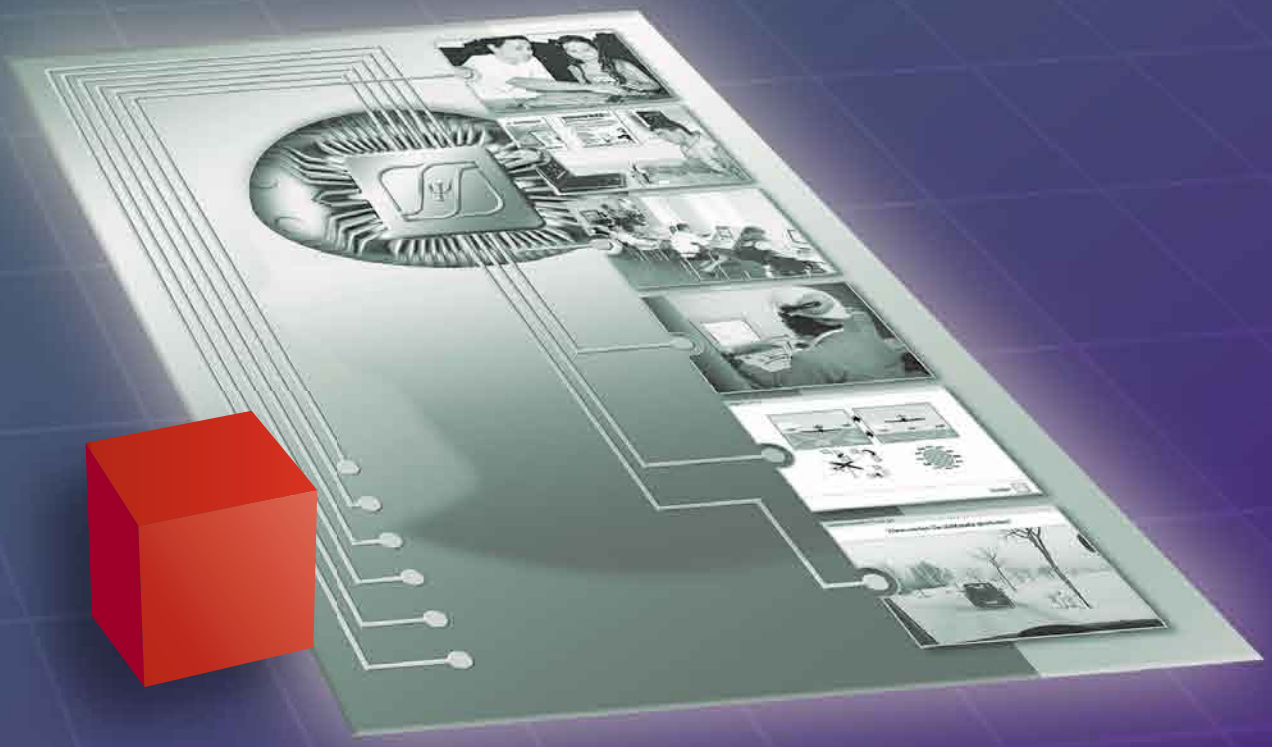
catalog

# Vienna Test System

computerized psychological assessment

2007/2008



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Qualität durch Kompetenz

# Foreword

Dear Reader,

The Vienna Test System (VTS) is known worldwide as a leading computerized psychological assessment tool. Offering a comprehensive range of tests for many different applications and continually working on the further internationalisation of our products, our position as international market leader is assured.

The development of tools for application areas as diverse as clinical psychology, personnel selection and development, aviation psychology, traffic psychology and sport psychology is made possible only through the symbiosis of hardware, software and psychological expertise. We are pleased to see that psychological assessment in all these areas is experiencing a boom. Alongside this increased demand, we note that users are making ever more rigorous demands of test providers - and rightly so. Test quality criteria are being critically examined; tests are expected to be motivating and up-to-date in style. Great importance is also attached to ease of use for the test administrator. These increased demands on quality are providing an important impetus to development in the field of psychological assessment in general.

New technical possibilities not only make for improved implementation of psychological theories (for example, in objective personality tests) – they also make tests more readily available.

## VTS goes online

Test sessions can now be conducted without local installation of the Vienna Test System basic software. A link with access to a server on which the VTS is installed makes it possible to start a test directly. The VTS basic software, and all its associated functions such as selection of different test forms, language choice, data export and all forms of results display, can also be accessed in this way.

Online presentation can take place via either Internet or Intranet. Maintenance and updating of the system is carried out at the central server.

A VTS Demo Version is also available online and can be accessed free of charge at any time.

## Up to date with Updates

The latest findings from our Development Department and our test and research laboratory as well as suggestions and ideas from our clients all play a part in our product development. We regularly incorporate amendments and additions into both the tests themselves and the WinVTS user interface. By means of Updates you can access these on favourable terms and ensure that your system remains state-of-the-art. We should be happy to discuss the advantages of an update for your system with you personally.

Development and research are an important element of our company philosophy. Over the course of time, therefore, our products are constantly undergoing changes. But one thing never changes: we put the customer first.

I wish you enjoyable reading!

Gerald Schuhfried
Sales

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# The Vienna Test System
## a short description

**We made the use of profound psychological tests simple and comfortable by developing and employing the most up-to-date technology within the Vienna Test System (VTS).**

**The VTS consists of a powerful basic software, individual computerized tests and of optional input devices.**

Depending on your area of psychology, we offer a full spectrum of computer tests to meet your diagnostic needs:

We have developed a significant range of tests according to classic testing theory. More than ever our company develops **adaptive and multi-media** tests based on innovative technology and „modern testing theory".

### Easy to use

Using the test system is simple and logical, and does not require any specific computer knowledge. When developing the system we paid particular attention to creating clear structures and a uniform design. A user interface guides you through the necessary steps.

The tests are selected by using a clearly structured index card system. Electronic manuals containing information on each test will help you make your selection.

The test results are presented clearly and can be printed out immediately. The extent of the print-out is adjustable and can even be customized. Because the results can be exported directly to word processing programs, writing up expert reports is made easier and faster. The results are stored at an item level in the respondent database and easily can be processed with many common statistical programs (Excel, SPSS), making the Vienna Test System a genuine research tool.

### User-friendly input devices

User-friendly **input devices and peripheral devices** allow respondents to work comfortably and fairly, and are suitable for respondents with little computer experience. In addition, specific diagnostic questions can also be addressed.

**To administer the test the following media are available:**

- light pen
- subject panel
- additional devices
- mouse
- PC keyboard
- touch screen

### Always up-to-date

Our psychologists ensure that our tests are up-to-date by researching new norms in our own research laboratory. In-house projects and studies form an essential part of the further development of our tests; we also work together with selected institutes, enterprises and hospitals on an international level.

As the **international market leader in computerised psychological assessment** we offer an innovative high-quality product which is the only one of its type on the market.

# The Vienna Test System
## a short description

### Flexible use

Whether you use a **notebook**, a desktop PC or a local or even decentralized network for test application, or if you use standard equipment or special input devices - the VTS' flexibility adapts to every user's needs.

Our products are used all over the world and in almost every area of psychology. More than 7,000 Vienna Test Systems are in use, primarily in the following fields:

- Neuropsychology
- Clinical psychology
- Traffic psychology
- Aviation psychology
- Personnel psychology
- Sport psychology
- Research

Our clients include a large number of private companies, public institutions, government bodies, clinics, universities and freelance providers. An excerpt from our extensive client list can be viewed on our homepage: **www.schuhfried.at**

### Globally successful

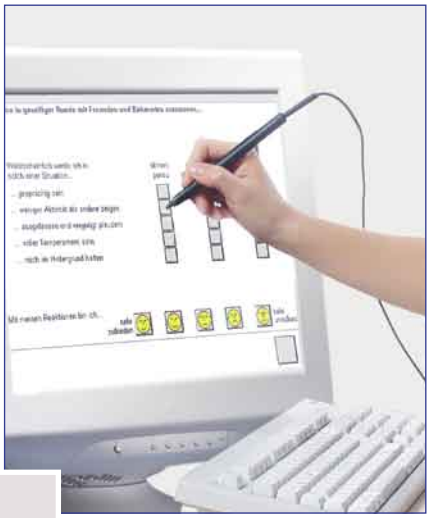
**Since the Vienna Test System was conceived for international use, it supports many languages.**

The VTS basic software is available in eight different languages, many of the tests in up to 20 different languages. Above and beyond the mere translation of the procedures the individual adjustment to different cultural backgrounds is of particular importance to us.

To give our international customers the best possible support we have established a close global network of distributors (see page 108).

NEW **Tests available in Arabic!**

**Many of the tests in the Vienna Test System (VTS) can be worked with mouse and keyboard. However, not all respondents can manage well with these devices and might therefore be at a disadvantage. That's why our hardware designers have developed special, ergonomic input devices, such as the light pen, which can be used in addition to the usual devices, such as keyboard, mouse and touch screen. You can increase respondents' motivation and acceptance of the test by making sure that the input device for each test is best suited to your respondents' needs. The use of peripheral devices enables you to assess even the processing of external light stimuli (e.g. Peripheral Perception).**



## Light Pen

Those respondents who do not frequently work with computers are most often the ones who prefer this device. Answer boxes are displayed on the screen - any normal PC monitor will do - corresponding to the possible answers for the item. The answer boxes light up whenever a respondent touches them on the screen with the light pen. When the item is answered, an „X" appears on the box corresponding to the selected answer to confirm the respondent's choice.

targets

The light pen interface is the interface to the PC

## Panels

**Panel, standard:**

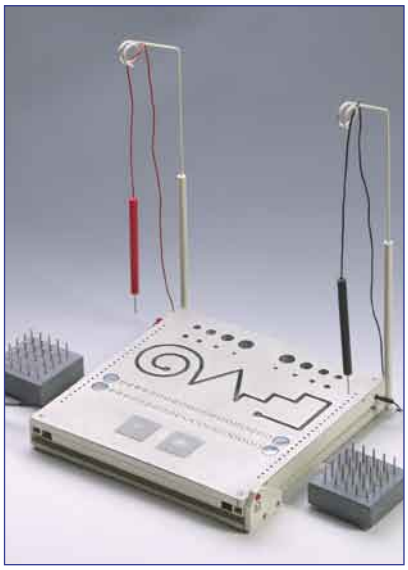
- seven colored buttons
- ten numbered buttons
- one sensor button
- hook-up for foot pedals possible
- USB - interface

Two panels were created to ensure user-friendly data input and can be used for many different tests:

**Panel, universal:**

- seven colored buttons
- ten numbered buttons
- one sensor button
- two control knobs
- two analog joysticks
- hook-up for foot pedals possible
- USB - interface

## Motor Performance Series



Corresponding test: **Motor Performance Series**

The Motor Performance Series is a highly-developed and highly accurate test designed according to Fleishman's factor analytical study of fine motor skills. The dynamic as well as the static dimension of finger-hand-arm movement are evaluated.

**The Motor Performance Series includes:**

- Drilled holes of various sizes to measure steadiness, for one or two hands
- A line carved out in the shape of several geometric figures to measure line tracking, for one hand
- 2 x 20 contact points to measure aiming, for one or two hands
- Left and right, on each side 25 small drill holes for inserting pins, for one or two hands
- Two small metal plates for tapping, for one or two hands
- USB - interface

## Flicker Fusion Unit

Corresponding test: **Flicker/Fusion Frequency**

The Flicker/Fusion Frequency test records activity (arousal) in the central nervous system.

- Stimulus lamp from 10.0 to 80.0 Hertz in increments of 0.1 Hertz
- Little interference from physiological and physical variables

## Peripheral Perception

Corresponding test: **Peripheral Perception**

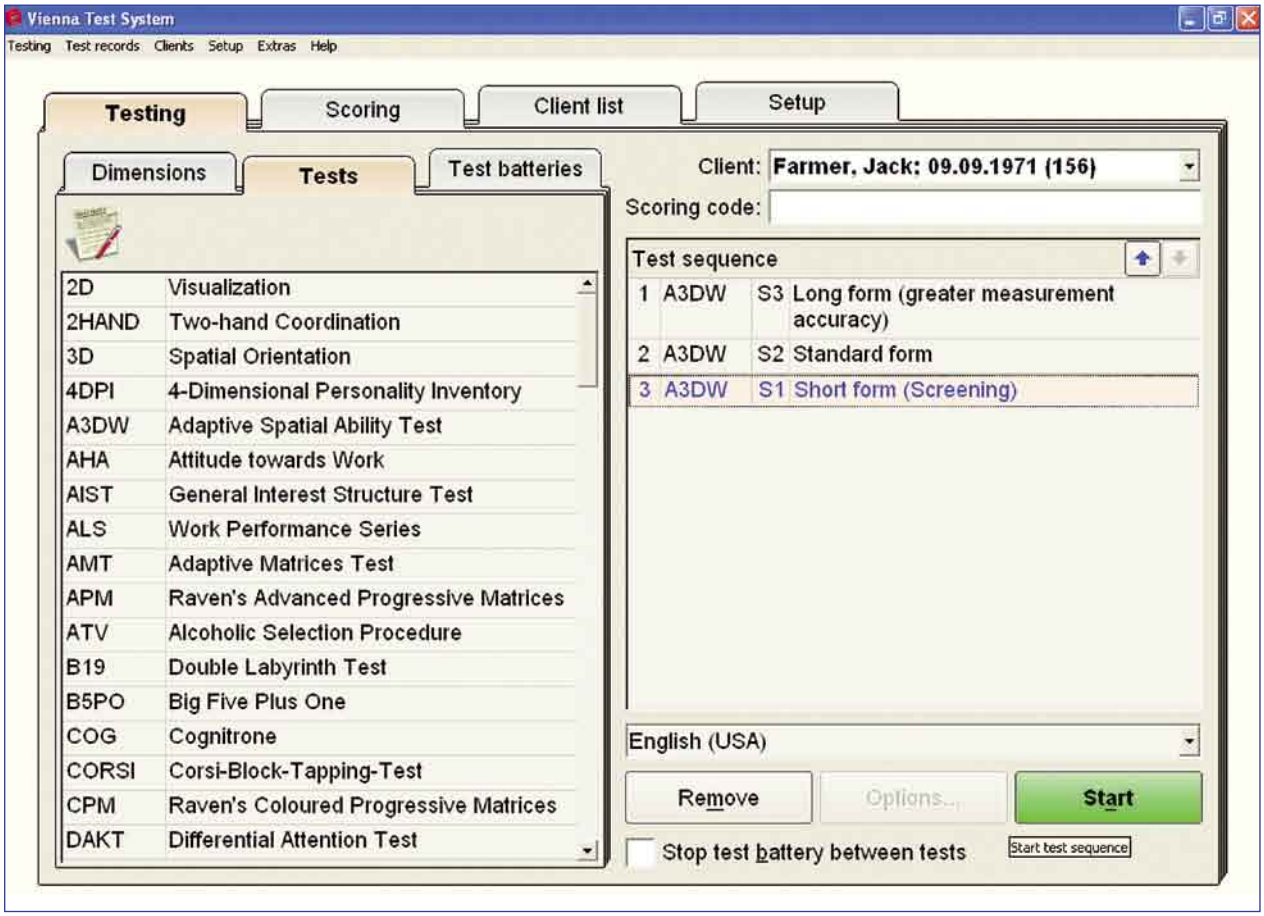
In executing a tracking task the respondent's attention is focused on the center of his/her field of vision. At the same time peripheral light stimuli are activated to which the respondent is to react in a selective manner.

- Peripheral display: LED matrix, 8 lines and 64 columns per side
- Light stimuli from the center to the periphery of the respondent's field of vision
- Ultrasound distance measurement records head position

# Vienna Test System user interface



**The user interface for the VTS basic software has been structured to display clear and logically ordered index cards so that you can switch between the Vienna Test System's functions quickly and easily. You can see at a glance which level you are currently on.**




The user interface is made up of four main cards: Testing, Scoring, Client list and Setup.

The card **Testing** is used to call up and present individual tests or test batteries.

The **Scoring** card contains the database with the respondents' test scores.

Respondents' data can be modified under **Client list,** new respondents can be added and printouts requested.

Under **Setup** you can call up important basic setup information in the Test System and adapt it to meet your individual needs. For example, you can select the input devices, install new tests, set the options for the generation of results and define access authorization.

# Running Tests
# with the Vienna Test System

## Test selection

Individual tests can be selected or prepared and test batteries can be called up. A test battery is a clearly defined series of individual tests.

### Selection of individual tests

If you are already familiar with the tests, you can select individual tests according to their label. However, if you are unsure about which test is best suited to your needs, it is recommended that you make your selection from our list of dimensions and choose the tests accordingly.

With the „Info"- button, you can conveniently access all test manuals.

### Test forms

Many tests are available in different test forms that differ from each other according to test length or difficulty. These were developed for use with specific sections of the population (e.g. children, gifted persons...) or for specific evaluation purposes (e.g. screening). In this way, you can adapt **the same test to assess different criteria.**

### Language selection

Because the Vienna Test System is designed to be international, it supports many different languages. The test presentation and the results can each be given in a different language - without any additional installation - regardless of the language used for the user interface.

If you would like a test in a particular language, please contact us. We continually translate our tests into additional languages.

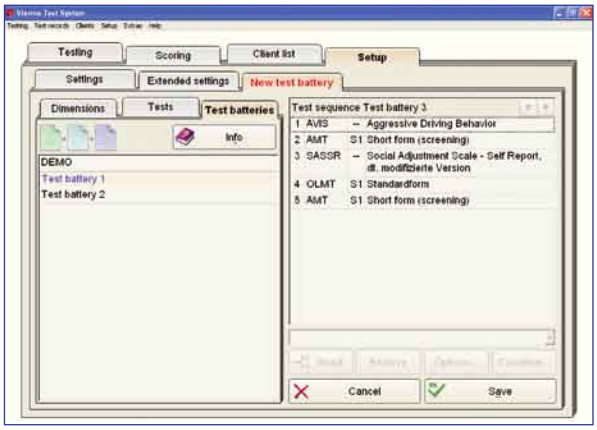
### Test batteries

The Vienna Test System can administer individual tests as well as entire test batteries. The next test is automatically activated when the respondent enters his/her final answer for the previous test, making the administration of an entire test battery just as simple and convenient as it is for a single test.

In order to standardize the test presentation it is often helpful to define, save and make the test batteries available to the test administrator ahead of time for him/her to directly activate later. Depending on your psychological focus, you can create a self-defined „Neuropsychological Test System", a „Traffic Psychology Test System" or a „Test System for Personnel Selection".

In order to shorten the testing time, you can create **conditional test batteries** within the Vienna Test System. The next test is presented depending on how the respondent preformed on the previous test.
By defining the conditions necessary for the presentation of the subsequent tests you can prevent your respondents from becoming unnecessarily less motivated.

The Schuhfried company offers validated test batteries. See page 22.



## Test administration

After the selection of the test or the test battery has been made, enter the respondent data and begin testing.

### Instruction phase

Each test starts off with an instruction phase explaining how to complete the test. Usually the instructions are presented on the screen; however, in some cases, such as when testing children who are not able to read yet, the test administrator must perform this task.

### Practice phase

The practice phase follows the instruction phase and is aimed at familiarizing the respondent with the test and ensuring that s/he understands how to work it. The instruction and practice phases are often interconnected and structured according to the principles of programmed learning. This helps the respondent to understand the test especially quickly - if this is not the case, the test administrator must intervene.

### Test phase

In this phase the respondent works the individual test items. This occurs without any input on the part of the test administrator and guarantees a high degree of objectivity for that reason. If a test administrator is running a two-monitor system (see additional functions), s/he can follow the test administration on his/her own screen.

## Test scoring

The scoring is available immediately after the test or the test battery is concluded. It is easy for the test administrator to specify which scores are required so that only relevant results are displayed. This means that the user has flexibility in selecting the items to be shown in the printout.

The **test results** are presented in a uniform manner in tables and diagrams.

The respondent's **raw scores** are presented in the results table with the test variables, as well as the corresponding norms. These norm values either refer to an entire sample or to partial samples broken down according to age, gender, educational criteria or other criteria. In addition to **percentile ranks,** t-scores and/or z-scores are usually available **for norm comparisons** as well. In some tests other standardized test scores are also used, such as IQ scores in intelligence tests or Stanine scores. If reliability values are available, **confidence intervals** are also given.

The coloured **profile** enables this information to be taken in at a glance. The normal range is shaded grey so that deviations are immediately visible.

The **test protocol** provides information about the subject's responses and the time taken to work each item.

In addition the test protocol reveals whether the subject made any alterations to his answers. For many questionnaire-type tests an item analysis protocol is available showing the formulated questions and the answers given.

If response behaviour is implausible or very incomplete warning notes and guidance on interpretation of the test are provided.

# Running Tests
## with the Vienna Test System

User designabel titel bar

Data retrievable from the subject database

Short description of the test

Raw score, comparison against a selectable normative sample, confidence interval

clear and colored profile

**Farmer, Jack**
born 09.09.1971, male, 34,4 years, Education level 5

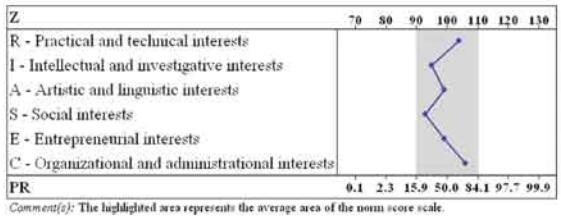
**General Interest Structure Test** (AIST)
Differential test to determine academic/professional interests for educational and career counseling
**Test form S7 - English form**
German and Austrian norms, suggested professions - Great Britain / USA
Test administration: 12.01.2006 - 10:33...10:35, Duration: 2 min.

**Test results - total sample:**

| Test variable | Raw score | PR | T | Z |
|---|---|---|---|---|
| Practical and technical interests (R) | 31 | 66 | 54 | 104 |
| Intellectual and investigative interests (I) | 28 | 31 | 45 | 95 |
| Artistic and linguistic interests (A) | 26 | 46 | 49 | 99 |
| Social interests (S) | 24 | 24 | 43 | 93 |
| Entrepreneurial interests (E) | 29 | 46 | 49 | 99 |
| Organizational and administrational interests (C) | 27 | 73 | 56 | 106 |
| Working time | 41:43 [1] | | | |

*Comment(s):* Percentile rank (PR), T-score (T) and Z-score (Z) result from a comparison with the entire comparative sample 'total sample'.
The norms were taken over from the paper-and-pencil test.
[1] Working time in minutes:seconds

**Profile - total sample:**




*Comment(s):* The highlighted area represents the average area of the norm score scale.

Test protocol and item analysis for a detailed description of the subject's responses

**Item analysis protocol:**

| Work-related stress | Answer | +/- |
|---|---|---|
| 3. I feel tired in the evening after work. | true | + |
| 5. Problems often come up at work which are very difficult to overcome. | false | - |
| 8. I really should give myself a break at work. | false | - |
| 9. Sometimes I think I overtax myself at work. | false | - |
| 12. I am often interrupted while trying to work. | false | - |
| 14. My career entails, by and large, a great deal of mental strain. | true | + |
| 15. Sometimes I feel like I can't handle my work anymore. | true | + |
| 19. I have experienced some big disappointments in the course of my career. | true | + |

Note for test interpretation

**Attitude towards Work (AHA)**
Short test battery for the assessment of the dimensions "aspiration level", "frustration tolerance", "performance motivation" and "impulsiveness/reflexivity"
Test administration: 16/10/2001 – 13:25...13:33; Duration: 7 min.

**Caution with interpreting: Test was interrupted!**

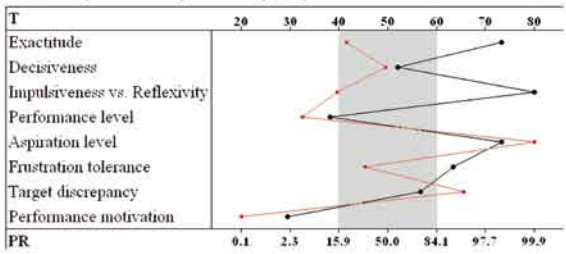
Not all item groups of the overall test were presented!
Comparison using the comparative samples is only possible under certain conditions!

In some cases it is meaningful that a subject repeats a certain test after an intervention (e.g. treatment, training). To compare the test repetitions with each other quickly, the Vienna Test System can carry out a profile comparison. In this special method of evaluation the profiles of the individual test administrations are overlaid. All changes are identifiable at a glance. The individual profile curves are represented in different colors or with differently styled lines. Up to seven profiles can be compared.

**Farmer, Jack**
born 09.09.1971, male, 34,4 years, Education level 5
Test administration: 09.01.2006

Presentation of the changes for test repetitions
**Attitude towards Work** (AHA)
Short test battery for the assessment of the dimensions "aspiration level", "frustration tolerance", "performance motivation" and "impulsiveness/reflexivity"

**Profile comparison - Comparison sample, representative:**



**Because data protection is such a necessity, the Vienna Test System contains functions that prevent the unauthorized use of the system and misappropriation of the data protecting the respondent's personal data in particular.**

**Access authorization** can be ensured with three passwords on three different levels used to define the following user groups:

1. All functions of the test system are accessible.

2. Test batteries cannot be created or modified, basic setup data cannot be altered, and tests cannot be installed or removed. Access to the databases is, however, unrestricted.

3. The Test System can only be used to present the tests; all other functions are not accessible. The records generated during testing and saved in the system can be printed out after the test is concluded. Other records located in the database cannot be accessed.

The test items and respondents' data are recorded in the Vienna Test System in encoded form.

# Use your own tests - the Test Generator

**Do you want to add tests to the Vienna Test System, which you are currently using? Have you developed tests yourself?**

The Test Generator enables you to administer them in the Vienna Test System and to score them electronically. So you can adapt the system to your individual needs. The functions of the Vienna Test System apply to all the tests that you create.

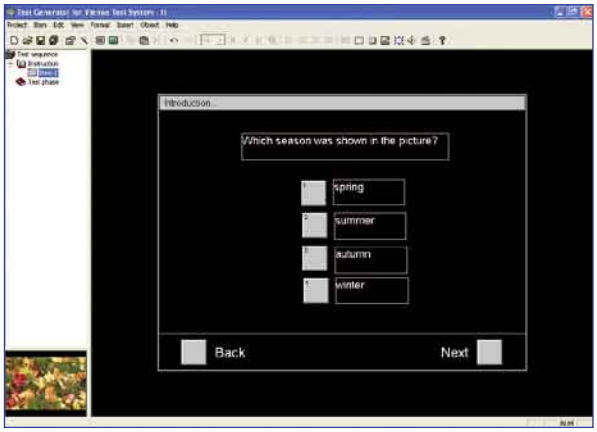
**Advantages:**

- Programming skills are not necessary
- You can create your tests in a short amount of time
- Your own norms or norms you have adopted from another source can be easily added
- Maximal flexibility and customization possibilities

The Test Generator is available for test questionnaires (TQ) and tachistoscopic tests (TT).

**Test questionnaires** can be constructed as a power test or as a personality test. You just enter simple questions into the Test Generator or add in multimedia elements such as diagrams, photos, scanned-in templates, audio and video files.

