The Human Hand Maze: Concrete and Abstract Pre-Visualization

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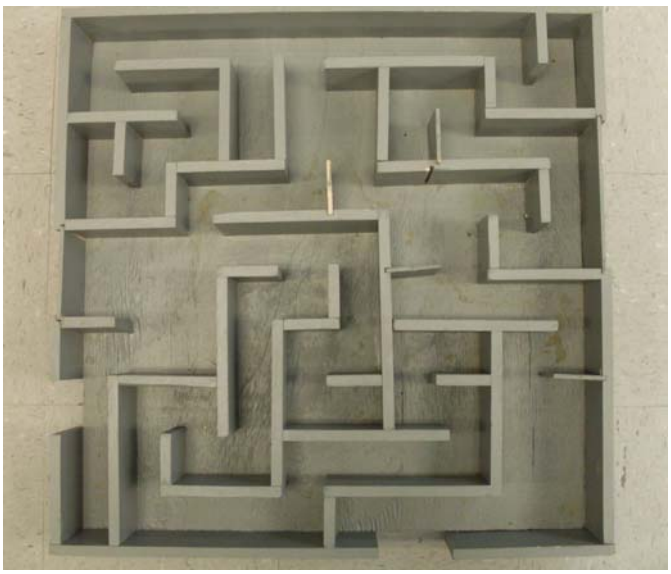
Abstract: I developed a novel means of testing spatio-temporal memory. Blindfolded human subjects traversed an open-top mouse maze with one hand of their choice. Each subject was tested under three different conditions: no visual pre-study of the maze, 1 minute of visual study of the maze prior to being blindfolded, and 1 minute study of an abstract solution to the maze prior to being blindfolded. The times to solve the maze were recorded. The experiment concluded in proving that there is a population of humans that test better with pre visualization and population that does better without. Evidence of this is that there is no significant difference between the completion times of the "pre exposure" and "w/ picture" tests.
Keywords: behavior, memory, psychology, visual perception, contact (touch) memory, visual memory

INTRODUCTION

Visual perception is the ability to interpret information from visible light reaching the eyes. The various physiological components involved in vision are referred to collectively as the visual system, and are the focus of much research in psychology, cognitive science, neuroscience and molecular biology. The forms of memory recollection I am using in my experiment are free recall, serial recall, and cued recall. Free recall is the recollection of memories without clues. This is used in the first test by allowing the person to go through the maze blind folded. Serial recollection is when items are recalled in a particular order. The second test uses this because I allow my test subjects to view the maze before going through it. Cued recall is the recollection of memories with some clues. The third test shows an abstract drawing of the maze to the person and then they go through the maze.

METHODS

I used a 66 cm x 66 cm maze with 5cm wide and 9 cm deep channels. There are approximately one dozen turns required to solve the maze. There are also, approximately 6 alternate paths. Using a desired hand, the blind folded participant would attempt to solve the maze by traversing from the entrance to exit. Each of the 10 subjects solved the maze once every 3 days. Each trial was under 1 of 3 conditions; no preliminary study of maze, a one minute study of maze preceding the trial, and a thirty second study of an abstract drawing of the maze preceding trial. The time to solve the maze was recorded with a stop watch. Using Microsoft Excel I was able to log the information from my subjects results and graph my findings.



RESULTS

My experiment shows that some people are able to learn with diagrams or an observation better than from lectures or speeches. This is proven by subjects having quicker completion of the pre exposure test.

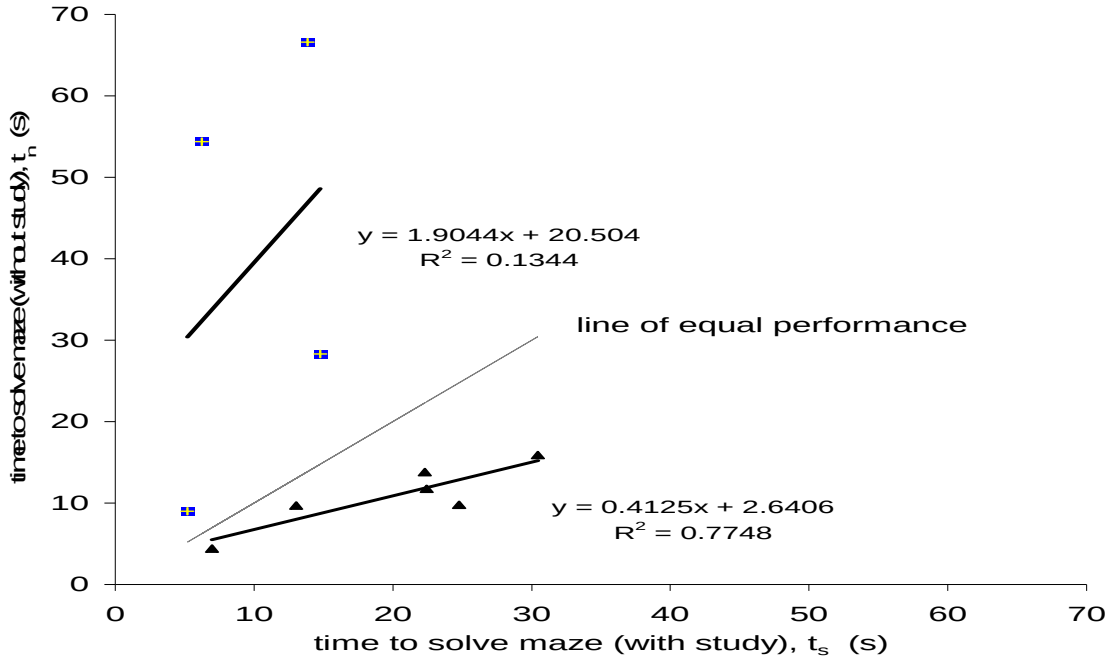


FIGURE 1. This diagram shows the relationship between completion times of the pre exposure test and the no exposure test. It also, shows the "good" and "poor" trend line of the test subjects' performance. These trend lines show the averages of my results.

DISCUSSION

Overall, the physiological mechanisms behind memory are poorly understood. I intend to expand on this science. My experiment tests the human's ability to comprehend and recall their memories.

CONCLUSIONS

As a result of studying the completion times of my test subjects, I observed that there is no significant difference between the completion times of the “pre exposure” and “w/ picture” tests. From this I conclude that there is a population that does better with pre visualization, and a population that does better without. I have also concluded that my experiment is a new way of teaching students. It shows that some people can learn through the use of diagrams or an observation better than from lectures or speeches. Apparently the use of lectures and speeches may actually cause some students to do worse on test or have less than optimal performance.

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REFERENCES

1. http://en.wikipedia.org/wiki/Psychology
2. Karl Popper, Conjectures and Refutations, London: Routledge and Keagan Paul, 1963, pp. 33-39; from Theodore Schick, ed., Readings in the Philosophy of Science, Mountain View, CA: Mayfield Publishing Company, 2000, pp. 9-13.
3. Gleitman, H (1991) Psychology, 7, 275-278.
4. Baum, W.M. (2003). "The molar view of behavior and its usefulness in behavior analysis". Behavior Analyst Today 4: 78–81. http://www.doaj.org/doaj?func=abstract&id=206927. Retrieved on 2008-01-10
5. http://en.wikipedia.org/wiki/Maze
6. http://opl.apa.org/Experiments/About/AboutMazes.aspx
7. http://en.wikipedia.org/wiki/Touch_memory
8. http://en.wikipedia.org/wiki/Visual_memory
9. Parkin, A.J. (1996). Explorations in Cognitive Neuropsychology, pp. 1–23.