

Quasi-Experimental Test
Learning by trial and error
(Mental Labyrinth)

Experimental Psychology Unit Code 1

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Introduction

The theory of operant conditioning by Thorndike discusses learning in the form of trial and error. Thorndike believed that learning in animals and humans occurs through blind trial and error, meaning that an individual who has not seen a particular educational subject learns through repetition and practice. During this process, with effort and repetition, the number of incorrect behaviors gradually decreases. Of course, memory also plays an important role in this process. One of the ways to assess Thorndike's theory is to use mental mazes, which we will discuss in this experiment.

Experiment Objective:

The aim of this experiment is to determine the impact of effort and error on learning and the role of memory in this learning process. This experiment is conducted in various ways, and here we intend for the participant to find their way through a 12-branch maze, three times in a row without making any mistakes.

Experiment Description

Sample Experiment:

Six participants were selected individually for the experiment.

Participant Details:

Participant 1: 35-year-old female

Participant 2: 16-year-old female

Participant 3: 20-year-old male

Participant 4: 26-year-old female

Participant 5: 28-year-old female

Participant 6: 30-year-old male

Materials Needed: Pencil and paper, a randomly numbered 6-branch maze, and a randomly numbered 12-branch maze.

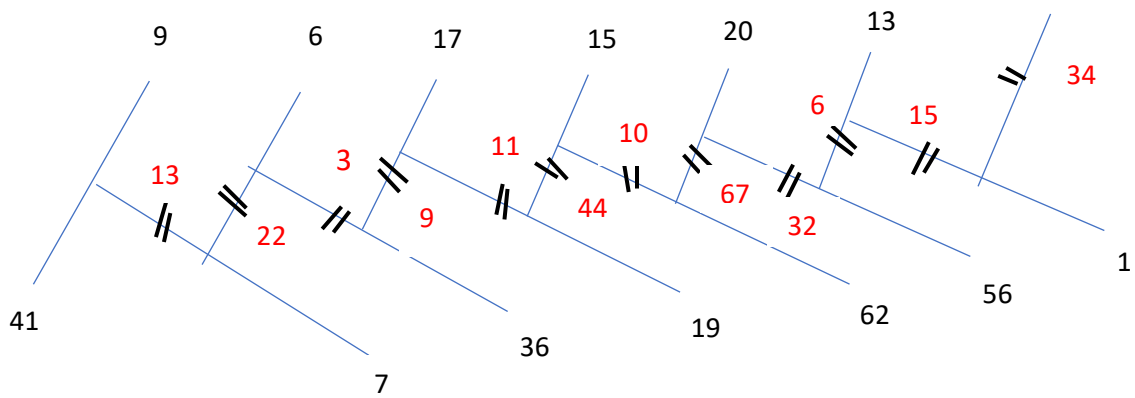
Execution of the Experiment

Initially, a 6-branch experimental maze is presented to the participant, and they are instructed that using the randomly selected numbered paths, some of which are detours and some are the main route of the maze, they are supposed to mentally navigate from the origin to the destination of the maze. The experiment should be conducted in a calm environment where the participant can concentrate on the task at hand.

The numbers in the maze are read two by two from the starting point to the participant. If they provide the correct answer, the next branch of the maze is read out, and progression continues. However, if they give an incorrect answer, the main and detour numbers are read out again so that they can realize their mistake and correct their choice.

After one practice session with the 6-branch maze, the experiment proceeds with the main 12-branch maze, and all the mentioned steps continue until the participant can find the maze path without errors for three consecutive times. Additionally, the maze should be entirely mental, and not physically shown to the participant.

