want *an* apple.	I want *a* apple.
Pronoun form	*We* have to do it.	*Us* got to do it.
Pronoun expressing possession	*His* book.	*He* book.
Preposition	He is over *at* John's house. He teaches *at* Francis Pool.	He over *to* John house. He teach..... Francis Pool.
Use of 'do'	contradiction: No, he *isn't.*	contradiction: No, he *don't.*

[1] This table is adapted from BARATZ [1969a, pp. 99–100].

14 analyses were run, with each of 14 grammatical forms used as the dependent variable, while race, SES, sex, and age were used as predictor variables. The results across the 14 forms clearly demonstrates that race and age are the most powerful variables influencing the results. SES was moderately powerful. Sex was the least consistently powerful of all the predictors. For the sake of brevity we shall attend primarily to race and age effects in what follows, and occasionally to SES.

Proportion correct imitations and translations for ages 8 and 10. Figure 1 reveals a striking regularity about the imitation data. When standard English is used in the stimulus sentence, the following sequence of proportions correct is obtained from the 8-year-old black lower, black middle, white lower, and white middle groups: 0.501, 0.595, 0.584, 0.791, respectively. For the same groups responding to nonstandard stimulus sentences we get the fol-

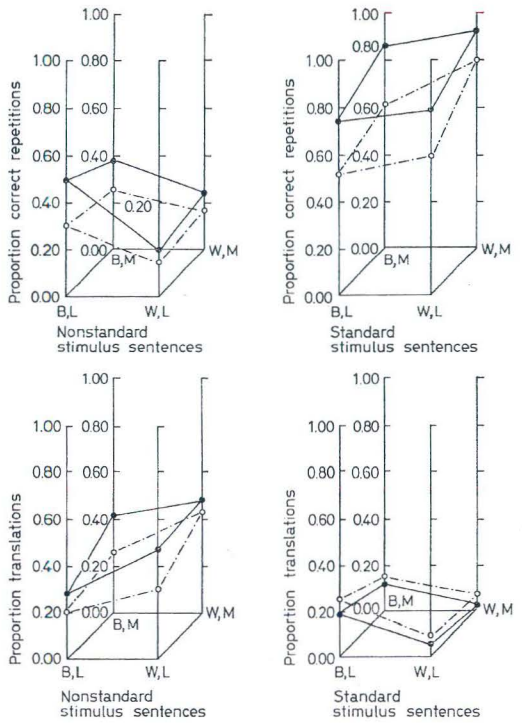

Fig. 1. The proportion of correct repetitions and proportion of translations over all grammatical forms for standard and nonstandard English dialects. ● = 10-year olds; ○ = 8-year olds. For abbreviations, see table IV.

lowing correct repetitions: 0.300, 0.298, 0.134, 0.129. Notice that if the proportions for any pair of the first four numbers increase the proportions for the corresponding pair of numbers for the lower sequence decrease. Thus, the first number 0.501 and the third 0.584 represent an increase in magnitude and their corresponding entires in the second series of 0.300 and 0.134 represent a decrease in magnitude. The same holds approximately for the proportion of correct responses for 10-year-old subjects. When responding correctly to a standard sentence they provide the following: 0.716, 0.829, 0.784, 0.897; and when responding to a nonstandard: 0.460, 0.377, 0.174, 0.217.

If a subject gives back a form from a standard sentence in the nonstandard dialect, a translation is said to have occurred.[2] Similarly, if a nonstandard form was presented and the subject gives back a standard form, a translation is held to have occurred. An inverse relationship holds when we examine the proportions of the 8-year-old black lower, black middle, white lower, and white middle subjects in translating the standard stimulus sentences into standard ones. The pattern is: 0.217, 0.145, 0.075, 0.058, respectively. Now, the proportion of translations for these same groups when converting nonstandard into standard forms yields: 0.198, 0.243, 0.286, 0.444, respectively. For the 10-year olds the pattern of translations is similar to that of the 8-year olds. When given the standard sentences the pattern was: 0.195, 0.103, 0.056, 0.026, in comparison with the one when the nonstandard sentences were the stimulus: 0.293, 0.410, 0.462, 0.495.

In order to interpret these patterns, it will be useful here to recall an interpretation by BARATZ [1969a]. She suggests that the two dialects are different coding schemes. One who is most familiar with nonstandard English as observed for the lower class blacks in our data will tend to encode in his short-term semantic memory sentence information corresponding to the nonstandard code. Correspondingly, one who is most familiar with standard English as observed for white middle class subjects in our data will tend to encode in his short-term semantic memory sentence information corresponding to the standard code.

This idea can be applied to our data in the following way. If the incoming stimulus for a black lower-class subject is in his familiar dialect, he does not have to do any extra work in encoding the information since it already is in his preferred dialect. Thus, his short-term semantic memory is in a nonstandard state. If he retrieves this information in the same form as it is coded in his memory, in a large percentage of cases he will get a large number of nonstandard structures correct. This same black subject also receives standard sentences. By the above argument he will tend to encode many of these in nonstandard form. When it is time to retrieve them, he should give back many translations, since by assumption he tends to retrieve information in terms of the representation in his semantic memory.

