HRS 2006

Description of Number Series (Module 9)

The purpose of this module was to broaden the content domain currently assessed in the HRS to include "fluid intelligence." The specific purpose was to see if we could achieve reasonably informative test scores by using a small subset of items from the Number Series task adapted from the new WJ III using adaptive testing methodology. The task administered in HRS 2006 was identical to the one included in HRS 2004. More detail about the rationale for, development of, and administration details of this task is available in the Ofstedal, Fisher, & Herzog (2005) HRS Cognition documentation report (http://hrsonline.isr.umich.edu/docs/userg/dr-006.pdf).

The sampling of respondents for the 2006 number series module was as follows: Respondents who were asked to complete the number series module in 2004 were randomly assigned to either the number series or retrieval fluency modules in 2006. (The only exception to this was a small overlap group of respondents that were assigned to the risk aversion module in 2002 and the number series module in 2004, who were randomly assigned them to complete either the 2006 risk aversion module or either the 2006 number series or 2006 retrieval fluency module.) In 2006, a total of 1,230 HRS respondents completed the Number Series module at the end of the standard HRS survey. Of these, 356 respondents (almost 30% of those who completed this in 2006) also completed the Number Series task as part of a module in HRS 2004. The Number Series test was designed so that each respondent would be asked no more than six test items (i.e., the number of items that we estimated could be completed in the three-minute time frame).

The full information in the pattern of responses provided by each respondent was used to create a score on the W-scale (logit metric) based on the scoring method for the original WJ III test. This variable, called WSCORE, represents the respondent's performance on the task where higher scores indicate higher performance on the task. The W scale is a transformation and combination of the Rasch log ability and easy scales (W=9.1024 b + 500). The procedure for developing the transformation was based on the analysis of actual data representing a wide range of ages. In this metric, there is no need for negative numbers or decimal fractions, and the same set of numbers can be used for expressing both item difficulty and a person's ability. This also means that the difference between a person's ability and item difficulty leads to predictive relationships about performance. For example, given an item score with the same W difficulty as the person's ability, the person has a 50% chance of answering correctly. However, given an item whose W-difficulty is 10 points higher than the person's ability, the person has only a 25% chance of answering it correctly. Please refer to the cognition documentation report (http://hrsonline.isr.umich.edu/docs/userg/dr-006.pdf) for more information.

Other variables include the total number of items asked of each respondent (NASK), and the number of items answered correctly (NCORRECT), and the starting point within the module (NSSTART). NSSTART has a value of A, C, 17, or 23. These values correspond to the item number from the original WJIII test (which has three sample items, A, B, & C, and 47 test items arranged in order of item difficulty from item 1 to item 47). The starting point for each respondent was determined by level of education and performance on the Serial 7s task.