Order Effects in the Integration of Verbal Descriptions

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Abstract. Respondents were provided with a series of message ensembles, each of which contained nine descriptions, all based on the same referent-photograph. Their task was to identify the appropriate target-photograph. Descriptions that were presented at the beginning or at the end of a message-set were more influential determinants of choice than those presented in the middle of the series.

Items that are placed at the beginning or at the end of a list that is to-be-recalled are normally easier to remember than those that appear in the middle of the list. While this pattern of results has been explored most intensively in the context of verbal learning experiments, similar effects have been observed in a number of settings quite removed from the traditional learning laboratory. Because of the varied situations that yield bow-shaped performance patterns, Crowder (1976) has speculated about the possibility that the serial position curve may derive from some general cognitive principle, in contrast to the more parochial theories advanced in the learning and memory literature.

The present experiment examined serial position effects in the context of referential communication (Manis & Platt, 1975; Manis & Platt, 1976; Manis, Fichman, & Platt, 1978). While most studies of the serial position effect have used short, disconnected components (e.g., unrelated verbal units, the respondents in this study were presented with a series of descriptive passages, all based on the same referent (a photograph of an actor, portraying one of several emotions). The respondents' task was to integrate the information that they received, and to choose the appropriate "target-referent" from an array of 24 photographs. The main purpose of the study was to examine the effectiveness of the integration process as a function of the serial order of the input elements. To explore the stability of the results that were obtained, the experiment included both immediate and delayed testing procedures.

Design. Each message-set contained some accurate (high-valid) and some less-accurate (low-valid) passages. Following Anderson (1965), a block of three focal massages (either $L_1L_2L_3$ or $H_1H_2H_3$) was inserted at one of four selected positions in a series of contrasting background passages (see Table 1); this made it possible to explore the impact of the focal (or probe) descriptions as a function of their position within the overall series. For example, respondents in the low-valid condition received message ensembles that included three low-valid passages as *probes*, and six high valid passages as *background*.

Table 1: Ordering the Descriptive Passages Within Message Ensembles

Position	Low-Valid Condition (Low-valid *focal* descriptions)	High-Valid Condition (High-valid *focal* descriptions)
1	$\underline{L_1L_2L_3}H_1H_2H_3H_4H_5H_6$	$\underline{H_1H_2H_3}L_1L_2L_3L_4L_5L_6$
2	$H_1\underline{H_2L_1L_2L_3}H_3H_4H_5H_6$	$L_1\underline{L_2H_1H_2H_3}L_3L_4L_5L_6$
3	$H_1H_2H_3H_4\underline{L_1L_2L_3}H_5H_6$	$L_1L_2L_3L_4\underline{H_1H_2H_3}H_5H_6$
4	$H_1H_2H_3H_4H_5H_6\underline{L_1L_2L_3}$	$L_1L_2L_3L_4L_5L_6\underline{H_1H_2H_3}$

Note: L = Low-valid (poor) descriptions; hit rate = 10-32%
H = High-valid (good) descriptions; hit rate = 40-64%

Method. Sixty-four University of Michigan students (31 males and 33 females) participated in this study. They decoded a series of eight message sets, each one of which contained nine descriptions of a different facial expression; within each message set, all descriptions referred to the same target expression. Each description was exposed for 15 seconds by a Carousel projector. The subjects' task was to choose the target expression from an array of 24 possible alternatives, all showing the same actor in different poses. Respondents made their choices either immediately following the message set or after an unpredictable two minute *delay* period, during which time they worked on an irrelevant arithmetic task. Individual descriptions were coded as high-valid (i.e., relatively accurate) or low-valid (relatively inaccurate) based on the percent correct that each passage elicited when decoded separately.

Experimental Design. The study was based on a complex experimental design that involved both within- and between-subject variables. The within-subject variables were: *probe position* and *immediate vs. delayed choice*. The validity of the probe passages (high or low) constituted a between-subjects variable; other between-subject variables were established to insure effective counterbalancing. Subjects were run in small sets of one to four, that were randomly assigned to the various subgroups that the design called for.

