

The modality of post-stimulus cueing of recall order in the memory span

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Seven-digit sequences were recalled in either forward (F) or backward (B) order, with order of recall cued after the stimulus. The stimuli were presented acoustically, and the cue was visual. F recall was significantly better than was B recall in contrast to a study by Hinrichs (1968), who used a spoken posture. It is concluded that the spoken posture in that study was acting as a stimulus suffix, thus depressing the level of F recall.

scored. The Ss were tested in a single group.

The Ss listened to a list of 54 sequences of seven digits. The digits were drawn from the set, 1-9, and were balanced for the serial-position occurrence of each digit in the two conditions.

The digits were presented through a tape recorder at the rate of 2/sec, and the Ss recalled the sequences by writing each digit in a blank corresponding to its correct position. The order of recall required was cued by the E holding up a card on which was written the word "forwards" or the word "backwards." The two words occurred equally often in a random sequence. In F recall, the digits were written from left to right; in B recall, they were written from right to left. A preliminary experiment had indicated that this was easier for the Ss than writing the B-recall digits from left to right, apparently because the resulting spacial position of the digits corresponded to their temporal order

no matter which method of recall was used. Ss had 12 sec for recall and were required to guess rather than to leave blanks if they were uncertain. The group was given 18 practice lists, 9 under each condition, during which time any uncertainties were resolved, and any S observed in an incorrect procedure was re-instructed. A response was scored correct only in the correct serial position.

RESULTS

The data are shown in Fig. 1. Twenty out of the 21 Ss performed better with F recall than with B recall ($T = 1.5$, $n = 21$, $p < .001$, Wilcoxon), the mean number of digits recalled being $F = 5.41$, $B = 4.79$. In addition, it can be seen from the figure that there is no loss of recency in the F recall, recall on the final item being identical in the two conditions.

There does appear to be some loss of primacy in the F condition compared to normal serial recall. Performance on the initial item is invariably as good as that on the final item, with serial recall following acoustic presentation (Crowder & Morton, 1969), whereas in the present experiment with F recall, the last item was recalled significantly better ($T = 2$, $n = 12$, $p < .005$, Wilcoxon). Presumably, this is because Ss rehearsal strategies are different under conditions where they do not know in advance the way in which they will have to recall the stimuli.

DISCUSSION

The present experiment confirms the suspicion that Hinrichs's result was due to the modality of the cueing, and that a poststimulus cueing of recall order does not of itself produce a reduction in the size of the recency effect. Unpublished experiments by Morton, Crowder, and Prussin (see Morton, 1969) have shown that a wide variety of speech events (including the word "recall") have an effect on the recall of the last few items of an acoustically presented list. To avoid confounding the results, poststimulus cues should either be presented visually or be nonspeech-like.

REFERENCES

- CROWDER, R. G. Prefix effects in immediate memory. *Canadian Journal of Psychology*, 1967, 21, 450-461.
- CROWDER, R. G., & MORTON, J. Precategorical acoustic storage (PAS). *Perception & Psychophysics*, 1969, 5, 365-373.
- HINRICHHS, J. V. Poststimulus and poststimulus cueing of recall order in the memory span. *Psychonomic Science*, 1968, 12, 261-262.
- MORTON, J. Repeated items and decay in memory. *Psychonomic Science*, 1968, 12, 219-220.
- MORTON, J. Memory and word recognition: A functional model. In D. A. Norman (Ed.), *Models for Human Memory*. New York: Academic Press, 1969.

NOTE

1. The author is grateful to Mrs. S. M. Chambers for assistance with the data processing.

METHOD

The Ss were 24 members of the APU S panel. Three Ss failed to follow instructions, and their data were not

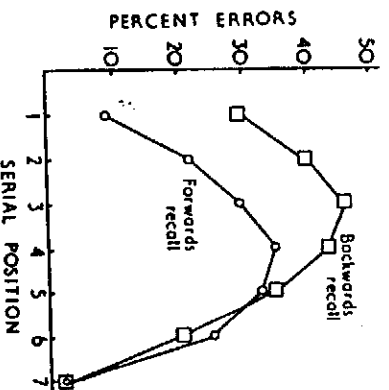


Fig. 1. The probability of an error as a function of presentation order, with order of recall cued after presentation. The stimuli were presented acoustically and the recall cue visually.