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ABSTRACT

It was hypothesized that, with stimulus words selected for familiarity and associative hierarchy, extreme responders give faster and more common or popular free associations than nonextreme responders. Results did not support this hypothesis. Predicted effects of stimulus word attributes were observed. (Author)

Effects of extreme response style and stimulus word attributes on free association

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Extreme-response style (ERS) refers to the tendency to select extreme categories on tests which require the individual to respond along an intensity dimension, such as strongly agree, agree, undecided, disagree, strongly disagree. Evidence for the reliability and generality of ERS is fairly strong (Hamilton, 1968), and several factor analytic studies of personality variables and response styles have produced substantial loadings on an ERS factor. Viewed as a personality trait, ERS can be interpreted as one manifestation of a more general behavioral deviancy, a pattern including rapid closure (or "high speed of Gestalt completion"; Damarin & Messick, 1965) and the inability to modulate attitudinal reactions (Zuckerman, Oppenheimer, & Gershowitz, 1965).

Arthur and Freemantle (1966) report a significant positive correlation between extreme responding on the semantic differential and the tendency to give common or popular responses in a free association task; they conclude that both ERS and associative commonality are determined in part by the availability of intense responses which the individual does not inhibit. Implicit in this interpretation is the idea that highly reactive or impulsive individuals are likely to be extreme responders and to give quick and easy free associations. The present study was designed to

provide further information on the relationship described by Arthur and Freemantle, and to consider effects of two stimulus word attributes, frequency and associative hierarchy, not controlled in their investigation.

Method

Selection of stimulus words

Words were selected from the Kent-Rosanoff list on the basis of Thorndike-Lorge frequency and the type of associative hierarchy they produce (Mednick, Mednick, & Jung, 1964). Associative hierarchy was determined from two sources of normative free association responses, given by large numbers of college students (Schellenberg, 1930; Jenkins and Palermo, 1964). Both sources included all 100 Kent-Rosanoff words, and listed the first, second, and third most frequent responses to each, along with the frequency of each response.

To qualify in the steep association hierarchy category, a stimulus word was required to meet each of three criteria: (1) identical most frequent responses on both normative lists; (2) combined percentage of the most frequent response for both lists greater than 75%; and (3) a margin greater than 45% between the combined percentage of the most frequent response and the second most frequent response regardless of whether the second most frequent response ~~regardless of whether the second most frequent response~~ was identical on both lists. For the steep hierarchy stimulus word high, the response low was the most frequently given by

both norm groups, (criterion 1); 47% of Schellenberg's subjects and 56% of Jenkins and Palermo's subjects gave the response low (combined percentage of 103% greater than 75% required by criterion 2); the second most frequent response was up (7%), for Schellenberg's subjects, and mountain (15%) for Jenkins and Palermo's subjects (the combined percentage of 25%, for the second most frequent responses, results in a margin between most frequent and second most frequent responses of 78%, which satisfies criterion 3).

The criterion of identical most frequent response in both norm groups was not used in identifying flat hierarchy words. Combined percentage of most frequent response on both lists was restricted to less than 48%, and the margin betwcen combined percentage of most frequent and second most frequent response was established at less than 20%. The stimulus word trouble evoked the most frequent response of sorrow (11%), and bad (10%) from Schellenberg's and Jenkins and Palermos's samples respectively, satisfying criterion (1) for a flat hierarchy. Second most frequent responses to trouble were worry (7%), for Schellenberg, and police (5%) for Jenkins and Palermo, producing a combined percentage of less than 20%, satisfying criterion 2 for flatness. Applying the above criterion to both sets of norms for the 100 Kent-Rosanoff words, a total of 47 words were selected for the attribute of associative hierarchy produced, 25 classified as being steep hierarchy words, and 22 classified as being flat.

These 47 words were then assessed for familiarity or frequency, using the Thorndike-Lorge G list. High frequency words were defined as those occurring at least 1000 per million written words, and low frequency words as less than 100 times per million. All intermediate frequency words were discarded, and five words were selected for each of the following categories: high frequency and steep hierarchy, high and flat, low and steep, and low and flat (see Fig. 1). Of the 20 words finally chosen, none were synonyms, homonyms, or antonyms of any other.

Subjects

Forty college women were selected from 261 who completed a group administration of Berg's Perceptual Reaction Test, a widely used and relatively content-free index of ERS. The 20 highest (scores over 35) and the 20 lowest (scores under 14) scoring women served as subjects.

Materials

A Wollensak tape recorder, stop watch, and stimulus words typed in the center of 3 X 5 cards, were used.

Procedure

Ss were tested individually in the free association task. A standard set of instructions was read to each S and stimulus words were then presented in the sequence of rows of stimulus words in Fig. 1. E simultaneously spoke the word and presented a 3 X 5 card with the word typed in the center. A trial consisted of the presentation of one stimulus word, and ended when the response was given, with an intertrial interval of seven seconds.

E was unaware of S's ERS classification. E was, however, aware of the salient stimulus word attributes. E manually recorded the responses to each word, and the response time. Sessions were tape recorded as a check for accuracy of timing and recording.

