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Serial position and affect

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This study examined the influence of serial position of subjects' affect ratings of stimuli. Ninety subjects saw a serial list of 12 nonsense words repeated two, four, or eight times. Subjects rated the words and then attempted to recall them. Results indicated that: (a) A curvilinear relationship exists between serial position and affect, with first and last items preferred to middle items. (b) Recall is most accurate for the first items in the list. (c) Partially and completely recalled words are preferred to words which were not recalled. (d) After controlling for recall, the curvilinear relationship between serial position and affect still remains.

This paper is concerned with the relationship between serial position and evaluative rating. Substantial experimental investigation in a related area has revealed that the stimulus attribute of frequency of exposure influences affect (as assessed by evaluative rating), with high-frequency items being rated more positively (Harrison, 1968; Matlin, 1970; Zajonc, 1968). This research demonstrated that some phenomena from the social psychology research about attraction and attitudes may be explained in terms of variables normally confined to verbal learning research. It therefore seems useful to investigate further areas in which social psychology phenomena can be clarified by verbal learning paradigms. This can be done by examining serial position, another stimulus attribute that has received considerable attention in verbal learning, to determine if this variable influences affect as well.

Two papers (Matlin, 1974; Stang, in press) have demonstrated a relationship between serial position and affect. Serial position, in these earlier studies, was defined as the section of a long list in which the word occurred one or several times. In both studies, words in the first and last sections were preferred to words in the middle. However, I have been unable to locate any study investigating the relationship between serial position and affect where serial position is manipulated according to the classic serial learning paradigm. The present experiment used the serial learning paradigm by assigning each of 12 stimuli to a constant serial position in a list and by repeating the list two, four, or eight times.

METHOD

Ninety male and female students, enrolled in introductory psychology at State University of New York at Geneseo, served as subjects in the experiment. They were tested in groups of 10 in each of nine stimulus conditions, representing all combinations of the three list orders and three frequency of exposure categories.

Stimuli were 12 neutrally rated nonsense words of the form CVCVCCV. Each word was printed in black letters on transparent slides. The slides were arranged in three random orders, representing the three lists. Slides were projected on a screen for 8 sec each.

Following list presentations, subjects rated each of the 12 stimuli and three similar but novel stimuli on a seven-point good/bad scale. Subjects were instructed to rate the words according to how much they *liked* the words. They next received blank sheets of paper on which they were instructed to write as many words as they could remember. They were urged to guess whenever they could not recall the exact spelling.

RESULTS

An analysis of variance was performed on the affect rating data. Serial position had a significant effect ($F = 2.47$, $df = 11/891$, $p < .01$), but no other main effects or interactions reached significance. Trend analysis of the serial position effect revealed a significant quadratic trend ($F = 8.12$, $df = 1/891$, $p < .01$). This demonstrates that serial position influences affect ratings nonlinearly, with items at the beginning and end of the series preferred to items in the middle (see Figure 1). Thus the data support earlier reports (Matlin, 1974; Stang, in press) that serial position and affect are related in a curvilinear fashion.

It is possible that the relationship between stimulus position and affect can be explained by an artifact such

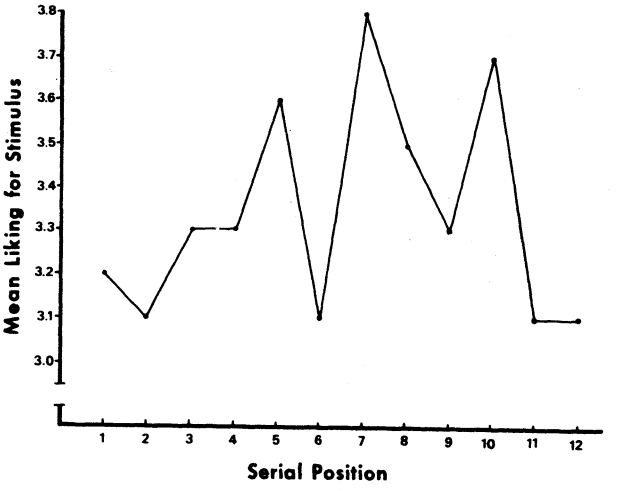

Figure 1. Relationship between serial position and affect rating (1 = good, 7 = bad).

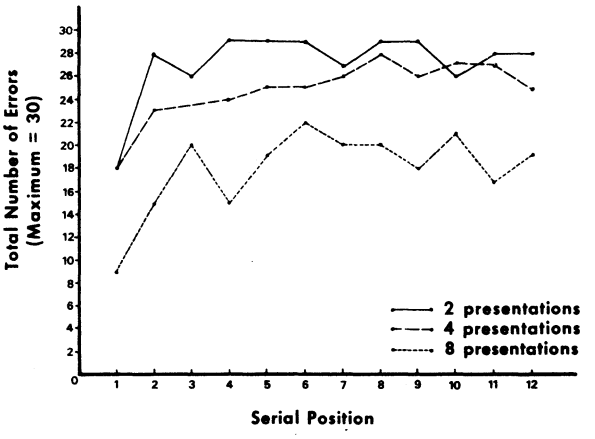

Figure 2. Relationship between serial position and recall errors.

as memory. For example, serial position may influence memory, which in turn may influence affect. Further analyses were performed to examine this explanation.