To create **tachistoscopic tests** just add in your own images or series of images and define the time frame in which they are to be presented. Questions to be answered by the respondents after the tachistoscopic presentation on the screen can also be easily added.



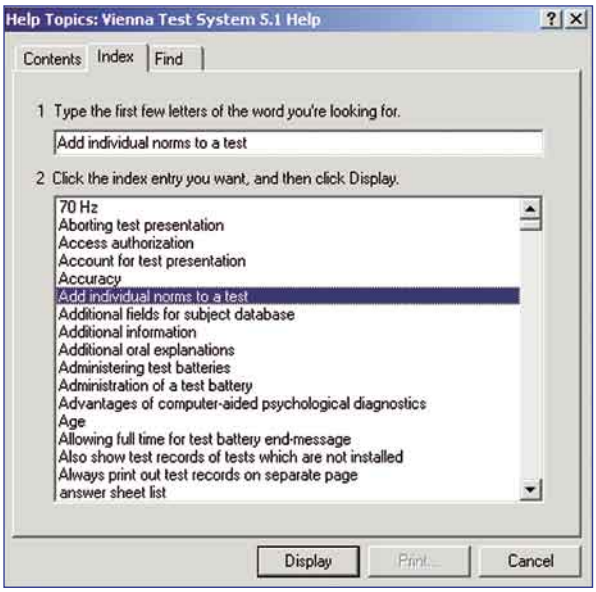

You can use any of the available input devices (light pen, subject panel, mouse, PC keyboard) for the tests created with the Test Generator. Test scoring is performed according to the standardized VTS design, automatically giving you results tables, profile diagrams and test protocols without costing additional time and energy.

As regards scoring, there is no restriction on the defined number of test variables nor on what kind of name the variable may have. Norm scales such as percentile ranks, t-scores, z-scores, IQ-scores, stanine, sten and C11 scales are provided.

The Test Generator is a standard which can rightly be considered both well-developed and well-thought out. It is, of course, based on the experiences and information gleaned from the Vienna Tests System's more than twenty-year history, and takes into account the latest developments in technology as well as those in the field of psychology.

## VTS help

The Vienna Test System contains a comprehensive help program that is sensitive to the context of the inquiry. You will find all the information you need, from how to install and use the VTS to tips, tricks and additional literature references.
You can search for certain topics using „Contents", „Index" or „Find" just like in MS Windows.
Manuals for the individual tests are available in digital form.




**VTS help is divided into the following chapters:**

- The basics of computerized psychological assessment
- The Vienna Test System
- The Test Generator
- Update info
- Test documentation

## 2 monitors - 1 Test System

Having the test administrator and the respondent use the same monitor is often unpractical. The light pen interface (see input devices and additional devices) allows for the hook up of two monitors so that the test administrator can monitor the test and intervene if necessary. The respondent monitor is used solely for presenting the test.

## Scoring programs for paper-and-pencil tests

It is often useful to present paper-and-pencil tests that are later scored and administered on the computer. In the Vienna Test System there is a special scoring program for this.
The answers of the questionnaires are entered through the keyboard. Some answer sheets can also be scanned. For the scoring you obtain, without any additional effort, the usual result tables, graphic profiles and test protocols of the VTS.
The norm comparisons are available as well and the test results can also be exported.

## Norm table explorer

The raw scores for all test variables are indicated for each installed test, as are the corresponding percentile ranks and t-scores (or the typical standardized test score for that particular test, such as z-scores or sten-scores) and presented in table form. If available, the reliability values are also provided. The sample sizes, the gender distribution, the age group and the distribution according to education level are usually given as well.

## Hardware test

The hardware test allows you to check the function of individual test system components. After the check is completed, a report is generated, displayed on the screen or printed out. This document serves as evidence for the **records of test equipment** which are compulsory in many institutions.

## Individually adaptable respondent database

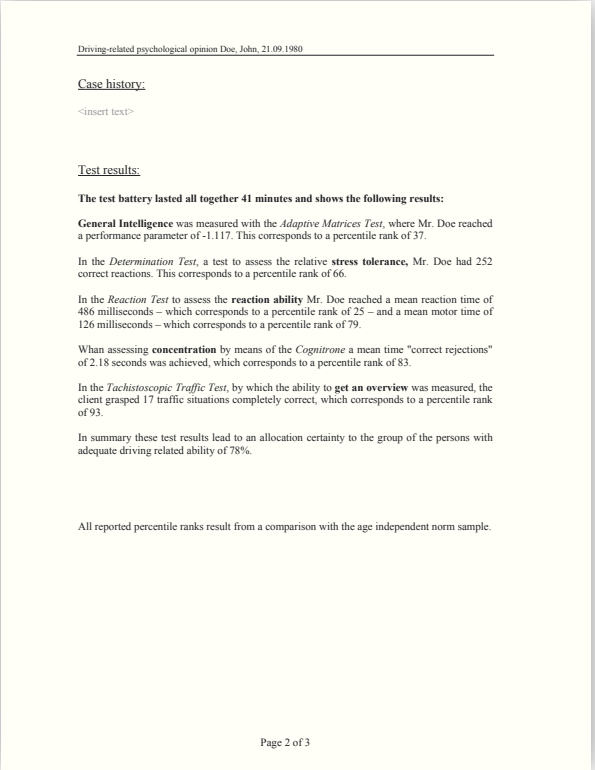
The respondent database contains the standard fields of name, first name, date of birth, gender, educational level, scoring code and language. Additional user-defined fields can be added as required, enabling an individual input form to be created.

## Data export - data import

To ease the further statistical processing, all data (raw scores and/or the norm scores for the test variables) can be exported to the most common statistics programs (such as Excel and SPSS). It is also possible to create an ASCII file as well.
„Exchanging" respondent data between two Vienna Test Systems (VTS) is very simple: the records are imported via the network or diskette to the second Vienna Test System.
The respondent codes can be encoded to ensure anonymity when exporting the data.

## Automatic report generation

The test system includes a function by means of which individual test results can at the touch of a button be imported into a report template. This report can be processed in Microsoft Word ®, printed out and saved. A Template Wizard helps you create individual templates. A template is supplied at the time of purchase with the Traffic and Aviation Expert Systems and some individual tests.



Driving-related psychological opinion Doe, John, 21.09.1980

Case history:

<insert text>

Test results:

**The test battery lasted all together 41 minutes and shows the following results:**

**General Intelligence** was measured with the *Adaptive Matrices Test*, where Mr. Doe reached a performance parameter of -1.117. This corresponds to a percentile rank of 37.

In the *Determination Test*, a test to assess the relative **stress tolerance,** Mr. Doe had 252 correct reactions. This corresponds to a percentile rank of 66.

In the *Reaction Test* to assess the **reaction ability** Mr. Doe reached a mean reaction time of 486 milliseconds – which corresponds to a percentile rank of 25 – and a mean motor time of 126 milliseconds – which corresponds to a percentile rank of 79.

Whan assessing **concentration** by means of the *Cognitrone* a mean time "correct rejections" of 2.18 seconds was achieved, which corresponds to a percentile rank of 83.

In the *Tachistoscopic Traffic Test*, by which the ability to **get an overview** was measured, the client grasped 17 traffic situations completely correct, which corresponds to a percentile rank of 93.

In summary these test results lead to an allocation certainty to the group of the persons with adequate driving related ability of 78%.

All reported percentile ranks result from a comparison with the age independent norm sample.

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## Creation of individual norms

The software program FlexNorm is a Windows-based tool devised by us so that norms for the Vienna Test System can be simply and efficiently created. In a few easily learned steps you can draw up overall norms as well as norms separated by gender, education, age or other separating variables defined by you.
The norm base thus created can be easily imported into the Vienna Test System using any text editor. As an aid to accuracy there is an option for checking self-created norms for syntactic errors.

## Voice Response

Technically, voice response is a demanding task. Nevertheless we have already found good solutions. Speech output is used in a number of clinical tests which are currently in the final stages of being prepared for the market.

## Ranking

A separate Vienna Test System module enables applicants and their test results to be easily compared. Once the profile of the desired requirements and their weightings has been entered, the system identifies the most appropriate person. Ranking takes place according to the degree of discrepancy between individuals' profiles and the requirements you have specified.

**Using the Vienna Test System in a network makes many useful applications possible.**

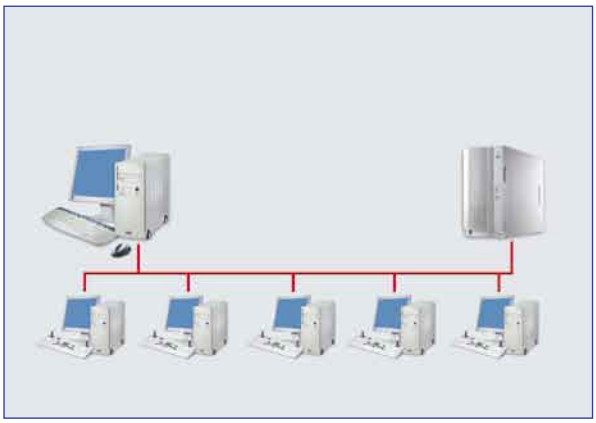
## VTS group system

If a big number of respondents is to be tested, the establishment of a VTS group system is recommended. This consists of an administrator work place and an almost unlimited number of respondent work places.

The **test administrator work place** is used for controlling the respondent work places and to administer the data. On the administrator work place respondent data are recorded, test batteries are prepared and scorings are carried out.

At the **respondent work places,** people can work on the tests simultaneously, but completely independently from each other, at their own speed. On each work place different tests or test batteries can be presented. The AutoTest function is usually used at the respondents' workstations.

The control monitor and the AutoTest function are two aspects of the Group Testing System which make testing significantly easier.



### Control monitor

The control monitor is a separate program, used for the supervision and control of the individual respondent work places in a VTS group system. It is started from the administrator's work place and displays the following information for each respondent work place:

- Current test battery
- Test duration since the start of the test battery
- Current test and current test form
- Duration of the current test
- Subject data
- Different hints, when a respondent needs the administrator's help

### AutoTest

AutoTest is especially suitable for use in VTS group systems. This function makes it possible for the test administrator to prepare tests for different respondents in advance. At the beginning the individual respondents log on with their specific code on any work place, where the tests and test batteries meant for them are then presented. After the test, the results can be printed out automatically.

## Shared database use

All respondent databases and test results can be stored in a **central database.** This may have an advantage in a hospital, when a patient is moved from one ward to another. The new ward's psychologist can immediately call up the patient's data. No data transfer by floppy disc is necessary.

## Shared use of settings

In a computer network, **centrally fixed settings** like test batteries, respondent database settings, data export options and test battery scoring can be used jointly. For example test batteries that were created on one Test System can also be used on every other system in the network. For bigger companies, with extended or even global networks, it is even possible that a test administrator creates test batteries in Paris, which are then presented on a Test System in London. The access authorization can be defined according to your wishes.

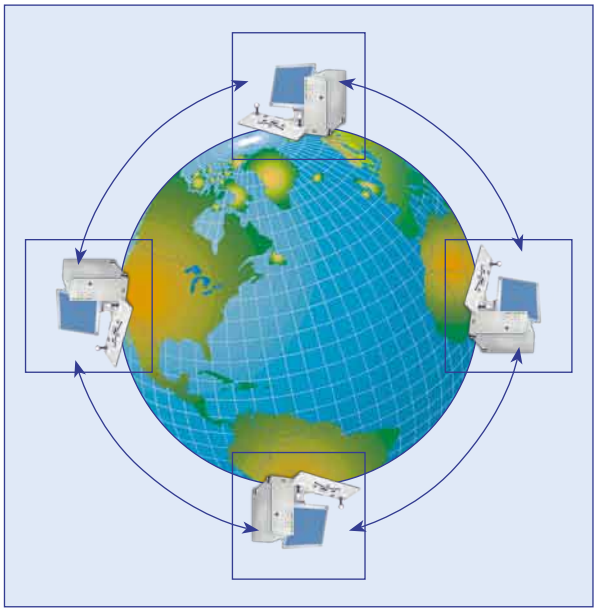
## Terminal Server Solution

In the Terminal Server Solution the Vienna Test System is not installed on individual PCs (terminals) but on a central server. You then have the flexibility of being able to work on any computer you choose, without being tied to a particular location. Depending on the quantity of VTS licences purchased, a number of people can make use of the basic software simultaneously. Updating takes place centrally on the server. The terminals are linked to the server either by intranet or by internet.

## Internet testing

Take the opportunity of administering tests over the internet! You can use our tests either by themselves or with our administration system (Vienna Test System):

- You can present the tests individually on your internet platform.
- You can include the tests in your existing online administration system.
- As an additional option, you can present the tests online as part of the Vienna Test System. This is done using the Terminal-Server Solution.



## Expert systems

Expert systems from Schuhfried are **standardised validated test batteries** providing an **overall assessment** which takes account of all the test results.

Except in very rare instances, the correlations between the result of a single test and aptitude for a particular skill (criterion) are very low. This can be explained by test theory, which states that the correlation between a criterion with a high level of universality – such as aptitude for driving or for flying an aeroplane – and a test which measures specific characteristics and abilities cannot be high. The validity of specific tests, however good they are, will always remain low. For this reason it is preferable to use a battery of tests which measures a number of specific abilities and combines the individual test results into an overall assessment. An expert system from Schuhfried carries out the data aggregation by means of a neural network. This is essentially a robust mathematical algorithm – with minimal prerequisites - for the identification of patterns. Neural networks can depict non-linear relationships and compensatory mechanisms.

The impressive validities of our expert systems demonstrate that the way forward lies in using a combination of a validated test battery and an overall assessment which consolidates all the test results by means of a neural network.

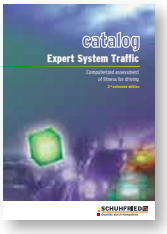
### Expert System Aviation


The Expert System Aviation consists of a standardised and validated test battery. This covers all the suitability criteria specified in the European regulation JAR-FCL3 including logical thinking, concentration, spatial perception, psychomotor co-ordination and decision-making skills.

The test battery combines the results of the individual tests into an **overall assessment.** This indicates the probability of passing the flight simulator test and functions as an aid to interpretation.

With a validity coefficient of 0.85 the Expert System Aviation achieves a classification rate of 92%.

### Expert System Traffic




The test batteries of the Expert System Traffic (STANDARD and PLUS test batteries) can be used to assess driving-specific abilities. In addition an overall assessment of the subject's ability in this field is provided, based on an empirically validated model of the correlation between the test results and the assessment of driving behaviour in a standardised driving test. The figure quoted for the overall assessment serves as an aid to interpretation.

With a validity coefficient of 0.78 the Expert System Traffic achieves a classification rate of 86%.

**You will find further details in our „Aviation Expert System" and „Expert System Traffic" catalogs.**

# Quality management

**The Dr. Gernot Schuhfried GmbH has set up a quality management system in accordance with EN ISO 13485:2003; this is a version of EN ISO 9001:2000 which applies specifically to medical products.**

Products from Dr. Gernot Schuhfried GmbH are developed and manufactured to meet the requirements of the EU Directive 93/42/EEC. They conform to the Medical Products Law and therefore carry the CE mark.

This ensures that they meet the requirements of the safety regulations and EMC guidelines for electrical medical devices (EN60601), the biocompatibility guidelines (EN30993) and other product-specific regulations.

The quality management guidelines for development and manufacture help ensure that our products are well made, durable and highly reliable.

Additional aspects of our emphasis on quality are the on-going further training of our staff and the continuous improvement of product quality.

## The Vienna Test Lab

The Schuhfried Company founded a research and development laboratory for empirical data collection in the proximity of the University of Vienna. We collect data from approximately 20 persons per day.

The main task in the laboratory is standardization work on representative samples. DIN 33430 requires that the norm values of procedures which are used for aptitude testing are checked for their adequacy every eight years. The Schuhfried Company meets this standard for each and every one of the tests offered.

## We have been awarded the Austrian national coat of arms

This means that we fulfil the following requirements:

- High level of exports
- Quality management
- Excellent financial standing
- Innovative products
- High level of research and development work
- Continuous further development of the company


Fewer than 0.5% of Austrian firms have been awarded the national coat of arms.

## Clinics

The use of tests in the clinical field falls into two main areas: neuropsychology and clinical psychology.

The purpose of **neuropsychological assessment** is primarily to identify which of the subject's abilities are impaired and to what extent. The tests used are therefore those which provide a valid and reliable assessment of basic functions such as attention, memory, motor skills or executive functions. They are designed to identify the areas in which deficits exist and training may be required.

In **clinical psychology** tests are used to measure aspects of both ability and personality. Psychological assessment procedures have, for example, proved to be effective in identifying depression, personality disorders, anxiety states and perseveration tendencies. Ability impairments resulting from pain can also be recognised, as can the attendant stress levels and coping strategies.

## Traffic

In the context of traffic psychology there are usually two questions which are of particular interest – firstly, whether the subject demonstrates adequate driving-specific ability and, secondly, whether he also has the aptitude to adapt to traffic conditions.

The Vienna Test System provides a simple and efficient means of assessing **driving-specific aptitude**. Of particular interest in this context are the ability to gain an overview, reaction behaviour, the ability to concentrate, sensorimotor functions and intelligence or the ability to remember. In addition, the assessment of reactive stress tolerance is particularly important in traffic psychological assessment.

**Aptitude for adapting to traffic conditions** is assessed by means of personality tests. The aspects of personality which are investigated include sense of responsibility, self-control, emotional stability, readiness to take risks and the tendency towards aggressive interaction in traffic. Often the issue of possible dependence on alcohol is also relevant.

The aim of testing is to discover whether the minimum requirements for the proper handling of a vehicle in traffic are met.

## Aviation

Assessment in the field of aviation psychology is concerned with the testing of pilots, would-be pilots and air traffic control personnel. In both civil and military aviation psychology, tests are used to assess the suitability criteria laid down in the JAR-FCL3 regulations. For example, these tests make it possible to reliably pre-select pilot applicants on the basis of their ability and of personality characteristics relevant to aviation psychology: only applicants with sufficiently good results proceed to the flight simulator. It is also possible to assess the ability of pilots already in the profession.

Flight training schools use tests to forecast the likelihood of successful completion of pilot training. If the likelihood of success is low, training is usually not pursued because of the high costs involved.

## Personnel

In personnel psychology psychological tests are used for **personnel selection** and in the provision of **personnel or career-related advice.**

In **personnel selection** tests are used to pre-select applicants. Pre-selection involves comparing job applicants with regard to ability and/or personality factors. On the basis of the comparison a decision can be made on how to proceed with the individual's application. DIN 33430 stipulates that tests used for this purpose must satisfy the principle criteria of objectivity, reliability and validity. The tests of the Vienna Test System meet the requirements of DIN 33430.

In personnel selection tests are not necessarily used as the primary means of applicant selection. They often provide information which complements that provided by other selection tools such as the interview and work test.

Since tests need to predict future work-related behaviour as objectively as possible, the choice of tests for personnel selection purposes is always based on a careful analysis of the job requirements.

In the field of **personnel and career-related advice** tests are used to assess personal strengths and weaknesses and to analyse potential. Testing is followed by one-to-one discussion of the way in which the individual's potential can best be realised. In the context of personnel and career-related advice interest tests are indispensable. These highlight individual preferences and thus help in the selection of the future career course.

## Sport

In sport psychology tests are used to assess both ability and personality factors.

Differentiated aspects of performance can be assessed such as concentration, reaction ability, stress tolerance, eye-hand co-ordination, peripheral perception and anticipation of time and movement.

Insight into personality factors which are important in sport is provided by tests which assess achievement motivation, frustration tolerance, handling of stress, impulsivity/reflexivity and level of challenge.

## Research

Depending on the purpose of research, the research and development departments of institutions and companies use tests to assess the current state after particular actions. The tests therefore serve both to check the effectiveness of the action taken and to identify appropriate intervention measures.

Additionally, an important application of assessment tests is in the field of research into fundamentals and in psychometric research, as for example in studies of the use of motivator items.

In the disciplines of applied psychology, such as traffic psychology or aviation psychology, psychological assessment in the area of research gives important impetus to quality assurance and to the continual further development of assessment tools.

Within research a particularly important role is played by pharmacopsychology as it requires very high standards of the tests used. Changes in ability are measured to provide an objective assessment of the general level of activation while under the influence of a drug.

We are currently implementing the requirements of 21 CFR Part 11 in the Vienna Test System.

## Help Desk

Our Help Desk staff are available to provide swift and reliable information on software and hardware issues.

**The Help Desk helps our customers by:**

1) Receiving and responding to support requests from customers, whether received by telephone or in writing.
2) Passing on customer enquiries to the relevant departments (e.g. Psychology).
3) Documenting all customer queries in a support database.
4) Exchanging information regularly with the development departments.
5) Using comments and ideas from customers to help devise improvements.
6) Handling hardware sent in for repair.

**Tel: +43 (0) 2236-42315-60**
**e-mail: support@schuhfried.at**
**Fax: +43 (0) 2236-46597**

**The Help Desk is available Mon. – Thurs. 9:00 - 17:00 and Fri. 9:00 - 14:00.**

## Update service

The best way to keep your Vienna Test System always up to date is to have an update contract. This ensures that you automatically receive new norms, test forms, languages and user functions as they become available. In addition the software is regularly adapted in line with the latest technological developments. Our easily understood update information lets you review all the changes at a glance. As an alternative to the update contract you can request updates from us at any time.

## Project support

Since the founding of the Schuhfried company more than 40 years ago co-operation with customers on their projects has been an important part of our company philosophy. Our experts in the Hardware, Software and Psychology departments provide specialist advice on both technical and psychological matters. This leads not only to solutions appropriate to the requirements of the individual situation but also to a process of ongoing support, which in times of rapid technological change is particularly valuable.

## Specialist advice

We are happy to offer specialist advice or to support you in the work you are doing. For example, we can assist you in planning experiments, carry out the statistical evaluation of large sets of data and provide interpretation of results.

## User seminars

In contrast to the workshops, user seminars deal with specific assessment issues. These seminars are intended for people who already have experience of using the VTS and wish to deepen their knowledge.

## Workshops

We hold workshops which provide an introduction to computerised psychological assessment and acquaint participants with the use of the Vienna Test System:

- Use of the VTS user interface
- Test selection appropriate to the relevant assessment purpose
- The construction of test batteries
- Test administration
- Interpretation of results

# Services

## Norming service

A new service offered by the Schuhfried company is data gathering and norm creation for special norm comparison groups. You tell us what is required – we collect the data and draw up the norms. If you already have suitable data available we shall be happy to draw up norms from it.

# Schuhfried up to date

## Our website

We have an informative and easy-to-use website.

Important **contact addresses** and telephone numbers are listed on the website alongside the **latest information** about our products. You will also find details of the **fairs** at which we will be represented.

You will find there more information on our **company**, its history and the philosophy which has made us the international market leader in the field of computerised psychological assessment.

All our **products** are described on our website together with information about their scientific background.

A **reference list** of our customers can also be viewed on the website.

Our products are being continuously improved, taking into account the latest scientific findings. We can assure you **„Quality by competence“** – read more on our website about our quality marks and awards.

For more detailed information go to:

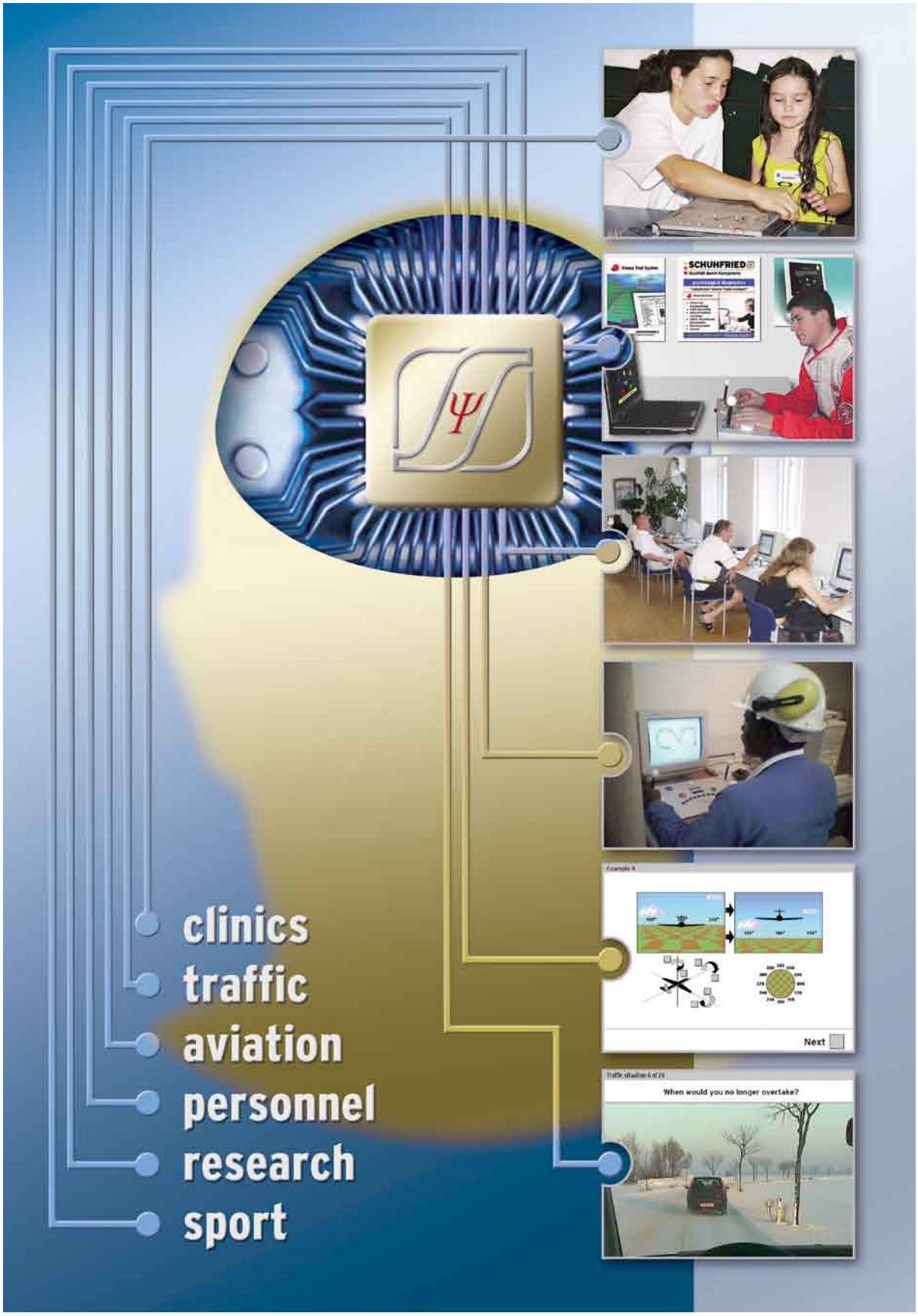
**www.schuhfried.at**

## Newsletter


A special service is our Newsletter which can also be read on our website.

It will keep you informed of all the news about our company and our products.