Exactly the reverse argument holds for the middle class white subjects. They will get a large proportion of standard structures correct, and will also

[2] For a given group of subjects the proportion correct repetitions, translations, and deletions (substitutions were included along with deletions) were computed for each of 14 grammatical forms. In every case the sum of the proportions for corrects, translations, and deletions equalled 1.00.

tend to give a large proportion of translations from nonstandard into standard. A reflection on the data described above will show that this is exactly what happens. Middle class blacks and lower class whites fall somewhere in between these two extremes. Presumably, they have no clear-cut dialect preference since they are perhaps equally familiar with both standard and nonstandard forms. The regularity of these results holds for both 8- and 10-year olds.

Thus, while some of these findings have been reported by BARATZ [1969a], as well as being replicated here, we have extended her coding idea in an information-processing sense. This extension helps us explain the regularity between translation scores and correct repetition scores as a function of race, SES, and age.

Several other implications follow from the encoding idea. There should be a positive correlation between the proportion of sentences correctly imitated when a standard sentence is given as the stimulus and the proportion of translations into standard English when a nonstandard sentence is presented. The rank-order correlation in this regard was 0.802 ($p < 0.05$). Further, the aforementioned results suggest that there should be a positive correlation between the proportion of nonstandard sentences correctly imitated and the proportion of sentences translated into the nonstandard when a standard sentence is given as the stimulus. Here the rank-order correlation was 0.667 ($p < 0.05$). When these two correlations are pooled, the result yields a ϱ of 0.936 ($p < 0.01$). These calculations are based on a pooling of all seven of the grammatical forms. One can compute similar relationships at the level of each grammatical form (3rd person singular, copula, negation, etc.) for the standard sentences and another for the nonstandard sentences. These correlations are presented in table II.

The significant positive correlations in table II provide evidence for the information-processing assumption that subjects encode stimulus sentences into their most familiar or preferred dialect and tend to retrieve information from their short-term semantic storage in primarily the same form as it exists in the memory store.

The only surprise that occurs in table II is for negation where we fail to find a positive correlation for either age group. In fact, it looks as though the correlation may actually approach significance in the negative direction. We can provide a *post hoc* explanation for this and retain the coding idea. We should consider the possibility that in both dialects double negation has become, or is becoming, as acceptable as single negation. This would mean that receiving a nonstandard double negation stimulus would result in the encoding of the double negation in semantic memory. This would hold for both races. Similarly, when either race receives a sentence with single negation they code it in exactly that form. Thus, they will produce very few translations from nonstandard to standard and vice versa. Further, they will both get high correct repetition scores. This will produce the desired negative correlation.

Additional regularities were found to exist in the imitation data.

(a) There is a significant tendency to increase the proportion of correct imitations from age 8 to 10. This occurred for all four groups and all standard sentence structures.

Table II. Rank order correlation between number of standard (or nonstandard) forms used correctly and number of translations from nonstandard (standard) into standard (nonstandard) for two age groups

Grammatical form[1]	Correlation for age 8 (n = 8)	Correlation for age 10 (n = 8)
3rd person singular	0.98**	0.79*
Copula	0.88**	0.82*
Negation	0.60	0.57
'If' + S + V	0.99**	0.90**
Past marker	0.93**	0.98**
Possessive	0.98**	0.81*
Plural (standard only)[2]	0.74*	
Use of 'be' (nonstandard only)	0.72*	

* $p < 0.05$; ** $p < 0.01$.

[1] There were eight entries upon which each correlation was based: e.g., letting *c* represent a correct proportion and letting *t* represent a translation the following eight pairs of entries were used in the correlation: lower black standard *c* (lo, bl, st, c) with lower black nonstandard *t* (lo, bl, ns, t), then (lo, bl, ns, c) with (lo, bl, st, t), then (mid, bl, st, c) with (mid, bl, ns, t), then (mid, bl, ns, c) with (mid, bl, st, t), then (lo, wh, st, c) with (lo, wh, ns, t), then (lo, wh, ns, c) with (lo, wh, st, t), then (mid, wh, st, c) with (mid, wh, ns, t), and finally (mid, wh, ns, c) with (mid, wh, st, t).

[2] Only plurals were scored for standard sentences and only use of 'be' was scored for nonstandard sentences, hence to increase N size we combined over ages here.

Twenty-eight out of a maximum of 28 comparisons showed this improvement which is significant by a two-tailed sign test, $p < 0.001$. A similar comparison for nonstandard structures indicates that 23 out of 27 show this effect. By a two-tailed sign test, 23 out of 27 comparisons are significant ($p < 0.002$). In general, it seems that age leads to improvement in correct repetitions. This seems to operate for both standard and nonstandard structures.

(b) There is a significant tendency for middle class blacks to perform better in the absolute level of correct imitations for standard structures with 13 out of 14 comparisons showing the effect ($p < 0.002$, two-tailed test). On the other hand, the lower class blacks out-perform middle class blacks in the proportion of correct imitations for nonstandard English with 14 out of 14 comparisons showing the effect ($p < 0.001$, two-tailed test). Thus, it seems that socioeconomic status is associated with doing well in standard English, at least for blacks.

