

The Vowel Cluster

Pronunciation Preferences of Proficient and Non-Proficient Adult Readers

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The purpose of this research was to determine whether the results of a study conducted by Johnson and Venezky (1976) are generalizable to non-proficient adult readers. One hundred eight college undergraduates for whom grade-equivalent scores on a standardized reading test were available were administered the same pronunciation test used by Johnson and Venezky. The pronunciation test data of the subjects whose grade-equivalent scores placed them in either the upper (proficient readers) or lower (non-proficient readers) quartiles were subsequently analyzed. The proficient reader results coincided with the Johnson and Venezky results, but the non-proficient reader results did not. These data were interpreted as suggesting that the vowel cluster pronunciation preferences of adult readers vary as a function of reading competency.

Recently Johnson and Venezky (1976) investigated the influence of graphemic environment and frequency of occurrence features on the vowel cluster pronunciation preference of adult readers. Fifty-one college undergraduates enrolled in either a computer programming course or an elementary education course were administered a 24-item pronunciation test over four vowel clusters: *oo*, *ou*, *ea*, and *ow*. Six synthetic, monosyllabic words were constructed for each cluster type. The words within a given cluster had different consonant endings. Each word was accompanied by four real-word alternatives. One alternative within each set of four alternatives was characterized by the principal pronunciation of a given vowel cluster, while the remaining three were characterized by less frequently occurring pronunciations.

The subjects were told to read a synthetic word to themselves and to note how they pronounced the vowel cluster, after which they were to underline the real word that contained the same vowel sound. The actual number of principal

pronunciations obtained for each synthetic word was then compared with the number of principal pronunciations predicted by three different models: (1) a model based on the percentage of words selected from a list of common words which contained the same vowel cluster and the same consonant ending as the synthetic word, and which were characterized by that cluster's principal pronunciation (the graphemic environment model), (2) a model based on the percentage of words selected from the same list which contained the same vowel cluster as the synthetic word, and which were characterized by that cluster's principal pronunciation (the frequency of occurrence model), and (3) a model based on the assumption that all of the responses to a given cluster will be the principal pronunciation for that cluster. It was shown that the number of actual principal pronunciations was more consistently similar to the number of principal pronunciations predicted by model 1 than by either of the other two models, indicating that the vowel cluster pronunciation preferences of adult readers are more affected by graphemic environment than by frequency of occurrence features.

Although the authors did not characterize the subjects in terms of any attributes other than course membership, it seems plausible to assume that on the average they were proficient readers: Given the results obtained by Johnson (1970) in an earlier study, it also seems plausible to assume that the Johnson/Venezky results will not generalize to non-proficient adult readers; the subjects of high reading ability in the Johnson study consistently gave more principal pronunciations to vowel clusters than the low reading

ability subjects. In other words, whereas the vowel cluster pronunciation preferences of proficient adult readers may be more influenced by graphemic environment than by frequency of occurrence features, for non-proficient readers either the reverse may be the case, or the two features may exert an equal influence on vowel cluster pronunciation preferences.

The present study, then, was undertaken to determine whether or not the Johnson/Venezky results with respect to models 1 and 2 will generalize to non-proficient adult readers. It was decided to disregard the model 3 results since they do not pertain to the basic research issue of the relative influence of graphemic environment and frequency of occurrence features.

Method.

Subjects

The subjects whose data were analyzed included 54 undergraduates enrolled in a reading/study skills course at Drake University. They represented half of the total number of students who participated in the testing.

Tests

In order to test the research hypothesis, it was necessary to isolate two groups of readers: those who could legitimately be

characterized as proficient readers, and those who could legitimately be classified as non-proficient readers. This classification was accomplished by selecting the subjects included in the upper (proficient) and lower (non-proficient) quartiles on the combined vocabulary and comprehension section of the Nelson-Denny Reading Test, Form C, which had been administered at the beginning of the semester as a part of the normal testing sequence in the reading/study skills course. This procedure resulted in a grade-equivalent range of 14.0-15.0 for proficient readers, and a grade-equivalent range of 6.0-11.5 for non-proficient readers. The means and standard deviations of the Form C grade-equivalency scores for the two groups are presented in Table I.

The pronunciation test was identical to the one employed and described in detail by Johnson and Venezky (1976).

Procedure

The pronunciation tests were administered over a period of three days by four graduate assistants assigned to teach the reading/study skills course. Approximately one week prior to testing, the investigator had briefed the instructors with respect to the purpose for the testing, and had provided them with a sufficient number of copies of the test complete with directions, and an announcement explaining the volunteer nature of the experiment. Both the announcement and the test directions were read to the examinees by their instructors.