**Our Newsletter is free and you can request it from us or subscribe at any time.**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Next
When would you no longer overtake?
clinics
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sport

## IBF Basic Intelligence Functions

### Intelligence screening battery

ITB Institut für Test- und Begabungsforschung GmbH, Bonn (Managing Director: E. Fay, G. Trost); G. Gittler, Institute of Psychology of the University of Vienna



**Economical intelligence screening battery based on Thurstone's primary factors.**

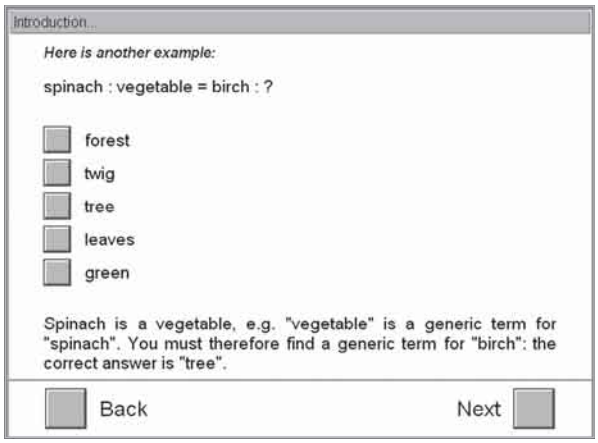
**Application:**
Measurement of level and structure of intelligence; suitable for all relevant assessment purposes from the age of 13 years. The IBF tests are particularly useful as screening tools when a swift global overview of intelligence level is required. The intelligence profile can also be used as a preliminary to more detailed investigation of particular areas of ability.

**Main areas of application:** education, further education and career choice; performance-related aptitude assessment, clinical psychology, educational psychology; work psychology, industrial and organisational psychology.

**Theoretical background:**
The test aims to provide a differentiated assessment of the main areas of ability which are hierarchically structured at a level of medium abstraction.
Building on Thurstone's primary factors of intelligence (1938), this tool for analysing intelligence structure assesses the following four ability dimensions: verbal intelligence (35 items), numerical intelligence (40 items), spatial visualisation (17 items) and memory (20 items).

**Administration:**
There is a time limit for the completion of each group of items. Standardised instructions and practice items are presented before each group is worked through. The respondent selects the correct answer from a multiple choice range. Amendments can be made to individual answers within a task group, repeatedly if necessary. Within the permissible time limits it is possible to go back to any item in the group in order to change the answer.

**Test forms:**
Two test forms are available:
Test form S1 (standard form),
Test form S2 (easy short form)




**Scoring:**
The results of the IBF are given in the form of z-transformed factor scores for the ability areas of verbal intelligence, numerical intelligence, spatial visualisation and memory. An overall intelligence score is also provided, based on a hierarchical linear structural equation model.
All test scores are compared with the norms and percentile rankings and T-scores are given. The test protocol indicates how the individual items were answered (correct, incorrect, amended, omitted) and how long the test took.

**Reliability:**
Internal consistency (Cronbach's Alpha) for the individual areas of ability lies between r=.84 (spatial visualisation) and r=.94 (numerical intelligence). For the test as a whole a value of r=.95 was obtained. The test has been optimised to combine an economical test length with a very high degree of reliability.

**Validity:**
Studies show correlations with Raven's matrix tests APM (Raven, Raven & Court, 1998) and SPM (Raven, Raven & Court, 1979) of r=.30 to r=.41 (APM, N=237) and r=.42 to r=.52 (SPM, N= 256) for the item groups and r=.52 and r=.66 for the overall test score. Correlations with INKA (Heyde, 1995) are between r=.36 and r=.47, or r=.54 for the test as a whole (N=320).

**Norms:**
For all forms computer norms are available for 4785 individuals; these norms have also been separated according to age, education and gender. Norms are also available for 806 school children aged 13 and over.

**Testing time:**
Test form S1: approx. 45 minutes (actual test time)
Test form S2: approx. 30 minutes (actual test time)

## INSBAT Intelligence Structure Battery

### Test battery for measuring intelligence

L.F. Hornke, M. Arendasy, M. Sommer, J. Häusler,
M. Wagner-Menghin, G. Gittler, B. Bognar, M. Wenzl

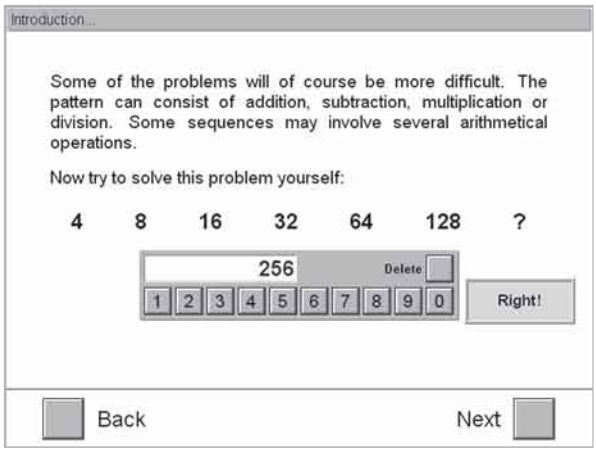


**A modular intelligence test battery constructed on theory-led principles and designed to measure work-related abilities both fairly and economically.**

**Application:**
Assessment of intelligence level and intelligence structure, for subjects age 14 and over.

**Main areas of application:** Decision-making in the fields of education, further education and career choice; ability-related aspects of aptitude assessment; educational psychology; work psychology, commercial/industrial and organisational psychology.

**Theoretical background:**
As a decision-oriented psychological assessment tool the INSBAT is constructed modularly, so that only items of a type relevant to the purpose of the investigation need to be presented.
The theoretical basis is the hierarchical Gf-Gc theory of Horn (1989; Horn & Noll, 1997) and the Three Layer theory of Carroll (2003) which is a further development of the Gf-Gc theory. Working on the intercorrelations between individual measures of the primary factors, Horn and Cattell (1978) extracted nine broadly based second order factors which together provide a global assessment of an individual's intellectual ability. The validity of this factor structure has been confirmed in a number of replicative studies carried out in different parts of the world (e.g. Brickley, Keith & Wolfe, 1995; Carroll, 1989; Gustafson, 1984; Horn & Stankov, 1982; Undheim & Gustafsson, 1987). The following secondary factors were selected for the construction of the INSBAT, being ones which are of interest in practical areas of application such as work psychology, commercial/industrial and organisational psychology, and educational psychology:
*Fluid intelligence:* The ability to recognise relationships between stimuli, to understand implications and to draw logical conclusions (subtests: Numerical-inductive thinking, Figural-inductive thinking).
*Short-term memory:* The ability to retain visual and verbal information in the short term and to reproduce it accurately (subtests: visual short-term memory).
*Long-term memory:* The ability to retain information in the longer term, to integrate it into one's own knowledge base and to recall it accurately (subtest: Long-term memory).
Visual processing: The ability to imagine how objects will look after they have been rotated or transformed (subtest: Spatial perception).
*Processing speed:* Defined by the number of basic cognitive operations carried out in a particular period of time (subtest: Observation time).




*Decision-making ability:* Determined by the number of basic cognitive operations needed to make fast but accurate decisions associated with the solving of non-trivial problems (subtest: Decision-making ability).
*Quantitative thinking:* The understanding of mathematical concepts and skills and the ability to apply them (subtests: Arithmetical estimating ability, Arithmetical competence, Numerical flexibility, Algebraic thinking).

Eleven different subtests are available for the measurement of these secondary factors. In selecting these subtests and their component items, emphasis was placed not only on ensuring their soundness in psychometric terms in accordance with the Rasch model (Rasch, 1980) and the scaling fairness associated with it, but also on incorporating the insights of cognitive psychology into the choice of the item material.

**Administration:**
The INSBAT has been designed as a modular intelligence test battery so that tests can be administered individually if required. However, for the prediction of work-related ability for individuals whose tasks are clearly defined, it has been shown by Wittmann & Süß (1997) that the use of a group of specific subtests is desirable. These subtests should be selected on the basis of a requirements analysis. On account of its modular structure the INSBAT is equally well suited to either assessment strategy.
The items in the individual subtests are sometimes presented as a power test and sometimes with a time limit on the items. Which form of presentation is used, depends on theoretical considerations relating to the constructs to be measured and relevant research results. Some of the subtests are able to test the required ability dimension adaptively, thereby maximising the information which

## INSBAT Intelligence Structure Battery

### Test battery for measuring intelligence

each item yields about the subject without being either over or under-challenging.
For each subtest there are standardised instructions with practice examples, based on the principles of programmed instruction and „mastery learning". Depending on the subtest the answers are given either in multiple choice format or as automatically recognised free answers.

**Test forms:**
There are six test forms:
Test form S1 (variable form I), test form S2 (variable test form II), test form S3 (global form) and test form S4 (short form), test form S5 (special form: technical professions), test form S6 (special form: commercial professions)

**Scoring:**
Because of the calibration of the items in accordance with the Rasch model the INSBAT also has the unique feature of being able to offer the person parameter in place of the number of correctly answered items as a measure of an individual's ability in the various ability areas. While the number of correctly worked items is merely a measure of the individual's performance, the ability parameter provides an estimate of the underlying latent ability dimension. This is a significant but for assessment purposes necessary inferential step which is linked to the fit of the relevant item response model – in this case the Rasch model (cf. on this subject van der Linden & Hambleton, 1997).
As well as yielding the person parameters as a measure of an individual's ability in the different subtests, the Intelligence Structure Battery also makes it possible to calculate factor scores for the secondary dimensions measured, as well as a score for general intelligence (Carroll, 1993, 2003). These scores are calculated automatically on the basis of the results of a confirmatory factor analysis for testing the INSBAT's construct validity.
Alongside the calculation of the ability parameters and factor scores a norm comparison (percentile rankings and IQ; confidence interval) is carried out. Following completion of the tests the results can be printed out both in tabular form and as a profile.
The test protocol for each subtest records details of the latency time for each item and the selected answer, as well as information on scoring and statistics relating to the adaptive process.
It is also possible for the INSBAT test results to be transferred directly into an assessment report.

**Reliability:**
Because of the adaptive item presentation of some tests and the validity of a probabilistic test model which this requires, any desired level of reliability can be achieved. For reasons of economy the reliabilities of the individual item groups lie between r=.70 and r=.95.

**Validity:**
Construct validity exists when a test not only meets pragmatic requirements but can also be shown to embody appropriate theoretical considerations (Kubinger, 2003). The construct representation (Embretson, 1983) of the individual subtests of the INSBAT has been confirmed by studies which used the construction rational to predict item difficulties. The multiple correlation between the item difficulty parameters of the Rasch model (Rasch, 1980) and the item characteristics of the construction rational which influence difficulty varies among the individual subtests between r=.72 and r=.93. In addition, studies of convergent and discriminant validity are available for the individual subtests.

A study by Sommer and Arendasy (2005; Sommer, Arendasy & Häusler, 2005) provided evidence for the construct validity of the overall test battery in relation to the modified hierarchical Gf-Gc theory of Horn (1989; Horn & Noll, 1997) and the Three Layer theory of Carroll (2003) which is a further development of the Gf-Gc theory. By means of a confirmatory factor analysis the authors were able to confirm the theoretically-based assignment of the individual subtests to the secondary factors of the modified Gf-Gc theory.
Empirical studies of criterion validity in relation to success in work-related and academic training are currently being carried out.

**Norms:**
Norms are available for 543 adults aged between 14 and 73. They are also available according to age, education and gender. Work on enlarging the norm sample is currently in progress.

**Testing time:**
Because of the modular construction of the test, administration time depends on the specific purpose of the assessment. The individual subtests take between 5 and 30 to complete.

## 2 D Visualization

### Test for the assessment of visual perception

O. Bratfisch and E. Hagman


**Visualization, as it is assessed in this test, is an aspect of intellectual capacity providing the psychologist with essential information about the respondent which cannot be assessed with other cognitive tests. It is the ability to think in various dimensions and to organize thoughts on the basis of mental pictures.**

**Application:**
Non-verbal test which assesses mental imagination and transformation of spatial arrangements in two-dimensional space; applicable at the age of 15 years and over.

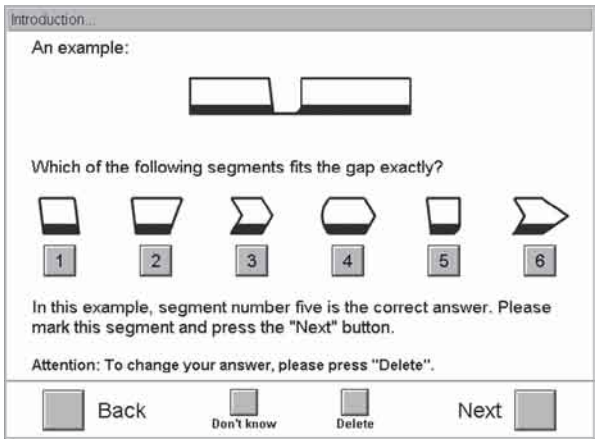
**Main areas of application:** performance-related aptitude diagnostics, clinical psychology, neuropsychology, traffic psychology, aviation psychology, industrial and organizational psychology, decisions in school, studies and career.

**Theoretical background:**
The primary object of measurement is the factor Spatial Ability (S) in the sense of Thurstone's theory of primary mental abilities (Thurstone, 1938). This factor was not only multiply confirmed by the factor analytics (e.g. Guilford, 1956) but also by the adherents of the hierarchical intelligence models (e.g. Spearman, 1927; Burt, 1949; Ver- non, 1950). Recent research on intelligence describes the factor as one of the „Multiple intelligences" (e.g. Gardner, 2001). Finally, Sternberg's „Three factor theory" (Sternberg, 2000) includes abilities which by definition correspond to the S-factor.

**Administration:**
A given figure has to be completed. The starting point is a bar which has differently shaped breaches for each task. Beneath 16 segments are shown which also are differently shaped. The task for each item is to pick one, two or three segments out of the 16 that will complete the bar. The test has 22 items. For the first 8 items only one segment is needed to complete the bar, for the next 8 two segments are needed, and for the last 6 three parts are needed.

**Test forms:**
There is one test form.

**Scoring:**
The number of correctly solved items constitutes the score for visualization/spatial ability. The printout shows raw- and standard- values for the total performance.




**Reliability:**
The split-half reliability coefficients vary between r =.84 and .86 for respondents with different educational levels.

**Validity:**
The face validity is evident – the respondents think immediately of „perception of forms" and „laying a jigsaw puzzle". The logical validity is given by the operational definition of the measurement content. Content validity has been proven through analyses of correlations. The content of 2 D is similar to the content of other spatial ability tests, which have good predictive validity for a variety of occupations. Thus, predictive validity can be ascribed to the 2 D as well.

**Norms:**
Standardization was performed on a representative sample of normal persons (N=255) which was collected at the Schuhfried Company's research lab in 2004. These norms are available separately by gender, age and educational level.
Norms for a sample of 547 Swedish working adults are available as well. Subdivisions according to educational level and age are included.

**Testing time:**
The testing time is 6 minutes. Add approximately three minutes for instructions and solving the practice items.

## 3 D Spatial Orientation

### Test for the assessment of spatial orientation

O. Bratfisch and E. Hagman


**Spatial orientation, as it is assessed in this test, is an aspect of intellectual capacity providing the psychologist with essential information about the respondent which cannot be assessed with other cognitive tests. It is the ability to think in various dimensions and to organize thoughts on the basis of mental pictures.**

**Application:**
Non-verbal test which assesses mental imagination and transformation of spatial arrangements in three-dimensional space; applicable at the age of 15 years and over.

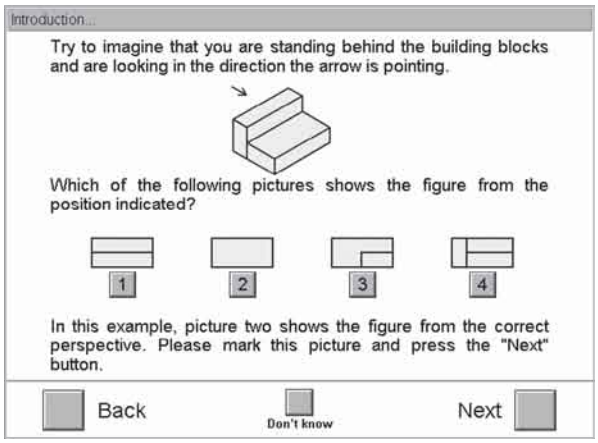
**Main areas of application:** performance-related aptitude diagnostics, clinical psychology, neuropsychology, traffic psychology, aviation psychology, industrial and organizational psychology, decisions in school, studies and career.

**Theoretical background:**
The primary object of measurement is the factor Spatial Ability (S) in the sense of Thurstone's theory of primary mental abilities (Thurstone, 1938). This factor was not only multiply confirmed by the factor analytics (e.g. Guilford, 1956) but also by the adherents of the hierarchical intelligence models (e.g. Spearman, 1927; Burt, 1949; Ver- non, 1950). Recent research on intelligence describes the factor as one of the „Multiple intelligences" (e.g. Gardner, 2001). Finally, Sternberg's „Three factor theory" (Sternberg, 2000) includes abilities which by definition correspond to the S-factor.

**Administration:**
The starting stimulation of each item is a number of building blocks of the same form and size, which are joined together in different ways. One has to imagine that the building blocks are looked upon from the direction that an arrow indicates. The testee must select a diagram that represents the bricks from this angle. The correct answer has to be chosen out of four diagram choices. The 3D consists of 30 items.

**Test forms:**
There is one test form.

**Scoring:**
The number of correctly solved items constitutes the score for visualization/spatial ability. The printout shows raw- and standard- values for the total performance.




**Reliability:**
The split-half reliability coefficients vary between r =.82 and .87 for respondents with different educational levels.

**Validity:**
The face validity is evident – the respondents think immediately of „perception of forms" and „laying a jigsaw puzzle". The logical validity is given by the operational definition of the measurement content. Content validity has been proven through analyses of correlations. The content of 3 D is similar to the content of other spatial ability tests, which have good predictive validity for a variety of occupations. Thus, predictive validity can be ascribed to the 3 D as well.

**Norms:**
Standardization was performed on a representative sample of normal persons (N=246) which was collected at the Schuhfried Company's research lab in 2004. These norms are available separately by gender, age and educational level.
Norms for a sample of 547 Swedish working adults are available. Subdivisions according to educational level, age and gender are included.

**Testing time:**
The testing time is 3 minutes. Add approximately three minutes for instructions and solving the practice items.

## A3DW Adaptive Spatial Ability Test

### An adaptive test for the assessment of spatial perception

G. Gittler


**With the creation of the A3DW, a test has become available to which the often mentioned critical comment does not apply that spatial perception tests are not suited for a comparison of gender-specific performance as men and women use different task-solving strategies.**

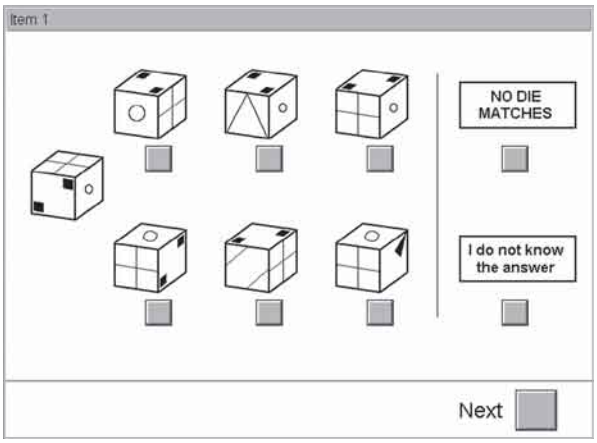
**Application:**
This Rasch-homogenous and adaptive test assesses the (non-verbal) ability to perceive and transform spatial elements (spatial perception) for both adolescents aged 13 years and over and adults.

**Main areas of application:** performance-oriented aptitude diagnostics, counseling regarding school, college, and career, traffic psychology, aviation psychology, clinical psychology, industrial and organizational psychology, research.

**Theoretical background:**
Spatial perception is one of the primary intelligence dimensions. The unidimensionality (Rasch-homogenity) of the A3DW was proven in many empirical studies. This means that the same latent ability dimension is assessed in all respondents. Thus the criticism that spatial perception tests are usually not suited for a comparison of gender-specific performance due to the fact that men and women use different task-solving strategies, does not apply for the A3DW. Probabilistic characteristic values were estimated for the items. The resulting item pool allows for an adaptive test presentation with all advantages provided by modern computerized diagnostics: shorter administration time with increased measurement precision and highly motivated respondents due to an adequate and personalized item selection.

**Administration:**
The presentation of items is adaptive. It is not possible to omit an item or to return to the previous one. The 8 answer options are designed to reduce guessing to a minimum.

**Test forms:**
There are three test forms that vary as regards the precision of the person parameter estimation (PAR).
The screening offers a quick overview, when testing a person does not have any consequences to him/her (e.g. for students where spatial perception is assessed as an additional control factor).
The long form S3 should only be administered in special cases, where increased measurement precision is of great importance (e.g. in court assessments).




The increased measurement precision obviously extends the administration time.

**Scoring:**
The person parameter of the variable „Spatial perception" is determined as characteristic test value.

**Reliability:**
The internal consistency is given due to the validity of the Rasch model (applied to all pool items). The numerical values of the individual samples and reliability coefficients determined by various methods (split-half; Cronbach's Alpha) vary between .82 and .91. The retest-reliabilities amount to r=.61 in school students that were retested after 21 months.

**Validity:**
Numerous results of statistical correlation analyses and inter-group comparisons (including other tests and various external criteria) back up the convergent and discriminant validity of the test and allow a differentiated judgment of the A3DW with respect to various validity aspects. Just to mention an example: Students from technological colleges have significantly higher results than students from non-technological colleges.

**Norms:**
Arrer (1992) showed that the paper-and-pencil form of the 3DW is also valid for the computerized version of the test. The A3DW thus provides representative norms for Austria (N=4064), both gender specific and not, and categorized according to specific school types and grades (=age-equivalent); students: N=432; adults: N=161).

**Testing time:**
10 to 30 minutes.

## AMT Adaptive Matrices Test

### Adaptive test to assess non-verbal general intelligence

L. F. Hornke, S. Etzel and K. Rettig


**The relation between test length and measurement precision is optimized. The AMT requires fewer items than most non-verbal intelligence tests for more accurate calculations.**

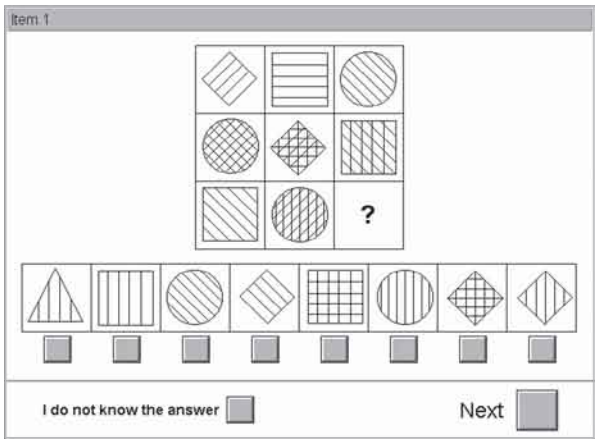
**Application:**
This test is a non-verbal assessment of the general intelligence based on eductive thinking, and is thus mainly independent of cultural and social backgrounds; it can be applied to persons aged 15 years and over.

**Main areas of application:** performance-oriented aptitude diagnostics, consulting regarding school, college, and career decisions, traffic psychology, industrial and organizational psychology, aviation psychology, sports psychology.

**Theoretical background:**
The items resemble classical matrices, but they are based on explicit construction rules. Altogether, almost 300 items were created on the basis of these rules and they were evaluated with a large sample of people in an extensive study in Aachen (Germany), Katowice (Poland), Moscow (Russia), and Vienna (Austria). Probabilistic characteristic values were estimated for the items. The resulting item pool now allows for an adaptive test presentation with all advantages of modern computerized diagnostics: shorter administration time but improved measurement precision, and highly motivated respondents due to a selection of tasks that are adequate for each individual person taking this test.

**Administration:**
The entry of answers is adaptive. It is not possible to omit an item or to return to the last one. The 9 answer options are designed to reduce guesses.

**Test forms:**
There are three test forms with differing precision as regards the person's parameter estimation (PAR). The estimation error in test form S1 is adjusted to 0.7, in S2 to 0.6, and in S3 to 0.5. The screening allows for a quick overview when this does not have any further consequences for the person taking the test (e.g. in studies where general intelligence is also assessed as a control factor). The long form should only be administered in special cases, when increased measurement precision is of great importance (e.g. for court assessments). The increase of measurement precision (reduction of the estimation error) obviously prolongs the test phase.




**Scoring:**
The person's parameter of the variable „General Intelligence" is calculated as the test value.

**Reliability:**
Reliability is given in the sense of internal consistency since this test complies with the test theoretical model by Rasch. It was adjusted accordingly for the three different forms S1-S3 of the AMT, based on a uniform variance (CritSEM = 0.63, 0.44, 0.39; corresponding to reliabilities of .60, .80, .85), and applies to all persons taking the test, and in all scale levels. This is the main and decisive advantage compared to other conventional psychometrical tests following the classic test theory: All respondents are assessed with equal reliability!

**Validity:**
This test provides content validity for „Reasoning" according to Thurstone.

**Norms:**
Norms are available resulting from N=1356 persons (580 men, 776 women) aged between 15 and 77 years. The norms were collected in Katowice (Poland), Moscow (Russia), and Vienna (Austria). In addition, a norm sample of N=400 persons is available from the research laboratory of the Schuhfried Company.

**Testing time:**
Depending on the adjusted measurement precision, the testing time (without instruction) takes between 15 and 45 minutes. Experiences show that the instruction takes about 5-10 additional minutes.

## ANF Adaptive test for assessment of numerical flexibility

### Adaptive procedure for the assessment of quantitative thinking

M. Arendasy, M. Sommer and A. Hergovich


**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.**

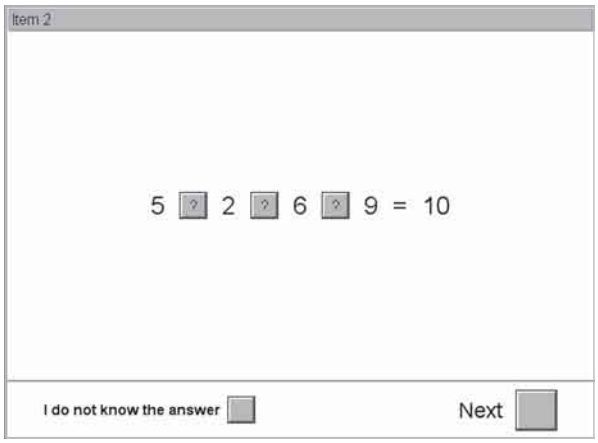
**Application:**
The Adaptive test for assessment of numerical flexibility is a tool for assessing flexibility in the area of mathematical problem solving. This is one of the important sub-dimensions of the secondary factor „quantitative thinking" which forms part of the modified Gf-Gc theory (Horn &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

**Main areas of application:** aptitude testing, aviation psychology, 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:**
The construct representation (Embretson, 1983) was supported by the linear logistical test model (Fischer, 1983). In addition, results for the convergent and discriminant validity of the ANF are available. The combined results of these studies confirm the construct validity of the test.

