Improving the Practicality of the Method of Loci (MoL)
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9. NAIL
Example of a visual image supplied to help participants visualize a list item ("nail") evocatively interacting with its MoL location.

Introduction

The Method of Loci (MoL), also known as the Memory Palace, is an ancient mnemonic technique that involves memorizing a long list of items by mentally associating each item with a location along a familiar pathway. To later recall this list one then only has to imagine viewing the pathway again and its locations (loci) act as cues that help retrieve the list items in their original order.

While the MoL has been demonstrated to be effective in world memory competitions and research laboratory settings, its practical use as an educational tool has so far been limited due to difficulties with applying it. Here we sought to overcome this limitation by identifying factors that predict levels of MoL performance and then experimentally compensating for some of these factors to further enhance its utility.

Methods

Study #1 - 133 Introductory Psychology (Psyc 110) students participated in 2 within-subject trials during a single 30-minute session. Separate lists of 20 random concrete nouns were used in a counterbalanced order for baseline and MoL conditions, and were read out at a rate of one word per every 10 sec. During the MoL condition, participants were instructed to use for loci 20 locations from the first 2 major rooms of a house of their choosing that they were very familiar with. Immediately after a list was read, participants attempted to write down in the proper order as many of the words as they could remember. Half of the participants (n = 65) also completed, prior to memory testing, self-assessments of the following three variables using 5-point rating scales: visualization ability, creativity, and spatial memory ability.

Study #2 - 9 Psychology Club students participated in 5 weekly sessions, each approximately 1-hour in duration. In the 1st session, participants completed the following questionnaires/tasks: a demographic questionnaire, the Vividness of Visual Imagery Questionnaire[1], the Spontaneous Use of Imagery Scale[2], the Divergent Thinking Task[3], and the Visuospatial Memory Task[4]. In the 2nd session, participants' baseline knowledge of the Camosun College campus was assessed by the following questionnaires/tasks: a location familiarity questionnaire, the Landmark Description Task[5], the Landmark Photograph Recognition Task[5], and the Landmark Spatial Recognition Task[5]. Participants were then taken on a guided tour of 50 Camosun College campus locations for MoL use in subsequent sessions. In the 3rd session, participants' were trained to accurately recall all 50 of these locations in their proper order, and the number of trials and duration to reach this criterion performance was recorded. In the 4th and 5th sessions, participants were presented with lists of 50 random concrete nouns to memorize in MoL and control (no MoL) conditions, with one list and condition per session and the order of conditions counterbalanced across the 2 sessions. Following the initial test trial for each condition, participants then immediately underwent additional practice trials in the same session using the same list of words and with feedback provided between trials, until they felt their maximum performance had been achieved. Finally, at least 1 week after the MoL session, 6 of the participants returned for a follow-up test of their long-term memory ability to recall the list of words they had previously learned in the MoL condition.

Study #3 - 51 Introductory Psychology (Psyc 110) students were tested with the same methods described above in Study #1 but with the addition that examples, in the form of visual images (n = 19), verbal descriptions (n = 15), or both (n = 17), were supplied to participants for how each list item could be visualized as being in and evocatively interacting with a location within a house.

The MoL Shows Superior Recall Ability Over Baseline

$p < 1E-19$
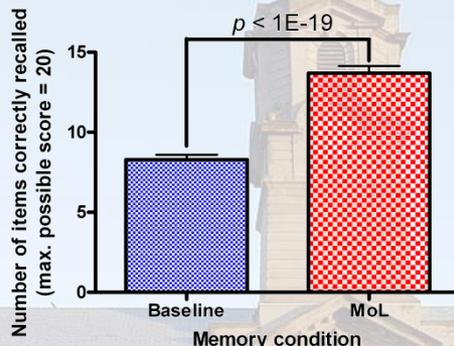
Results from Study #1 (displayed above) demonstrate that the MoL produces a very large improvement in recall, with an effect size of Cohen's d = 1.7 and a 24% distribution overlap compared to baseline.