White middle class subjects are significantly better in an absolute sense of repeating back correctly standard sentences than are lower class whites (14 out of 14 comparisons show the effect: $p < 0.001$, two-tailed test). However, lower class whites do not significantly out-perform middle class whites in their ability to repeat nonstandard forms, with only 4 out of 14 comparisons showing the effect ($p = 0.18$, n.s.). Thus, the whites present a slightly different pattern than the blacks.

(c) The proportion of translations reveals an almost perfectly inverse pattern to the above results. This relationship is of course expected since the proportion of translations are not independent of the number of correct repetitions within a dialect. Nineteen out of 21 comparisons (with 3 ties) show that for the standard structures there are more translations at 8 years of age than at 10. By a two-tailed sign test this is significant ($p < 0.001$). An exception to this finding can be seen in the data from the nonstandard structures. Twenty-four out of 27 of these (with a single tie) show the same pattern as observed in the proportions correct. Moreover, the proportion of translations increases significantly from age 8 to 10 when nonstandard structures are the stimuli ($p < 0.001$, two-tailed test). The regularity here presumably has some bearing on any parameter estimation procedure which attempts to account for all the patterns of consistencies found for the imitation data across race, SES, age and type of stimulus sentences.

(d) There is a significant tendency for middle class blacks to use fewer translations in responding to standard sentences than lower class blacks. Thirteen out of 14 comparisons show the effect ($p < 0.001$, two-tailed). On the other hand, the lower class blacks produce significantly fewer translations into standard English when the stimulus sentence is nonstandard: 11 out of 14 comparisons showed the effect ($p = 0.058$, two-tailed). White middle class subjects produce translations significantly less often than lower class whites for standard sentences: 11 out of 13 (one tie) show the effect ($p = 0.022$, two-tailed). Lower class whites translate significantly less often than middle class whites when nonstandard forms are the stimuli: 12 out of 14 show the effect ($p < 0.013$, two-tailed test).

Rates of improvement from age 8 to age 10. Statistics texts give a standard result for determining the variance of a statistic when the sample size is very large – this is known as finding the formula for the asymptotic variance of a parameter *a*. The particular parameter we are interested in comes from the following linear equation:

$$P_2 = P_1 + a\,(1 - P_1).$$

According to this equation, the quantity P_2 (the proportion of correct repetitions at age 10) results from the quantity correct at an earlier time period P_1 (that is, P_1 would be the number of corrects at age 8, say) plus a proportion *a* of the quantity $1 - P_1$. The parameter *a* can be regarded as a rate of change over two time periods. Given that we are able to get sample estimates of the quantities P_1 and P_2 from which we estimate the quantity *a*, we seek to compare this resulting magnitude with another similarly calculated quantity resulting from other independent estimates of P_1 and P_2 obtained from another population of subjects. The result of obtaining variance statistics[3] for the quantity *a* will allow us to evaluate the following questions: (1) Is the rate of change for white subjects in response to standard English any different from the rate of change for blacks for standard English? (2) A similar question can then be raised for the rates of change of both groups

in responding to nonstandard English. (3) Do blacks show a higher or lower rate measure in responding to standard English as compared with nonstandard English? (4) Do lower class and middle class blacks differ in their rate measures for standard English? (5) Does this class difference for standard English rate measures also hold for lower class and middle class white subjects? (6) Is there a similar rate difference for social class when whites respond to nonstandard English? (7) Do blacks show a similar difference as do whites across social class in responding to nonstandard English? We shall consider these several questions in turn.

(1) Using the statistics for calculating the asymptotic variance of *a* (see footnote 3) we find that blacks are not significantly different from whites in their rate of improvement from 8 to 10 years in responding to standard

[3] The asymptotic variance of *a* is given by the following equation:

$$a = \left(\frac{P_2 - P_1}{1 - P_1}\right) \quad a \quad \eta \left[\frac{P_2 - P_1}{1 - P_1}, \left(\frac{P_2(1 - P_2)}{n_2} + \frac{P_1(1 - P_1)}{n_1}\right)\left(\frac{1}{(1 - P_1)^2}\right)\right],$$

where η represents the normal distribution with mean equal to $(P_2 - P_1)/(1 - P_1)$ with variance V_1 equal to

$$\left(\frac{P_2(1 - P_2)}{n_2} + \frac{P_1(1 - P_1)}{n_1}\right)\left(\frac{1}{(1 - P_1)^2}\right).$$

Note that n_2 represents the number of observations that went into the calculation of the quantity P_2 while n_1 represents the number of observations used in calculating the quantity P_1.

Now, a similar quantity is calculated from another pair of observations of P_2 and P_1 so as to estimate another rate of change parameter *a*. In order to distinguish these values from the other values, let us place a prime on them as follows:

$$a' = \left(\frac{P'_2 - P'_1}{1 - P'_1}\right) \quad a' \quad \eta \left[\frac{P'_2 - P'_1}{1 - P'_1}, \left(\frac{P'_2(1 - P'_2)}{n'_2} + \frac{P'_1(1 - P'_1)}{n'_1}\right)\left(\frac{1}{(1 - P'_1)^2}\right)\right].$$

Let us agree to designate the variance part of this equation for a′ by the symbol V_2. Now we wish to test whether these two independent estimates of *a* and *a′* are significantly different from each other. The equation to test this is:

$$\left(\frac{a - a'}{\sqrt{V_1 + V_2}}\right) \rightarrow \eta\,(0, 1).$$

This means the test is made with respect to the normal distribution with mean 0.0 and variance 1.0.