Results. The two testing procedures (immediate vs. delayed choice) yielded similar results; hence that data that are reported in Figure 1 reflect, for each condition, the percentage of correct choices, averaging the results obtained in the two test periods. The focal descriptions had their greatest impact when positioned at the beginning or the end of series, rather than in the middle. For example,

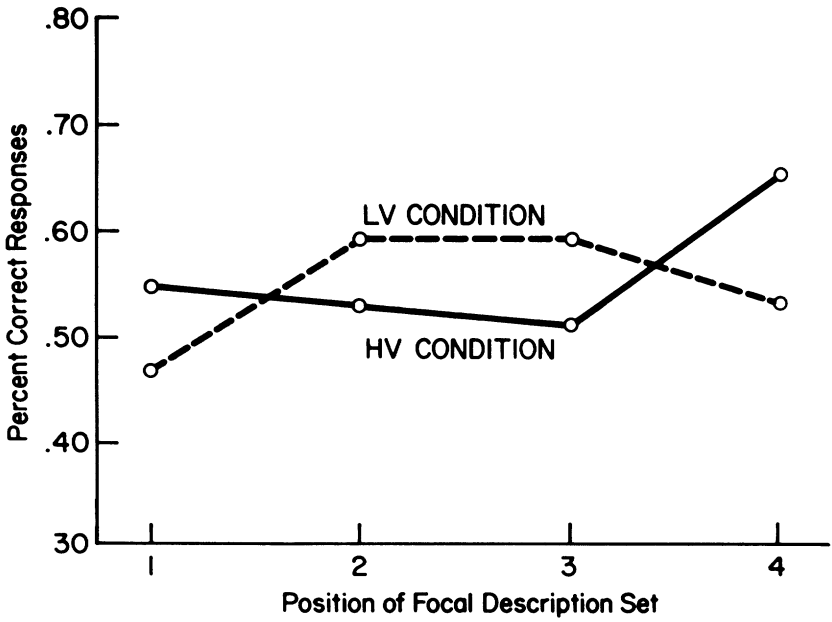

Figure 1. Percent correct response as a function of the serial position of the focal passages within the overall message ensemble (see Table 1 for explication). Focal descriptions were either high in validity (HV condition) or low in validity (LV condition).

examination the high-valid probes (in the curve labelled high-valid condition) shows that they produced superior performance when they were presented either first or last in the overall message-set; by contrast, when the high-valid probes were placed in the middle of the series (in positions two or three), the respondents were less successful in taking advantage of the "good" information that these passages contained.

In contrast to the high-valid condition, the focal passages in the low-valid condition *depress* performance when they are most influential. Since performance proved to be relatively poor when the low-valid probes were presented at either the beginning or at the conclusion of the message-sets, we conclude that in both the low-valid and the high-valid conditions, the probe passages were most influential when presented in the 'end" positions, rather than in the middle.

The reliability of these effects was confirmed by an analysis of variance, which indicated that the difference between the two curves in Figure 1 followed a significant quadratic pattern (F (1,48) = 4.40; $p < .05$).

Surprisingly, the high- and low-valid conditions yielded virtually identical hit-rates overall, despite the fact that they included differing amounts of accurate information. This failure to replicate an effect that was previously observed in four separate studies (Manis, Fichman, & Platt, 1978) may mainly derive from the fact that in the present case, the conditions being compared were not so very different from one another (i.e., the contrasting message-sets contained 33% vs. 66% high-valid passages). Extrapolation from our previous work suggests that a 33% difference of this sort should produce a hit-rate difference of only 8-9%.

Discussion. In contrast to most studies of serial effects, the present experiment was based on an integration task, as opposed to a verbal learning procedure, and used extended, meaningful stimuli, rather than the short, disconnected components that have traditionally been employed in this area. Despite these changes, the classic bow-shaped pattern emerged, for the probe (or focal) passages proved to be most influential when they were presented at the beginning or at the end of the message-ensemble, rather than in the middle. These results, which were obtained with both high-and low-valid probes, provide a heartening demonstration of the robust generality of the serial position effect.

The present results were surprisingly unaffected by the interpolation of a two-minute delay period. Neither the main effect of this variable, nor any of its interactions with other psychologically interpretable variables even approached statistical significnace. By contrast, Glanzer and Cunitz (1966) found that the introduction of a 30 second distractor task not only intererfered with recall of a word-list, but more importantly, eliminated the recency effect (superior recall of the last few items). It is conceivable, of course, that the introduction of a longer, more difficult distraction task might have eliminated the recency effect that we observed. On the other hand, the present results are consistent with a number of other studies (Bjork & Whitten, 1974; Koriat & Fischoff, 1974; Roediger & Crowder, 1976) in suggesting that recency need not be short-lived, and that it may thus derive from a more complex process than the "dumping" of short term memory.

In his extensive studies of impression formation, Anderson (1965, 1973) has repeatedly obtained primacy effects, and has suggested that this pattern may reflect the respondent's systematic decline in attention, as the successive traits in a given description are presented. Why do the present results, based on an integration task that resembles Anderson's procedure in some respects, depart from this simple primacy pattern? One possibility revolves about our subjects' realization that tesponses in this experiment would be scored for"correctness;" they may consequently have maintained a posture of alert attention throughout each message-set,

since useful information might appear at any point in the input series.

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Footnotes

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