Results

Tape-recorded response times were smaller than hand-recorded times for nearly all Ss; the two sets of measures were therefore analyzed separately. All response words proved to have been accurately recorded by E. Hand-recorded times correlated .88 with tape-recorded times, suggesting a constant error in E's manual recording procedure. Since E was familiar with the stimulus word attributes, the possibility of systematic bias in hand-recorded response time was tested by calculating mean differences between hand-and tape-recorded times for the four categories of stimulus words. Hand-recorded times were .38 and .33 seconds slower than tape-recorded times for frequent and infrequent words, respectively, and were .38 and .37 seconds slower for steep and flat hierarchy words, respectively. Differences between these pairs of values were not significant, suggesting the absence of any systematic hypothesis-relevant experimenter bias with regard to frequency and hierarchy effects.

Table 1 summarizes the analysis of variance for response time manually recorded by E. Neither ERS nor frequency exerted significant ~~and~~ main effects on response time, but associative

hierarchy showed a pronounced main effect. A small but statistically significant interaction of hierarchy with frequency also appeared. The same analysis, with tape-recorded times, is presented in Table 1a. The strong hierarchy effect appears here, but none of the interactions reach significance.

Normative commonality was determined for each stimulus word by identifying target responses. For each steep hierarchy word the target response was its predominant association; for each flat hierarchy word, either of two or three target responses were allowed, including most frequent associations from the combined normative lists, since there is often no predominant response for flat hierarchy words. Frequency of target responses for each type of stimulus word was determined for each subject. Table 2 presents the analysis of variance for normative commonality. The significant F values for frequency and associative hierarchy indicate that these two dependent variables influenced the normative commonality for response items, as expected. However, the significant ERS effect was in a direction opposite that described by Arthur and Freemantle, with low ERS subjects giving more common responses. A hierarchy X frequency interation was found.

Within-sample commonality was calculated from percentage of each response in the total sample. The analysis of these data is summarized in Table 3; results were nearly identical to those observed in the analysis for normative commonality. Frequency and

associative hierarchy effects were found, and ERS effects were again opposite in direction to those reported by Arthur and Freemantle.

The assumption of homogenity of variance for the two ERS groups was supported in the four analyses of variance. Bartlett's test yielded chi-squares of less than one in each case.

Response time showed the expected negative relationship with both indices of commonality in the total sample, yielding significant coefficients of -.44 and -.40 for normative and within-sample commonality, respectively.

Discussion

Arthur and Freemantle's intuitively plausible account of a direct relationship between ERS and associative commonality is not supported by the present results. Their correlation coefficient of .34, while statistically significant of the .05 level, is not impressively large. On the other hand, the present ERS effects, which indicate an inverse relationship, are also significant only at the .05 level, and are from subjects taken from extremes of the ERS dimension. Considering the two sets of findings together, it appears that either or both of the statistically justified conclusions may represent Type I errors; it is possible that the null hypothesis accurately describes the ERS-commonality relationship. It should be noted, too, that differences in method may be partly responsible for differences in findings, since Arthur and Fremantle used a written, group-administered word association task, while the

present study did not.

The findings with regard to stimulus word attributes are less equivocal; the present data demonstrate clearly that commonality of free association is much more powerfully determined by stimulus word characteristics than by the subject's disposition toward extreme responding. Associative hierarchy exerts strong effects on both speed and commonality of responses, while frequency appears to influence commonality quite reliably. The significant interaction effects of frequency with hierarchy suggest that each accentuates effects of the other in determining response commonality. The overall pattern of findings indicates that psychologists using free association techniques for either clinical or research purposes should assess their stimulus words on these dimensions.

One final point merits consideration. On listening to the tape, it was apparent that the vocal presentation by E was not consistent and uniform, in terms of volume, enunciation, and emphasis. These irregularities were not analyzed, but could conceivably have been a source of systematic error in the present results.

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Table 1

Analysis of Variance for Response Time (Recorded by Examiner)

Source	SS	df	MS	F
ERS (A)	99.2	1	99.2	3.5
Frequency (B)	3.5	1	3.5	
Associative hierarchy (C)	1428.0	1	1428.0	51.0**
A X B	.6	1	.6	
A X C	25.6	1	25.6	
B X C	172.2	1	172.2	6.1*
A X B X C	.2	1	.2	
Error (Within Treatments)	4262.6	152	28.0	
Total	5591.9	159		

* $p < .05$

** $p < .01$

Table 1a

Analysis of Variance for Response Time (Tape Recorded)

Source	SS	df	MS	F
ERS (A)	50.3	1	50.3	2.3
Frequency (B)	0.4	1	0.4	
Associative Hierarchy (C)	1377.8	1	1377.8	62.9**
A X B	0.5	1	0.5	
A X C	1.1	1	1.1	
B X C	50.4	1	50.4	2.3
A X B X C	6.3	1	6.3	
Error (Within Treatments)	3334.1	152	21.9	
Total	4820.9	159		