**Norms:**
A norm sample (overall norm, and separated according to gender and level of educational attainment) is available consisting of N=1362 individuals (585 men, 777 women; age range 12-70). The norm data was collected in 2004 and 2005.

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

## APM Raven's Advanced Progressive Matrices

### Non-verbal Intelligence Test

Test: J. C. Raven, Manual: J. C. Raven, J. H. Court and J. Raven

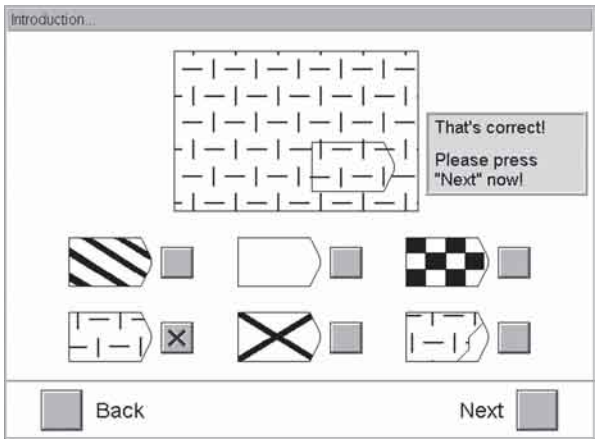

**For years the Progressive Matrices have played an important role as an instrument to assess non-verbal intelligence and especially logical reasoning. Comprehensive standardizations and validation studies have been conducted all over the world.**

**Application:**
Non-verbal assessment of general intelligence for performances above average, based on eductive thinking; applicable to people 12 years of age and over.

**Main areas of application:** performance-oriented aptitude diagnostics, consulting regarding school, college, and career decisions, traffic psychology, industrial and organizational psychology, clinical psychology, aviation psychology, sports psychology.

**Theoretical background:**
The extensive administration of the Raven Standard Progressive Matrices (SPM) resulted in a demand for a short screening form, as well as for a test to assess the upper 25% of the cognitive capacity range. The Advanced Progressive Matrices were developed to meet these demands. The APM consists of some exercises (Set I with 12 items) that can also be used for screening, and a second set (II) with 36 items to assess this area more thoroughly. As with all Raven Matrices Tests, the APM also assesses the ability to detect a certain order in a chaos, or the meaning of appearently randomly compiled elements, i.e. the eductive ability (the word eductive comes from the Latin word educere: deduce). As perception in general is a process of understanding that includes the capacity to find a structure in a chaos, Raven's Progressive Matrices (RPM) can be considered to assess logical reasoning and recognition. Spearman and other psychologists agree that the general factor (g- factor) assessed in most intelligence tests consists of two main components, eductive and reproductive abilities. From this point of view, the RPM measures one of the most basic human abilities.

**Administration:**
After an instruction phase, the items are presented according to difficulty level. The respondent selects one out of eight answers with the light pen, the mouse, the touchscreen or the computer keyboard. He or she can correct the selected answer and can return to the previous item. It is also possible to omit items, which are represented again after the last item has been responded to. This version of the RPM can be administered without any time limit, just like the paper- and-pencil version.




**Test forms:**
There are 5 test forms available. S1 (Set I + II) and S5 (Set II) with time limit, S2 (Set I + II), S3 (Set I), and S4 (Set II) without time limit.

**Scoring:**
The following variables are scored:
„Number of correct" for set I and set II.
The test protocol indicates each individual answer as well as the time needed to respond.

**Reliability:**
In a summary, the test authors indicate consistency coefficients between r=.83 and r=.87. The retest-reliability amounts to r =.91 (interval of 6-8 weeks).

**Validity:**
The current APM manual includes a detailed discussion about the issue validity. Among other things, it describes the influence of the eductive capacity on the effectiveness of performances demanded in social and professional fields. It also includes rather conventional studies that document the correlations of the APM scores with certain abilities to achieve a job position or to keep it. In addition, correlations with differentiated performances of students as well as with specific occupational groups are pointed out.

**Norms:**
A wide range of norms derived from the paper-and-pencil version is available if so desired. Various studies showed that the paper-and-pencil and the computerized version yield the same results.

**Testing time:**
S1: 25 - 50 minutes, S2: 25 - 60 minutes, S3: 7 - 15 minutes, S4: 20-50 minutes, S5: 20-40 minutes.

**This test is only available for customers in the European Union!**

## CPM Raven's Coloured Progressive Matrices

### Non-verbal Intelligence Test

Test: J. C. Raven, Manual: J. C. Raven, J. H. Court and J. Raven


For years the Progressive Matrices have played an important role as an instrument to assess non-verbal intelligence and especially logical reasoning. Comprehensive standardizations and validation studies have been conducted all over the world.

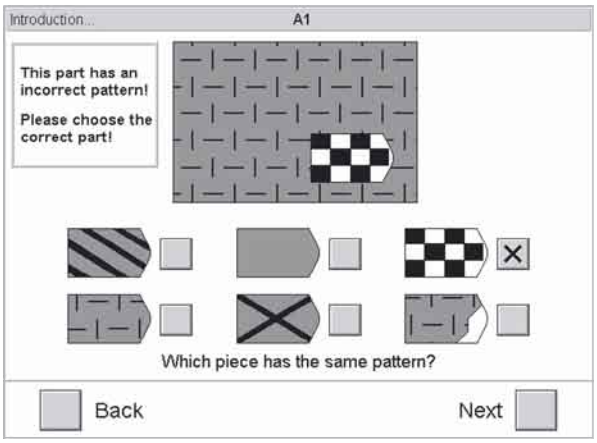
**Application:**
Non-verbal assessment of general intelligence in children and less gifted adults on the basis of eductive thinking; applicable to people ages 5 years and over and to adults for clinical examinations.

**Main areas of application:** clinical psychology (e.g. geriatric psychology), educational psychology and neuropsychology.

**Theoretical background:**
The CPM is based on the same principle as the Raven's Standard Progressive Matrices Test; however, it is supposed to assess performances in the lower dispersion range. It assesses the ability to detect a system in material that seems confusing at first sight, that is, the ability to recognize and think logically. This deductive ability is one out of two components of general intelligence (g-factor).
The 36 items are presented in 3 sets of 12 each, starting with the easiest. The 3 sets offer those persons taking the test the possibility to become familiar with the task-solving strategy (train of thought) necessary to take the test successfully. The colorful and appealing design makes a particularly positive impression on children and helps them to maintain their motivation.

**Administration:**
The test design has taken into account an item presentation that is particularly suited to children. The instruction phase is short and simple and is supposed to be read aloud to people with reading difficulties or deficits. The instruction for adults is slightly modified. The answers can be entered via light pen, mouse, touchscreen or computer keyboard. Even pre-school students have usually no difficulties in using the light pen. It is possible to go to the previous items, to omit one, and to correct individual items.

**Test forms:**
Three test forms are available. Depending on the age that has been entered, the program presents the instruction for children (up to 15 years) or adults.
S2: Pattern-completion form (with assistance): this test form continues in the test phase what has been shown during the instruction (the selected answer is put into the incomplete pattern), however, there are no more feedbacks whether or not the answer is correct.




Test form S3: Parallel form to S1.

**Scoring:**
The following variables are calculated:
„Total of correct", „Expected values of all sets compared to the raw scores for the entire test", and „Error distribution".
The report of the test results encompasses raw scores and percentile ranks as well as an optionally selectable test protocol of the respondent's answers to each item.

**Reliability:**
The test manual includes several reliability studies. The results vary, depending on the examined population, and are usually lower for clinical and less gifted groups. Most internal consistencies are situated between r=.85 and r=.90, the retest-reliabilities in most of the studies are above r=.80.

**Validity:**
All factor analytical studies show that the Raven Matrices Test is a good indicator for Spearman's g-factor, although there are differences depending on the assortment of the test battery. Correlations with performances at school are usually lower that those between school performance and knowledge tests.

**Norms:**
Percentile ranks and T-score norms of the paper-and-pencil form are available for the following groups:
Children aged 4 years and 9 months to 12 years, adults aged 55 to 100.
Test form S2: this test form is provided with corrected norms of the standard form (excluding the sample of adults).

**Testing time:**
Between 10 and 30 minutes.

**This test is only available for customers in the European Union!**

## FOLO Inductive Reasoning

### Logical thinking

E, Hagman and O. Bratfisch


**Nonverbal logical thinking, as it is tested here, is fundamental for all occupations where abstract information is being processed.**

**Application:**
Non-verbal test which assesses nonverbal logical thinking on the basis of the recognition of rules and completing form sequences; applicable for people 15 years of age and over.

**Main areas of application:** aptitude diagnostics in the performance area, industrial and organizational psychology, consulting regarding school, college and career decisions.

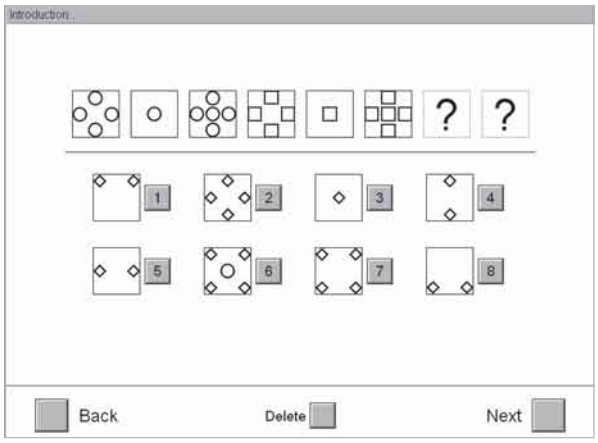
**Theoretical background:**
The test is of inductive nature, i.e. aims at measuring the ability to derive a general rule from a specific case. FOLO belongs to the factor Reasoning ability (R). Reasoning ability is regarded as a fundamental dimension in all recognized models of intelligence (also in the g- factor theory).
The various definitions of Reasoning ability encompass a broad spectrum: abstract thinking, relational thinking, analytical reasoning, sound judgment, etc. Reasoning ability is often considered the real core of intelligence.

**Administration:**
A series of six figures, based on a specific logical system, is presented. The respondent has to determine which two figures out of eight options represent a meaningful continuation of the series.

**Test forms:**
There is one test form consisting of 25 items.

**Scoring:**
Each correct answer is given a point. The number of correctly solved items constitutes the overall performance.

**Reliability:**
The split-half reliability coefficients vary between r =.89 and .91 for respondents with different educational levels.




**Validity:**
The psychological validity is evident – the respondents think immediately of „logical thinking, analytical reasoning". The logical validity is given by the operational definition of „Inductive reasoning". Content validity has been proven through factor-analyses.
Prognostic validity has been demonstrated for occupations demanding, among other things, a high degree of reasoning ability.

**Norms:**
Norms of a sample of 1147 Swedish adults are available. They are also available according to education level and age. Additionally there are norms of 192 Austrian adults, which are also available according to education level and age.

**Testing time:**
The time necessary for instruction, answering the exercises and the test items is about 12 minutes (mere testing takes 12 minutes).

## MIP Mathematics in Practice

### Calculations needed in everyday life

O. Bratfisch and E. Hagman


**The test measures the ability to apply the basic arithmetical operations - addition, subtraction, multiplication and division - quickly and correctly in „daily life" situations.**

**Application:**
The test is basically conceived for personnel selection, vocational counselling, diagnosis and aptitude assessment. Additional areas of use are within clinical settings.

**Main areas of application:** industrial and organizational psychology, clinical psychology.

**Theoretical background:**
Theoretically the test has to be placed in the borderland between a cognitive intelligence test and a test of knowledge. It contains numerical (N-factor) as well as verbal (V-factor) and logical (R-factor) components in the sense of Thurstones model for primary abilities. The knowledge element, the degree of daily training and routine influence the results on the test positively, but do not account for the dominating part of the variance.

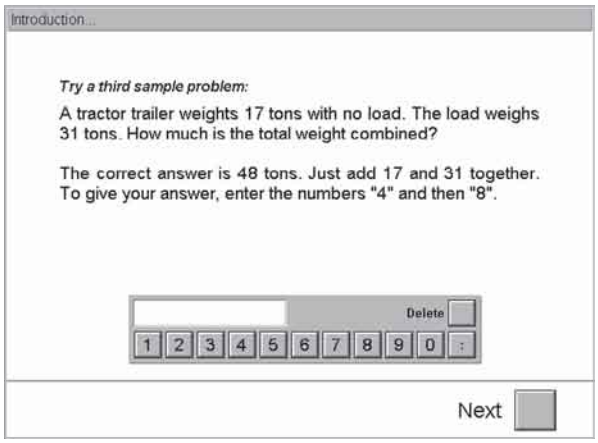
**Administration:**
„Daily life" calculation tasks are presented on the screen in writing. For calculation purposes, paper and pencil are provided.

**Test forms:**
There is one test form containing 20 items.

**Scoring:**
The number of correctly solved items constitutes the score for inductive reasoning. The print-out shows raw- and standard-values for the total performance.

The interpretation of the test results should be limited to the aspect of applying everyday life basic calculations. „Mathematical ability" is not measured by the test – a prediction concerning qualifications for the study of mathematics, or for curricula demanding a high degree of mathematical ability, is not possible.

**Reliability:**
The split-half reliability coefficients vary between r =.84 and .91 for respondents with different educational levels.




**Validity:**
The psychological validity is evident – the respondents think immediately of „Calculations, arithmetic". The logical validity is given by the operational definition of the task. Content validity has been proven through analyses of correlation with a numerical test. Prognostic validity could be demonstrated for occupations demanding, amongst other prerequisites, a high degree of perceptual speed and accuracy. Criteria used were „Completed occupational education without complications" and „Poor performance on the job".

**Norms:**
European norms for a representative sample of N=2607 Swedish persons are available. Subgroup norms according to educational level are also presented.

**Testing time:**
The required time for instructions, solving the practice items and the actual testing time (10 minutes) is about 13 minutes.

## MR Mental Rotation

### A test for the assessment of spatial perception

H. Bauer, G. Guttmann, M. Leodolter, U. Leodolter


**This test distinguishes itself by using three-dimensional, multi- media test material for the recording of the spatial perception skill as well as by its scaling fairness due to the validity of the Rasch model.**

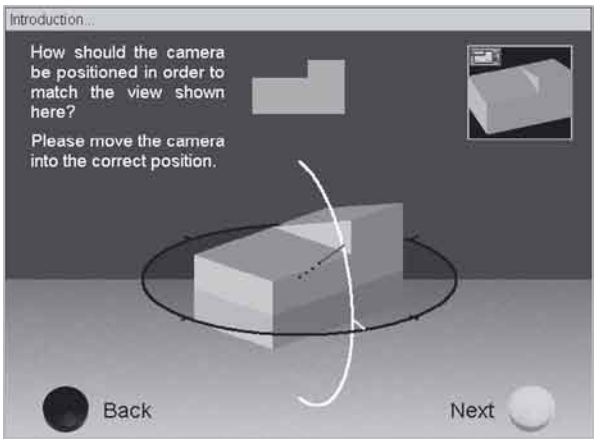
**Application:**
Mental Rotation is a Rasch homogenous computerized test for assessing respondents' spatial perception skills. This is, in other words, the respondent's ability to mentally picture and manipulate spatial content; the test was designed for adolescents from the age of 16 and adults.

**Main areas of application:** performance-oriented aptitude diagnostics, clinical psychology, neuropsychology, aviation psychology, industrial and organizational psychology, counseling regarding school, college and career.

**Theoretical background:**
Psychometric research into spatial ability began at the start of the 20th century and was analyzed with relative precision for the first time thanks to the introduction of multiple factor analysis (Thurstone, 1931a,b). Shortly afterward, Thurstone established the existence of seven so-called primary factors of intelligence, of which one of them was spatial ability. Spatial ability research based on factor analysis led to the definition of a host of various spatial ability factors and factor-analysis based spatial perception tests. These were subject to criticism due to their homogeneousness and one-dimensionality. One- dimensionality (Rasch homogeneousness) has been proven for the Mental Rotation (MR) spatial perception test. This means that the same latent skill dimension is measured in all respondents.

**Administration:**
After a general instruction phase and three practice examples, the test phase presents the respondents with a total of 20 items in sequence, one per screen, to be solved. The respondent has one minute to solve each item. It is not possible to go back and correct answers to items already given.

**Test forms:**
There is one test form with 20 items.




**Scoring:**
The test score has been defined as the number of correctly solved items and is presented as a standardized value (percentile rank and t value). It describes the scope of the respondent's spatial perception skills.

**Reliability:**
Reliability in the sense of an internal consistency can be said to exist on the basis of the validity of the Rasch model. The reliability coefficient (Cronbach's alpha) comes to .81.

**Validity:**
Initial analysis based on correlation statistics points to the convergent and divergent validity of the MR.

**Norms:**
A norm sample (total norm, and broken down by gender, age and education level) of N=195 (104 men and 91 women; age span 16-73 years) is available. The data was collected in Vienna in 2003.

**Testing time:**
The test takes a maximum of 20 minutes to complete. Five minutes should be allowed for the instruction phase.

## NTA N-Test Alpha

### Fast and correct mental arithmetic

O. Bratfisch and E. Hagman


**The N-Test Alpha represents a reliable realization of Thurstone's N-factor. It enables the measurement of the ability to handle a system of symbols in an automatical way.**

**Application:**
The test is basically conceived for personnel selection, vocational counseling, diagnosis and aptitude assessment. Additional areas of use are within clinical settings.

**Main areas of application:** clinical psychology, industrial and organizational psychology.

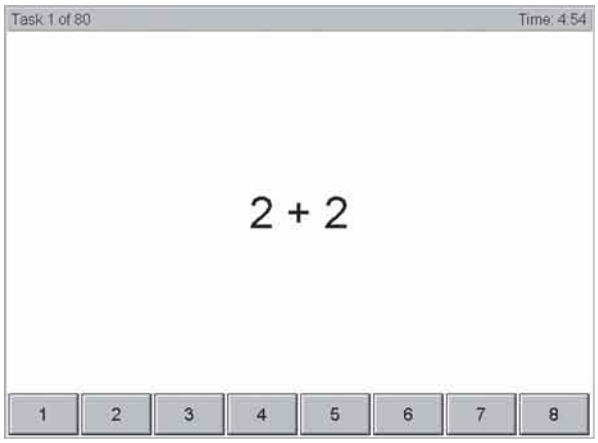
**Theoretical background:**
The test measures numerical ability, i.e. the degree to which one can handle a system of symbols, that follows certain rules. It is a question of being able to apply the system of symbols so automatically, that no logical thinking is necessary any more – as was the case before automatism took place.

The connotation numerical ability of the N-factor identified by the factor-analytic school of intelligence research, is unjustified. It is assumed that there is a hidden general ability behind this factor (namely the ability to handle a system of symbols automatically) that as well could be assessed by non-numerical test, but which, at present, can be measured especially well by numerical tasks.

**Administration:**
Pairs of numbers are used as stimuli. They are always presented in the sequence addition, subtraction, multiplication and division. Each task has to be solved, it is not possible to pass over any. There are eight answering choices for each task.

**Test forms:**
There is one test form containing 80 items.

**Scoring:**
The number of correct solved items constitute the score for numerical ability. The print-out shows raw- and standard-values for the total performance. Moreover, the number of correct solutions for each of the four basic arithmetic operations is available.




**Reliability:**
The reliability coefficient according to Cronbach's Alpha is r =.91.

**Validity:**
The psychological validity is evident – the respondents think immediately of mental arithmetic. The logical validity is given by the operational definition of the task. Content validity has been proven through analyses of correlations with a test measuring the ability to use the four basic arithmetic operations correctly (the MIP-test). Prognostic validity could be demonstrated for occupations demanding, amongst other prerequisites, good mental arithmetic capacity. Criteria used were „Completed occupational education without complications" and „Poor performance on the job".

**Norms:**
A sample of N=1587 Swedish adults and a sample of N=217 Austrian adults are available. Subsamples according to educational level and age are also presented.

**Testing time:**
The required time for instructions, solving the practice items and the actual testing time (about 6 minutes) is about 8 minutes.

## PST Pilot's Spatial Test

### Test for the measurement of spatial perception and orientation ability

P. Grössenbrunner


Rasch-homogenous test for pilot selection.

**Application:**
Assessment of navigational abilities by the measurement of spatial perception and orientation abilities; items are Rasch-homogenous.

**Main areas of application:** flight psychology (also for problems connected to space flight).

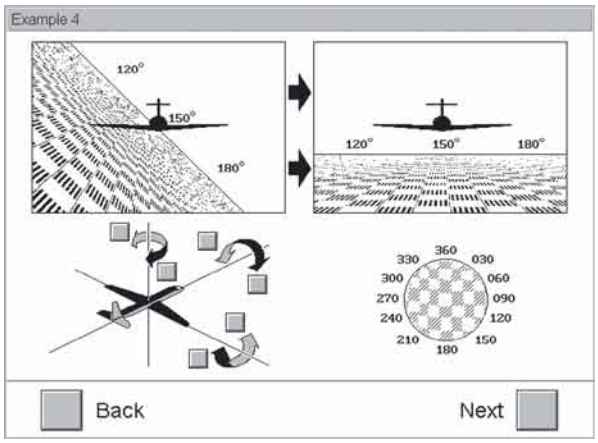
**Theoretical background:**
At the center of the test requirements are two ability components: first, the ability to move visualized pictures around one or more of the three spatial axes (mental rotation) and second, the ability to change the perceptive system from egocentric to allocentric.
Rasch-homogenizing of the item pool should help to exclude the use of abilities other than the required solution techniques and thus the application of other abilities.

**Administration:**
The task is to say, based on a diagram of an airplane, what changes in position (rotation around 3 axes) must have taken place between two consecutive position displays. The positions are displayed by means of picture pairs with information on the position of the plane, such as result either during a visual flight or an instrumental flight.

**Test forms:**
There is one standard test form available with 13 items.

**Scoring:**
The test is scored according to the following variables:
- Amount of correct solutions
- % Correct
- Amount of incorrect solutions
- % Incorrect
- Working time

The test protocol shows the type and evaluation of the solutions based on the spatial axes.




**Reliability:**
The inner consistency (Cronbach's Alpha) is r=.74.

**Validity:**
The validity of the outer criterion (orientation ability, registered by an instrument flight device) amounts to rtc =.56, for the validity of the inner criterion (Eliot-Price-Spatial Test) rtc =.64.

**Norms:**
Norms of an evaluation sample of N=596 persons in the age group 17 to 38 are available.

**Testing time:**
About 10 minutes.

## RIS Calculating with Symbols

### A non-verbal intelligence test scaled according to Rasch

C. Schmotzer, K. Kubinger and C. Maryschka


**In some professions and trainings it is an essential ability to keep to certain restrictions when competing a task. Calculating with Symbols makes possible a fair and reliable assessment of this sub-factor of reasoning.**

**Application:**
Non-verbal assessment of general intelligence based on deductive thinking.

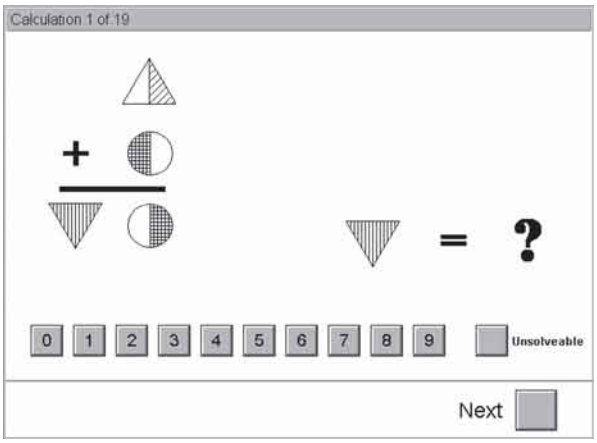
**Main areas of application:** performance-oriented aptitude diagnostics, industrial and organizational psychology, consulting regarding school, college and career decisions.

**Theoretical background:**
The authors followed the factor „Reasoning" which, according to Thurstone, encompasses the following abilities: inductive thinking, deductive thinking, and the ability to keep to restrictions for completing a task (Jäger, 1967). The RIS focuses mainly on the latter aspect.

**Administration:**
The person taking the test is confronted with a series of simple arithmetic equations using meaningless shapes instead of numbers. However, the algebraic symbols for these (basic) calculations remain as usual. The solution is to find the number, which leads to the mathematical correct solution of the equation if used instead of the symbol. There is no time limit. It is not possible to omit items or to return to one that has already been completed.

**Test forms:**
There is one test form available.

**Scoring:**
The number of correctly completed items is a measure for the ability of the test respondent.




**Reliability:**
The test is reliable in the sense of an internal consistency due to Rasch model. The results of the Rasch analyses could be reproduced with two further independent samples, and now even includes the assumption of item homogeneity (Rost, 1996). The internal consistency according to Cronbach's Alpha amounts to r=.89.

**Validity:**
Validity is given with respect to deductive thinking according to Thurstone. The construct validity results from the correspondence with the Rasch model. This is especially confirmed by the results of the Martin-Löf test for the examination of item homogeneity. Correlations with the test WMT are situated at r = 0.71.

**Norms:**
T-scores and percentile ranks are available of a representative sample of N=236 people between 16 and 84 years of age divided into two age groups. Furthermore, there are also T-scores and percentile ranks available based on the data of N=165 psychology students.

**Reasonableness:**
This test will be difficult for people with a performance below average.

**Testing time:**
Between 20 and 50 minutes.

## SPM Raven's Standard Progressive Matrices

### Non-verbal intelligence test

Test: J. C. Raven, Manual: J. C. Raven, J. H. Court and J. Raven


**For years the Progressive Matrices have played an important role as an instrument to assess non-verbal intelligence and especially logical reasoning. Comprehensive standardizations and validation studies have been conducted all over the world.**

**Application:**
Non-verbal assessment of general intelligence in people with average capacity on the basis of eductive thinking; applicable to people ages 5 years and over.

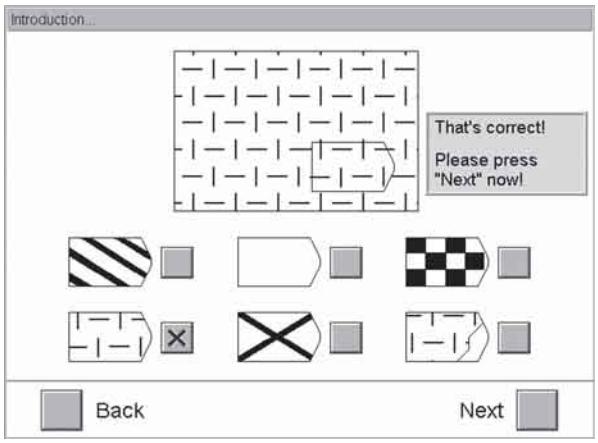
**Main areas of application:** performance-oriented aptitude diagnostics, consulting regarding school, college, and career decisions, traffic psychology, industrial and organizational psychology, clinical psychology.

