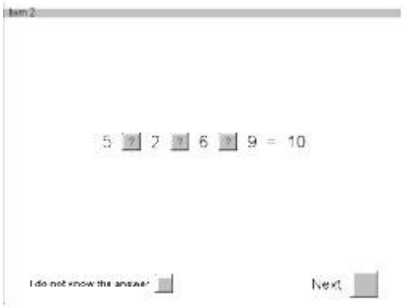
Adaptive Test for Assessment of Numerical Flexibility - ANF - 7 Year License

Model : 64117

System Overview
The Schuhfried VTS enables computer-assisted application of a large number of highly diverse psycho-diagnostic tests and measuring procedures. In developing the system much emphasis was placed on transparent structure and largely uniform design. It is therefore simple to operate and easy to understand and does not require any special computer skills.



The VTS basic module is required for administration of any of the available tests.

The Schuhfried VTS supports the administration of both single tests and test batteries. Many of the single tests are available in different test versions. These test versions may differ, for example, in terms of test duration or difficulty or may be parallel forms. They are characterized by different parameters reflecting specific test requirements. They have been designed for administration to a specific population (e.g. psychiatric patients, children, etc.) or for special measuring purposes (e.g. repeated measurements). Test batteries are compiled from the available single tests and test versions.

Overview
The ANF is the first test on the market to provide an adaptive and fair assessment of cognitive flexibility in the area of mathematical problem solving.

Application
The Adaptive test for assessment of numerical flexibility is a tool for assessing flexibility in the area of mathematical problem solving. This is one of the important sub-dimensions of the secondary factor "quantitative thinking" which forms part of the modified Gf-Gc theory (Horn & Noll, 1997).

Main areas of application : aptitude testing, aviation psychology, and educational psychology.

Theoretical background

Quantitative thinking is an important second order factor both in the three-stratum theory (Carroll, 1993) and in Horn's modified Gf-Gc theory. (Horn, 1989; Horn & Noll, 1997). It covers not only number comprehension but also the understanding of basic arithmetical operations and mathematical principles and the ability to apply them. The Adaptive Test for the Measurement of Numerical

Flexibility measures the flexible use of cognitive resources through the application of basic arithmetical operations to the solving of abstract numerical problems.

Administration
Items are presented adaptively, so that after the initial phase the process of presenting only those items which are appropriate to the respondent's ability is increasingly refined. It is not possible to omit an item or to return to a preceding one.

Each item presents the respondent with a series of unrelated operands and a target number or answer. From a list of the four basic arithmetical operations the respondent has to select the operators which, when applied, will produce the given answer. Because any of the four operations can be used as often as required the probability of arriving at the correct answer by guesswork is very low.

Test forms
There are two adaptive test forms which differ in their pre-set precision of measurement (standard estimation error) of the person parameter estimate.

Scoring
The test yields an estimate of the respondent's numerical flexibility. The estimate is made on the basis of the dichotomous logistical model of Rasch (1980) using an exact parameter estimate process (Fischer, 2000). In addition a percentile ranking is provided based on comparison with a norm sample.

Reliability
Reliability in the sense of internal consistency is given as a result of the validity of the Rasch model. Precision is represented for the short form by a critical standard estimation error of 0.55, which corresponds to a reliability of 0.70. For the standard form the critical standard estimation error is 0.50, corresponding to a reliability of 0.75. In contrast to linear test forms the quoted precision applies to all respondents across all parts of the range. This represents a decisive advantage over conventional psychometric tests constructed on the basis of classical test theory.

Validity
Studies are available both of the construct representation and of the convergent and discriminant validity of the Adaptive Numerical Flexibility Test; these demonstrate the construct validity of the test.

Norms
Norms are available (overall norm, and separated by gender and educational level) for a sample of N=1362 individuals (585 men, 777 women; age range 15-52). The data was collected at the end of 2004 and beginning of 2005.

Testing time
The time required for the test is between 30 and 45 minutes.

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