* $p < .05$

** $P < .01$

Table 2

Analysis of Variance for Normative Commonality

Source	SS	df	MS	F
ERS (A)	3.9	1	3.9	4.2*
Frequency (B)	9.5	1	9.5	10.6**
Associative Hierarchy (C)	247.2	1	247.2	262.9**
A X B	1.1	1	1.1	
A X C	.8	1	.8	
B X C	41.0	1	41.0	45.6**
A X B X C	.5	1	.5	
Error (Within Treatments)	142.0	152	.9	
Total	446.0	159		

* $p < .05$

** $p < .01$

Table 3

Analysis of Variance for Within-Sample Commonality

Source	SS	df	MS	F
ERS (A)	1.5	1	1.5	5.0*
Frequency (B)	18.3	1	18.3	60.0**
Associative Hierarchy (C)	189.5	1	189.5	631.7**
A X B	.1	1	.1	
A X C	.9	1	.9	
B X C	49.6	1	49.6	165.3**
A X B X C	.7	1	.7	
Error (Within Treatments)	47.5	152	.3	
Total	308.1	159		

* $p < .05$

** $p < .01$

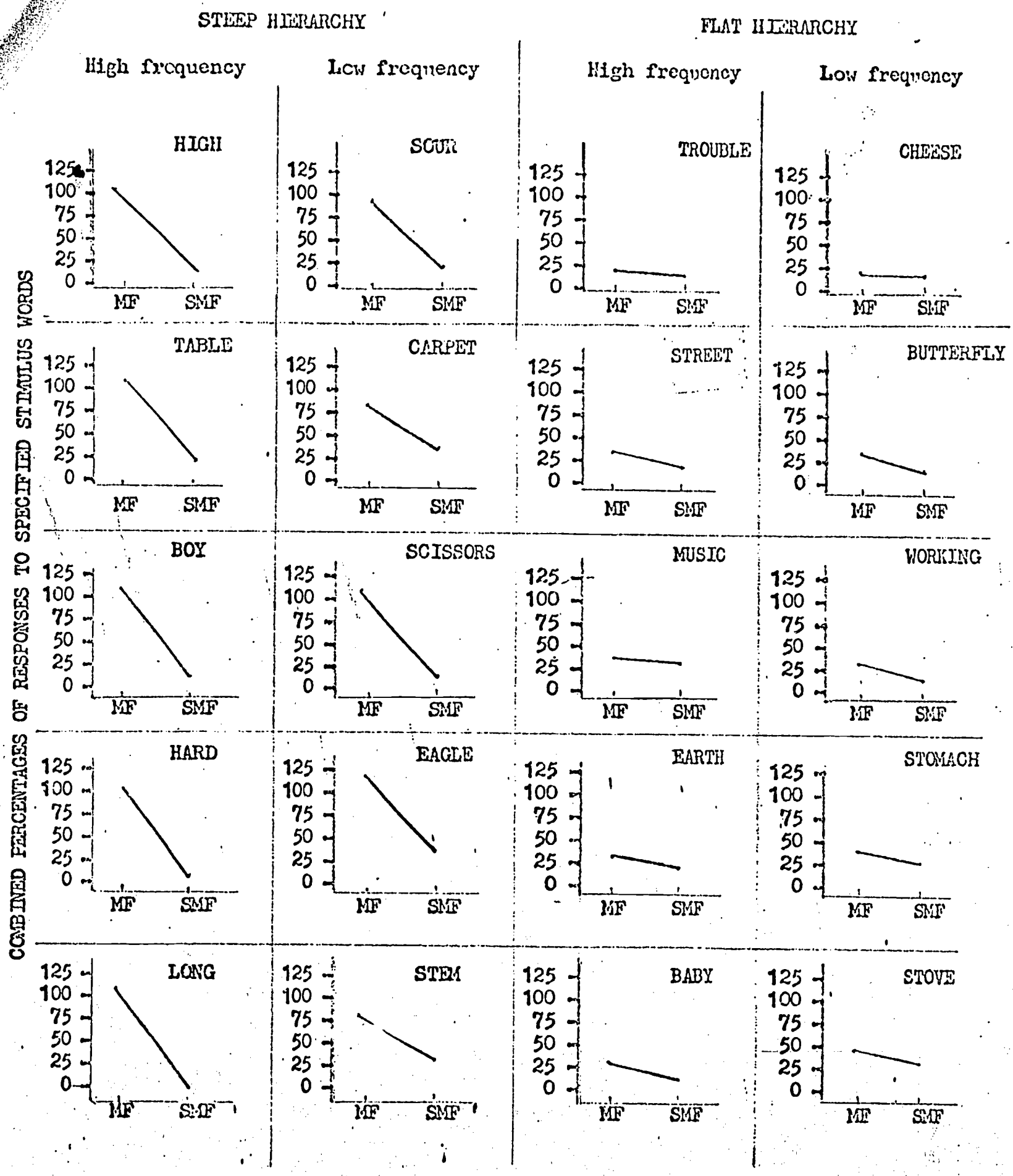

Fig. 1. Combined percentages from Schellenberg (1930) and Jenkins and Palermo (1964) normative lists of most frequent (MF) and second most frequent (SMF) free association responses of college students to stimulus words producing steep and flat associative hierarchies and varying in Thorndike-Lorge frequency.