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# Lexicality as a Determinant of the Category-Order Effect

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## Introduction

The current study examined the category-order effect (COE hereafter) identified by Brooks and Watkins (1990) where memory span is facilitated by the order of presentation of salient stimuli. In previous research (Brooks and Watkins, 1990; Greene and Lasek, 1994), when numbers preceded words recall performance on the entire list was improved. To examine to what degree lexicality is involved in the COE, the authors modified Brooks and Watkins' paradigm by presenting a unitary string (as opposed to a sequential list) containing four random non-repeating numbers and four letters representing four conditions: random letters, rhyming letters, four letter pseudo-words (consonant-vowel-consonant-vowel strings, CVCV hereafter), and four letter words. The results of this study indicate that COEs are stronger in conditions where the letters have lexical properties, such as the CVCV and word conditions. In contrast to past results, this study found better list recall when words and CVCV preceded numbers.

## Methods

### Participants

Twenty-two (n=22) undergraduate psychology students.

### Procedure

Participants recalled eight item lists of four letters and four numbers. Letter stimuli represented four conditions: random letters, phonetically similar (rhyming), CVCV strings, and four letter words. Each participant completed 160 trials. Presentation order of letter/number pairs and letter conditions were counterbalanced.

A response cue indicated the direction of recall, either "FORWARD" or "BACKWARD". The response cue followed a 250 ms ISI that occurred after the stimuli were presented. The stimulus exposure time was 750 ms.

### Scoring

Participants were scored in an all-or-none scoring of individual items when a correct item appeared in the correct order, for a maximum aggregate score of 8 (4 each for the letter and number scores).

### Stimulus Samples

BONE1274 - Word  
XANI5974 - Word-like (CVCV)  
CVTP5873 - Rhyming Letters  
DYRM3527 - Random Letters

## Results

Table 1: Significant Effects

Significant Effects	<i>F</i>	<i>df</i>	<i>p</i> <	MSE
COE	22.600	1,22	.001	0.325
	94.932	3,66	.001	1.957
Letter Category				
Score Component	7.809	1, 22	.01	21.303
COE x Letter	14.070	3, 66	.001	0.226
COE x Score	8.884	1, 22	.01	0.799
COE x Letter x Score	8.118	3, 66	.005	2.578

## Discussion

The present study replicated a category-order effect similar to that observed by Brooks and Watkins (1990) and Greene and Lasek (1994). Previous research demonstrated that when numbers preceded words, recall performance on the entire list was improved. By contrast, we found that while the COE is indeed evident within the overall score, it only exhibits improved performance for word and word-like stimuli, with no score improvement with random letters, rhyming letters, or random numbers. This suggests that participants may be pursuing a strategy of conservation, thus adopting the easiest means to encode the stimuli. Participants would thus select the most readily identifiable stimuli to encode first; i.e., word stimuli, and then proceed to encode the other stimuli.

## Conclusions

Our findings suggest that the lexicality (word-like properties) of the letter stimuli improved memory span, suggesting that encoding strategies such as chunking directly affect the direction and magnitude of the COE. This phenomenon is not limited to lexicality, but lexicality is simply one expression. What should be taken from this study is that any strategy that facilitates the encoding of patterns (e.g. features) within stimuli (whether intrinsic or extrinsic) will generally improve memory span.

## References

- Brooks, J. O., & Watkins, M. J. (1990). Further evidence of the intricacy of Memory Span. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 16, 1134-1141.
- Greene & Lasek (1994). Category-order effects in memory span. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 20, 1391-1395.