**Theoretical background:**
The Raven Matrices Test assesses the ability to recognize a certain order in an apparent disorder, in other words: the ability to recognize and think clearly. Spearman and other psychologists showed that the eductive ability (eductive capacity) is one or two main components of general intelligence or the g-factor Eductive derives from the Latin word educere, e = out + ducere = to lead.

**Administration:**
After the instruction, the items are presented according to their difficulty level. The person taking the test selects one out of six or eight answers. There is the possibility for multiple corrections by switching to another answer or even by returning to the previous item. In case a respondent is not able to select an answer, s/he may omit the item. All the omitted items will be presented again at the end of the test.

**Test forms:**
S1: Standard form of the SPM according to Raven, including 60 items. S4: Short form with 32 Rasch-homogeneous items. S5: just like S4, however, there is a time limit (time limited short form) of 15 minutes. S6: Short form for traffic-psychology; presenting the easiest 47 items out of form S1. S7: Parallel form of the Standard form S1.

**Scoring:**
The sum of correct answers (with norm comparison) is the measure for the eductive component of the g-factor.
Additional scores (in test forms S1 and S7 only): In all 5 sub-sets, the raw-scores are compared with the expected results. In addition, the answering patterns of those taking the test are examined to find out whether or not they manipulate the raw-scores intentionally (McKinzey, 1999).
If this is really the case, a corresponding message is included into the




scoring report. The test protocol depicts each item together with the time spent for answering it.

**Reliability:**
The split-half-reliabilities were r > .90 in over 40 studies with people of differing age and from diverse cultural backgrounds.
The test authors indicate retest-reliabilities varying between r =.83 and r =.93 in a summarizing overview.
In this form of the SPM, an internal consistency between r=.77 and r=.96 was determined in various norm samples.

**Validity:**
Raven Matrices Tests assess general intelligence, that is, the various fundamental abilities necessary in everyday life. This is why the correlations with other tests or external criteria are most of the time rather low. Intercorrelations are the highest with arithmetic, technological and scientific abilities. Correlations between the SPM and school performances result in values up to r=.70.
Correlations with other intelligence and ability tests vary between r=.20 and r=.80. Factor-analytical calculations show high values in the g-factor, often amounting up to r=.95.

**Norms:**
A wide range of comparative norms of the paper-and-pencil form is available for test forms S1 and S7, among others age-specific norms from 6 to 80 years, as well as some ethnic and job-specific groups. Special test forms S4 to S6 are provided with norms of the computerized version: S4: Representative sample; applicants; job seekers
S5: Applicants; forklift truck drivers; S6: Applicants

**Testing time:**
Depending on test form, age, and capacity of the respondent, about 10 to 30 minutes.

**This test is only available for customers in the European Union!**

## SPMPLS Raven's Standard Progressive Matrices Plus

### Non-verbal intelligence test

Test: J. C. Raven, Manual: J. C. Raven, J. H. Court and J. Raven


**For years the Progressive Matrices have played an important role as an instrument to assess non-verbal intelligence and especially logical reasoning. Comprehensive standardizations and validation studies have been conducted all over the world.**

**Application:**
Non-verbal Rasch-homogeneous assessment of general intelligence on the basis of eductive thinking; extension of the SPM with some new and more difficult items, for respondents (ages 14 years and over) that are assumed to know the items of the SPM well.

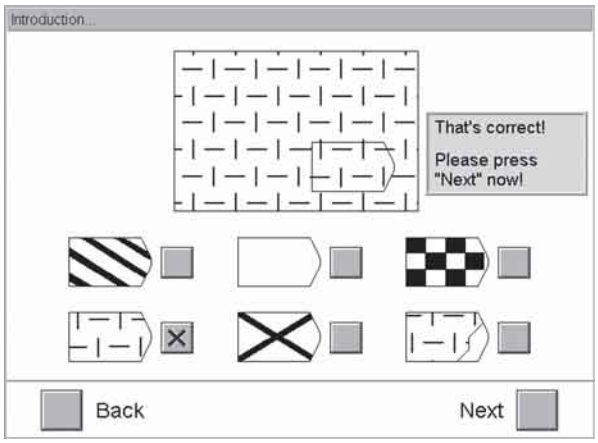
**Main areas of application:** performance-oriented aptitude diagnostics, industrial and organizational psychology, consulting regarding school, college, and career decisions.

**Theoretical background:**
What triggered the development of the SPMPLS was mainly the opinion of practitioners that the SPM might generally be too well known. Studies for developing a parallel form were being conducted (see also the description of the SPM). However, various reasons caused that these first efforts did not yield the desired results. Standardization studies (Raven, 1979, 1992) showed clearly the necessity to provide the test with some new and more difficult items so as to achieve the previously given differentiation capacity of this test which it had at the beginning. The items follow the testing model by Rasch.
For further information see also the corresponding SPM catalog page.

**Administration:**
After the instruction, the items are presented according to their difficulty level. The person taking the test selects one out of six or eight answers by means of the light pen, the mouse, or the keyboard. There is the possibility for multiple corrections by switching to another answer or even by returning to the previous item. In case a respondent is not able to select an answer, s/he may omit the item. All the omitted items will be presented again at the end of the test.

**Test forms:**
There is one test form with 60 items.

**Scoring:**
The „Sum of correct answers" (with norm comparison) is a measure for the eductive component of the g-factor. Additional scores: In all 5 sub-sets, the raw-scores are compared with the expected results.




**Reliability:**
The split-half-reliabilities were r > .90 in over 40 studies with people of differing age and from diverse cultural backgrounds. The test authors indicate retest-reliabilities varying between r =.83 and r =.93 in a summarizing overview.

**Validity:**
Raven Matrices Tests assess general intelligence, that is, the various fundamental abilities necessary in everyday life. This is why the correlations with other tests or external criteria are most of the time rather low. Intercorrelations are the highest with arithmetic, technological and scientific abilities. Correlations between the SPM and school performances result in values up to r=.70.
Correlations with other intelligence and ability tests vary between r=.20 and r=.80. Factor-analytical calculations show high values in the g-factor, often amounting up to r=.95.

**Norms:**
Three norm groups of the paper-and-pencil forms are available: German norms (ages 14 years and over), USA norms (5 – 17 years), and Polish norms (ages 15 years and over). It is also possible to convert the raw- scores by means of a conversion table described in the manual to the 'classic form', in order to use the norms. In addition, Austrian norms (N=247) from the computerized version are also available.

**Testing time:**
Depending on age and capacity of the respondent, about 30 minutes.

**This test is only available for customers in the European Union!**

## VISGED Visual Memory Test

### Adaptive test to assess the visual memory

St. Etzel and L. F. Hornke


**The adaptive presentation provides that every respondent is required to complete just as many tasks as necessary. The respondents are only confronted with those tasks that correspond to their performance level. This is to avoid overstrain or under- stimulation.**

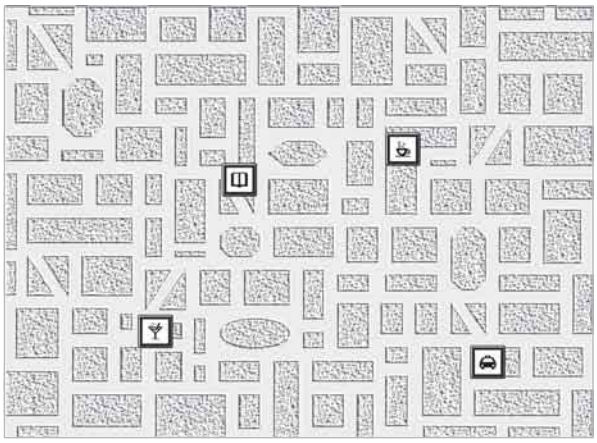
**Application:**
The perception and recall of visual information (memorizing and recalling the positions of symbols on a map) is used to determine the capacity of the visual memory.

**Main areas of application:** performance-oriented aptitude diagnostics, decisions regarding school, college, and career, aviation psychology, research.

**Theoretical background:**
The test items based on an explicitly designed construct assess the capacity of the visual memory which also plays an important role in the orientation process: the development of a so-called „knowledge of how to remember characteristic marks". The design of the test items mainly follows the „Theory of visual imagination" by Kosslyn (1980), and the „Model of integrative information processing" by Hänggi (1989).

**Administration:**
The respondent sees a city map on the screen, which indicates typical sites marked with symbols. S/he is asked to memorize the individual positions of the symbols and to recall them subsequently. This is done by presenting the map again, but without the symbols, and by asking the respondent to mark the position where s/he thinks the symbol was before. Immediately after the respondent has marked the supposed position in the map, the real location appears to give him/ her feedback on the performance. The individual items vary with respect to number and arrangement of the symbols.

**Test forms:**
There are three test forms. Their difference is the precision with which the respondent's parameters (PAR) are estimated.
The screening form is recommended to obtain a quick overview when there are no real consequences for the respondent (e.g. in the framework of studies that ascertain visual memory as an additional control factor). The long form should only be administered in specific experiments, which require a particularly high measurement precision (e.g. court report).



The increased measurement precision (decreased number of errors caused by estimation) certainly extends the testing time.

**Scoring:**
The respondent's parameters as well as a norm comparison (percentile ranks) with the variable „Visual memory performance" are indicated.

**Reliability:**
All items correspond to the criteria of the probabilistic testing theory and thus provably measure the same aspect. Since the item presentation is adaptive, the measurement precision for each performance level is optimized. That way the desired measurement precision can be achieved with a significantly smaller number of items.
The reliability in test form S1 is .64, in test form S2 it is .75, and in S3 .84.

**Validity:**
The fact that the items are based on a theoretically deduced construct design contributes to the construct validity of the test. To support the ecological validity, the items were embedded into a realistic scenario. This was done by using all the specific possibilities provided by a computer to design innovative item and answer structures.

**Norms:**
A parameter according to Rasch is indicated, which is independent of the sample and depicts the performance of a respondent. In addition, norms of a sample of students (N=590) and a representative sample of N=481 persons aged 17 – 85 years are available. The last-mentioned samples is available for four different age groups as well.

**Testing time:**
The testing time varies - depending on the number of the items to be completed - between 10 and 15 minutes.

## 2HAND Two-Hand Coordination

### Test for the examination of visual-motor coordination

G. Schuhfried


**The test 2HAND reliably assesses the eye-hand and hand-hand coordination. The layout of the track makes a comparison of the coordination performance possible for simple and more demanding tasks.**

**Application:**
Examination of visual-motor coordination (eye-hand and hand-hand coordination), by moving a dot on a track, through the coordination of both hands.

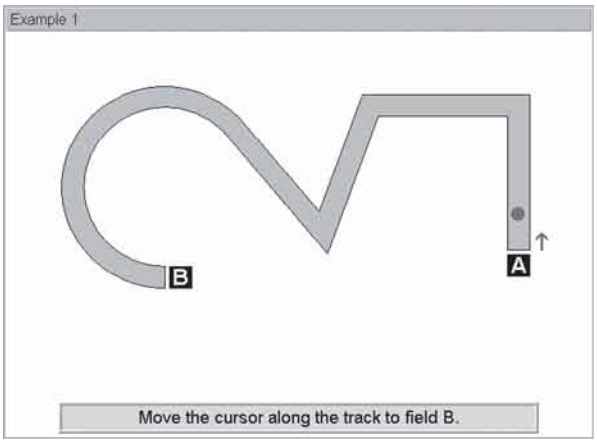
**Main areas of application:** Aptitude diagnostics in the performance area, motor capacity diagnostics, industrial and organizational psychology, traffic psychology, sport psychology.

**Theoretical background:**
Two aptitude components lie at the center of the test requirement: sensomotor coordination between eye and hand as well as between both hands. The special difficulty in coordinating both hands lies in the capacity to visually assess left and right deviations between target and actual state and to correct with the hands accordingly. Additionally the capacity to anticipate the course of movement plays an important role.

**Administration:**
The task consists in moving an illuminated dot on a preset track, using two control knobs or two joysticks. This track consists of three sections, which make different demands on the coordination of left and right hand. The dot is to be moved from the right to the left.

**Test forms:**
Four test forms are available:
S1: Administration with joysticks, 10 runs
S2: Administration with joysticks, 4 runs
S4: Administration with control knobs, 10 runs
S5: Administration with joysticks (inverted direction assignment), 10 runs.

**Scoring:**
The following variables are scored:
„Overall mean duration"
„Overall mean error duration"
„Overall percent error duration" (results from the ratio of overall error duration to overall duration)
„Coordination difficulty" (time difference standardized to the length of the way between sections without or without need for coordination). This variable shows, with how much precision the coordination requirement is mastered. The value expresses, by which factor the time requirement increases, if the same distance is mastered once with (semi-circle and V-shape) and once without sensory-motor coordination requirement (inverted L). The variable is therefore a measure for the respondent's coordination capacity.




**Reliability:**
The inner consistency (Cronbach's Alpha) varies between r=.85 and r=.97.

**Validity:**
The content validity of the test in the sense of logical validity is given. Karner and Neuwirth (2000) were able to show, that the performance in 2HAND with r=.50 is significantly connected to the assessment of driving performance. Furthermore these authors were able to prove that persons with P<33 received significantly worse results in a standardized driving test.

**Norms:**
For test form S1 comparison values with healthy adults (N=151), Swedish job seekers (N=209), applicants for a technical training (N=186), adults in Sweden (N=168), traffic-psychological clients (N=126), people with evident alcohol problems (N=100) and BT norms (N=110) are available. Test form S2 was standardized using adults (N=244), Luxemburgian job seekers (N=2867) and traffic-psychological clients (N=54) Results of test form S4 can be compared with adults (N=210), Swedish job seekers (N=386), adtults in Sweden (N=125), professional drivers from Macao (N=187) and traffic psychological clients (N=930).
Test form S5 was standardized with adults (N=182).

**Testing time:**
About 10 minutes.

## ALS Work Performance Series

### Test assessing concentration on numerical tasks done under time pressure

G. Schuhfried


Enhanced version of the well-tried Pauli Test.

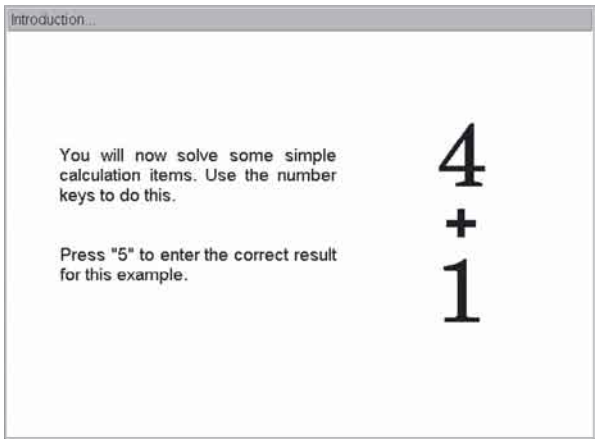
**Application:**
Assessment of concentration, psychic saturation and fatigability in mental tasks under time pressure (continuous arithmetic additions such as in the Pauli Test, but also more difficult test forms).

**Main areas of application:** clinical psychology, performance-oriented aptitude diagnostics, occupational and organizational psychology.

**Theoretical background:**
The ALS, an enhanced version of Kraepelin's work and the Pauli Test, presents a respondent continuously with arithmetic additions in order to assess his/her performance over a period of time: The respondent is required to add to single-digit numbers as fast and error-free as possible for some time. The test is subdivided into time sections (partial times) allowing the test administrator to evaluate the course of the performance. The test can also be applied in a modified way. The modifications are obtained by varying the difficulty of the arithmetical problems and by including additional short-term memory tasks. This is how the test assesses fluid intelligence of the respondent.

**Administration:**
The computerized administration of the ALS includes a standardized instruction and a practice phase, as well as a test phase of 20 minutes, during which the respondent is required to add as fast as possible two numbers at a time. They are displayed on top of each other on the screen. The respondent enters the results of the arithmetical problems via the keys of the panel. For the short-term memory tasks, the lower number moves up and is covered each time the respondent enters a result. Thus the respondent needs to memorize the lower number before entering the result in order to be able to carry out the next task.

**Test forms:**
3 standard test forms are available, yet providing always a result between 1 and 17.
S1: Pauli Test: The respondent is required to add two numbers that are depicted on top of each other. This form includes 20 time sections of one minute each.
S2: Pauli Test with short-term memory task: The respondent is required to add two numbers that are depicted on top of each other, including a short-term memory task. This form comprises 20 time sections of one minute each.
S7: Luxembourg form: The respondent is required to add the numbers




or distract them from each other. The computer program makes sure that no numbers are chosen that would lead to a negative result. This form comprises 10 time sections of one minute each.

**Scoring:**
„Answered" as a measurement for the working speed, „Increase in items answered" as a measurement for the respondent's increase or drop in performance, „Error percent" and „Corrections" as a measurement for the respondent's working accuracy.
The results of the partial times depicted in diagrams show the course of the performance.

**Reliability:**
Our own studies carried out with various samples show for the variables „Answered" and „Errors" split-half-reliabilities varying between r=.91 and r=.99. They correlate to a great extent with data from the paper-and-pencil version, for which test-retest and split-half reliabilities for the variable „Answered" lie above r=.95, for „Errors" and „Corrections" they vary between r=.68 and r=.88.

**Validity:**
In literature the assessment method of the ALS is described as sustained concentration for tasks under time pressure. This also includes personality traits such as resistance against distractions and disturbance, interferences, motivation and willpower, as well as the ability to sustain one's attention during a certain task.

**Norms:**
S1 Norm sample N=310, Job applicants N=662, Organic disorders N=130, Job seekers N=187, Older people N=95
S2 Job applicants N=105, Job seekers N=103, Swedish adults N=199
S7 Blue-collar workers N=2907

**Testing time:**
Test form S1 and S2 20 minutes, test form S7 10 minutes.

## B19 Double Labyrinth Test

### Test to assess the eye-hand coordination

R. Bonnardel


**The Double Labyrinth Test makes possible a reliable assessment of visuomotor coordination in tasks of a pre-set speed.**

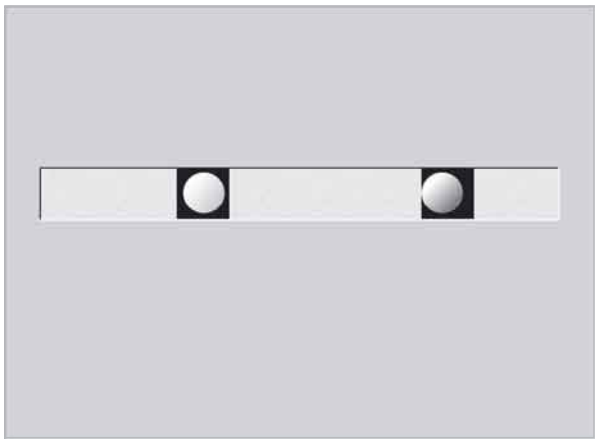
**Application:**
Assessment of the eye-hand coordination ability in task of predetermined speed.

**Main areas of application:** traffic psychology, diagnostics of motor abilities, sports psychology.

**Theoretical background:**
This test is an enhanced version of the test „Le test du double labyrinthe" by Bonnardel, which is a standard test in the traffic psychology in France. The original test was an instrument made of a cylinder, which rotated at a constant speed. The respondent had to maintain two markings in the middle of the track by means of two levers. Each time a marking touched the side of the track was counted as an error.
The course of the track becomes gradually more difficult and requires constantly adjusted movements. The test assesses speed and reaction of adjusting the movements to the track. Up to now, the Double Labyrinth Tests is the only one among various psychomotor tests to form a synthesis of the factors coordination, precision in adjusting the movements to the track, and focused attention, taking into account the capacity of sustained visual perception.

**Administration:**
The respondent is required to maintain to circles on a track by means of two control knobs. The left knob is to steer the left circle, the right knob for the right circle. The respondent is informed to make sure that the circles do not touch the edges of the track. If this is the case, the respondent has to adjust the position of the circle accordingly with the respective control knob. After a practice phase of 40 seconds, the test phase starts and takes 2 minutes and 45 seconds.

**Test forms:**
There is one test form that takes 2 minutes and 45 seconds.



**Scoring:**
The following variables are being recorded:
-Number of mistakes
-Length of mistakes
-Length of mistakes in percent
-Number of mistakes – left hand
-Length of mistakes – left hand
-Length of mistakes in percent – left hand
-Number of mistakes – right hand
-Length of mistakes – right hand
-Length of mistakes in percent – right hand
-An optional depiction of the course of the test is possible.

**Reliability:**
The present reliabilities (internal consistency) amount to 0.96 for the „Length of mistakes" and 0.80 for the „Number of mistakes". Furthermore there are also separately recorded reliability coefficients available for the left hand and the right hand.

**Validity:**
A validation study for the computerized version of the B19 showed significant correlations between the tests 2HAND and B19. Thus the test can be considered to provide a convergent validity.

**Norms:**
Norms of a representative comparative sample (N=567) are available.

**Testing time:**
About 5 minutes.

## COG Cognitrone

### General Performance Test for the assessment of attention and concentration

G. Schuhfried


**Measurement of attention and concentration under validity of the Rasch model. Numerous validation studies prove the construct and criterion validity.**

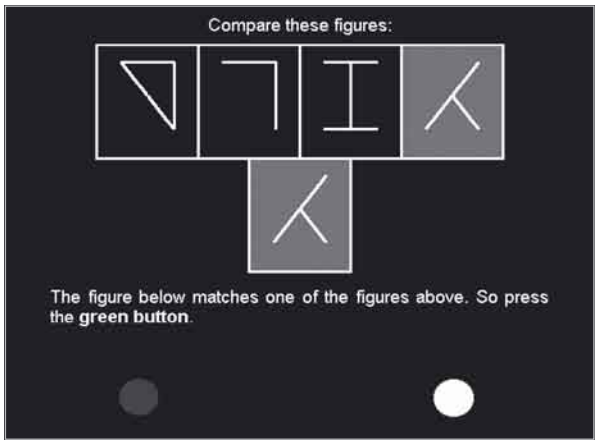
**Application:**
Assessment of attention and concentration through the comparison of figures concerning their congruence; depending on the test form. Presentation is possible from 4 years of age.

**Main areas of application:** organizational industrial psychology, performance-oriented aptitude diagnostics, clinical psychology, neuropsychology, traffic psychology, aviation psychology, sports psychology, psychopharmacology.

**Theoretical background:**
Cognitrone is based on the Reulecke's theoretical model, which sees concentration as a state that is essentially described by three variables: 1. Energy: The concentrative state is exhausting and uses up energy. 2. Function: Function of concentration while coping with a task. 3. Precision: The quality of the mastering of tasks. In test forms with unlimited working time the variable Energy in the sense of Reulecke (1991) is recorded via the time needed for a predetermined precision and function.

**Administration:**
Either the work panel or the computer keyboard serves as input medium. An animated instruction phase and an error-sensitive practice phase introduce the task at hand. In test forms with unlimited working time it is the task of the respondent, to compare an abstract figure with the model, and assess its identity. After the answer was entered, the next task follows automatically. Skipping a task, going back to a previous task or correcting a task is not possible. For test forms with fixed working time a reaction is only required, if a figure is identical to the model. At the end of the presentation time the next tasks follows automatically. Skipping a task or going back to a previous task is not possible.

**Test forms:**
Six test forms with unlimited working time (S1-S3, S7-S9) and three test forms (S4-S6) with a fixed working time of 1.8 sec. are available. The test forms S1/S4, S2/S5 and S3/S6 contain the same stimulus material. The 3 groups differ by the complexity of the patterns. Test forms S7 contains greatly reduced stimulus material. The figure from a task field has only to be compared with one figure in one of the display fields. S8 and S9 contain very simple constant stimulus material, S8 being slightly more difficult. Additionally both test forms are limited to seven minutes.




**Scoring:**
Main variable of test form S1-S3, S7
„Mean time true rejection" (sec) Main variables of test form S4-S6
„Sum correct reactions"
„Sum incorrect reactions"
Main variables of test form S8-S9
„Sum hits" (correct and incorrect reactions)
„Percentage incorrect reactions".

**Reliability:**
The reliabilities are generally very high and are mostly above r=.95.

**Validity:**
A great number of studies on different validity concepts are available (content validity, convergent or discriminant validity, construct validity and criterion validity) and they all show that the test is valid.

**Norms:**
The following norms are available:
S1: norm sample of N=870, drivers with increased risk N=1218, Swedish adults N=198, Portuguese traffic psychology clients N=2819 and students (8 to 15 years) N=240
S2: norm sample of N =221, Portuguese traffic psychology clients N=370 and Portuguese air traffic controllers N=115
S3: norm sample of N=165
S4: norm sample of N=530, Swedish adults N=327 and job seekers N=410
S5: norm sample of N=394;
S6: pilot candidates N=284 and Portuguese pilots N=194
S7: Viennese (Austria) students N=75
S8: norm sample of N=193
S9: norms sample of N=281
S11: norm sample of N=1230

**Testing time:**
5 minutes.

## CORSI Corsi-Block-Tapping-Test

**Test to assess the visual-spatial memory span (UBS) and the implicit visual-spatial learning (SBS)**

D. Schellig


**Neuropsychological studies prove that the immediate block span can depict deficits that are not assessed by common tests for the registrations of the verbal memory span.**

### Application:

Assessment of the capacity of the visual short-term memory and of the implicit visual-spatial learning; applicable to people aged 6 years and over.

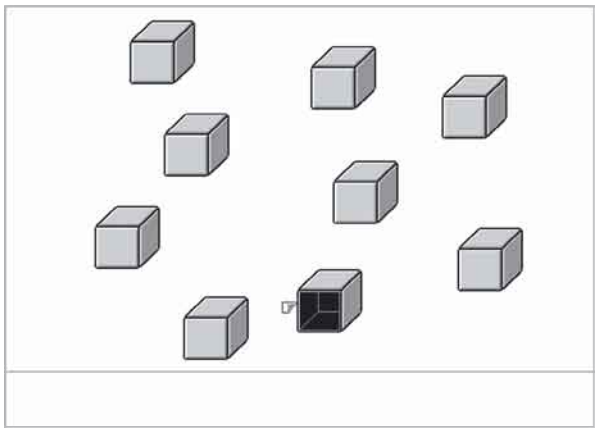
**Main areas of application:** clinical psychology, neuropsychology.

### Theoretical background:

Tests, which examine the memory span, mainly focus on the short-term memory that is provided with a limited capacity only. The assessment of the memory span is an important factor. The short- term memory is provided with a verbal subsystem as well as a visual-spatial subsystem. These subsystems can be damaged separately from each other by brain traumata, which is a proof of their - almost complete -independency. The Block-Tapping-Test for the assessment of the immediate block span (UBS) assesses the capacity of the visual-spatial subsystem within the short-term memory. The theoretical background is characterized by Baddeley's concept of the working memory. The Block-Tapping-Test for the registration of the supra-block span (SBS) goes beyond the assessment of the short- term memory: sequences are used that exceed the respondent's visual memory span and thus make necessary to acquire specific learning processes. This implies to learn a frequently repeated sequence that is embedded into a pool of sequences with equal length. The respondent does not know that a sequence is repeated in the items that are presented: implicit learning is being operationalized. The test registers the number of repetitions until the relevant sequence is imitated correctly. It was designed in the context of neuropsychological experiments of the right temporal lobe.

