

Pausological aspects of children's narratives

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The present research combines developmental and socioeconomic (SES) perspectives in a study of paralinguistic aspects of children's speech. Spontaneous speech samples were obtained from 94 kindergarten and second-grade children of low-, middle-, and high-SES families in response to a nine-frame sequence of cartoon cards. Results show that low-SES kindergarten children use much longer, although fewer, unfilled pauses than do middle- or high-SES children. However, by second grade there are no longer significant SES differences, a phenomena which is mainly the result of the low-SES children readjusting their use of pause time.

The present research emanates primarily from the work of Kowal, O'Connell, and Sabin (1975), who discovered a consistent developmental pattern of paralinguistic variables ranging from kindergarten through high school. "Speech rate increased steadily with age up to high school sophomores, and the acceleration was due to both frequency and length of UPs [unfilled pauses]" (p. 201).

There have also been numerous studies attempting to define paralinguistic variations among socioeconomic (SES) groups. Hawkins (1973) found differences in paralinguistic variables along SES boundaries for 6½- to 7-year-olds. He found the higher SES group used more pauses of an intermediate length as compared to those of the lower SES group.

Research by Jones and McMillan (1973) with 5-year-old kindergarten children found SES variations. "Across the three speech conditions, middle-class subjects paused less frequently and had a shorter mean pause duration than lower-class subjects" (p. 117).

The present research combines developmental and SES factors in an attempt to determine their relationships and relative strengths in defining paralinguistic behavior.

METHOD

A total of 94 kindergarten and second-grade children from St. Louis area grade schools representing three distinct SES groups were recorded.

SES levels were distinguished according to the parents' occupation and area of residence. Fathers' occupations in the low-SES group were unskilled and semi-skilled laborers with 58%, or 24, of the mothers employed either as waitresses, maids, clerical, or factory workers. The middle-SES group was composed of children whose fathers were businessmen and skilled workers, with 20%, or six, mothers in this group employed as nurses, teachers, or clerical workers. Fathers of the children in the high-SES group held executive and professional positions. Only two, or 8%, of these mothers were employed, one in teaching and the other in real estate.

All children were white and spoke only English, with no apparent speech defects. The mean age of the kindergarten children was 5 years 7 months and of the second graders was 7 years 7 months.

The groups were of unequal sizes, with the low-SES group consisting of 17 kindergarten and 24 second graders, the middle-SES group with 10 kindergarten and 20 second graders, and the high-SES group with 13 kindergarten and 10 second-grade children.

Each child was recorded individually at his school. Spontaneous speech samples were obtained in response to nine cartoon pictures featuring a dog, a girl, and a balloon. The pictures were on separate cards and were presented to each child in the same random arrangement. The content of the cartoon was such that it could be arranged in numerous meaningful sequences.

The task of the child was to arrange the cards so they were in the order of a good story. After arranging the cards and thinking about the story, the child was asked to tell the story depicted by the cards as he had arranged them, with no further instructions from the experimenter. Without a practice session, this story was recorded as it occurred spontaneously. All recording sessions were conducted by the same middle-class female experimenter.

Verbatim transcriptions were made of these recordings with no corrections or punctuation. Graphic records in terms of amplitude over time were made of the recordings with a Brüel and Kjaer audio frequency spectrometer (Type 2112) and level recorder (Type 2305). From these graphic tapes, basic measures of story length in seconds, and the location, frequency, and length of unfilled pauses (UPs) were determined. The minimum length of UPs was set at 270 msec. Response measures obtained from the transcriptions included the story length in syllables and the number of vocal hesitations.

Speech rate was measured in syllables/sec, as in O'Connell and Kowal (1972). The length of the UPs was examined in mean milliseconds. The number of syllables/total UPs in each child's story determined the average phrase length. The measures of UP length/total syllables in the story indicated the amount of pause time unconfounded by the length of the story.

RESULTS

The statistical design was a 2 by 3 (age by SES) analysis of variance. The SES factor was significant for three measures: total UPs, mean UP length, and UP length/syllable. Age was significant for four measures: mean UP length, UP length/syllable, syllables/sec (speech rate), and total story length in syllables. There were significant interaction effects for measures of total syllables and for mean UP length.