English sentences (z = 0.147). If we interpret this rate of improvement paramater as reflecting underlying abilities in memory, comprehension of language, etc., then we may feel that we are justified in drawing the conclusion that blacks are not inferior to whites in their 'learning ability'. They do differ, of course, from whites inasmuch as they do not get gas many standard sentences correct as do the whites at age 8. But the rate of change parameter is not dependent upon the starting proportions P_1. It is a measure of rate of change in improvement over two time periods and as such is independent of the starting proportions. The learning parameter *a* for whites was 0.489 while that for blacks was equal to 0.497.

(2) We can calculate another pair of parameters for the rate at which blacks improve in responding to nonstandard sentences over ages 8–10 and compare this with the rate of change for whites' improvement in responding to nonstandard sentences. The result of this calculation indicates that blacks have a significantly higher rate than whites in responding correctly to nonstandard sentences from 8 to 10 years (z = 3.405; for blacks the *a* was 0.171 while for whites it was 0.052). The meaning of this result is less clear than the first calculation since whites do not get much exposure to black dialect nor do they feel any cultural pressure to learn black dialect; hence, the higher 'learning' rate of blacks in response to nonstandard English may primarily be reflecting opportunities to learn it. But this cannot be the full story.

(3) Blacks have a greater opportunity to gain greater competence in black dialect from the ages 8–10, yet their learning rate for nonstandard is only 0.171 in comparison to a significantly higher rate for standard English of 0.497. Thus the 'learning' rates among the blacks probably reflect a complex number of factors including responsiveness to the cultural pressure to speak standard English, and by implication, a corresponding pressure to stop speaking nonstandard. The smaller learning rate of 0.171 for nonstandard sentences may reflect a complex mixture of abilities which, on the one hand, tend to increase this rate such as greater memory capacity at the later age and greater familiarity and comprehension of these structures, but, in addition reflects an even more powerful social conformity pressure which works to depress this rate measure. Hence the rate measure ends up significantly smaller for nonstandard than it does for standard dialect.

(4) Another interesting comparison is the contrast within the blacks according to SES level. For standard English, the lower class blacks yielded a rate of improvement = 0.431 while middle class blacks had an *a* of 0.578. This difference, which is significant, may reflect a complex of factors such

that the middle class blacks show a higher motivation or willingness to gain competence in the standard forms while the lower class ones may show a combination of greater antagonism to the standard forms plus somewhat less direct contact with standard speakers, with the consequence of having lower motivation and less opportunity for gaining great competence in standard English.

(5) This argument seems to hold up when we examine the 'learning' rates for the lower and middle class whites in response to standard English. The lower class had an $a = 0.481$ while the middle class had an $a = 0.505$. These were not significantly different. Our reasoning for this pattern again implicates the concept of cultural pressure. Since both white groups have always spoken predominantly standard English and since there is no corresponding pressure to learn the nonstandard forms (even though there may be many opportunities to experience black dialect, especially among lower class whites), there is no reason to expect that the two white groups will differ in their learning rates.

(6) Our argument somewhat falls short of the mark, however, when we contrast the 'learning' rates of the two white groups on their nonstandard English. Here the lower class whites, who should do better, give only an $a = 0.052$ while the middle class whites yield an $a = 0.107$. This difference presents us with a puzzle which at the moment we are unable to explain.

(7) However, a similar contrast for nonstandard English between lower class blacks ($a = 0.220$) versus middle class blacks ($a = 0.110$) is significantly different. This, presumably, can be more readily explained by postulating that lower class blacks have had greater opportunity to gain competence in nonstandard usage than those from the middle class.

In summary, the overall pattern of results indicates that the blacks (lower and middle class combined) are equal to the whites in their rate of improvement in standard English from the years 8–10. Blacks are superior in their 'learning' rate to whites in their response to nonstandard English over the years 8–10. Lower class blacks 'learn' standard more slowly than middle class blacks, but there is no class difference for the two white groups with respect to their rate of improvement on the standard forms. For nonstandard, the class differences indicate that lower class blacks are now superior to middle class blacks, while middle class whites, surprisingly, are significantly better than lower class whites in their responses to nonstandard forms.

A final comment about the rate parameter *a* may be of value here. Some readers may question in what sense one can claim that the estimate of *a* need not be correlated with

the starting proportion P_1. The form of equation 1 allows us to assert that if improvement at a later time (P_2) is never worse than at the earlier time (P_1), then the parameter *a* will be free to take on values between and including 0.0 and 1.0. This range of values of *a* is in no way influenced by the starting value of P_1 except in the very exceptional case where P_1 happens to represent perfect performance (i.e., where $P_1 = 1.0$). It is in the above sense that we assert that the improvement parameter *a* is dependent of the starting value.