### Administration:

The monitor displays 9 randomly positioned dice. A hand points on a certain number of these dice. The respondent is then asked to point at the dice in the same order. The number of dice increases always when 3 items are answered correctly, while the test run is cancelled when he or she answers three subsequent items incorrectly.
In order to assess implicit visual-spatial learning (supra-block-span), first the immediate block-span is calculated. Then the number of dice is increased by one for the next couple of items. The test consists of 24 items, containing a sequence that is repeated eight times
(target sequence). The test is over as soon as the respondent reproduces the target sequence correctly.



### Test forms:

The following test forms are available: S1: immediate block span, for adults; S2: immediate block span, for children and clinical patients; S3: immediate and supra-block span, for adults; S4: immediate and supra-block span, for children and clinical patients. The forms for children present sequences from 2 to 8 dice, whereas the forms for adults use sequences from 3 to 8 dice.

### Scoring:

The variable „Immediate block span" operationalizes the visual-spatial memory span. It corresponds to the longest sequence that has been reproduced correctly at least once. The variable „Supra-block span" operationalizes the implicit visual-spatial learning. It corresponds to the number of attempts until the respondent reproduced the target sequence correctly.

### Reliability:

The reliablity of the CORSI is good to sufficient.

### Validity:

The Block-Tapping-Test is mentioned in neuropsychological literature as a frequent means to examine the visual-spatial memory span, and has also widely been applied in the clinical context. Experiments on patients with cerebral lesions using the Block-Tapping-Test prove that it assesses a visual-spatial function of the short-term memory, which is independent of the verbal subsystem.

### Norms:

Cut-off scores were calculated instead of conducting a conventional standardization (which does not seem to make sense as the variable can assume 7 different values only). In case the immediate block span is below the cut-off value, a corresponding footnote is issued in the report of test results.

**Testing time:** About 10 minutes.

## DAKT Differential Attention Test

### Checking details fast and accurately

E. Hagman and O. Bratfisch


**The DAKT enables the reliable and valid measurement of „Perceptual speed" and „Accuracy/ Resistance to error" as basic elements of attention. Moreover, the test is suitable for the diagnosis of perceptual disorders, e.g. dyslexia.**

**Application:**
The DAKT is primarily intended for personnel selection, career counseling, diagnosis and assessment. Additional areas of use are traffic psychology (especially railway and aviation psychology), military psychology as well as within clinical settings.

**Main areas of application:** performance-oriented aptitude diagnostics, organizational industrial psychology, counseling regarding college and career.

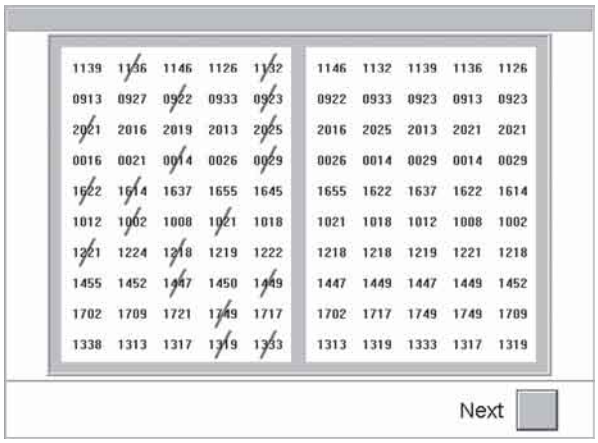
**Theoretical background:**
The DAKT measures Perceptual speed, defined as the capacity to recognize details rapidly in a distracting perceptual environment and to differentiate them from irrelevant material, and Accuracy, defined as the relation between the number of errors and the quantitative performance (error-percentage).

Research on mental ability using factor-analysis, has unambiguously identified a perceptual factor which involves a major component of speed. The DAKT represents this factor, referred to as Perceptual Speed (P) in the psychological literature.

**Administration:**
The DAKT consists of three subtests differing in content (Numbers, Letters, and Figures). The task is to identify and mark critical items as fast and accurately as possible.

**Test forms:**
There are two parallel test forms: S1 and S2. It is possible to administer each of the subtests separately.

**Scoring:**
The number of correctly solved items constitutes the score for Perceptual Speed; the relation between errors and completed items constitutes the sore for Accuracy. The printout shows raw- and standard-scores for each subtest and for the total performance.




**Reliability:**
The parallel-test reliability coefficients are r = 0.96 for Perceptual Speed and r = 0.84 for Accuracy.

**Validity:**
The face validity is evident – the respondents think immediately of „fast and accurate checking/attention and concentration". The logical validity is given by the operational definition of Perceptual Speed and Accuracy. Content validity has been proven through factor analysis. Prognostic validity has been demonstrated for occupations demanding, amongst other prerequisites, a high degree of perceptual speed and accuracy. Criteria used were „completed occupational education without complications" and „poor performance on the job".

**Norms:**
For both test forms norms of an Austrian norm sample of N=436 persons as well as a Swedish norm sample of N=1120 are available. Both norm samples are available broken down by age. Statistically the overall Austrian norms do not differ from the overall Swedish norms, hence the samples can be regarded as parallel.

**Testing time:**
The testing time for each subtest is three minutes. Add approximately four minutes for instructions and solving the practice items.

## DAUF Continuous Attention

### Test to assess the quantification of the attention performance

G. Schuhfried



**The simplified but efficient design of the items makes it possible to assess the individual long-term attention without disadvantaging respondents with a weaker performance.**

**Application:**
Assessment of the long-term selective attention and concentration ability, general performance and commitment; applicable for people 15 years of age and over.

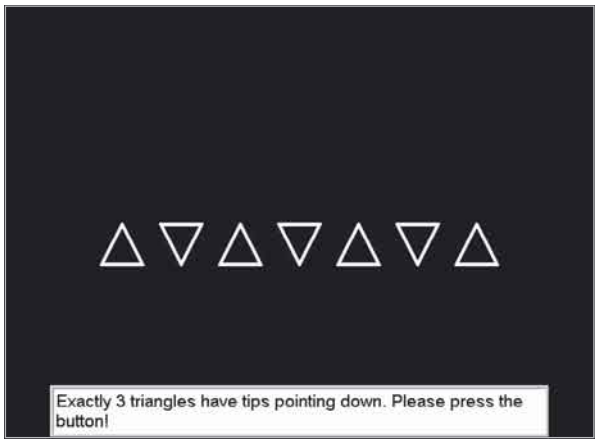
**Main areas of application:** clinical psychology, occupational and organization psychology, medicine and pharmacology, aviation psychology, neuropsychology, traffic psychology, performance-oriented aptitude diagnostics.

**Theoretical background:**
From the beginning, attention has always been a basic term in scientific psychology. However, until today psychologists have not succeeded completely in separating the various aspects and findings related to attention and integrate them into an established theory at a time. According to a minimum definition, attention is a selection process: perception and imagination are focused and aimed at a part of the stimuli confronting a person simultaneously. The aspect continuous emphasizes that sustaining one's attention becomes more demanding when the task is repeated. Unlike vigilance, continuous attention is defined as selective awareness of stimuli that are either presented always or most of the time. Vigilance, on the other hand, requires a person to react to randomly presented stimuli just a few times over a longer period of time.
For the measurement of continuous attention, the main aspects that are assessed refer to a general ability or willingness to perform well. These aspects are largely independent of intelligence.

**Administration:**
Rows of triangles are shown on the screen pointing either up or down. Whenever a pre-defined number of triangles points down, the respondent is required to press the reaction button.

**Test forms:**
S1: Clinical form 1 (rows with 5 triangles and regular time intervals)
S2: Clinical form 2 (rows with 5 triangles and irregular time intervals)
S3: Normal form (rows with 7 triangles and irregular time intervals)
Forms S1 and S2 should only be applied to respondents who are expected to have an impaired attention capacity.

**Scoring:**
The following variables are calculated:
„Sum correct" and „Sum incorrect" as well as the mean of reaction




times „Mean time correct", „Mean time incorrect" and the „Distribution of reaction times".
The number of correct and incorrect answers indicates the accuracy of the respondent. A low number of correct or a high number of incorrect reactions show impaired concentration, low motivation, or a lack of understanding of the task. In order to reveal changes in the performance during the test run, additional mean values and distributions are recorded for test sections (so-called partial intervals).

**Reliability:**
Depending on the test form and the comparative sample, coefficients for Cronbach's Alpha or for the split-half reliability were found varying between r=.76 and r=.98.

**Validity:**
It is given in the sense of criterion validity. Continuous attention is a psychological construct, which is considered an ability that is relatively independent of the intelligence level and is to be maintained over a period of time. It can be ruled out that higher cognitive functions are required to take the test Continuous Attention successfully. The test reveals the stability of a person's long-term attention performance as a basis for proving cognitive abilities under time pressure.

**Norms:**
Norms based on T-scores and percentile ranges (partly with confidence intervals) are available for all test forms. For test form S1 there are also overall norms and age-matched norms of adults available (N=297), as well as norms of neurological patients (N=369). Test form S2 was standardized with a sample of normal persons (N=319). In addition, the test results can be compared to a sample of Portuguese IEFP clients (=job seekers, N=388). Test form S3 comprises samples of normal persons (N=568).

**Testing time:**
S1, S2 (clinical forms): about 20 minutes; S3 (standard form): about 35 minutes.

## DT Determination Test

### Complex multiple-stimuli reaction test

G. Schuhfried


**The DT is an especially accurate measurement instrument and applied to assess reactive stress tolerance.**

**Application:**
Measurement of reactive stress tolerance, attention deficits and reaction speed in the presence of rapidly changing and continuous optical and acoustic stimuli.

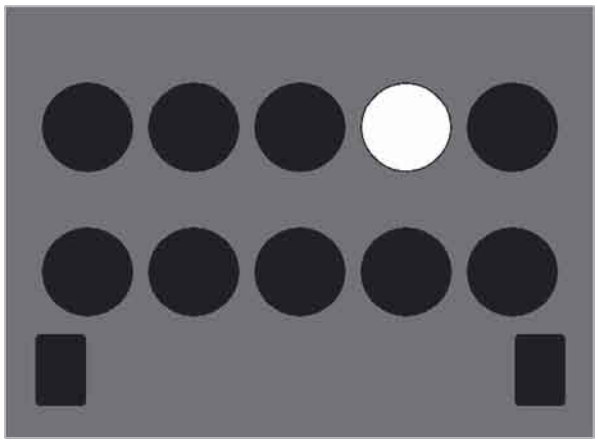
**Main areas of application:** traffic psychology, aptitude diagnostics in the area of performance, neuropsychology, clinical psychology, medicine and pharmacology, sport psychology, motor aptitude diagnostics and organizational psychology.

**Theoretical background:**
The central objects of measurement in the D-test are reactive stress tolerance and the related reaction speed. The D-test requires, as cognitive partial performances, to discriminate colors and acoustic signals, to memorize the relevant characteristics of stimulus configurations and response buttons as well as the assignment rules, and to select the relevant reactions according to the assignment rules laid down in the instructions and/or learned during the course of the test. The difficulty of the D-Test lies in the production of continuous, sustained rapid and varied reactions to rapidly changing stimuli.

**Administration:**
This test is an enhanced version of the Vienna Determination Unit (D-Unit). However, the color stimuli are presented via the monitor and the acoustic stimuli via the Test System interface. The respondent reacts by pressing the appropriate buttons on the panel. In spite of these differences, studies show that the results of DT and D-Unit coincide to a large extent (Karner & Biehl, 2001). Stimulus presentation occurs in three different ways, namely in the adaptive mode (the presentation speed adjusts to the performance level of the respondent), in the action mode (no time limit) and in the reaction mode (fixed time limit). The headsets supplied guarantee an undisturbed stimulus presentation.

**Test forms:**
S1 (adaptive short), S2 (adaptive), S3 (Rostock form), S4 (Hanover form), S5 (Vienna form A), S6 (Vienna form B) und S16 (Turkish form). The following test forms were mainly developed for clinical examinations: S7 (central light presentation), S8: Meidling form A to S15 (Meidling form H).

**Scoring:**
Depending on the stimulus-reaction mode, the variables „Median reaction time", „Correct (on time, delayed)", „Incorrect", „Omitted" and „Number of Stimuli" are evaluated.



**Reliability:**
The internal consistencies for the main variables vary for all test forms between r=.98 and r=.99.

**Validity:**
A study by Karner (2000) shows differences between drivers with evident alcohol problems and the norm group in the Determination Test. The test results of the drivers with evident alcohol problems were significantly inferior to those of the norm population, from which we can deduce, that this test is sensitive to alcohol-related decay processes. A study by Neuwirth & Dorfer (2000) showed that the Determination Test distinguishes between all the examined assigned groups (psychiatric and neurological patients and alcoholic patients, resp.) and the norm group. One study (Karner & Neuwirth, 2000) showed significant correlations between the tests DT and RST3 (Karner & Biehl, 2001).

**Norms:**
S1 - Representative norm sample of N=1179
- People apprehended for bad driving behavior N=4949
- Portuguese norm sample N=144 and Portuguese people apprehended for bad driving behavior N=123, divided by age, gender and level of education

S2 - Representative norms sample of N=797

S3 - Representative norm sample of N=102
- Norms of electric wheelchair users N=75
- Norms of stroke patients N=150

S4 - Representative norm sample of N=229
- Norms of German professional drivers N=888

S5 - Representative norm sample of N=444
- Norms of German professional drivers N=182
- Comparable values of engine drivers N=52

S6 - Representative norm sample of N=392

**Testing time:**
About 6-15 minutes.

## DTKI Determination Test for Children

### Complex multiple-stimuli reaction test

Ch. Heidinger, J. Häusler, G. Schuhfried


**The DTKI combines the proven test concept of the Determination Test with a multi-media mode of presentation which is especially designed for children.**

**Application:**
Measurement of reactive stress tolerance and reaction speed and assessment of attention deficits in situations requiring continuous, swift and varying responses to rapidly changing visual and acoustic stimuli. As a children's version of the well-established Determination Test (DT) the DTKI combines a measurement method which has proved its success over many years with an innovative and child-friendly mode of presentation.

**Main areas of application:** Educational psychology, school psychology, neuropsychology, clinical psychology, psychopharmacology, sport psychology, assessment of motor ability.

**Theoretical background:**
The DTKI is used to measure reactive stress tolerance and the associated ability to react. The test requires the subject to use his cognitive skills to distinguish colours and acoustic signals and to memorise the relevant characteristics of stimulus configurations, response buttons and assignment rules. The difficulty of the DTKI arises from the need to sustain continuous, rapid and varying responses to rapidly changing stimuli.

**Administration:**
The test involves the presentation of coloured stimuli and acoustic signals. The child reacts by pressing the appropriate buttons on the response panel. The stimuli are presented adaptively – that is, the speed of presentation adapts to the ability level of the child. The use of headphones ensures the exclusion of unwanted noise.

**Test forms:**
S1 Adaptive mode


**Scoring:**
The test yields scores for the variables "correct responses", "incorrect responses", "omitted items", "median reaction time", "number of stimuli", "on time responses", "delayed responses" and "reactions".

**Reliability:**
Depending on the age group, the internal consistency for the main variable lies between $\alpha$=0.86 and $\alpha$=0.94.

**Validity:**
Results for the content validity of the DT are also applicable to the DTKI. Further studies of the validity of the test are currently being undertaken.

**Norms:**
The DTKI has been normed on a sample of 545 schoolchildren (271 male, 274 female) age 6 – 14.

**Testing time:**
Approx. 6-8 minutes including instruction and practice phase.

## FLIM Flicker/Fusion Frequency

### Assessment of central-nervous activation (arousal)

G. Schuhfried


**Objective test for the assessment of the activation level without self-evaluation.**

**Application:**
Assessment of the central-nervous activation (arousal) with the help of threshold values, when high frequency light is recognized as constant light. To be used with adults.

**Main areas of application:** clinical psychology, neuropsychology, medicine and pharmacology.

**Theoretical background:**
Physiological studies prove that the activation (arousal) of the organism is centrally controlled. The flicker-fusion frequency is regarded, next to other criteria (e.g. EEG, SCR) as an indicator for this central-nervous function capacity.

**Administration:**
In the increasing process the frequency of a flickering light is augmented until a constant light is perceived.

In the decreasing process the frequency of a higher frequency light, that the respondent perceives as constant, is reduced until it is subjectively perceived as flickering. The respondent has to confirm every change of perception by pressing a key. The critical frequency is then stored.
The median values of the critical frequencies in the ascending or descending process are threshold values and they are called „Fusion frequency (VF)" and „Flicker frequency (FF)".

**Test forms:**
There are three standard test forms with five practice and eight measurement runs each available:
S1: Determines flicker and fusion frequency (increasing and decreasing measuring modes)
S2: Determines only fusion frequency (increasing measuring mode) S3 Determines only flicker frequency (decreasing measuring mode).

**Scoring:**
The following variables are scored:
- „Fusion frequency VF (Hz)",
- „Flicker frequency FF (Hz)",
- „Error in measurement of VF (Hz)",
- „Error in measurement of FF (Hz)".

### Test with peripheral unit

The fusion frequency (VF) and flicker frequency (FF) mark the level of activation. The measurement errors of the median values serve as control variables. They make an estimate possible on how precisely the subject was able to determine the change from flicker to constant light. Additionally a diagram with the threshold values measured during the individual measurement cycles is displayed as well as the test protocol.

**Reliability:**
Special studies with senior executives produced split-half reliability coefficients of r=.92 for the fusion frequency (VF) and of r=.91 for the flicker frequency (FF). For a group of psychiatric patients values of r=.86 and r=.92 were found.
The stability coefficients for test-retest interval of between two and eight hours were of r=.86 (VF) and r=.85 (FF) for senior executives.

**Validity:**
In pharmacological studies, this method revealed biologically relevant differences starting at 0.8 Hz.

Parallel to the decrease of the flicker and fusion frequencies, corresponding changes in other performance parameters were found (memory, attention, reaction speed etc.).
Pharmacological studies are a frequent area of application for the FLIM. A multitude of studies were conducted in this area. For example the flicker-fusion frequency is a highly reliable indicator and a valid parameter for the measurement of sedation induced by medical drugs. A study by Görtelmeyer et al. (1982) found that the flicker-fusion frequency together with EEG-Variables are described by a common factor, which can be interpreted as the expression of cortically modulated attention.

**Norms:**
In test form S1 (increasing and decreasing measuring modes) norms for the age groups 18-38, 39-55 and 56-80 are presented for the variables „Flicker frequency (FF)" and „Fusion frequency (VF)". These comparative values (N=245) were gained from a comparative sample of psychiatric patients and a group of senior executives.

**Testing time:**
About 10 minutes.

## FVW Continuous Visual Recognition Task

### Test to quantify mnestic deficits

J. Kessler and U. Pietrzyk


**The diverging difficulties of the tasks make the test very suitable to assess the memory performance of each individual respondent. Effects of overstrain or under-stimulation can thus be avoided.**

**Application:**
Assessment of memory performance and cerebral dysfunctions (quantification of mnestic deficits) by means of the decision whether or not an item is newly presented; applicable to people aged 6 years and over.

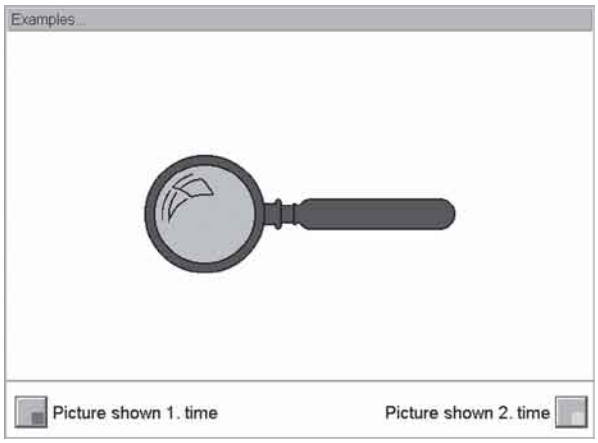
**Main areas of application:** clinical psychology (for normal age-related and pathological memory loss), neuropsychology, psychopharmacology.

**Theoretical background:**
Most theories assume that every piece of information (item) in memory has a certain familiarity, which rises with the number of presentations. It is also assumed that this familiarity is respondent to random deviations, so that familiar items might be evaluated as new and new items as familiar. Various characteristic values of this overlapping area are used to judge the certainty with which the respondent differentiates between familiar and new items.
Memory deficits may be sensitive indicators of brain function disorders and are the most frequently cited symptom after brain damage has taken place. Recognition performance is also considered an indicator for pathological aging.

**Administration:**
Depending on the test form, words, objects, numbers, meaningless syllables, letter-number combinations, or difficult-to-name items are presented in sequence. The respondent has to decide whether an item is being shown for the first time or is being repeated on screen.

**Test forms:**
The FVW is available in seven test forms (S2 to S8).
The forms S2 to S5 differ in level of difficulty. Each test form contains 210 items (105 verbal and 105 non-verbal). S6 and S7 are short forms with a low level of difficulty, especially for use in the clinical field. S8 is a special test form for children.

**Scoring:**
The evaluation is carried out according to the following variables:
„Number hits“: This variable characterizes the number of correctly recognized items.
„Number incorrect positive“: number of yes-answers during distractions, i.e. an item that has only been shown once is seen as having been shown twice.
„Mean reaction time hits“.
„Discrimination ability“: distribution-free measurement of the ability of the respondent to differentiate among items presented once or repeatedly (familiarity).
„Answer tendency“: expresses whether a respondent answers rather „conservatively“ (when in doubt „No“) or „liberally“ (when in doubt „Yes“).
„Working time“.




**Reliability:**
The reliability (Cronbach's Alpha) varies depending on test form and sample between r=.78 and r=.86.

**Validity:**
The test performance in FVW showed no connection with the cognitive performance of the respondent in CPM (Coloured Progressive Matrices) and in DAUF (continuous attention).

**Norms:**
Test form S2 was standardized with a sample of N=266 normal persons of ages 10 - 99. There are overall norms and age norms are available.
Comparison values of N=53 normal persons of ages 16-90 are available for test form S3.
Results of test form S4 can be compared with comparison values of N=78 normal persons of ages 16 - 89.
Test form S5 was standardized with a sample of N=159 normal persons of ages 15 - 67.
Overall norms and age norms from N=763 adults of ages 17-91 are available for the clinical short form S6.
Test form S8 was standardized with a sample of N=240 children of ages 6 - 9 and is available as well divided into two age groups.

**Testing time:** About 15 minutes.

## GESTA Gestalt Perception Test

### Test to assess the field dependence

Andreas Hergovich and Helmut Hörndler

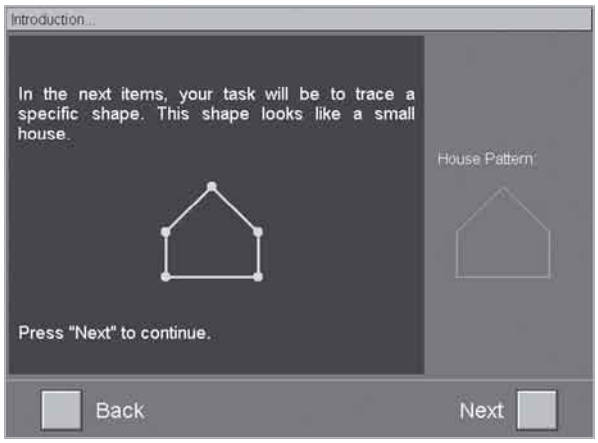

**A Rasch-homogenous test based on the hierarchic model perception to assess the construct field dependence.**

**Application:**
Assessment of the cognitive style of field (in)dependence (field articulation) by identifying a specific shape integrated into a pattern.

**Main areas of application:** industrial and organizational psychology, personality-based aptitude diagnostics, clinical psychology.

**Theoretical background:**
The GESTA is based on the concept of field dependence. The typology differentiates between field dependent and field independent people. Field dependent are people who are influenced by their perception of surrounding stimuli so that they always perceive taking into account the surrounding „field". Apart from the perception, it is also the entire „mental apparatus" that is affected by this dependence on the „field" (and thus also cognitions and emotions). The concept of the field dependence was developed in four phases. The first tests were based on the theory by Witkin & Asch (1948). The first phase encompassed the classic test for the assessment of the field dependence, the Rod-and-Frame-Test (RFT; Witkin, 1949). During the second phase of the construct, the test most applied to assess field dependence was developed: the Embedded-Figures-Test (EFT; Witkin et al, 1971).
The GESTA was developed on the basis of the hierarchic model perception. The aim is to assess the ability of disassembling and assembling structures. During the development of the test, the main goal was to design a test that was one-dimensional in the sense of modern testing theory and assessed the construct field dependence.

**Administration:**
The task is to identify a pre-defined shape (in form of a house) in a pattern, and to mark the corners of the house with the mouse as if redrawing them. The test comprises 30 items that vary as regards the surrounding pattern. However, it is not a jungle of lines but some more or less well-shaped forms. The relevant shape (the house) is presented for each item at the side to serve as a model. The respondent has 20 seconds per item to find the solution. An item is considered as solved as soon as the house was drawn correctly within the preset time limit (with marked corners in the correct order). A relatively intensive instruction and practice phase precedes the testing phase.




**Test forms:**
There is only one test form.

**Scoring:**
The variable is the number of solved items.

**Reliability:**
The internal consistency (Cronbach's Alpha) on the different samples varies between r=.89 and r=.95. The split-half-reliabilities are high, too. They are situated between r=83 and r=.94.

**Validity:**
From the point of view of the probabilistic testing theory, reliability can be considered as given since all items measure the same dimension. Results revealing convergent validity proved to be especially important. The study by Hergovich and Kriechbaum (1996) showed that the correlations between the subtest „Analyze and synthesize" of the AID and the GESTA amount to r=.66. The correlations between the EFT and GESTA is situated at r=.51. Furthermore it was shown that the two tests EFT and GESTA revealed similar correlations with other variables that had been examined (extroversion, social acceptance or intelligence).

**Norms:**
Norms of a representative age-based sample of normal people with a volume of N=298, as well as subsamples matched by gender, age and level of education are are available. The data was collected in the year 2002 in the research laboratory of Dr. Gernot Schuhfried.

**Testing time:**
About 20 minutes.

## LVT Visual Pursuit Test

### Test for the assessment of selective attention

B. Biehl


**This test measures the visual orientation performance for simple structures in a complex environment and is characterized by a high reliability and numerous criterion-related proofs of validity.**

**Application:**
Diagnostics of the selective attention in the visual area; to be used with adults.

**Main areas of application:** performance-oriented aptitude diagnostics, organizational psychology, traffic psychology, sport psychology.

