

Instruction five point test data

Introduction

The Five point test (FPT), also known as the Design Fluency Test, is a cognitive assessment tool that measures an individual's ability to generate as many different/novel designs as possible within a certain amount of time, using a limited set of shapes and lines. The FPT has been used in research to investigate various aspects of cognitive functioning, such as executive functioning (such as strategy use), working memory, and creative thinking. The advantage is that it is a standardized measure: The FPT has a standardized administration protocol and scoring system, which potentially increases e.g., the reliability of the test administration. Based on research, the FPT is believed to be able to detect subtle cognitive changes within and differences in cognitive functioning among individuals. Also, given the fact that the instruction is relatively easy, it can be used across different populations, including children, adults, and older adults, making it a versatile tool.

The traditional scoring is to give participants within a limited time interval (e.g., in our case 180 seconds) and then count all unique patterns. In some studies, researchers subtract the number of doubles from the total number of unique patterns to calculate the test score.

We administrated this test among students at secondary school in Limburg (Netherlands) who are in grade 3 and therefore typically 15 years of age. Although the test is traditionally administered on paper, we developed an online version of the FPT. This allows us to measure e.g., reaction times more precisely.

Variables in main file (*fivepoints.csv*)

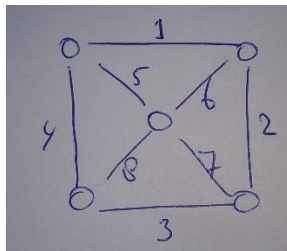
primary counts the order in which submitted patterns entered the server.

idll_vo3lv is the student identifier, so best is to sort first on *idll_vo3lv* and then on *primary*, to get the input student by student for each of them on the right order.

name is the type of data that is stored and value the content of this data

name can be:

patternsm: The submitted pattern, giving a 1 for each line that is drawn and 0 for each line that is not drawn when submitting the figure. This is the numbering of the lines:



Thus, 0,0,1,0,0,0,1,0 means that line 3 (i.e., the horizontal lower line) and line 7 (i.e., the small diagonal line in the right lower corner) are drawn.

timestampsm: how many milliseconds after the page (i.e., the start of the new item) was retrieved did the student submit the pattern

statuscl: For each click was it an on- or an off-click

numbercl: In what order have the lines been clicked (in theory *statuscl* can be derived from this. The first time a line is clicked it should be on, the second time it should be an off, ...).

timestampcl: gives for each click the unix time stamp

timestampload: Gives the unix time stamp for the moment the page was loaded.

Original set up

The original set-up can be seen (in Dutch) at inventaar.nl/vragenlijst

You need a password to enter, that can be used once. We will provide some passwords.

Timing

So, for each figure the student makes the server has received 6 lines with data. To bundle them in the right way, sort the data by *idll_vo3lv* and *primary*. This will give the blocks of the 6 pieces of information together.

To count how long the students have been working on the task, aggregate *timestampsm* over the submitted figures of each student. If everything is perfect the last submission should be the only that is after 180 seconds. This is more than 180 seconds in real time, because there is time needed for server to computer communication. The software gave students 180 seconds net, so excluded this communication time.

There are some exceptions in which students kept on going making figures although the time ran out, so we recommend to delete the observation of each student after 180 seconds, so there should be only one observation left for each student submitted after 180 seconds.

Do not use *timestampload* to measure the progress during the task, (1) because this includes the communication time and (2) because sometimes there are jumps in this clock time. *Timestampload* can be used, though to calculate after how many milliseconds the clicks were performed.

Test at primary school

The file *eindtoets.csv* contains the scores of students at the test they took at the end of primary education. Schools have to choose one out of several tests that measure the same construct: *Cito*, *route8* and *IEP*. We do not have this information for all students. Therefore, there are substantially fewer observations than we have in the Five Points Test.

All three tests provide an overall score. For cito and route8, there are in many cases also subscores for language (cito_taal and route8_taal) and math (cito_rekenen and route8_rekenen). The three test have their own scales. Cito ranges e.g., from 500 to 550.

We transformed the overall score of the route8 and iep to the overall cito scale. This variable is called citop. Cito might deviate from cito since the official cito score is rounded and truncated at 500 and 550. When more information was available this rounding and truncation was undone. This especially leads to a longer tail on the upper end of the distribution.

We also added the level of education each students is attending in the third years (when the five point test is done) and the gender of the student. These are the variables school and gender, with female=1.