Moreover, it may appear to some that even though two values of *a* (estimated from different groups, such as blacks and whites) are equal, one should not conclude that the amount of work that has to be done by the two groups of subjects to get these same *a* values is necessarily equivalent. This is certainly true; we shall further pursue this since it will even strengthen our claim that blacks can at least equal whites in this measure (and perhaps outstrip them as we shall now demonstrate). Suppose whites do very well on standard English at age 8 – say their $P_1 = 0.80$ (they get 80% of the standard structures correct at age 8). Now suppose that the improvement parameter *a* for these same subjects is 0.5; then applying equation 1 we see that at age 10 they will get 90% of the standard structures correct since $0.80 + 0.5\ (1 - 0.80) = 0.90$. Now let us contrast this example with blacks who start at a lower level of correct performance on standard forms (have a lower P_1 value of say 0.40) but who show the same value on their improvement parameter *a* of 0.5 over ages 8–10. We see, by applying equation 1, that their percentage correct performance at age 10 will be 70% since $0.4 + 0.5\ (1 - 0.4) = 0.70$. Notice that in an absolute sense these blacks had to 'cover more ground' in order to earn this improvement parameter of 0.5 than the whites. That is, the blacks had to improve by 30% while the whites had to improve by only 10% in order to earn the same learning parameter. From this point of view, even though the blacks still lag behind the whites in their absolute level of correct performance on standard forms at age 10 (i.e., the blacks still get only 70% at age 10 while the whites get 90% correct); nevertheless, the total amount of learning that the blacks had to engage in to earn this rate parameter of 0.5 was much greater than the absolute amount of learning that the whites had to engage in to earn an *a* value of 0.5. Thus, although blacks lag behind whites in absolute performance at each age, they are superior to whites inasmuch as they were capable of learning a much larger piece of 'the linguistic pie' in order to earn the identical parameter of 0.5. Clearly, the manner in which one chooses to 'score' the protocols in experimental settings (and by implication the manner in which one wishes to score blacks on some standardized tests) can greatly affect the interpretation of the data. We suggest that greater attention be paid to rates of improvement as useful scores for assessing the functioning of various racial and SES groups, especially since these rate parameters seem to tell quite a different story from conventional measures which typically examine only the absolute level of performance such as total percent correct at some specified age.

Dialects as distinct systems. The pairwise correlations of each structure (seven standard and seven nonstandard structures) with every other structure were computed. An examination of each of the correlation matrices reveals a very consistent pattern. The correlations of all standard constructions with every other standard construction is almost always positive. Similarly, the intercorrelations of every nonstandard construction with every remaining nonstandard construction is also virtually always positive. On the other hand, when we examine the correlations across dialects, we see that a large number of them tend to be negative or zero. For example, for the lower class blacks, the correlation of standard 'if' with nonstandard 'if' is –0.42. The same tendency for negative or zero correlations to occur across dialects can also be seen when examining the data from the white subjects.

This somewhat systematic effect can be interpreted as evidence that within a dialect, an internally consistent system of grammatical rules (and/or cognitive operations) is producing the positive correlations of each structure with every other structure in the same system. Thus the behavioral data indicate the psychological reality of a nonstandard dialect and the separate psychological reality of a standard dialect. This separability of the dialects is even found for speakers who know both dialects. Many of the negative correlations across dialects indicate some mutual conflict exists in moving from one dialect system to another, but, similar one. However, some exceptions to this finding can be observed. Nonstandard copula, double negation, and use of 'be' appear to be somewhat positively related across dialects. This does not contradict the assertion that the nonstandard is an internally consistent dialect, it rather indicates the presence of complex linkages across the dialects.

Table III. Percent variance accounted for in predicting each of 14 grammatical forms from the remaining forms (plus SES as a predictor)

Dependent variable in regression	Blacks		Whites	
	8-year-old	10-year-old	8-year-old	10-year-old
Standard				
3rd person	76.9	69.5	72.9	67.7
Copula	76.4	35.7 n.s.[1]	72.1	60.7
Negation	53.0	34.2 n.s.	48.2	60.6
If + S + V	37.6	67.9	61.9	62.8
Past	48.7	43.1	74.1	39.4
Possessive	49.9	47.9	57.2	47.6
Plural	66.9	41.4	65.8	49.4
Nonstandard				
3rd person	44.6	59.7	33.3 n.s.	50.9
Copula	42.4	36.4 n.s.	28.7 n.s.	42.7
Negation	54.0	44.4	41.0	50.0
Use of 'if'	51.0	63.1	47.4	65.6
Past	46.0	34.7 n.s.	33.0 n.s.	35.6 n.s.
Possessive	27.7 n.s.	46.7	20.0	54.7
Use of 'be'	47.8	53.9	40.8	57.3

[1] All entries were significant beyond the 0.05 level, except those marked n.s. In all cases the F test was based on (14, 45) degrees of freedom.

Regression results for individual grammatical forms. In table III the percent of variance accounted for by the 13 grammatical forms (plus socioeconomic level as an additional 14th predictor variable) indicated that standard dialect is more 'predictable' overall than

nonstandard. For example, Mann-Whitney U tests indicate that standard forms are more predictable for the 8- and 10-year old white children than nonstandard forms are for them ($U = 30$, $p = 0.002$, two-tailed). No significant difference in predictability was found for a comparable test using the 8- and 10-year-old black children ($U = 76$, $p > 0.10$, two-tailed). This indicates that some blacks know the two dialects about 'equally' well and so should not be significantly different from each other in their predictabilities from other grammatical forms in the systems. However, since the white children know primarily only one of the dialects, the standard, this dialect should be superior in its predictability than is the dialect which is only remotely or incompletely known to them.

