Inhibition of Return Test

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Purpose of this document

This file contains all the information to understand and analyze the Inhibition of Return 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 *Inhibition of Return Test* will be composed of several trials, where each trial is made of 4 steps: (1) There is a fixation point "·" in the center of the screen, with two circles off (colored in grey) located on the left and on the right of the fixation point. (2) The fixation point becomes "⋯", while the circles remain the same. (3) The fixation point becomes a "·" again, and one yellow point appears in one of the two circles, but participants should not react to that. (4) The fixation point remains the same, but one of the circles lights up green. Participants must press the cleft or right arrow key on the keyboard (if using a computer) or on the screen (if using the App), depending on which circle lighted up in green. If the yellow and the green colors appeared in the same circle, it will be considered a congruent trial, but if the yellow and green colors appeared in a different circle, it will be considered an incongruent trial.

The concept of this task is based on the *Inhibition of Return* task (Posner & Cohen, 1984).

You can try the *Inhibition of Return* 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

This task allows the assessment of the phenomenon known as "inhibition of return", which consists of people responding more slowly to stimuli located in the position where at least 300 milliseconds before a task-irrelevant stimulus was shown.

Task Structure

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

Phase	Amount of trials	Congruent trials	Incongruent trials
Learning	4	2	2
Testing	40	20	20

Task Stimuli

The stimulus for each trial consists of one fixation point (that could vary within each trial from a single point to three horizontally aligned points), and two circles composed of a white circular frame and its filling. In steps 1 and 2, the filling of the circle will be gray (off). In step 3, the gray filling will remain, but there will appear one small yellow circle in the center of one of the circles (cue). In step 4, one of the circles will become green (lighted up), and the other will remain gray (off).

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

Accuracy in cued trials

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

Accuracy in uncued trials

This variable measures the percentage of accuracy in all uncued 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 5000 milliseconds, and lower values indicate better performance.

Response time in cued trials

This variable measures the average response time to correct cued trials in the testing phase. It ranges from 0 to 5000 milliseconds, and lower values indicate better performance.

Response time in uncued trials

This variable measures the average response time to correct uncued trials in the testing phase. It ranges from 0 to 5000 milliseconds, and lower values indicate better performance.

Inhibition of return effect in accuracy

This variable measures the result of the operation “Accuracy in uncued trials” minus “Accuracy in cued trials”. Its value should range from -100 to 100.

Inhibition of return effect in response time

This variable measures the result of the operation “Response time in cued trials” minus “Response time in uncued trials”. Its value should range from -5000 to 5000.

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 after 5000 milliseconds since the presentation of the stimulus, that is, the number of timeouts. It ranges from 0 to 40. High scores on this variable indicate that the user is distracted (not paying attention) or has a slow response.

Omission errors in cued trials

This variable measures the number of cued trials where no response is given by the user after 5000 milliseconds since the presentation of the stimulus, that is, the number of timeouts in cued trials. It ranges from 0 to 20. High scores on this variable indicate that the user is distracted (not paying attention) or has a slow response.

Omission errors in uncued trials

This variable measures the number of uncued trials where no response is given by the user after 5000 milliseconds since the presentation of the stimulus, that is, the number of timeouts in uncued trials. It ranges from 0 to 20. High scores on this variable indicate that the user is distracted (not paying attention) or has a slow response.

Omission errors (percentage)

This variable measures the percentage of trials where no response is given by the user after 5000 milliseconds since the presentation of the stimulus, that is, the percentage 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.

Omission errors in cued trials (percentage)

This variable measures the percentage of cued trials where no response is given by the user after 5000 milliseconds since the presentation of the stimulus, that is, the percentage of timeouts in cued trials. 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.

Omission errors in uncued trials (percentage)

This variable measures the percentage of uncued trials where no response is given by the user after 5000 milliseconds since the presentation of the stimulus, that is, the percentage of timeouts in uncued trials. 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.

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’.

Accuracy validity 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 cued trials validity

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

Accuracy in uncued trials validity

This variable measures the validity of the variable “Accuracy in uncued 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 100 and 5000. Otherwise, it is ‘false’.

Response time in cued trials validity

This variable measures the validity of the variable “Response time in cued trials” and it is ‘true’ when its value is between 100 and 5000. Otherwise, it is ‘false’.

Response time in uncued trials validity

This variable measures the validity of the variable “Response time in uncued trials” and it is ‘true’ when its value is between 100 and 5000. 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 higher than 20. Otherwise, it is ‘false’.

References

Posner, M.I.; Cohen, Y. (1984). "Components of visual orienting". In Bouma, H.; Bouwhuis, D. (eds.). Attention and performance X: Control of language processes. Hillsdale, NJ: Erlbaum. pp. 531–56.