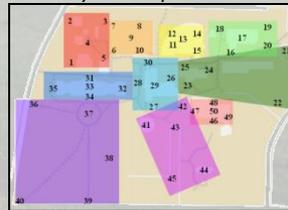### Unlike Baseline, the MoL Distribution Appears Bimodal
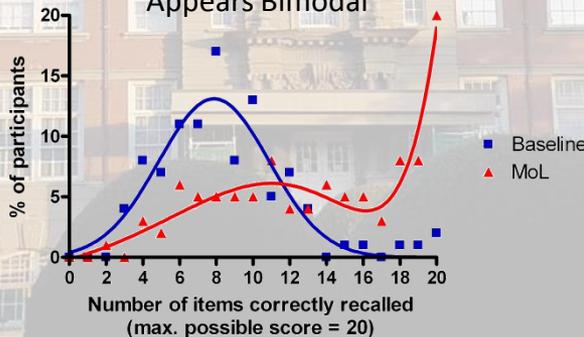
Results from Study #1 (displayed above) revealed that while only 5% of participants during baseline got >13 out of 20 items correct, half (54%) of participants using the MoL were able to achieve this level of performance (i.e., were MoL responders).

Results from Study #2 showed that when further practice trials were given to equate the learning of MoL responders and non-responders, an advantage was still found for retaining that information after a long interval in those participants who had originally responded to the MoL.
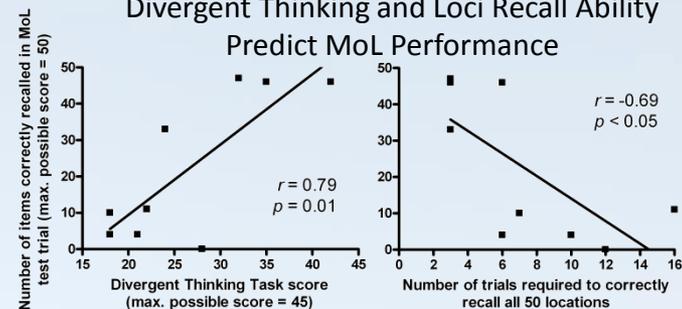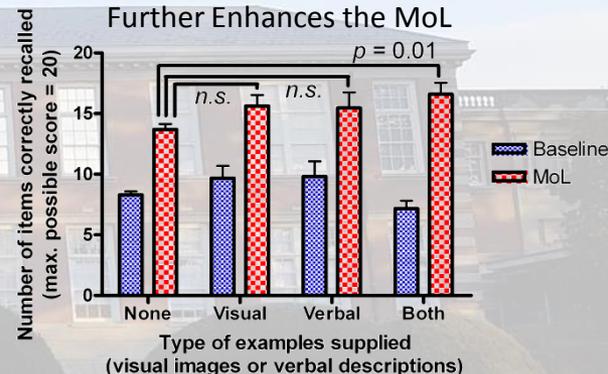
Divergent Thinking and Loci Recall Ability Predict MoL Performance

$r = 0.79$
$p = 0.01$

$r = -0.69$
$p < 0.05$

Supplying Example Images & Descriptions Further Enhances the MoL

$p = 0.01$

n.s.   *n.s.*

Baseline
MoL

Results from Study #3 show that when the MoL is supplemented with both example images and descriptions a huge improvement in recall is produced, with an effect size of Cohen's d = 4.2 and a 2% distribution overlap compared to baseline similarly supplemented with both example images and descriptions.

Conclusions

1. The MoL powerfully enhances recall, but to varying degrees across individuals in a bimodal fashion.
2. Divergent thinking and the ability to recall loci predict MoL performance.
3. Compensating for divergent thinking deficits by supplying participants with example images & descriptions of how to visualize to-be-remembered items in MoL locations overcomes some of the limitations associated with MoL use.

Acknowlegements

Study #1&3 House Locations

Study #2 Campus Locations

[1]Marks (1973), *Brit. J. Psychol. 64*, 17-24; [2]Reisberg et al. (2003), *Appl. Cognitive Psych. 17*, 147-160; [3]Wallach & Kogan (1965), *Modes of thinking in young children*; [4]Brooks (1967), *Q. J. Exp. Psychol. 19*, 289-299; [5]Herdman et al. (2015), *Cortex 71*, 248-263.