# Word Free Recall Search Scales Linearly With Number of Items Recalled

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## Abstract

I find that the total search time in word free recall, averaged over item position, increases linearly with the number of items recalled. Thus the word free recall search algorithm scales the same as the low-error recognition of integers (Sternberg, 1966). The result suggests that both simple integer recognition and the more complex word free recall use the same search algorithm. The proportionality constant of 2-4 seconds per item (a hundred times larger than for integer recognition) is a power function of the proportion not remembered and seems to be the same function for word free recall in young and old subjects, high and low presentation rates and delayed and immediate free recall. The linear scaling of the search algorithm is different from what is commonly assumed to be the word free recall search algorithm, search by random sampling. The linearity of the word free recall extends down to 3 items which presents a challenge to the prevalent working memory theory in which 3-5 items are proposed to be stored in a separate high-availability store.

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## References in Article

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