I Reading Test Means and Standard Deviations of Proficient and Non-Proficient Readers

	N	Mean	S.D.
Proficient	27	14.6	.41
Non-Proficient	27	9.4	1.42

Data Analysis

The percentage of actual principal pronunciations and the percentage of principal pronunciations predicted by models 1 and 2 were calculated for each test item on each of the following groups: the original Johnson/Venezky sample, the proficient readers, and the non-proficient readers. The absolute deviation between actual percentage and predicted percentages was then determined for each item. The deviations were summed and divided by the number of items, yielding a mean percent deviation for both prediction models for each group of subjects. The Johnson/Venezky sample was included for two reasons: (1) the data analysis procedure employed in the present study differed from that employed in their study, and (2) its inclusion permitted verification that the subjects in that sample were primarily proficient readers.

Results

The average absolute deviations of the percentage of predicted principal pronunciations from the actual percentage of principal pronunciations across all of the test items are presented in Table II.

The percentages for the Johnson/Venezky and the proficient groups are highly similar, thus providing evidence that the Johnson/Venezky group consisted primarily of proficient readers. For both groups, the actual versus predicted discrepancy associated with model 1 (graphemic environment) was notably smaller

II Mean Percent Deviations of Predicted from Actual Principal Pronunciations for the Three Reader Samples

Sample	Model 1	Model 2
Johnson/Venezky	18.3	26.9
Proficient	19.6	26.8
Non-Proficient	20.3	20.9

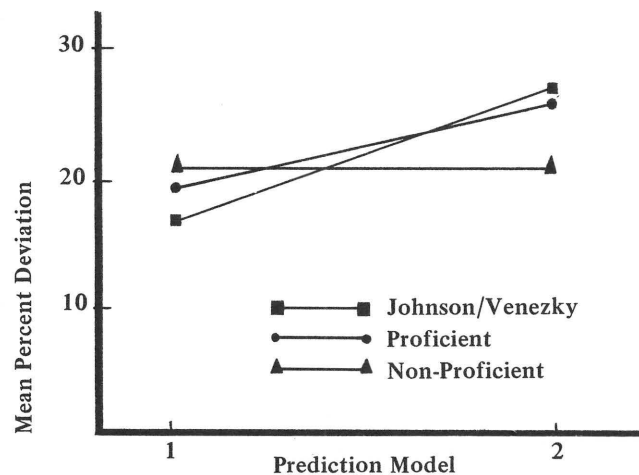
than the actual versus predicted discrepancy associated with model 2 (frequency of occurrence). The pattern of percentages for the non-proficient group, however, deviates from the Johnson/Venezky group and the proficient group pattern; the actual versus predicted discrepancies associated with models 1 and 2 are essentially the same. Figure 1 illustrates the respective patterns graphically.

The means and standard deviations of the proficient and non-proficient readers on the pronunciation test are presented in Table III. There were twenty-three items on the pronunciation test. The difference between the means of the two groups of readers was found to be statistically significant beyond the .001 level ($t=3.45$).

Discussion

The results of this study yielded two major outcomes: (1) a replication of the Johnson/Venezky results with respect to proficient readers, and (2) evidence that the Johnson/Venezky results are not generalizable to non-proficient readers. A virtual match occurred between the Johnson/Venezky and proficient groups in terms of the average percent deviations of predicted from actual principal pronunciations; such a match did not occur in the case of the non-proficient group.

The data collected in this study, then, were interpreted as suggesting that the vowel cluster pronunciation preferences of proficient adult readers are more affected by graphemic environment features than by frequency of



1 Mean percent deviations under both prediction models for the three reader samples.

III Pronunciation Test Means and Standard Deviations of Proficient and Non-Proficient Readers

	N	Mean	S.D.
Proficient	27	18.0	2.04
Non-Proficient	27	14.9	4.39

occurrence features, which is what Johnson and Venezky concluded with respect to adult readers in general. However, these data also indicate that in the case of non-proficient adult readers, graphemic environment and frequency of occurrence features exert an approximately equal influence on vowel cluster pronunciation preferences.

The fact that the vowel cluster pronunciation preferences of non-proficient adult readers appear to be equally influenced by graphemic environment and frequency of occurrence features is not surprising. Generally speaking, non-proficient readers do less independent reading than proficient readers, and are therefore less likely to internalize pronunciation patterns associated with certain contextual constraints. Also, non-proficient readers tend to receive more intense doses of isolated phonetic analysis instruction over vowels and vowel combinations than proficient readers, and are therefore more likely to utilize decoding strategies which do not take into account neighboring graphemes.

Johnson, D. D. *Factors related to the pronunciation of vowel clusters*. Technical Report No. 149. Madison: Wisconsin Research and Development Center for Cognitive Learning, 1970.

Johnson, D. D. and Venezky, R. L. Models for predicting how adults pronounce vowel digraph spellings in unfamiliar words. *Visible Language*, 1976, 10, 257-268.