Experiment II

Materials and Procedure

The basic procedure used in this experiment was adapted from the work of KRAUSS and GLUCKSBERG [1967] on referential communication. The task consists of a teacher and a student (or alternatively, a language producer and a comprehender, a speaker and a listener) who discuss pictures so as to place them correctly. The experiment was designed to allow for the measurement of the frequency with which the aforementioned grammatical forms occurred in the free productions of subjects, and to mesure the degree of comprehension of the receiver of the messages. The messages were the free productions of the teachers. All of the subjects used in this experiment were male. Subjects were divided into two categories: teachers and receivers (or students). They came from three age groups (5, 8, and 10). Each teacher instructed four students: a black lower class male, a black middle class, white lower class, and white middle class male. Teacher and student were always of the same age.

The teachers were given sheets containing various designs. Each design was numbered on the sheet. Their students were given a sheet of paper divided into correspondingly numbered spaces. The students were given a stack of cards a subset of which contained items to be placed on the numbered spaces. The task required teachers to describe each design on their sheets of paper, one at a time, using reference numbers to indicate the position of each picture. Teachers and receivers were allowed to interact freely. Two practice sessions were used to acquaint the teachers with their job of providing messages for a listener. The complete task was tape-recorded. Four different test forms were used. Each subject involved in the interaction used but one of the test forms in order to avoid transfer effects.

Results

Productions. Each teacher 'taught' four students, thus eight scores were obtained for each teacher in the interaction task. In all cases, the teacher was speaking to one of four listeners (a black lower class listener, a black middle class listener, a white lower class listener, and a white middle class listener), all of the same age as the teacher. For each subject with whom he spoke, the same two scores were computed: frequency of standard usage, and frequency of nonstandard usage. Hence, eight scores were obtained.

The four white teachers at age 5 revealed an overall significant Friedman χ^2 (14.77, df = 7, $p < 0.05$). This significant effect was contributed to primarily by the strong tendency of these teachers to use more standard than nonstandard constructions regardless of whether they were speaking to black or white students. The mean number of standard forms used when black students were listening was 11.2 versus a mean number of 0.0 nonstandard forms. When white students were listening the mean number of standard forms was again 11.2 versus a mean of 0.0 usage for the nonstandard forms. Clearly, these young, white 5-year olds seem not to know (or use) any nonstandard forms of the seven types we have chosen to score. In contrast to this, the 5-year-old black teachers tended to use more nonstandard than standard forms when speaking to both white and black listeners. They used on the average 1.2 standard grammatical forms versus 4.5 nonstandard forms when speaking to black listeners, and 2.5 standard versus 5.2 nonstandard forms when speaking to white listeners. The Friedman analysis of variance, however, for just the 5-year-old black teachers failed to reveal a significant overall difference among the groups of listeners.

At age 8, a similar result was obtained. The scores for the four black teachers resulted in a significant overall difference ($\chi^2 = 22.26$, df = 7, $p < 0.01$). The main source of this significant difference was, surprisingly, due to a tendency to use the standard over the nonstandard grammatical forms, irrespective of the listener. For example, they used a mean of 15 standard forms, and 1.0 nonstandard forms when speaking to black listeners, and a mean of 16.2 standard forms and 0.5 nonstandard forms when speaking to white listeners. Notice that between the ages of 5 and 8, the black teachers shift from using primarily nonstandard to standard grammatical forms.

The four white teachers, aged 8, yielded a similar overall significance effect ($\chi^2 = 23.15$, df = 7, $p < 0.01$). These white 8-year olds used a mean of 40.0 standard and 1.2 nonstandard forms when speaking to black listeners, and a mean of 35.0 standard and 0.5 nonstandard forms when speaking to white listeners.

The analysis showed an overall significance level for both black and white teachers at age 10 ($p < 0.05$ in both cases). All teachers showed a preponderance of standard grammatical forms when speaking to both black and white listeners. When speaking to blacks, the black teachers used a

mean of 33.7 standard and 6.7 nonstandard forms. These same black teachers used a mean of 26.2 standard and 7.5 nonstandard forms in speaking to whites. The four white teachers used a mean of 40.5 standard and 1.5 nonstandard forms when speaking to blacks. When speaking to whites they used a mean of 46 standard and 2.0 nonstandard forms.

Thus, in general, the free production data suggest the following (table IV): the 5-, 8-, and 10-year-old teachers use primarily the same language when speaking to whites as to blacks. The younger teachers speak predominantly nonstandard English if they are black and standard if they are white. Sometime between the ages of 5 and 8, the black teachers undergo a shift in which dialect becomes their predominant one (at least it appears to be the predominant one within the confines of this experimental task, whether their speech in the everyday milieu is the same is unknown to us): they shift from nonstandard to mostly standard grammatical forms; they do this regardless of whether they speak to whites or blacks in the communication study.

