

INTONATIONAL AND VOWEL CORRELATES IN CONTRASTING DIALECTS: A SUGGESTION FOR FURTHER RESEARCH*

WALBURGA VON RAFFLER ENGEL

A comparison of spontaneous speech by black and white children revealed a clear correlation between the audible surface structure and the lexical and syntactic organization.¹ The black intonation contours covered a shorter span of words than those of whites.² Correspondingly, the white children used a somewhat larger number of adjectives than the blacks (3.6% : 2.4%). The black children also used pronouns (which are shorter than nouns or names) much more extensively (14.6% : 8.6%) (von Raffler Engel and Sigelman 1972).

1. EXPERIMENT I

From measurement of sonograph print-outs, estimates were taken of the duration of the initial consonant and the following vowel of selected words from stories freely told by black and white speakers of the same age and sex (10 year old males), compatible educational level (fourth grade elementary school), and socio-economic

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¹ For this study two elementary schools were chosen in Nashville, Tennessee. One is predominantly black and draws its students mainly from middle and lower class Negro families; the pupils of the other school come principally from middle and upper class white families. The fourth grade in each school consisted of thirty children. All recordings were done in the classroom, one child at a time but in the presence of all his classmates and the teacher. Equipped with a Sony cassette recorder, I walked through the classroom, from one student to the next asking each child to tell me a story of his own choosing for me to enjoy listening to on tape later in the evening. Thus, all the material analyzed stems from a corpus of free, informal, and continuous discourse. All of the stories were subsequently transcribed in IPA with stress and pitch markings.

² Both groups narrated in a charming, vivid fashion, and all children spoke in intelligible standard English with occasional ungrammaticalities. It is the internal organization of their discourse which is strikingly different. The white children tended to verbalize their thought in fewer and longer communication units whereas the black children seemed to divide the message into more numerous, shorter units.

status (middle class) and living in the same community (Nashville, Tennessee). For the examples chosen, words contrasted were selected from closely matched intonation curves as well as phrase structures: Black: 'and the hunter came and *started to shooting at the duck*'. White: 'and he started *taking to the ducks*'.

In the word 'duck' [dʌk] for the black speaker, the duration of the [d] was 161 ms. and for the following vowel, 221 ms. For the white speaker's speech sample, the duration of the initial consonant [d] was 30.40 ms. and 205.00 ms. for the following vowel. I then compared the relative durations of consonants and vowels between speakers. For the [dʌk] of the black subject, the consonant-vowel duration ratio was 0.7285, indicating that the duration of the consonant was nearly 3/4 of that of the following vowel. For the white speaker's sample, the consonant-vowel duration ratio was 0.1481, or more simply, the duration of the consonant was only 3/20 of the duration of the vowel.³ See Table 1.

TABLE 1
*A comparison of consonant-vowel duration ratios in black and white speakers
with the stimulus word 'duck'.*

	duration of consonant (in milliseconds)	duration of vowel (in milliseconds)	consonant-vowel ratio
Black Subject:	161.00	221.00	0.7285
White Subject:	30.40	205.20	0.1481

In conclusion, in American English the mutual complementation of vocalic and consonantal quantity (Lehiste 1970) appears in a different manner for black and white speakers.

2. EXPERIMENT II

Adult white listeners to the tapes had the impression that the black children paused more frequently, but that their actual speech was more rapid than that of the whites. Accurate measurements did not bear this out. On the contrary, it became apparent that black speech is slightly slower. Just by measuring the time of the [dʌ] consonant-vowel sequence on the print-outs of the preceding consonant-vowel ratio experiment we obtain 382.00 ms. for the black and 235.60 for the white child.

After listening auditorily to the tapes together with a group of students, our impressions (which turned out to be identical) were charted to furnish the data of psycho-

³ In every case even when the vowel-consonant duration ratios were very similar, the duration of the consonant was still longer than the vowel for black speakers.

acoustic perception. I then tested samples of the same tapes on the sound spectograph (Kay Sonograph) and on the oscillograph (M.M.I. light writing oscillograph) in order to discover their corresponding value in experimental phonetics.

