Sustained Attention to Response Test

Version No: 2023.1
Issue Date: 2023-06-16

Purpose of this document

This file contains all the information to understand and analyze the Sustained Attention to Response 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

In the *Sustained Attention to Response Test*, the participant is presented with an integer number between 1 and 9 for a short period of time. If the number presented is "3", the user must not give any response. If the number presented is not a "3", the user must press the button as quickly as possible. The task consists of a rapid succession of this sequence, where the numbers requiring a response appear with a high probability, and the number requiring withholding the response appears with a low probability.

The concept of this task is based on Sustained Attention to Response Task (SART; Robertson et al., 1997).

You can try the *Sustained Attention to Response 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 sustained attention.

Task Structure

The task is divided into two phases: one learning phase and one testing phase.

Phase	Amount of trials	Target trials (number 3)	Non-target trials (other numbers)
Learning	10	2	8
Testing	66	10	56

Task Stimuli

The stimuli of each trial are composed of a circle in the center of the screen and a button below it. The circle will display a number for 250 milliseconds, and after that, a mask (the circle filled in yellow) will be presented for 1250 milliseconds. The user is expected to answer during those 1500 milliseconds from the presentation of the number.

The whole test is made of a sequence of 66 trials where one number from 1 to 9 is shown. Each number is presented 8 times, except the number 3 which is the target number of the task and is presented 10 times.

The stimuli sequence is pseudo-randomized with some constraints: (1) the same digit cannot appear twice consecutively; (2) there must be four trials or presentations before the first number 3; and (3) between two presentations of the number 3, there must be at least four trials in between.

Also, there are five different font sizes, from small to large with a proportional increase, that are randomly assigned to the numbers.

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.

Accuracy

This variable measures, as a percentage, the accuracy of responses (pressing the button when appropriate and not pressing the button when not appropriate) in all the trials of the testing phase. It ranges from 0 to 100, and higher values indicate better performance.

Accuracy in GO trials

This variable measures, as a percentage, the accuracy of responses in trials where the button should be pressed, that is, when the number presented is not ‘3’. It ranges from 0 to 100, and higher values indicate better performance.

Accuracy in NO-GO trials

This variable measures, as a percentage, the accuracy of responses in trials where the button shouldn’t be pressed, that is, when the number presented is ‘3’. It ranges from 0 to 100, and higher values indicate better performance.

Response time

This variable measures the average response time of correct responses to all trials in the testing phase. It ranges from 0 to 1500 milliseconds, and lower values indicate better performance.

Omission errors (percentage)

This variable measures the number of times the user didn’t press the button when they should after 1500 ms, that is when the number presented is not ‘3’. It ranges from 0 to 100, and lower values indicate better performance.

Commission errors (percentage)

This variable measures the percentage of times the user pressed the button when they shouldn', that is when the number presented is ‘3’. It ranges from 0 to 100, and lower values indicate better performance.

Omission errors

This variable measures the number of times the user didn't press the button when they should after 1500 ms, that is, when the number presented is not '3'. It ranges from 0 to 100, and lower values indicate better performance.

Validity Index

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. Otherwise, it is ‘false’.

Accuracy in GO trials validity

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

Response time validity

This variable measures the validity of the variable “Response time” and it is ‘true’ when its value is between 0 and 1500. Otherwise, it is ‘false’.

Commission errors validity

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

Omission errors (direct score) validity

This variable measures the validity of the variable “Omission errors (direct score)” and it is ‘true’ when its value is between 0 and 28. Otherwise, it is ‘false’.

References

Robertson, I. H., Manly, T., Andrade, J., Baddeley, B., & Yiend, J. (1997). `Oops!': Performance correlates of everyday attentional failures in traumatic brain injured and normal subjects. *Neuropsychologia*, *35*(6), 747-758. https://doi.org/10.1016/s0028-3932(97)00015-8