Table 1
Significance Levels by Education (K, 2) and Low- (L), Middle- (M), and High- (H) SES Levels

Measure	Factor	Groups	ANOVA F	Scheffé F
Total UPs	SES	K-H vs. L	3.48*	5.95††
		K-M vs. H		4.42**
	Interaction	K-L vs. 2-M	3.28*	3.78*
		2-L vs. K-H		4.04**
Mean UP Length	SES	K-L vs. M	5.15**	5.15††
		K-L vs. H		22.32††
	Age	L-K vs. 2	11.41***	8.81††
	Interaction	K-L vs. 2-M	4.01*	7.76††
K-L vs. 2-H		7.86††		
UP Length/Syllable	SES	K-L vs. M	3.05*	3.97*
		K-L vs. H		5.04†
	Age	L-K vs. 2	17.35†	8.37††
Syllables/Sec	Age	L-K vs. 2	24.27†	7.67††
		M-K vs. 2		3.60*
		H-K vs. 2		4.20**
Total Story in Syllables	Age	L-K vs. 2	4.79*	3.47*
		M-K vs. 2		3.82*

**p* < .05

***p* < .01

****p* < .005

†*p* < .001

††*p* < .0005

Significant differences in the analysis of variance were more precisely located by utilizing the Scheffé test for multiple comparisons (Edwards, 1972, p. 150). F and p values for significant analyses of variance and Scheffé tests are presented in Table 1.

Means and standard deviations for all significant measures in the analyses of variance are presented in Table 2.

DISCUSSION

The most outstanding differences occur for the measure of

mean UP length. The low-SES kindergarten (low-K) group is significantly different from virtually all other groups. This is particularly interesting in light of the fact that this group does not show these anomalous differences for other measures. Speech rate and story length are consistent with the other SES groups their age; there are no significant SES or interaction effects, and there is the expected age change.

The high-K group is in a similarly anomalous position for the measure of total UPs. This situation largely explains how the low-K group can be so different in UP length, yet maintain similar speech rate and story length measures within age categories.

The high- and low-K groups use UP time very differently. The high group uses frequent short pauses, while the low group

Table 2
Significant Measures in the Analysis of Variance by Educational (K, 2) and SES (L, M, H) Levels

Measure	K						2					
	L		M		H		L		M		H	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Total UPs	13.12	7.59	14.50	4.10	22.46	9.48	16.54	5.43	18.45	9.88	17.40	2.62
Mean UP Length	3300	2968	1591	1352	1154	567	993	544	1178	889	708	300
UP Length/Syllable	609	444	379	263	335	223	219	121	244	175	161	68
Syllables/Sec	1.47	.66	1.86	.62	1.99	.70	2.45	.66	2.42	.71	2.71	.70
Total Syllables	60.29	31.12	67.20	19.31	83.92	23.34	76.58	20.42	89.10	28.37	82.50	21.58

uses a few very long pauses. Nevertheless, both groups produce about the same number of syllables in the same amount of time. Speech rate and story length are held constant in the presence of SES differences due to the balancing effect of these two measures at the K level.

However, by the second grade (2) these discrepancies have been resolved. The low-SES group has dramatically shortened the length of the UPs. The measure of UP length/syllable shows the same differences without the interaction effects. It is the only group to change for these measures over age categories. This further demonstrates how different the low-SES group is on these measures in K and the dramatic changes they undergo in the first 2 years of school.

At the 2 level there are no SES differences for any measure.

As in previous work by Kowal et al. (1975), significant differences in speech rate and story length were found for age as measured by the analysis of variance, reflecting a maturing process of increasing fluency. Evidently, the first years of school have a strongly equalizing effect on children's speech, especially that which they use in a school setting, and the adjustment to the norm is greatest for the less socioeconomically advantaged children.

This is not to say that some SES differences do not survive

or even reemerge, but further research must pursue this question in greater detail.

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(Received for publication October 1, 1976.)