Table IV. The frequence of occurrence of standard (S) and nonstandard (NS) forms in the free productions of speakers from 3 age groups, 2 races, and 2 SES levels as a function of the race and SES level of their listeners

Speaker		Listener							
Race[1]	SES[2]	black lower S	NS	black middle S	NS	white lower S	NS	white middle S	NS
5-year olds									
B	L	2	7	1	5	0	8	10	5
B	M	3	0	0	6	0	5	0	3
W	L	12	0	8	0	6	0	13	0
W	M	13	0	12	0	12	0	14	0
8-year olds									
B	L	15	1	15	2	15	0	17	1
B	M	18	1	12	1	11	0	22	1
W	L	19	0	41	1	38	0	20	1
W	M	35	1	65	3	46	1	36	0
10-year olds									
B	L	10	8	42	3	15	14	11	13
B	M	51	14	32	2	49	4	30	0
W	L	7	0	40	1	37	4	17	1
W	M	58	1	57	4	63	3	67	0

[1] B = black; W = white.
[2] L = lower class; M = middle class.

Similarly, whites of age 8 and older use predominantly standard forms and do so regardless of whether they address white or black listeners.

There is a significant increase in the proportion of time that a standard form is used when comparing the productions of 8-year-old black teachers with 5-year olds from the same racial group (Mann-Whitney U test, $p = 0.014$). Also, there is a significant decrease in the proportion of time that a standard form is used when comparing the productions of 10-year olds with 8-year olds (Mann-Whitney U test, $p = 0.014$). Apparently, older black teachers have either become socially more conscious of the implications of using standard or nonstandard forms and have somehow reacted to this by slightly increasing their usage of nonstandard forms. While this percentage decrease was not dramatically lower, it was significant by the above Mann-Whitney U test.

The white teachers show a different age effect. The proportion of standard usage decreases from age 5 to 8 (Mann-Whitney U test, $p = 0.014$). This probably means that while the 5-year olds were not at all familiar with black dialect (and so did not use it), the 8-year olds were at least aware of the existence of black dialect, and occasionally made use of it in this interaction task. No significant difference exists between the proportion of times standard forms are used in comparing 8-year-old white teachers with 10-year olds from the same racial group (Mann-Whitney U test, $p = 0.243$).

Comprehensions. The number of pictures correctly placed was used to assess the adequacy of comprehension (the ability of the listener to comprehend the message provided him by the teacher). There is also a possibility that this communication score actually reflects both the adequacy of the message provided by the teacher as well as the ability of the listener to understand and respond appropriately to that message. While the studies in this research bearing on the above statements are ambiguous, we think the results are worth reporting as initial data in dialect communication abilities.

A Friedman analysis of variance was computed for the 8-year-old listeners' correct placements. There was no overall significance obtained from any of the analyses, either in combination ($\chi^2 = 0.73$, $df = 3$, $p<0.80$) or singly ($p>0.05$, in all cases). Thus, any one of the four groups of listeners was able to respond as well as any other. Furthermore, within an age group there was no difference in the ability of the listener to get items correct when a black teacher formulated the message or when a white teacher formulated it (Mann-Whitney U test, $p = 0.343$). Similarly, when the 10-year-old listeners are considered, it made no difference in the correctness of responding whether a black or a white teacher formulated the message (Mann-Whitney U test, $p = 0.443$). Thus it seems that the adequacy of the messages provided by the teachers is not related to his race. Moreover, the races do not differ in their ability to place the cards correctly on the basis of the information provided by the teachers.

Only one effect was significant in evaluating the card placements. The 10-year olds did significantly better than the 8-year olds (Mann-Whitney U test, $p = 0.041$).

Task Interrelationships

Relationship between Imitation and Production

(a) Rank order correlations between the number of correct imitations on *standard* sentences (all seven types were summed for this score) and the number of standard grammatical forms produced by the teachers in the communication task were done. For the black teachers who were also subjects in the imitation task ($n = 12$, over all three age groups), a significant positive correlation of 0.79 ($p<0.01$) was obtained. This correlation relates the number of spontaneously produced grammatical forms to the number of correct repetitions of standard sentences in the imitation task. Similarly, for the white teachers, a rank order correlation of 0.68 ($p<0.05$) was significant, which also indicated that those subjects who spontaneously produced many standard grammatical constructions of the seven types also tended to repeat correctly the standard sentences in the imitation task. Thus, there seems to be a common ability which underlies performance in the imitation task with performance in the free production task.

(b) The correlation between the number of correct imitations on the *nonstandard* stimulus and the number of spontaneously produced nonstandard grammatical forms, obtained from the blacks acting as teachers in the communication study failed to be significant ($\varrho = 0.08$). This suggests that since these blacks are primarily speaking in the standard dialect (recall they use a greater proportion of standard constructions in their free productions than nonstandard for the above seven types except for the 5-year-old teachers), one need not expect to find a strong relationship between how well they do in imitation of nonstandard and how many nonstandard structures they produce. Given that there is a conflict between which dialect to use, and given that the dominant dialect is winning out after the age of 5, one might expect that the momentary lapses into the nonstandard dialect which occur in free productions need not bear any clear-cut relationship to their ability to call upon their knowledge of the black dialect in correctly imitating these structures as they had to do in the imitation task. Further, removing the 5-year-old black teachers from this last correlation did not alter this effect. A separate analysis by age should be done in later studies relating imitation, comprehension, and production tasks for diglossic subjects. However, for our present purposes it appears that mixing the ages of the teachers within the same analysis (due to small sample size) has not greatly altered the main findings.

