Maze Test

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Purpose of this document

This file contains all the information to understand and analyze the Maze Test. You will be able to find relevant information about how this assessment task works, what it measures, and all relevant data about the variables recorded during the performance of the activity.

Task Info

In this section information about the task, its structure, and stimuli will be given.

Task Description

The *Maze Test* measures the ability to plan a multi-step solution and a visual-spatial problem. The test consists of three mazes that increase in difficulty based on factors such as maze size, minimum number of steps required, time allowed, and number of possible dead-ends in each maze. The test-taker must successfully navigate the maze from start to finish using the fewest number of steps possible. Additionally, they should aim to complete the maze as quickly as possible.

The concept of this task is based on the Porteus Maze Test (Porteus, 1950), and on the Route finding subtest of the NEPSY battery (Korkman et al., 1998).

You can try the *Maze Test* for free on this page. If you want more information about its technical details, you can contact us at support@cognifit.com.

Cognitive skills measured

The primary cognitive abilities measured by this task are **Planning, Spatial Perception**, **Executive Functioning**, **Foresight**.,**Monitoring** and **Updating**.

This task contributes to the measurement of Spatial perception, Planning and Visual scanning.

Task Structure

The task is divided into two phases: a learning phase and a testing phase. The testing phase is subdivided into three stages, and each stage represents a maze or labyrinth. Below you can find the amount of minimum steps and maximum steps and time allowed to pass each stage.

Phase	Stage	Size	Steps (minimum)	Steps (maximum)	Time (maximum)
Learning	1	5x4	6	15	300s
Testing	1	10x7	17	40	40s
	2	13x9	25	60	80s
	3	18x13	35	90	120s

Task Stimuli

There are two different kinds of stimuli: the walls and the circles. The walls are thin white lines that can't be crossed and define the shape of the layout. The circles are distributed along all the intersections of the maze, and there are four types of circles: the orange one, the white ones, the hollow ones, and the one with a solid star in it. The orange one indicates the user's actual position. The white ones will indicate the user's possible movements, so if the user presses on one white circle, it will become orange. The user is allowed to move across the maze by pressing on these white circles. Hollow circles indicate potential future movements that are not yet accessible. The circle with a solid star in it indicates the goal of the maze, which the user must reach to complete the task.

Variables Info

In this section details about the variables, their definition, range, and other pieces of relevant information will be given.

Basic Variables

Basic variables refer to variables and indices that are commonly used in experimental research and clinical settings.

Mazes completed

This variable measures the number of mazes finished, either perfectly or with additional steps. It ranges from 0 to 3, and lower values indicate better performance.

Additional steps

This variable measures the average of the additional steps (as percentages) required to complete each maze from the task. It ranges from 0 to 100, and lower values indicate better performance.

Completion time

This variable measures the average time required to complete the mazes. It ranges from 0 to 120000 milliseconds, and lower values indicate better performance.

Omission errors

This variable measures the number of times the user couldn't complete the maze in the required time. It ranges from 0 to 3, and lower values indicate better performance.

Additional Variables

Additional variables refer to the variables and indices that are calculated by CogniFit for its internal computation of results.

Mazes completed without additional steps

This variable measures the number of levels in which the maze was finished in the minimum amount of steps required. It ranges from 0 to 3, and higher values indicate better performance.

Mazes completed with additional steps

This variable measures the number of mazes finished but not in the minimum amount of steps required. It ranges from 0 to 3, and lower values indicate better performance if the user completed the mazes.

Mazes not completed due to reaching max steps

This variable measures the number of mazes not finished because the user reached the maximum amount of steps before completion. It ranges from 0 to 3, and lower values indicate better performance.

Additional steps (direct score)

This variable measures the average number of additional steps the user needed to perform the mazes. It ranges from 0 to 37, and lower values indicate better performance.

Steps in first maze

This variable measures the number of steps needed to complete the first maze. It ranges from 17 to 40, and lower values indicate better performance.

Steps in second maze

This variable measures the number of steps needed to complete the second maze. It ranges from 25 to 60, and lower values indicate better performance.

Steps in third maze

This variable measures the number of steps needed to complete the third maze. It ranges from 35 to 90, and lower values indicate better performance.

Additional steps in first maze

This variable measures, as a percentage, the number of additional steps required, with respect to the maximum possible number of additional steps (23 in this case), to complete the first maze. It ranges from 0 to 100, and lower values indicate better performance.

Additional steps in second maze

This variable measures, as a percentage, the number of additional steps required, with respect to the maximum possible number of additional steps (35 in this case), to complete the second maze. It ranges from 0 to 100, and lower values indicate better performance.

Additional steps in third maze

This variable measures, as a percentage, the number of additional steps required, with respect to the maximum possible number of additional steps (55 in this case), to complete the third maze. It ranges from 0 to 100, and lower values indicate better performance.

Completion time in first maze

This variable measures the time required to complete the first maze. It ranges from 0 to 40000 milliseconds, and lower values indicate better performance.

Completion time in second maze

This variable measures the time required to complete the second maze. It ranges from 0 to 80000 milliseconds, and lower values indicate better performance.

Completion time in third maze

This variable measures the time required to complete the third maze. It ranges from 0 to 120000 milliseconds, and lower values indicate better performance.

Validity Index

If the user's performance falls outside these ranges, it will be considered deviating from the expected and may invalidate the assessment results.

Task validity

This variable represents the validity of the whole task, and it is 'true' only when all the individual variables of the Validity Index of the task are 'true'. Otherwise, it is 'false'.

Omission errors validity

This variable measures the validity of the variable "Omission errors", and it is 'true' when its value is 0. Otherwise, it is 'false'.

Mazes not completed due to reaching max steps validity

This variable measures the validity of the variable "Mazes not completed due to reaching max steps", and it is 'true' when its value is 0. Otherwise, it is 'false'.

Completion time validity

This variable measures the validity of the variable "Completion time", and it is 'true' when its value is greater than 0 and lower than 120000 milliseconds.

References

Porteus, S. D. (1950). The Porteus Maze Test and intelligence. Pacific Books.

Korkman, M., Kirk, U., & Kemp, S (1998). NEPSY: A developmental neuropsychological assessment. Psychological Corporation.