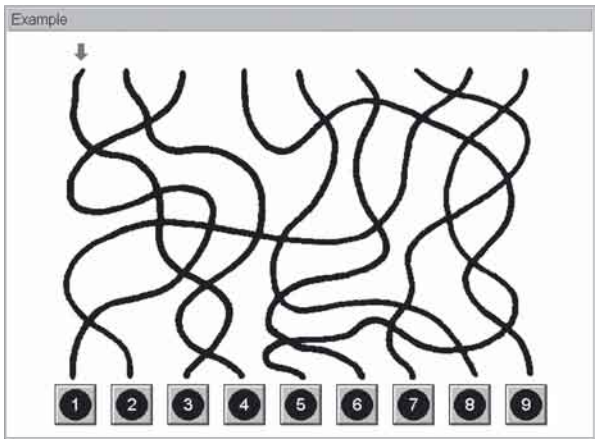
**Theoretical background:**
Special psychological tests are used to check complex dimensions of perception. Most often they were developed on the basis of certain experiment-psychological or practical methods. The present visual pursuit test is not merely a new version of an old test, but rather it was developed out of the experiences and observations with numerous previous versions. The aspect of visual orientation performance is assessed, which consists in pursuing simple visual structures in a relatively complex environment, in a target-oriented way, under time pressure and ignoring distractions. This is why it is also suited for the diagnostics of selective attention in the visual area.

**Administration:**
The test consists of a combined instruction and practice phase. If the 8 practice items are processed with less than 3 errors, the items of the test phase are presented. The respondents must find the end of a presented line. The respondent can freely choose the working speed.

**Test forms:**
A test form S1 (long form with 80 items) and a test form S2 (short form with 40 items) are available.

**Scoring:**
Scoring is achieved according to the following variables:
„Score", „Mean time correct answers" (sec).

**Reliability:**
The inner consistency is r=.96 for the long form and r=.92 for the short form.




**Validity:**
Currently, studies by Cale (1992) as well as Neuwirth & Karner (2000) and Sommer (2002) are available, which it demonstrated that persons with performances below average had more accidents, or that their driving performance was rated lower. Sommer (2002) was also able to show that 74.4% of the global judgments of the driving behavior in a standardized driving test could be accurately predicted on the basis of a test battery containing the LVT. Additionally, group comparisons are available between the normal population and drivers who aroused suspicion of alcohol abuse (Karner, 2000) as well as neurological and psychiatric patients (Neuwirth & Dorfer, 2000). These studies provide ample proof for the criterion validity of the LVT. The construct validity is proven by highly significant correlations of the characteristic values of the LVT with a similarly constructed test, the ART 90 (Karner, 2000), as well as with additional tests that assess attention and concentration. (Wagner, 1999).

**Norms:**
The following norms are currently available: Long form: A sample of N=221 adults. Short form: A representative norm sample of N=785 persons, divided into 5 age levels. Traffic-psychological clientele of N=4104 persons (a cohort sample collected in TÜV examination centers from all over Germany as well as from Austria collected in the INFAR and the ARGE). Traffic-psychological clientele (Portugal) of N=166 persons. A representative norm sample of N=800 persons from South Africa. Screening form: a representative norm sample of N=646.

**Testing time:**
Short form about 15 minutes, long form about 25 minutes.

## MLS Motor Performance Series

### Test for the measurement of fine motor abilities

K.J. Schoppe and W. Hamster


**Comprehensive fine motor abilities test battery with special norms for Morbus Parkinson patients.**

**Application:**
Measurement of fine motor abilities through static and dynamic tasks for finger, hand and arm movement, to be used from seven years of age onwards.

**Main areas of application:** neuro-psychology, clinical psychology (also rehabilitation), motor abilities diagnostics, industrial and organizational psychology, performance-oriented aptitude diagnostics, sport psychology, medicine and pharmacology.

**Theoretical background:**
The Motor Performance Series (MLS) is a test battery developed by Schoppe based on Fleishman's factor-analytic examinations of fine motor abilities. The following six factors of fine motor abilities are analyzed by the MLS:
- Aiming (aiming of motion),
- Hand unrest, tremor,
- Precision of arm-hand movements,
- Manual dexterity and finger dexterity,
- Rate of arm and hand movements,
- Wrist-finger speed.

**Administration:**
The MLS Work Panel is required for the administration of the MLS. The dimensions of this Work Panel are 300x300x15mm and it is covered with boreholes, grooves and contact surfaces. A pen is attached to each edge (left and right) of the Work Panel. The right pen is black, the left one red. The following tasks have to be carried out on the Work Panel:
Steadiness (one or both hands) Line tracking (one hand) Aiming (one or both hands) Inserting pins (one or both hands) Tapping (one or both hands).

**Test forms:**
The following test forms are available:
S1: Standard form according to Schoppe & Hamster (17 subtests), S2: Short form according to Sturm & Büssing (8 subtests),
S3: Short form according to Vassella (10 subtests).
It is possible to select individual test forms for test presentation.

### Test with peripheral unit

**Scoring:**
Result table: speed and/or accuracy measurements are calculated for the right and left hand for one-handed and two-handed administrations.
Result table for fine motor abilities factors: table with mathematically estimated Fleishman factors of the right hand.
Profile: the standardized variables and the Fleishman factors can be displayed in a profile.

**Reliability:**
Retest coefficients for the subtest-parameters Aiming, Line tracking and Tapping were calculated (test-retest interval 1 day). They varied between r=.52 and r=.92 for the right and r=.60 to r=.90 for the left and. For the subtest Tapping (variable „Hits") the consistency coefficient (Cronbach's Alpha) was calculated and amounted to r=.94.

**Validity:**
Factor-analytic control examinations on clinical groups and one group of healthy persons led to the result that the six factors of the MLS clarify over 85% of the overall variance.
Comparisons between people with or without disturbances of the central motor system showed significant and highly significant differences in performance. This confirms that impairments in fine motor function can be objectified using the MLS. Only low correlations up to .35 were found between the variables of the MLS and cognitive requirements, as expressed e.g. in HAWIE, CFT and the STROOP test, and to various personality dimensions (e.g. extroversion, neuroticism, rigidity).

**Norms:**
Test form S1: sample of school students between 13 and 19 years of age (N=300); university students between 18 and 26 years of age (N=100); sample adults (N=420).
Test form S2: sample of patients without neurological symptoms (N=200), 2 samples of patients with Morbus Parkinson (N=70 and N=114); sample of IEFP clients –Portuguese. They are the N=320 clients of the company IEFP, tested in the years 1999 and 2000. Sample of traffic psychological clientele – Portuguese. They are N=1904 Portuguese respondents in traffic psychological studies.
Test form S3: right-handed children and adolescents (Vassella in Bern, N=352), right-handed children and adolescents (Hiebsch - Martin Luther University, Halle (Germany), N=92); left-handed children and adolescents (Hiebsch - Martin Luther University, Halle, N=29).

**Testing time:**
About 15 to 20 minutes (for the short form).

## MTA Mechanical-Technical Perceptive Ability

### Recognition of the functions of moving technical instruments

K. Liedl


**The fact that this test consists of a mostly non-verbal task, of moving images and the obvious connection to practical activities makes it work even for those respondents, who tend to have a negative opinion about tests with a „typically school-like" content.**

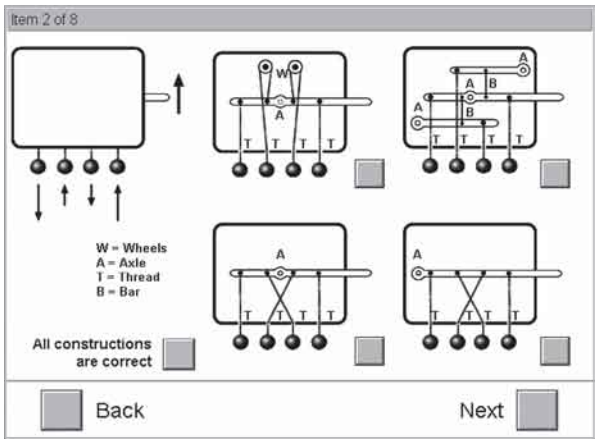
**Application:**
This test assesses the mechanical-technical understanding using animated items (instruments, to which a construction plan must be assigned); to be used with adolescents and adults.

**Main areas of application:** aptitude diagnostics.

**Theoretical background:**
In psychology there is a multitude of terms like „technical- constructive" or „practical-technical understanding", which are used in connection with mechanical-technical understanding. Pauli & Arnold (1972) limit the definition in the following way:

„Technical understanding broadly contains the following abilities:
a) to understand and describe technical drawings or instruments and to describe their usefulness.
b) to recognize the functional importance of the individual parts and to explain their coaction.
c) to correctly understand and describe basic technical laws (e.g. the effect of the lever), with which everybody is acquainted in daily life.
d) the personal inner connection with technical problems (eagerness or revulsion)."
The MTA tries to cover the above-mentioned abilities from points a-c.

**Administration:**
In the first run 4 plans per instrument are presented. The task consists of finding the one plan, which does not allow the sequence of movements shown before (in an animation). If all four constructions allow this sequence of movements, then the answer „all constructions are correct" must be selected. In the second run, either one of the 4 plans per instrument must be selected as correct or the answer can be „all constructions are incorrect". So in the first run one incorrect plan must be discovered among the four plans presented per instrument, whereas in the second run one correct plan must be found. The test has an „item-related time-limit". This means that the next item appears automatically after a certain time interval (2 minutes) has elapsed.




**Test forms:**
There is one testform.

**Scoring:**
The defined test score is the number of items solved.

**Reliability:**
The reliability in the sense of an inner consistency is given due to the validity of the Rasch model.
The following characteristic values for reliability were calculated: split-half-reliability r=0.87, Cronbach's alpha r=0.84 and Guttman's lambda 3 r=0.84.

**Validity:**
Since the tasks of the MTA coincide by their content as well as formally with those of other mechanical-technical tests that were checked for their external validity, the external validity is deemed to be secure also for them.
One external validity criterion (positive/negative completed retraining in a technical profession, r=.47) confirms the selection quality of the MTA.

**Norms:**
The norms available are based on a sample of N=259 adults.
Three additional samples are based on the data of N=556 students from vocational schools, which were further divided between professions with technical understanding (N=339) and professions without technical understanding (N=217).

**Testing time:**
Test phase: 40 minutes at the maximum.

## NVLT Non-Verbal Learning Test

### Test to assess non-verbal learning

W. Sturm and K. Willmes


**Homogenous assessment of non-verbal learning to detect material specific learning disorders.**

**Application:**
Non-verbal learning is assessed by presenting graphic material for memorization that is difficult to verbalize. The memorized material is recalled according to the recognition method; applicable to adults.

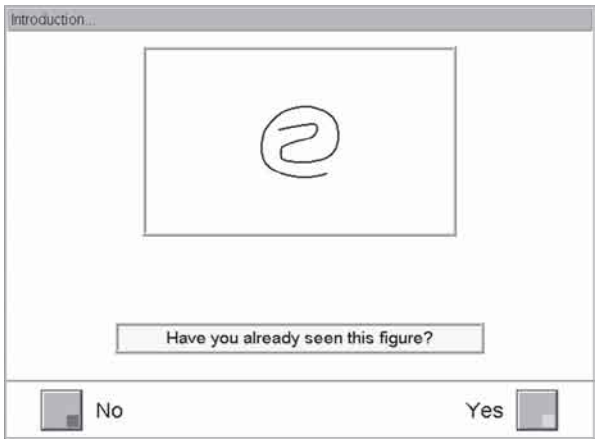
**Main areas of application:** clinical psychology, health psychology (the NVLT can be administered to healthy people as well as to people with cerebral lesions in order to assess specific memory deficits. The NVLT may well serve to assess material-specific learning disorders in the field of amnesia diagnostics).

**Theoretical background:**
Based on memory theories developed by Atkinson & Shiffrin and by Braddley, as well as on findings from neuropsychological research into amnesia, the NVLT was designed to assess the learning ability with respect to non-verbal memory material that is stored in a material-specific long-term memory store. Memorized information is recalled by means of the recognition method.

**Administration:**
The respondent sees meaningless, partly geometric and partly irregular shapes for 3 seconds each on the screen. During the test, 8 of the presented shapes are repeated seven times in the long form (7 item blocks), and five times in the short form. While a shape is presented, the respondent is required to decide each time whether or not he or she has seen it before. The respondent answers by pressing one of the two corresponding reaction buttons, depending on his or her decision. In case the results are below a percentile rank of 25, the respondent has to take the test for visual discrimination to verify whether the result was caused by impaired visual performance.

**Test forms:**
Long form with 160, short form with 120 items, and visual discrimination test with 20 items.

**Scoring:**
The test records the number of correct and incorrect positive answers, as well as the difference from these two parameters per item block and the sum of all items. In addition, the course of these three variables is recorded over the period of 7 item blocks. Furthermore a so-called „Instability index" is defined as a measure for the stability of the learning process. The median




of reaction times for the correct and incorrect positive answers is also indicated.

**Reliability:**
Split-half reliability coefficients were calculated that vary for all parameters between r=.84 and r=.91 for the long form, and between r=.80 and r=.90 for the short form of the NVLT.

**Validity:**
To analyze the construct validity, it was verified whether or not the learning procedure in the course of the testing was as monotonous as possible according to the Guttman Scale. This was the case to an 87%-95% for the repeated geometric items, and to a 54%-64% for the irregular shapes. However, the number of deviations from the ideal learning development is low for both item types. An analysis of the performance intercorrelations among item blocks showed a structure, which leads to the conclusion that only one homogenous aspect (learning ability) is assessed throughout all item blocks. An investigation of neurological patients with unilateral right- or left-hemispheric vascular cerebral lesions to prove the NVLT's as well as the VLT's differential validity showed that these two tests can precisely detect material-specific learning disorders in the sense of double dissociations, and not only for groups but also for a high percentage of individual cases.

**Norms:**
The norms of the paper-and-pencil version were collected from N=911 healthy respondents aged between 20 and 66 years. Furthermore the following norms collected from the computerized version are available: S1: „Neurological patients" (N=122) and „ Adults " (N=83). S2: „Adults".

**Testing time:**
Long form about 15 minutes, short form about 10 minutes, visual discrimination test about 3 minutes.

## PERSEV Perseveration Test

### A computerized enhanced version of the Mittenecker Pointing experiment

G. Schuhfried


**Objective test for the assessment of the perseveration tendency.**

**Application:**
Assessment of the perseveration tendency (stereotypies) can be used as of 6 years of age.

**Main areas of application:** clinical psychology (especially clinical routine diagnostics), neuropsychology, sport psychology.

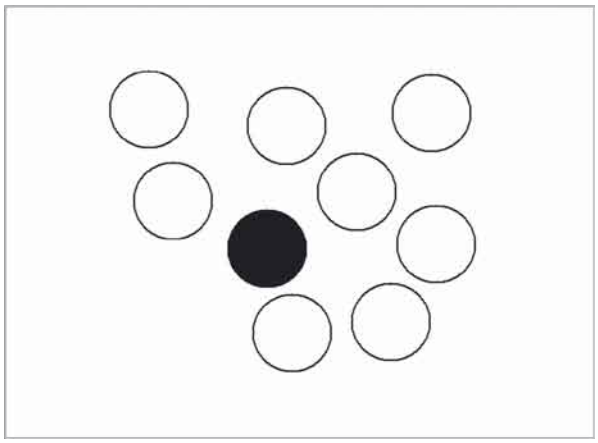
**Theoretical background:**
The consensus in scientific literature is that perseveration means an unwarranted repetition in cognitive processes and ways of behavior. Resistance to change and rigidity take the place of variability, flexibility and adaptability.
The motor perseveration or „stereotypy" is marked by a high measure of repetitions of certain action sequences. Most theories see perseveration as an arousal phenomenon, which follows mental and central nervous processes.
Mittenecker noted the perseveration tendency in a pointing experiment. In this experiment the respondents have to touch numbers between 1 and 10 in an unsystematic way, with a pen. The extent of the individual repetition tendency was determined using information-theoretical values.

**Administration:**
Nine big circles are displayed on the monitor. As in Mittenenecker's experiment 64 „beeping sounds" are presented per minute. The task consists in pressing with the light pen on the circles, to the tact of the tones. The test contains an instruction and a practice phase, in which the respondent receives feedback. After 210 entries the program indicates the end of the test.

**Test forms:**
There is one test form.

**Scoring:**
The following information theoretical values are calculated: Redundancy of the first degree (R1) as relative preference of individual circles.
Since this variable also shows very marked intra-individual variances and high standard deviations for healthy people, it should rather be viewed as control variable. A low percentage rank points to a preference for certain circles.

Redundancy of the second degree (R2) as the measure for the preference for individual combinations of two circles (the respondent pointed the light pen preferably to circle Y after circle X). The person taking the test cannot control the 81 combination options consciously



anymore. The lower the value is for R2, the greater the randomness of pointing the various circles, i.e. there is no preference for specific combinations of pairs. Patients with organic brain damages or patients with psychiatric symptoms display a marked preference for certain sequences of pairs. Control variables: „Omitted" and „Multiple reactions" in the interval between two beeping sounds.

**Reliability:**
The split-half reliability (odd-even) varies between r=.86 and r=.91 for the Redundancy of the first degree.
For the variable Redundancy of the second degree the same calculation mode was applied to produce reliabilities between r=.81 and r=.87.

**Validity:**
A number of studies with the pointing experiment showed a significantly higher perseveration for clinical respondent groups in the following ascending order: epileptics, respondents with organic brain dysfunctions or damages, depressive patients, neurotics and schizophrenics. These results were confirmed when applying the computerized Perseveration Test to patients with cranio-cerebral injuries. Additionally it is deemed evident, that rigidity and inflexibility of cognitive processes result in a greater repetition tendency of certain courses of action. In a study by Stoffers et al. (2001) it is reported, that when comparing two respondent groups with early signs of Morbus Parkinson (of which one groups was treated with medical drugs and the other one not) by the Perseveration Test, a marked reduction in the capacity to create patterns at random could be found in both groups.

**Norms:**
Norms of N=417 healthy persons between the ages of 6 to 95 years are available. Additionally, test results were compared to age-specific subsamples.

**Testing time:**
About 5 minutes.

## PP Peripheral Perception

### Test to assess peripheral perception during tracking tasks

G. Schuhfried, J. Prieler and W. Bauer


**Objective and precise measurement of the visual filed of perception.**

**Application:**
This test was designed to assess the perception and processing of peripheral visual information.

**Main areas of application:** traffic psychology, pharmacology, aviation psychology, sports psychology, industrial and organizational psychology.

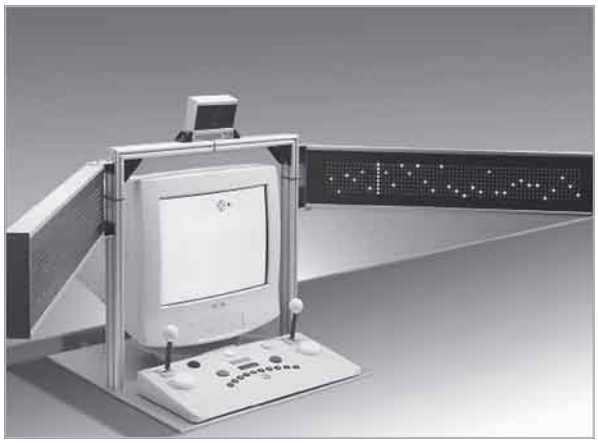
**Theoretical background:**
A good visual perception is indispensable for many activities conducted by humans and machines together, such as steering a motor vehicle. A driver perceives over a 90% of information via the visual channel. Literature about visual aspects of driving usually mentions peripheral visual perception in connection with three functions:

1. Speed estimation (high angular velocity in the peripheral visual field).
2. Steering a car (through objects that pass by at the sides of the road).
3. Observance of the surroundings (by detecting incidents and objects, e.g. cars turning in from another road, or passing).
   The PP made possible to design a purely behavior-related instrument that meets high methodical demands.

**Administration:**
Light stimuli - produced with the light emitting diodes mounted onto the device – move along with a pre-set speed (in regular „jumps"). Critical stimuli appear in pre-set time intervals, to which the respondent has to react by pressing the foot pedal.

**Test forms:**
There is one test form.

**Scoring:**
The following variables are recorded:
- „Field of vision"
- „Visual angles left/right"
- „Tracking deviation"
- „Hits left/right"
- „Incorrect reactions"
- „Omitted reactions"
- „Median reaction time (left/right stimuli)"



**Reliability:**
Studies to prove the reliability of this test have not yet been conducted.

**Validity:**
Context-logical validity or a high self-evident validity can be assumed. Critical stimuli are presented in the visual field of the respondent to which s/he has to react as quickly as possible just like for instance in road traffic.

**Norms:**
A standardization of the test does not seem reasonable, as literature indicates clear limits (in degrees) of the normal visual field (especially in traffic psychology). The German traffic psychology laws (German Driving Permit Regulation, 1998) state that a visual field covering 120 degrees (140 degrees in professional drivers; at least 70 degrees to the left and to the right) is the minimum necessary to drive a motor vehicle. Thus any reduction in the visual field seems to be problematic.

**Testing time:**
About 15 minutes.

## RA Reaction Time Analysis

### Test to assess cognitive speed

W. U. Dormann, Th. Pfeifer and J. A. Prieler


**With Reaction Time Analysis the slowing down of reactions can be assessed in a differentiated way according to the three stages of activity regulation (perception, cognitive processing and motor response organization. This shall be especially useful for the representation of the course of illnesses in an advanced age. But the RA can also be used as a tool for aptitude diagnostics.**

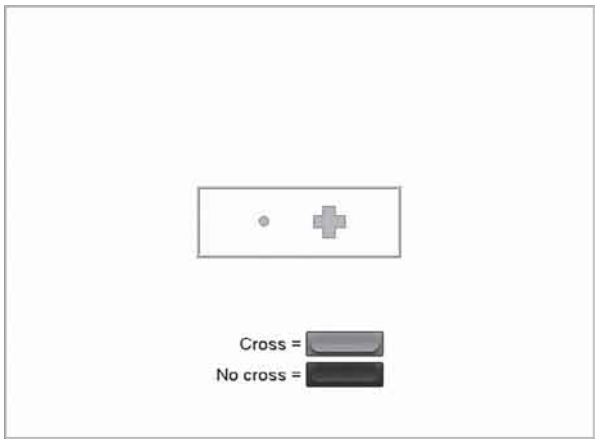
**Application:**
Assessment of the cognitive speed concerning perception, processing and motor response organization for choice reaction tasks and visual search, to be used with adults.

**Main areas of application:** clinical psychology, organizational psychology, traffic psychology, flight psychology, sport psychology.

**Theoretical background:**
The Reaction Time Analysis is based on Sternberg's Model of Additive Factors (Sternberg, 1969). According to this there are serial and independent process stages, and the measurable reaction time is the sum of the processing times of all stages. What varies are the influence factors, which selectively influence individual stages in their processing time. The effects triggered through the reaction time make conclusions about the processing time of individual stages possible. To influence the perception stage the discriminability of the figures displayed on the monitor (circle, rectangle, square, star, cross, ellipse) is varied by partial covering with a screen. The variation of the cognitive processing stage is based on the Visual Search Model by Schneider and Shiffrin (1977). The authors showed that visual search processes are realized by serial and self-canceling comparison steps. In the test one or two between two simultaneously presented figures have to be searched for. That way the extent of the necessary comparison steps varies. For the variation of the motor response organization step, the complexity of the reaction to be executed is modified (reaction with one finger or with a sequence of three keys). By this the mental response program is influenced in its central motor parts (Rosenbaum and Saltzmann, 1984).

**Administration:**
The respondent is guided through the experiment interactively. In the experiment 14 stimulus series with 20 individual stimuli each for choice reaction tasks or 16 individual stimuli for visual search tasks are to be processed.

**Test forms:**
One standard test form is available.




**Scoring:**
The following variables are scored
- Information processing, perception and motor response organization
- Choice reaction and simple reaction times
- Error frequencies

**Reliability:**
The inner consistencies of the scales all vary between .85 and .99 and must be seen as very satisfactory.

**Validity:**
The Reaction Time Analysis was administered under simultaneous conduction of event-related cerebral potentials (ERP) (Dormann, Pfeifer, Nickel, 1991). It could be shown, that the variation of experimental conditions, which influences the stimulus assessment time (perception stage, cognitive processing stage) also leads to a lengthening of the peak time of the late positive complex in ERP (P300). Contrary to that, the variation of experimental conditions, which has an effect after the stimulus assessment (concerns the motor sequence that influences the motor response organization), does not lead to peak time deferments of the P 300. This basically confirmed the stage model. Additionally, comparative studies were able to confirm results on age-related slowing down as well as slowing down for the organic psycho-syndrome.

**Norms:**
The comparison with a comparative sample stratified according to relevant reference groups (age, education level) is possible (N=419).

**Testing time:**
About 25 minutes.

## RT Reaction Test

### Measurement of the reaction time to visual and audible stimuli

G. Schuhfried


**Due to its clever combination of different test forms, the RT is ideally suited as a test battery to examine attention.**

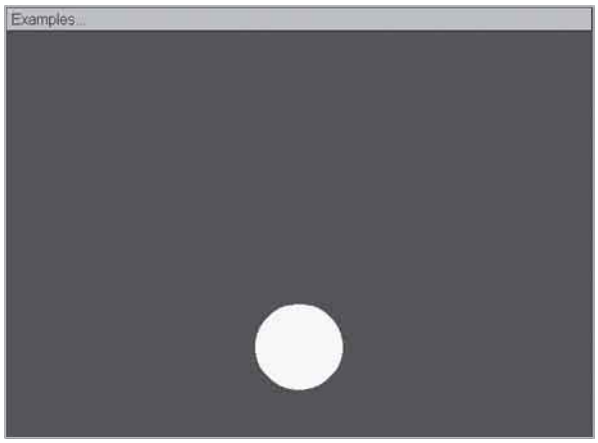
**Application:**
Apart from recording reaction times down to the milli-second, it also covers the areas of alertness, the ability to repress an inadequate reaction (an area relevant in attention diagnostics), vigilance and intermodal comparisons (directed attention) in special forms. It can already be used with children starting from the age of 6.

**Main areas of application:** Aptitude diagnostics in the area of performance, industrial and organizational psychology, motor skills diagnostics, aviation psychology, sport psychology, traffic psychology, medicine and pharmacology, clinical psychology.

**Theoretical background:**
With the Reaction Test, the measurement of the reaction time is possible for single-choice reactions and for simple multiple-choice reactions. The stimulus modalities light/tone and the characteristics red/yellow/white are available, so that different stimulus constellations for the measurement of reaction time can be produced. These can go from individual stimuli to simultaneous or sequentially presented stimulus combinations. The use of a rest and a reaction key makes the splitting into reaction and motor time possible.

**Administration:**
The respondent receives the instruction, to press the reaction key only when relevant stimuli are presented.

**Test forms:**
Test forms S1-S5 assess the reaction time (split into reaction and motor time) needed to respond to simple and complex visual or audible signals. They also assess attention deficit disorders (it also serves to record the ability to repress an inadequate reaction and for inter-modal comparisons). Test form S1: simple reaction yellow. Test form S2: simple reaction sound. Test form S3: choice reaction yellow/sound. Test form S4: choice reaction yellow/red. Test form S5: choice reaction yellow/sound or yellow/red. Test form S6: This test form is especially suited to record the reaction time over a longer period of time under monotonous stimulus conditions (vigilance). Test forms S7-S8: measurement of alertness. S7: simple reaction yellow (with audible warning signal). S8: simple reaction sound (with visual warning signal). Test forms S9-S10: These test forms serve to measure in particular the reaction time to simple visual or audible signals and are especially suited for problems, where absolute reaction times (i.e. not norms) are important (e.g. for experts' court




reports). Reaction times are not split into reaction and motor times. S9: simple reaction yellow, measurement of reaction time only. S10: simple reaction sound, measurement of reaction time only.