Similarly, the white students across the three age levels ($n = 11$) who had scorable responses for both free productions of nonstandard forms and number of correct imitations of nonstandard stimulus sentences from the imitation task did not yield a significant correlation: $\varrho = 0.26$, $p>0.05$. This is reasonable since one certainly would not expect to find any systematic relationship for subjects who, for all intents and purposes, do not speak the nonstandard dialect.

Relationship between Imitation and Comprehension

(a) Another pair of scores is of interest in eventually helping us understand mental operations relating imitation, comprehension, and production given that the subjects in the experiment are diglossic. Correlations were run between the number of correct picture placements in the communication task and the number of correct imitations of standard and nonstandard forms for blacks and whites first taken together. The correlation between the number of *standard* forms imitated correctly and the number of correct picture placements approached significance ($\varrho = 0.471$, $p<0.10$, $n = 14$).

(b) The correlation between the number of *nonstandard* forms imitated correctly and the number of correct picture placements was not significant for the group data ($\varrho = 0.329$, $p>0.10$, $n = 14$). Since neither of these correlations reaches conventional levels of significance the correlations for subgroups of subjects were not computed. The failure of these correlations to be significant probably stems from small sample size.

Conclusions

An overall analysis of the major independent variables used in this research, SES, race, age, and sex, were not found to be equally robust. Sex was found to be the least important variable, while race and age were the most important. The finding on the race variable is in accord with BARATZ [1969a], although she found age to be weaker than our data suggest. However, this may be due to the wider range of age samples in the current research. Our findings on SES effects partially agree with those reported by others [e.g. OSSER *et al.*, 1969].

In this paper, we have described several tasks and measures. We now wish to point out some possible unifying themes and some possible differences that emerge from comparisons among them.

The imitation task showed that blacks perform better than whites in terms of percentages correct when given stimulus sentences in nonstandard dialect. Whites performed better than blacks when stimulus sentences were in the standard dialect. This agrees with BARATZ's [1969a] main finding.

Using measures other than proportion correct, we have demonstrated that the rate of change from ages 8 to 10 show that blacks are improving at the same rate as whites in the standard dialect. Moreover, blacks improve at a significantly greater rate when responding to nonstandard dialect from the ages 8 to 10. To our knowledge, this represents a new finding. Employing another method of assessing the imitation data, i.e. correlational analysis, revealed two additional findings: standard and nonstandard dialects are internally consistent systems for both black and white subjects considered separately. Regression analysis of the imitation data indicated that the proportion of variance for standard structures was more predictable for whites than were the nonstandard. For blacks, standard and nonstandard structures were equally predictable.

The second major study has been our source of data for language production and comprehension. The task used here involved message producers and message receivers. The producers could use any grammatical forms that they wished to get the receivers to perform. We found that black speakers use standard and nonstandard expressions to the same degree, regardless of whether their listener was white or black. A similar finding was observed for whites. For the comprehension side of this task we found that black and white listeners did equally well, regardless of whether the message was delivered in standard or nonstandard form. This, too, appears to be a new finding of some importance. Using the measures employed in our research here, the races are equal both as message producers and comprehenders. We did, however, note age differences in this task. This would appear to support some prior findings [e.g. KRAUSS and GLUCKSBERG, 1967].

For both black and white message producers, a positive correlation was found between the number of standard forms repeated correctly and the number of spontaneously produced standard structures. Group data for the message receivers indicated a positive correlation between the number of correctly imitated standard forms and the number of pictures correctly placed in the communication task. In correlating imitations of nonstandard forms with nonstandard usage in message construction and, too, in correlating nonstandard imitations with number of correct picture placements, no consistent pattern was found. Hence, there is some suggestion in our data that common cognitive abilities underlie imitation, comprehension, and production for at least standard English usage; this is true for both blacks and whites.

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Varia

Announcement

The third biennial meeting of the International Society for the Study of Behavioral Development (ISSBD) will be held between July 15 and 19, 1975, under the general topic 'Ecological aspects of development' at the University of Surrey, Guilford, Surrey, England. Chairman of the Programme Committee: Dr. AMBROSE. Secretary: Dr. MCGURK.

A symposium will be organized for ISSBD by Dr. JOEL SHANAN, Hadassah Medical Organization, Jerusalem, Israel, after the International Congress of Gerontology which meets between June 22 and 27, 1975.

The fourth biennial meeting of ISSBD will be held in Italy under the chairmanship of Dr. MARCELLO CESA-BIANCHI in 1977.

Selected contributions to the second biennial meeting of ISSBD will be published under the editorship of Dr. KLAUS F. RIEGEL and Dr. JOHN A. MEACHAM in the fall of 1974 under the title 'The Developing Individual in a Changing World'.

For further information about ISSBD or the meeting, write to Prof. JAN DE WIT (Honorary Secretary), Pedologisch Instituut, Vrije Universiteit, Vossiusstraat 56, *Amsterdam* (The Netherlands).

HANS THOMAE
President–ISSBD