Twelve-branch maze



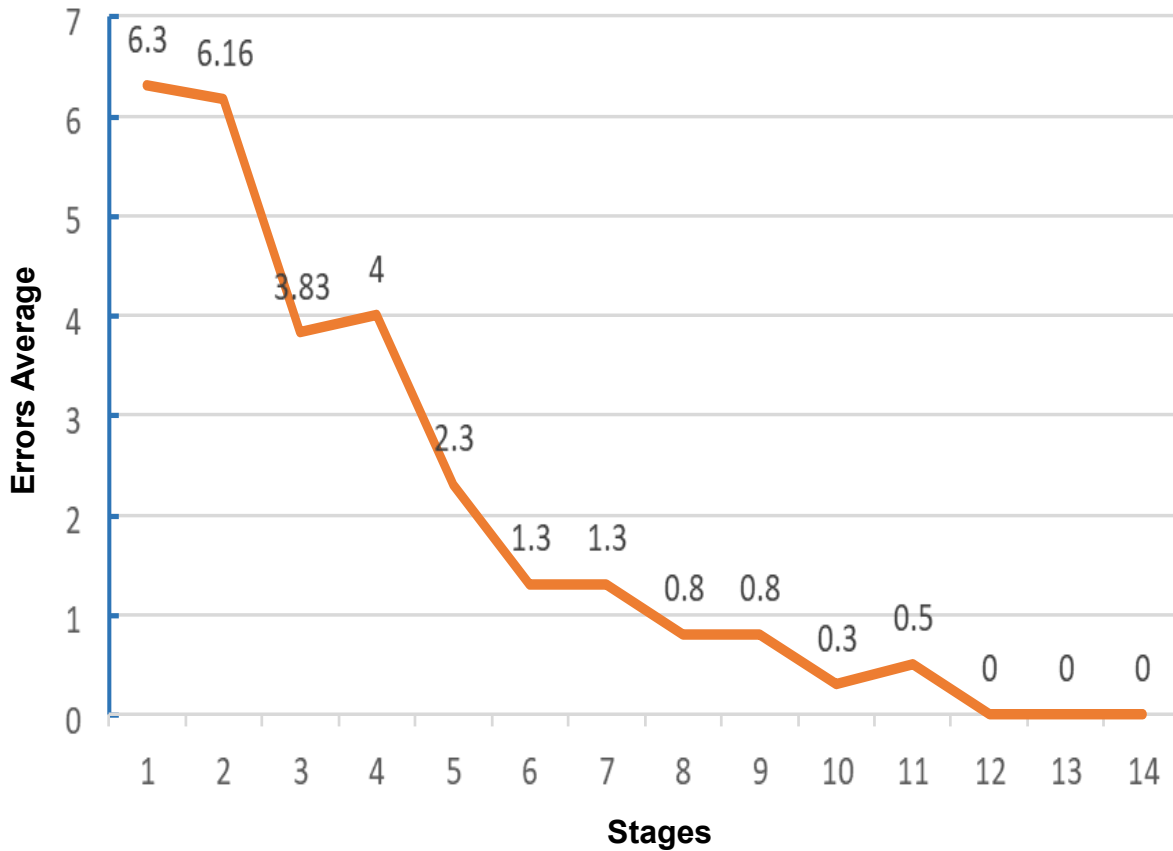
Participant Table

Participant	First	Second	Third	Forth	Fifth	Sixth
Gender/Age	F/ 35	F/ 16	M/ 20	F/ 26	F/ 28	M/ 30
Stage 1	6 errors	5 errors	7 errors	8 errors	7 errors	5 errors
Stage 2	6 errors	7 errors	6 errors	7 errors	5 errors	6 errors
Stage 3	5 errors	4 errors	4 errors	1 error	6 errors	3 errors
Stage 4	4 errors	4 errors	4 errors	1 error	6 errors	5 errors
Stage 5	3 errors	2 errors	2 errors	3 errors	2 errors	2 errors
Stage 6	1 error	No error	3 errors	1 error	2 errors	1 error
Stage 7	No error	No error	1 error	3 errors	2 errors	2 errors
Stage 8	No error	No error	No error	1 error	1 error	3 errors
Stage 9			No error	No error	3 errors	2 errors
Stage 10			No error	1 error	No error	1 error
Stage 11				No error	2 errors	1 error
Stage 12				No error	No error	No error
Stage 13				No error	No error	No error
Stage 14					No error	No error

Data Description

Stage	X_1	X_2	X_3	X_4	X_5	X_6	\bar{X}
1	6	5	7	8	7	5	6.3
2	6	7	6	7	5	6	6.16
3	5	4	4	1	6	3	3.83
4	4	4	4	1	6	5	4
5	3	2	2	3	2	2	2.3
6	1	0	3	1	2	1	1.3
7	0	0	1	3	2	2	1.3
8	0	0	0	1	1	3	0.8
9	0		0	0	3	2	0.8
10			0	1	0	1	0.3
11				0	2	1	0.5
12				0	0	0	
13				0	0	0	
14					0	0	

The average error curve at each stage of the experiment



Conclusion

The learning curve is descending. This means that as the number of attempts increases, the number of errors gradually decreases. However, the participant's distraction during this process has an impact, but the descending curve is maintained and with an increase in the number of trials, the number of errors decreases until the errors reach zero, which is the bottom of the graph. During this process, through repetition and practice, numbers and information gradually transfer from short-term memory to long-term memory.