The results are as follows: in regard to time relationship, (consonant/vowel ratio) the auditory perception coincided with the acoustic facts, whereas absolute time was incorrectly perceived by the human ear. My findings on the relationship between perceived and real time are therefore in agreement with Lieberman's "basic difference between categorical and comparative decisions" (Lieberman 1967:160).

3. EXPERIMENT III

After counting the number of syllables of the stories, each syllable was timed with the help of a stop watch. Deducting reaction time, it turned out that the black speakers averaged 2.4744 syllables per second while the whites averaged 2.8485 syllables per second. The intra-message segments (pauses) were then divided into silence,⁴ garbles or interjections, and giggles or laughs. The number and length (individual as well as total) of pauses appeared to be idiosyncratic. Also, determining the phonation ratio (message:pause) of a given discourse yielded no culturally relevant information. There was, however, some identifiable ethnic difference in the places where the pauses occurred.⁵

The white pauses, essentially, were syntactically or emphatically predictable whereas the black children frequently paused wherever there was a two-degree change in pitch, a factor which lent a rather pleasing sense of drama to their story-telling. Black pauses were not necessarily asyntactical but tended to be of an optional type (phrasal as well as for emphasis) which is very infrequently used by white speakers:

Black pauses: (Cl.4) And the shark/ate/'im up/
(Cl.6) He struck out/six times/

White pauses: (Ov.19) The cat thought he could beat 'im up/
(Ov.13) And they got in another fight/

A white story begins: (Cl.14) *Once upon a time there was* (minimal breathing pause)
four little girls (minimal breathing pause)
fixin' to play (minimal breathing pause)
kickball / so they went out...

⁴ In our linguistic research the analysis of silence has been largely just that: silence. A silence pause may or may not coincide with a breath group. It may occur at the end of expiration of air or simply suspend breathing for a while with inhalation following only after some more words are spoken. To determine if there are differences among black and white speakers of American English in that respect will be the subject of a subsequent paper.

⁵ It is possible that the pausal system of Black English is shared by substandard white, or at least Appalachian white. The V/C ratio, however, appears restricted to black speakers.

A black story begins: (Cl.6) *Once about*⁶ *a time* (minimal breathing pause)
this (1/2 second of silence) *boy* (min. breathing pause)
he was playing (minimal breathing pause)
baseball / and he thought...

Syntactically well-formed English sentences with such 'unexpected' pauses frequently sounded "ungrammatical" to white listeners. Hill (1961) was shown that meaning cannot easily be separated from the impression of grammaticality and our findings tend to incorporate overt sound and overt silence into an empirically validated definition of perceived well-formedness. In conclusion, in our case, the negative interference from a native dialect in interpreting another dialect can be explained through surface phonetics.

Various theories have been offered to explain why black speakers generally use shorter T-units than whites.⁷ My research points to a different type of explanation: It is known that the ethnic dialect called Black English⁸ has sharper pitch variations than standard English (Loman 1967) and that these frequently carry over into black standard English. I have tried to show that the latter has a longer consonant duration and generally shorter breath groups than white standard English. Intensive consonants are never followed by a descending intonation curve (Léon 1969). In the samples of Negro speech which I have recorded, these post-consonantal vowels carry the expected ascending tone and it is not impossible that these more frequent glottal vibrations lead to the necessity for breathing more often. It appears likely to assume that these phonetic and prosodic factors (which are interrelated) influence syntax in favor of the shorter T-unit for black speakers. Elements of sound and syntax are mutually affected. If in Lieberman's laboratory tests "the length of the expiration was apparently linguistically [i.e., by innate syntactic structures] conditioned" (Lieberman 1967:65) no such uni-directional influence is borne out by natural speech. Psycholinguistically, it could appear that diverging systems for sentence and intra-sentence cannot easily be scaled on degrees of mental maturity.

