PR or GR?

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Fifteen Ss each learned 12 paired associates whose response terms represented four form-classes (CVC, VCC, CCV, CCC). The form-classes were equated for PR. However, differences in ease of learning for the various form-classes were statistically significant, both for trials to criterion and for mean number of correct responses in 25 trials. In terms of decreasing ease of learning the form-classes were ordered CCV, CCC, CVC, VCC, contrary to a prediction based on letter-sequence preferences determined by frequency of experience in language (GR).

Underwood (1965) has suggested that trigrams may possess a grammar (GR) in somewhat the same way as sentences do. That is, previous language habits may dictate preferences for the appropriate ordering of the three units (letters) in a trigram as well as for words in a sentence. The appropriate arrangement of letters is presumed to be CVC (consonant-vowel-consonant), since it is the most frequently experienced. However, the fact that CVCs are generally easier to learn than trigrams of other form-classes (e.g., CCCs) cannot be taken as evidence for a grammatical interpretation, since differences in GR are confounded with differences in pronounciability.

Evidence suggestive of the importance of GR was obtained by Lindley (1963) and by Braud, Tolin, & Holborn (1966). Pronounciability rating (PR), which has regularly been shown to be a good predictor of ease of learning in lists of mixed-form class (Underwood & Schulz, 1960), was not when lists were composed solely of CVCs. Thus it was conceivable that GR was the fundamental attribute, and that PR only reflected differences in GR. However, subsequent investigation (Braud, Holborn, & Tolin, 1967) revealed that when lists were homogeneous with respect to form-class (CVCs), but not also homogeneous with respect to PR (easy or difficult) as in the two previous studies (Braud et al, 1966; Lindley, 1963), PR did predict ease of learning.

Nevertheless, it remained of interest to determine if differences in form-class, here referred to as differences in GR, would result in differences in rate of learning when PR was equated for various form-classes (CVCs, VCCs, CCVs, CCCs). A prediction based on GR, or letter-sequence preferences determined by differences in frequency of experience, would specify decreasing ease of learning in the above form-class order. If pronounciability is the critical factor, differences among form-classes should not be reliable.

Subjects

The Ss were 15 introductory psychology students

at the University of Iowa who had not served previously in experiments with similar materials.

Design and materials.

A mixed form-class list was employed. Each S learned a 12-pair list with three response terms in each form-class (CVC, VCC, CCV, CCC). The response items were selected and matched as closely as possible on PR, from Appendix E of Underwood & Schulz (1960). Mean PR for CCCs and CVCs was 7.24; for CCVs, 7.23; and for VCCs, 7.20. The various form-classes were approximately equally affected by formal intralist similarity, CCVs being somewhat more so than the other form-classes. Stimulus items were the numbers 1-12. Four random orders of presentation were used to prevent serial learning of the response terms.

Procedure

The lists were presented on a memory drum at a 2:2-sec. rate, with a 4-sec. intertrial interval. The lists were learned to a criterion of one perfect recitation (spelled anticipation) or for 25 trials, whichever took longer. Thus, the data for the number of trials to criterion and for the number of correct responses during 25 trials were collected.

Results and Discussion

Table 1 presents the means and SDs for number of trials to reach criterion and for total number of correct responses in 25 trials for the four form-classes. Form-class had a highly significant effect on both the trials to criterion ($F=9.87$, $df=3/42$, $p<.001$), and the number of correct responses measure ($F=7.60$, $df=3/42$, $p<.001$). However, in terms of decreasing ease of learning the form-classes were ordered CCV, CCC, CVC, VCC, contrary to the GR prediction of CVC, VCC, CCV, CCC. The form-classes which Underwood (1965) reported as occurring most frequently as three-letter words (CVCs and VCCs) were in fact the most difficult to learn. The CCVs were most affected by formal intralist similarity, but were easiest to learn.

Lindley (1963) found that association value (AV) predicted rate of learning when PR and frequency were held constant. However, the effect of AV in

Table 1. Means and Standard Deviations of Trials to Criterion and Number of Correct Responses During 25 Trials

Form-Class	Total Correct		Trials to Criterion	
	Mean	SD	Mean	SD
CVC	35.07	12.75	18.53	6.08
VCC	33.00	12.09	21.07	6.96
CCV	48.00	11.42	13.13	6.55
CCC	40.93	14.67	16.33	7.84

the present experiment could not be determined, as there is no common scale of AV for the various form-classes. Also, those frequency values that could be obtained from Appendix D of Underwood & Schulz (1960) suggested that the particular CCV items used in the present experiment may occur with a greater frequency in the language than the items employed in the other form-classes.

Caution is advised in interpreting the observed form-class differences in performance. The number of items in each form-class was small and may represent a biased sample. The equation of PR may not have been reliable with so few items. Thus the generation of, and scaling of pronunciability for, sufficient items in each form-class is a necessary

step to extend the generality of the present findings, which are interesting as a preliminary analysis.

References

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