First of all, does serial position influence memory in the present experiment? Figure 2 illustrates the relationship between serial position and recall errors. The criterion for correct recall was perfect spelling of the nonsense word. To permit analysis of variance, serial positions were combined by three's into four serial position groups. The analysis of variance showed that serial position influenced recall ($F = 13.55$, $df = 3/245$, $p < .001$). A Newman-Keuls analysis of this factor demonstrated that the first serial position group was significantly different from all other serial position groups ($p < .01$), but all three other serial positions were recalled equally well.

Next, does memory influence affect? Earlier research (Matlin, 1971) measured the relationship between affect and recognition of nonsense words. Of words that subjects had seen earlier, those they labeled as familiar were preferred to words they labeled as unfamiliar. The present data contain information on the relationship between affect and memory, using *recall* of words, a more stringent measure of memory than mere recognition. For each subject, the average rating was obtained for words that she recalled completely, words that she recalled partially, and words that she did not recall. An analysis of variance was conducted on the affect ratings. Recall category was the only factor significantly related to rating ($F = 4.00$, $df = 2/124$, $p < .05$). The means for the categories of complete, partial, and no recall were 3.0, 3.1, and 3.4, respectively. A Newman-Keuls analysis demonstrated that words not recalled were liked less than words either partially or completely recalled ($p < .01$), but partially recalled words were not liked less than completely recalled words ($p < .05$). Each subject also had rated three novel stimuli in addition to the 12 stimuli from the serial position list. Are these novel stimuli liked less than stimuli that the subject saw before but could not recall? A t test compared mean affect for novel words with mean affect for words seen but not recalled. The results showed that novel stimuli were liked significantly less ($t = 2.20$, $df = 88$, $p < .05$). Thus, stimuli recalled completely or partially are liked better than stimuli that are not recalled. Even stimuli that are not recalled, however, are liked better than stimuli that have not been seen previously.

In view of the above analyses, a final analysis was performed on the serial position-affect data to determine whether the relationship between serial position and affect is maintained when the affect scores are corrected for selective recall, i.e., superior recall for words in the first serial positions.[1] An analysis of variance using the corrected affect scores indicated that serial position still had a significant influence on affect ($F = 1.90$, $df = 11/891$, $p < .05$). No other main effects or interactions were significant. Trend analysis of the serial position effect showed a significant quadratic trend ($F = 4.37$, $df = 1/891$, $p < .05$). Thus, serial position per se does influence affect ratings, and selective recall is only a partial cause of the relationship.

DISCUSSION

The reason for this relationship between serial position and affect is unclear at present and requires additional investigation. Two possible explanations are: (1) In any organized sequence of events in everyday experience, the best or the most important events are typically placed first or last (Matlin & Stang, Note 1). Subjects may generalize from these experiences and bring with them a set which attributes enhanced affect to stimuli in the first and last positions. (2) Alternately, subjects may rehearse these stimuli in the first and last positions more frequently than stimuli in middle positions. Rehearsal, in essence, constitutes repeated exposure, which, according to Zajonc (1968) and others, will enhance affect ratings substantially.

A curvilinear relationship exists between serial position and evaluative rating for nonsense word stimuli, with first and last items preferred to middle items. After controlling for recall, the curvilinear relationship still remains.

REFERENCE NOTE

1. Matlin, M. W., & Stang, D. J. *The Pollyanna Principle.* In preparation.

REFERENCES

Harrison, A. A. Response competition, frequency, exploratory behavior and liking. Journal of Personality and Social Psychology, 1968, 9, 363-368.

Matlin, M. W. Response competition as a mediating factor in the frequency affect relationship. Journal of Personality and Social Psychology, 1970, 16, 536-552.

Matlin, M. W. Response competition, recognition, and affect. Journal of Personality and Social Psychology, 1971, 19, 295-300.

Matlin, M. W. Serial position, perceived serial position, and affect. Journal of General Psychology, 1974, 91, 245-258.

Stang, D. J. The effects of "mere exposure" on learning and affect. Journal of Personality and Social Psychology, in press.

Zajonc, R. B. Attitudinal effect of mere exposure. Journal of Personality and Social Psychology Monograph Supplement, 1968, 9, (2, Part 2).

NOTE

1. Affect scores were controlled for recall as follows: First, predicted affect if only recall were operating was estimated for each serial position by the formula

$$\frac{3.0\,C + 3.1\,P + 3.4\,N}{90}$$

where 3.0, 3.1, and 3.4 represent the mean affect for stimuli completely, partially, and not recalled; C, P, and N represent the number of stimuli in each category; and 90 was the total number of stimuli. For serial positions 1, 2, and 3, the predicted affect scores were 3.1, 3.2, and 3.2, respectively, For the other 9 serial positions, the predicted affect scores were all 3.3. To equalize for recall, .2 was added to every subject's affect score for serial position 1., and .1 was added for serial positions 2 and 3.

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