⁶ For this paper, the variation *once about a time* for *once upon a time* at the beginning of a Black story (Cl.6) is not directly relevant and is therefore not included in the discussion. Three white students (one graduate and two undergraduates) who were not trained phoneticians but had some knowledge of linguistics and had listened to black tapes before all transcribed the tape as *Once upon a time*. I then had, all one at a time, four white boys, ages 8-12, listen to this tape and without exception, they repeated it as *Once upon a time*. Then one 10 year old black boy who goes to a predominantly white school repeated it as *Once upon a time*, but commenting that "there was something wrong", but he "corrected it". The youngster was obviously bidialectal and "monitoring" (For a definition of this term see Kernan 1971).

⁷ A T-unit is one main clause with all its subordinate clauses attached to it (Hunt 1965).

⁸ The mean number of words per T-unit for the whites ($N=24$) was 8.7 and for the blacks ($N=17$) 8.3 (von Raffler Engel, 1972). The black children generally told much longer stories than the whites. I played the recording of a black story to my ten-year old son asking him to repeat it to me. *Black story*: (Cl.6) *Once about a time this boy he was playing baseball. White repetition*: (R.) *Once upon a time there was this boy who was playing baseball...*

If counting numbers of transformations may be as descriptively practicable a device as any, this does not necessarily bear any relation to speech programming or to the symbolization process and its implication for intelligence.

*Department of Linguistics
Vanderbilt University
Nashville, Tennessee
and the University of Ottawa*

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DISCUSSION

KINLOCH (Fredericton, N.B.)

Is it possible that the difference of color between the informant and the fieldworker may have affected the dialect of the informant?

Could one discover a methodology which would remove this variable?

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This has been researched and the results have been published quite recently in one of the linguistics journals. I am sorry that I do not recall the name of the journal. It seems that the color of the investigator is not crucial, his attitude towards the subjects, however is most important. As for my own fieldwork, I was careful to explain my project in great detail to the black principal and the black classroom teacher before contacting the children. I did not isolate the children from each other, doing

all the recording in the regular classroom during school hours and in the presence of the teacher. I walked from one child to the next, with my little cassette recorder. The children appeared to enjoy the whole thing and considered it to be just one more school activity. My research concerns standard English as spoken by black children, not the ethnic dialect termed Black English. For an analysis of the latter, I would have preferred a black investigator. Standard English is, after all, the medium of communication between blacks and whites. I do not believe that a black informant would have gathered data which would have differed from mine from a linguistic standpoint. I have a long time experience of working with black people and most of the time am not very conscious of the color difference. The children are probably more aware of it but not to the point of interference, or so it seems.

WODE (Kiel)

What were the intra-group relationships, because after all you seem to suggest that two different systems are involved which may turn out to be an inadequate basis for comparison?

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In a broad sense, not only all groups are different but each individual child has his own family background, etc. and even siblings differ in many measurable ways. To make adjustments for variables was not within the purpose of my study. It can be done and has been done. Providing for adjustments by necessity involves value judgments in my research. I have simply watched the setting of the interview (classroom, with the teacher and the other children present), and the age of the subjects (regular fourth class grade school). I certainly would have liked to match the socioeconomic background of the two groups more closely. Unfortunately, this turned out to be impossible because I had to choose schools where I just happened to know the principal. At first, I contacted the local board of education but found it extremely uncooperative. They do their own research on lines of English grammar, essentially along the lines of transformationalism and are clearly opposed to different approaches and to any outsider to their group of professional educators. I recognize that the types of the two schools I selected do not compare well, but that was all I could do. I used the only option available out of the impasse by trying to match the SEC (including number of siblings in the family) of each individual child when setting up a comparison between the speech of a black and of a white child. The overall statistics, of course, are affected by the disparity of the two schools. There was one black upperclass child in the white school and two lower and one middleclass white child in the black fourth grade and the output from these children has been used for a more detailed analysis which, however, did not yield significant results. My research leaves a lot to be improved upon and hopefully the entire school situation in the U.S.A. will change so as to allow for these in the future.