Visual Search Test

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Purpose of this document

This file contains all the information to understand and analyze the Visual Search 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 *Visual Search Test* consists of a set of letters in which a target letter must be identified. The target letter is always displayed on the left, and it appears twice within a grid of various letters on the right side of the screen. The test-taker has 10 seconds per trial to quickly locate and select any target letter hidden among distractors of varying similarity in the letter grid.

The concept of this task is based on the Visual Search Paradigm (Treisman & Gelade, 1980) and its variants (Simpson et al., 2012).

You can try the *Visual Search 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 ability measured by this task is **visual scanning**.

Task Structure

The task is divided into a learning phase and a testing phase. The testing phase consists of two stages, each with 2 trials. These stages are differentiated based on the number of distractors and filler letters relative to the target letter

Phase	Stage	Amount of trials	Target letter	Grid size	Amount of target letters	Amount of filling letters	Amount of distractors	Time to answer
0 *(Learning)*	1	1	A	5x7	3	24	8	60s
1 *(Testing)*	1	1	C	10x14	2	108	30	30s
		1	N	10x14	2	108	30	30s
	2	1	C	10x14	2	30	108	30s
		1	N	10x14	2	30	108	30s

Task Stimuli

A circle containing the target letter is displayed on the left side of the screen. On the right side, a 10x14 matrix of black Latin letters forms a grid of 140 letters. Within this grid, the target letter is concealed among various distractors and filler letters as follows:

- Target ‘C’: the distractors are G, O and Q, and the filling letters are M, W and Z.
- Target ‘N’: the distractors are M, W and Z, and the filling letters are G, O and Q.

Variables Info

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

Basic Variables

Accuracy

This variable measures the percentage of accuracy in all trials of the testing phase. It ranges from 0 to 100, and higher values indicate better performance.

Response time

This variable measures the average response time to correct trials in the testing phase. It ranges from 0 to 30000 milliseconds, and lower values indicate better performance.

Accuracy in low difficulty

This variable measures the percentage of accuracy in trials with a low proportion of distractors, that is, in stage 1 of the testing phase. It ranges from 0 to 100, and higher values indicate better performance.

Accuracy in high difficulty

This variable measures the percentage of accuracy in trials with a high proportion of distractors, that is, in stage 2 of the testing phase. It ranges from 0 to 100, and higher values indicate better performance.

Response time in low low difficulty

This variable measures the average response time to correct trials with a low proportion of distractors, that is, in stage 1 of the testing phase. It ranges from 0 to 30000, and lower values indicate better performance.

Response time in high difficulty

This variable measures the average response time to correct trials with a high proportion of distractors, that is, in stage 2 of the testing phase. It ranges from 0 to 30000, and lower values indicate better performance.

Omission errors (percentage)

This variable measures the number of trials where no response is given by the user, that is, the number of timeouts. It ranges from 0 to 100. High scores on this variable indicate that the user is distracted (not paying attention) or has a slow response.

Additional Variables

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

Omission errors

This variable measures the number of trials where no response is given by the user, that is, the number of timeouts. It ranges from 0 to 4. High scores on this variable indicate that the user is distracted (not paying attention) or has a slow response.

Variables Info

The user's performance will be considered to deviate from what is expected to the point of invalidating the results of the assessment when it falls outside these ranges.

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’.

Accuracy validity

This variable measures the validity of the variable “Accuracy”, and it is ‘true’ when its value is between 0 and 100, both included. Otherwise, it is ‘false’.

Response time validity

This variable measures the validity of the variable “Reaction time”, and it is ‘true’ when its value is between 250 and 30000, both included. 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 below 2, included. Otherwise, it is ‘false’.

References

Treisman, A., & Gelade, G. A. (1980). A feature-integration theory of attention. *Cognitive Psychology*, *12*(1), 97-136. https://doi.org/10.1016/0010-0285(80)90005-5

Simpson, I. A., Mousikou, P., Montoya, J. M., & Defior, S. (2012). A letter visual-similarity matrix for Latin-based alphabets. *Behavior Research Methods*, *45*(2), 431–439. https://doi.org/10.3758/s13428-012-0271-4