**Scoring:**
Four main variables are recorded:
„Median reaction time", „Median motor time" and „Inter-quartile range/median" in % for both time variables.

**Reliability:**
The reliabilities (Cronbach's Alpha) in the norm sample vary between r=.83 and r=.98 for the reaction time and between r=.84 and r=.95 for the motor time.

**Validity:**
The content (logical) validity is given for the Reaction Test. The presentation of an individual stimulus for one second is such a simple requirement, that it can be assumed, that nothing but a reaction to that stimulus occurs.

**Norms:**
The comparison with a norm sample stratified according to relevant reference groups is possible for test forms S1, S2 and S3 (S1: N=139, S2: N=157, S3: N=567).
Furthermore, for S3, there are cohort samples of drivers who have been apprehended due to bad driving behaviour (N=1830), of traffic-psychological clientele (Portugal) of N=141 persons and of Portuguese adults N=127. A standardization of S1 and S2 with primary school children (N=137 and N=134) as well as for S3 has been conducted. Additionally, there is a cohort sample for the test form S4 (N=80) as well as comparative samples for the test forms S5 and S6 (S5: N=170, S6: N=105). The sample sizes for the alertness test forms S7 and S8 are 75 and 111 people, respectively. For test forms S9 and S10 there are comparative samples with N=198 and N=101 people.

**Testing time:** About 5-10 minutes.

## SIGNAL Signal-Detection

### Test to quantify the performances of attention and visual differentiation

G. Schuhfried


**Based on the signal detection theory, this test assesses the visual detailed registration of complex stimuli under time pressure over a longer period of time.**

**Application:**
Assessment of long-term selective attention, that is, the visual differentiation of a relevant signal within irrelevant signals; application for people aged 7 years and over.

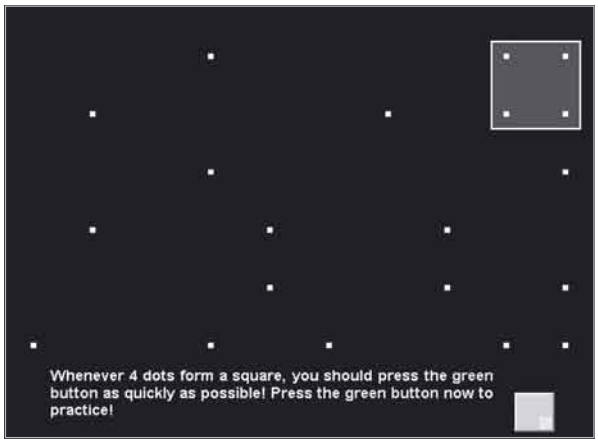
**Main areas of application:** health psychology, clinical psychology (to assess the ability of visual differentiation as well as neglect phenomena of a visual half-field, e.g. for neglect diagnostics), performance-oriented aptitude diagnostics.

**Theoretical background:**
The signal detection theory (by Green and Swets, 1966) describes the perception of weak signals on a constantly changing (flickering) background. It is not limited to visual differentiation of a certain type of signals that are close to the perception threshold. It is much more general and deals with the question: Under which circumstances can a person detect a weak signal surrounded by irrelevant signals that could be confused with each other?
This shows a strong link to the statistical decision theory, as for the reaction „Signal exists" or „Signal does not exist" the sensibility to differences is less important than the problem to decide for one of two possible answers with different probability to be correct.

**Administration:**
The entire screen is covered with dots, some of which randomly disappear while other new ones appear. The respondent is required to detect the critical stimulus constellation, that is, whenever four dots form a square.

**Test forms:**
S1: Standard (white signals on a black background)
S2: Standard, inverted (black signals on a white background) S3: Short signal duration
S4: Signal-balance (neglect diagnostics).

**Scoring:**
The main variables calculated are the sum of correct, delayed, and incorrect reactions as a measurement for the reliability of the detection process, and the median of the detection time as a measure of the speed of the detection process.




Additional part of the test protocol: quadrant scoring (including cut-off scores or distribution sections for average performances).

**Reliability:**
Depending on the test form and comparative sample, coefficients of r =.74 to r =.85 were calculated as split-half reliabilities (odd-even-method) for the norm variable „Number correct and delayed". The reliability for the Median of the detection times calculated according to the same rules resulted in values varying between r =.78 and r =.84.

**Validity:**
Construct validity can be assumed, as - according to the signal detection theory - exactly those aspects of performance are registered that are considered criteria for the construct signal detection. Studies with extreme group samples also showed good results.

**Norms:**
The individual test forms are provided with norms (T-scores and percentile ranks with confidence intervals) of the following com- parative samples:
S1: representative norm sample stratified according to age, gender and education level (N=296), Normal people selected according to age groups (N=738), Traffic psychological clients - Portuguese norms categorized according to age gender and education level (N=2589), gender-matched job applicants from Macao (N=118);
S2: Adolescents aged 14 years and over (N=76), Normal people selected according to age, gender, and education level (N=289);
S3: Adults selected according to age (N=904); S4: Neurological patients (N=71).

**Testing time:**
About 14 - 20 minutes.

## SIMKAP Simultaneous Capacity / Multi-Tasking

### Do many things simultaneously and correctly

O. Bratfisch and E. Hagman


**„Simultaneous Capacity" and „Stress Tolerance" are two of the essential requirements for a multitude of professions. The present test provides a reliable way to measure both constructs.**

**Application:**
SIMKAP is primarily intended for personnel selection, career counseling, diagnosis and assessment. Additional areas of use are traffic psychology (especially railway and aviation psychology), military psychology as well as within clinical settings.

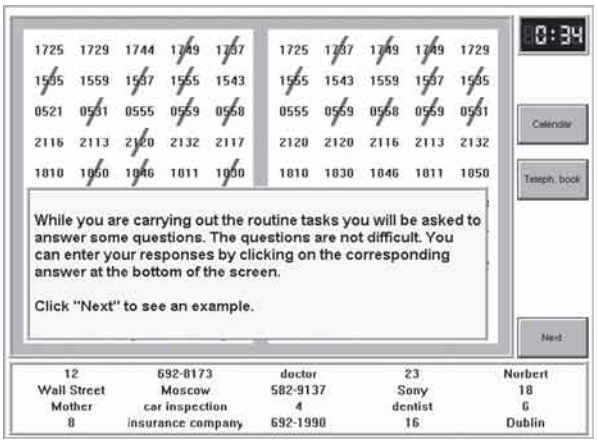
**Main areas of application:** performance-oriented aptitude diagnostics, industrial and organizational psychology, clinical psychology, neuropsychology (to assess perceptive disfunctions e.g. dyslexia).

**Theoretical background:**
Operationally SIMKAP is based on the definition of Simultaneous Capacity and Stress Tolerance.
Simultaneous Capacity is defined as the performance achieved when simultaneously dealing with routine tasks and tasks demanding cognitive performances (problem solving). More recently the term multi-tasking has been used to denote this talent.
Stress Tolerance is defined as the extent to which performance differs when dealing with corresponding routine tasks under normal (baseline) and stress conditions.

**Administration:**
SIMKAP consists of five subtests. The first three represent the routine tasks and aim at measuring the baseline of Perceptual Speed and Accuracy. They differ in content (Numbers, Letters, Figures). The task is to identify and mark critical items as fast and accurately as possible. In the fourth subtest uncomplicated problem solving is required. The fifth subtest combines the previous ones - both routine tasks of Perceptual Speed/Accuracy and tasks involving problem solving have to be dealt with simultaneously.

**Test forms:**
At present there is one test form.

**Scoring:**
The main scoring variables are Simultaneous Capacity and Stress Tolerance. Moreover, Perceptual Speed and Accuracy under normal (baseline) and stressful conditions are assessed.




**Reliability:**
The reliability coefficients regarding the total performance for Simultaneous Capacity and Stress Tolerance vary between 0.94 and 0.97 and between 0.89 and 0.91 respectively. The parallel test reliability coefficients are 0.96 for Perceptual Speed (baseline) and 0.84 for Accuracy (also baseline).

**Validity:**
The face validity is evident – the respondents think immediately of real situations where several things have to be handled simultaneously. The logical validity is given by the operational definition of Simultaneous Capacity and Stress Tolerance. Content validity has been proven through factor analysis. Prognostic validity has been demonstrated for occupations demanding, amongst other prerequisites, a high degree of Simultaneous Capacity and Stress Tolerance. Criteria used were „completed occupational education without complications" and „poor performance on the job".

**Norms:**
Norms of a sample of 436 Austrian as well as 901 Swedish adults are available. Both norms area available broken down by level of education and age. When comparing the Austrian and Swedish samples no statistical differences were found. Thus, the samples can be regarded as parallel.

**Testing time:**
The required time for instructions, solving the practice items and actual testing time is approximately 40 minutes.

**Note:**
For the administration of Simultaneous Capacity a sound card and speakers or headphones are necessary.

## SMK Sensomotor Coordination

### Tracking – test to assess sensomotor coordination ability

H. Bauer, G. Guttmann, M. Leodolter and U. Leodolter

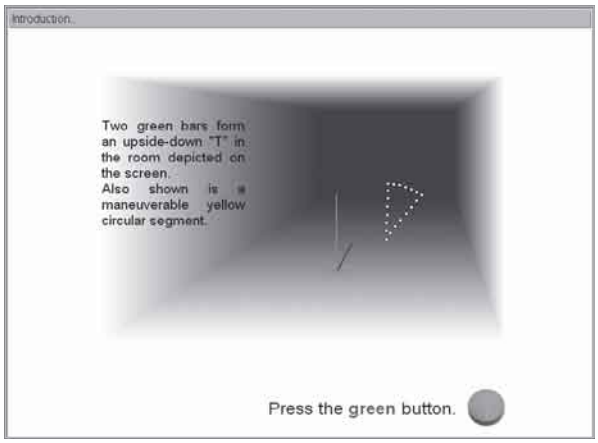

**An impressive test with a striking elegance and sophistication in pretending 3 dimensions. The joystick helps to assess the sensomotor coordination precisely.**

**Application:**
This test assesses the coordination of eye-hand, hand-hand, or eye-hand-foot by maneuvering a circular segment that moves on its own about a 3-dimensional room.

**Main areas of application:** performance-oriented aptitude diagnostics (especially for railway engine drivers, crane drivers etc., as well as for personnel of controlling and observation activities), traffic psychology, aviation psychology, medicine, clinical psychology (assessment of coordinative deficits in clinical groups).

**Theoretical background:**
The assumption is that movements are controlled through the use of sensor information coming from current activities. Occurring deviations between target value and actual value are revealed and corrected accordingly (the TOTE principle). The necessary time to coordinate one's movements is essentially determined by the received and processed feedback information. Two completely separate constructs are assessed: the „Anticipative coordination ability" refers to sensomotor coordination necessary to maneuver an element to a pre- set goal (target is known beforehand). The „Reactive coordination ability" refers to sensomotor coordination necessary to react adequately to an element's spontaneous, unpredictable changes of direction (and size) (ability to anticipate movements).

**Administration:**
The element selected for this test is a geometrical shape (circular segment) that is easy to describe and is hardly influenced by any previous experiences.
The screen depicts a room with a target position (green bars forming an upside-down „T") and a maneuverable element (yellow circular segment). The circular segment starts moving about the room in unpredictable directions (that remain the same for all respondents). All test forms include a preceding instruction and practice phase.




**Test forms:**
There are four test forms:
S1: Short form (screening; 10 minutes) S2: Standard form (15 minutes) S3: Long form (higher measurement accuracy; 20 minutes) S4: Special form for foot pedals (10 minutes).

**Scoring:**
The following seven variables are assessed: „Time in ideal range", Mean and distribution of „Angle deviation", „Horizontal deviation", and „Vertical deviation".

**Reliability:**
The internal consistency is situated above r=.90 in all scales.

**Validity:**
The results of statistical correlation analyses and inter-group comparisons (including other tests and various external criteria) back up the convergent and discriminant validity of the SMK. Extensive aviation psychological validations (pilot selection) have been conducted with the Austrian Federal Army.

**Norms:**
Test forms S1-S3 are provided with age- and education-specific samples (N=239). Test form S4 can be compared to age-, gender-, and education- specific samples (N=189).

**Testing time:**
Instruction: about 5 minutes.
S1: 10 minutes. S2: 15 minutes. S3: 20 minutes. S4: 10 minutes.

## STROOP Interference Test

### Test to assess the color-word interference

G. Schuhfried


**This test provides a fair and highly reliable assessment of the ability to inhibit overlearned answers to simple tasks.**

**Application:**
Registration of the color-word interference tendency, i.e. impairment of the reading speed or color recognition due to interfering information; applicable to adults.

**Main areas of application:** clinical psychology, neuropsychology.

**Theoretical background:**
The present form of the Stroop Interference Test is the computerized Color- Word interference paradigm by Stroop (1935). It is based on the assumption that reading speed of a color-word is slower, if the word is written in a differently colored font. There is always a delay in naming the color of this word, if color and color-word do not match. This paradigm results in two experimental conditions without interference influences:

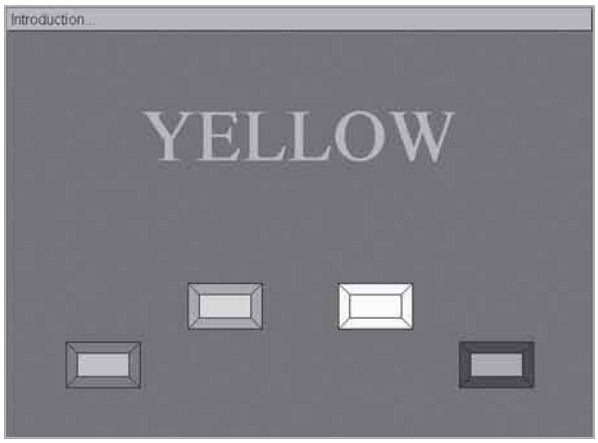
1. determination of the reading speed of a color word alone and
2. determination of the color naming speed.

This initial performance is used as „baseline" and can be related to the two so-called interference conditions, which are described below:

1. reading speed alone with the experimental set-up „colorinterference": reading speed of the color word decreases if the word is written in a different color,
   and
2. the experimental set-up „word interference", where naming the color is made more difficult since color-word and color in which the color word is written do not match.

**Administration:**
The task is to press the correct respective entry field or color button as fast as possible.

**Test forms:**
Generally four test forms are available. Test forms S4, S7 and S10 determine first the „baseline" then the „interference condition". The three test forms vary as regards the input medium and the instructions (the respondent names/does not name the color aloud).
Test form S8 differentiates between so-called „congruent" items – color and meaning of the word match - and „incongruent" items – color and meaning of the word DO NOT match.




**Scoring:**
The main variables are reading interference (the difference of the reaction time medians of the „reading interference condition" and the „reading baseline") and the naming interference (the difference of the reaction time medians of the „naming interference condition" and the „naming baseline").
Additionally, the following variables are issued for each individual test part: „Median reaction time" and the „Number of incorrect answers". The test protocol shows each single reaction of the respondent with reaction time of the respondent and evaluation of the reaction.

**Reliability:**
The split-half reliabilities for the norm sample varied between r=.85 und r=.99.

**Validity:**
The validity of the test STROOP-Tests is confirmed by numerous comparative examinations with clinical groups and healthy people (extreme group validation), as well as by examinations regarding its convergent and divergent validity. The computerized form was designed exactly according to the paradigm of the color-word interference by Stroop, taking into account further scientific developments (e.g. Bäumler, 1985). It proved that patients with cerebral lesions require much more time to do tasks under interference conditions, and that the test STROOP differentiates reliably between patients and healthy people (c.f. Perret, 1974; in Wittling, 1983; Beaumont, 1987).

**Norms:**
A comparative sample of N=254 normal people is available for form S4. A standardization to normal persons (representatively) is available in each case for forms S7 (N=343) and S8 (N=327). They consist of data from the Schuhfried Company's research laboratory.

**Testing time:**
About 15 minutes.

## TAVTMB Tachistoscopic Traffic Test

### Test to assess visual perception

B. Biehl


**The TAVTMB is a „classic" among the traffic psychological tests and allows a one-dimensional assessment of the ability to obtain an overview. In addition, numerous validation studies in the field of traffic psychology are available.**

**Application:**
Assessment of the visual perception performance and perceptive speed in tasks with short presentations (1 second) of traffic situations.

**Main areas of application:** traffic psychology and aviation psychology.

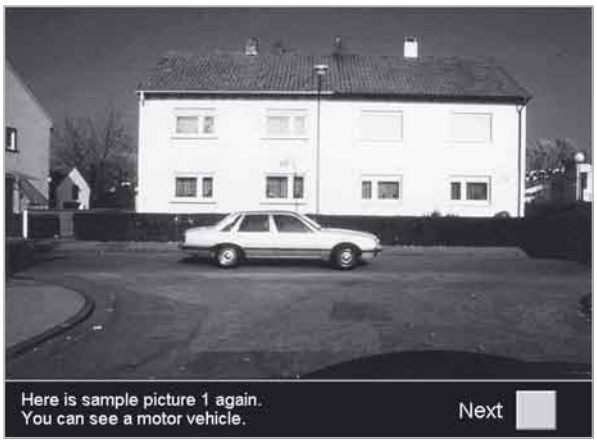
**Theoretical background:**
The „Tachistoscopic Traffic Test Mannheim" is a test that assesses visual perception and perceptive speed in tasks where pictures of traffic situations are presented for a very short moment. The test is fair, as neither road traffic experiences nor the knowledge of traffic regulations are advantageous. The eyesight of the respondent plays a minor role.

**Administration:**
After the instruction phase with two practice items (pictures), the respondent is confronted with 20 pictures for 1 second each. Then the respondent is to indicate in a list of five different options, what s/he has seen in the picture.

**Test forms:**
There are two test forms with 20 items each. One test form was designed for countries right-hand traffic, the other one for countries with left-hand traffic.

**Scoring:**
The variables „Correct entries", „Incorrect entries" and the characteristic test value „Overview" as the number of completely solved traffic situations are issued. The latter variable is also provided with raw score differences in tabular form for the observation of intervention effects. These raw score differences are based on an IRT model for the measurement of change of individual respondents by Fischer (2001).

**Reliability:**
The reliabilities amounts to r=0.82 for the main variable „Overview", r=0.87 for correct answers, and r=0.73 for incorrect answers. In addition, the variable „Overview" is homogenous according to the Rasch model.




**Validity:**
A study by Neuwirth (2000) showed that the TAVTMB distinguishes between the norm group and each of the groups that were sent to undergo traffic psychological examinations. Karner and Neuwirth (2001) proved a significant correlation between the general assessment of the driving behavior in a standardized driving test and the test results in the TAVTMB. Sommer (2002) replicated the results for the variable „Overview". Furthermore, a test battery including the TAVTMB made possible to predict the general assessment of driving behavior in a standardized driving test to a 74.7%. A comparison between the traffic-psychological test battery and the corresponding test of the ART90 showed high correlations between the TAVTMB and the TT15 (Karner & Biehl, 2000).

**Norms:**
A norm sample of N=661 persons, stratified by age and gender, is available. In addition, norms of a cohort sample of drivers with increased risk (N=3550), as well as norms of a cohort sample of Turkish professional drivers (N=91) and norms of Portuguese subjects in traffic psychological examinations (N=153) are available.

**Testing time:**
About 10 minutes.

**Note:**
The program conducts an automatic hardware test for the connected hardware and informs you about the compatibility. To prove hardware before purchasing the test, it is sufficient to install the demo version.

## VIGIL Vigilance

### Test to assess the sustainability of attention in monotonous stimulus situations

G. Schuhfried


**The assessment of vigilance based on monotonous monitoring tasks is realistic, valid and highly reliable.**

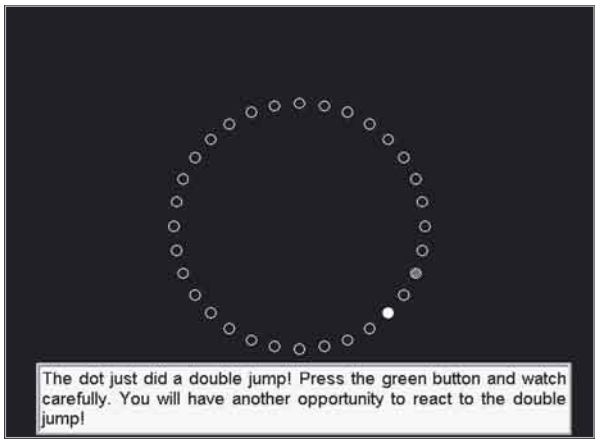
**Application:**
Assessment of attention under continuous stress in the form of sustained vigilance in a situation with few stimuli; applicable for people aged 6 years and over.

**Main areas of application:** clinical psychology, aptitude diagnostics, aviation psychology, sports psychology, industrial and organizational psychology, educational psychology, decisions regarding school and career selection.

**Theoretical background:**
The demands on vigilance are determined by the following factors: During a longer testing time, the respondent is required to show continuous attention. The relevant signals appear randomly and do not automatically attract attention. This requires a relatively low intensity of stimulus presentation and a low frequency of critical incidents. Generally, a maximum of 60 critical stimuli per hour are suggested. The drop in performance during vigilance experiments is due to the decrease in the activation level of the respondent accompanied by the growing reaction latency. According to the neurophysiological activation theory, the cortex is insufficiently stimulated by the increasing reticular activation system (ARAS) due to a lack of stimuli. The cerebral cortex does not receive sufficient alarms necessary to maintain certain activities, which leads to mental fatigue and a decrease in performance efficiency. This is the context in which the term overstrain through under stimulation.

**Administration:**
A brightly flashing dot travels along a circular path in small jumps. Sometimes, however, the dot takes a double jump to which the respondent has to react by pressing a button.

**Test forms:**
Standard test form S1 (Quatember-Maly):
The individual dots of the circular path are shown on the monitor as small circles. This form differentiates only among performances that are significantly below average (especially suitable for the examination of patients with apparently significant vigilance deficiency).
Standard test form S2 (Müggenburg): In this form no circular path is shown on the monitor. The respondents have to estimate whether the flashing dot has taken a double jump (=crucial stimulus) or not. Standard test form S4 (Müggenburg-66): It equals standard test form S2, only that the testing time was increased to 66 minutes. The frequency of crucial stimuli in standard test forms S2 and S4 is significantly lower than in S1.




**Scoring:**
„Number of correct", „Number of incorrect", „Mean value of reaction time correct (sec.)", „Increase correct" and „Increase in reaction time correct" including the respective measurements.

**Reliability:**
Depending on the test version and comparative sample, the following values were calculated as split-half reliabilities: number of correct: r=.80 to r=.95; mean of reaction times: r=.88 to r=.99.

**Validity:**
The validity in the form of the criterion validity is given: All criteria mentioned as necessary in the most important theories are met. Experiments to determine the extreme group validity showed significantly lower results for patients with right-sided brain damages compared to patients with left-sided brain damages.

**Norms:**
S1: samples of adults (N=292), children/adolescents from 6 to 17 years (N=619), job seekers in Sweden (N=245), traffic-psychological clientele (N=143), and neurological patients (N=51). S2: Austrian norm sample (N=306), samples of psychiatric patients (N=111), job seekers in Sweden (N=490), Swedish applicants for technical occupations (N=367), and Portuguese pilots (N=178). S4: a comparative sample of patients with sleep apnoea (N=114) is available for this test form.

**Testing time:**
S1: 30 minutes. S2: 35 minutes. S4: 70 minutes.

## WAF Perception and Attention Functions

### Test battery for the assessment of attention

W. Sturm


**On account of their theory-led construction basis the tests of the WAF battery can be used for the differentiated assessment of almost all the sub-functions of attention which are currently regarded as relevant.**

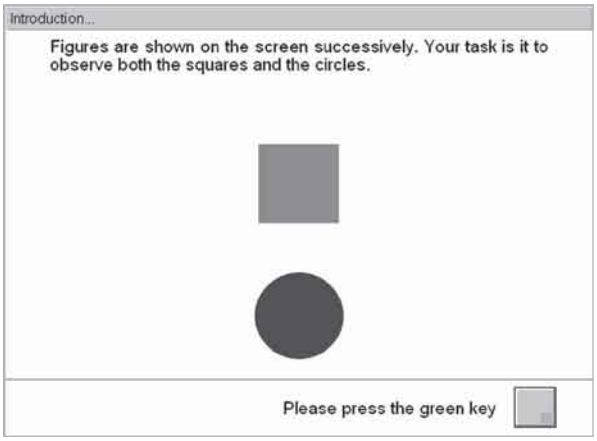
**Application:**
Assessment of sub-functions of attention, suitable for subjects from the age of 8.

**Main areas of application:** Neuropsychology; clinical psychology; health psychology; sport psychology; aviation psychology; performance and aptitude assessment; educational psychology; pharmacology.

**Theoretical background:**
Modern views of the dimensionality of attention can be summarised by the model proposed by van Zomeren and Brouwer (1994). According to this model the central factors include the distinguishing of intensity and selectivity aspects of attention; these need to be differentiated into their more specific components. The intensity aspect of attention is made up of alertness and vigilance components which are basal processes of short-term and of longer-term attention activation or of the sustaining of this activation. With regard to the selectivity aspect of attention processes the model distinguishes between focused or selective attention and divided attention.
The spatial direction of attention is an additional, independent dimension that the above model does not at present take into account (Posner et al., 1978, 1984) but which is included in more recent taxonomies (Sturm 2005). Both Posner and Raichle (1994) and Fernandez-Duque and Posner (2001) distinguish three types of attention networks: a) Orienting (corresponds to the network of spatial direction of attention), b) vigilance (corresponds to the intensity dimension) and c) Executive Attention (corresponds to the selectivity dimension).

**Administration:**
The WAF test battery consists of 6 tests that can be administered independently of each other or, as a test battery, in any desired combination:
WAFA – Alertness
WAFV – vigilance / sustained attention
WAFR – Spatial direction of attention and visual field / extinction – neglect (currently in development)
WAFF – Focused attention
WAFS – Selective attention
WAFG – Divided attention

For each of the WAF tests different test forms are available, enabling




dimensions of attention to be assessed under different presentation modalities. Thus all the WAF tests have separate sub-tests for visual, auditory and cross-modal presentation. In the WAF test battery automated and controlled aspects of attention are measured separately; the stimuli either become more prominent because the intensity level is increased ("popping out", or they become less prominent because their intensity is decreased and cognitively controlled "top down" processes are then required. Both attention processes are relevant in everyday life; both can interact and both can be selectively impaired, for example as a result of brain damage, since they are based on different cerebral networks (Corbetta & Schulman, 2002).
Two steps are taken to exclude the possibility that perceptual impairments may be affecting the processing of the stimuli used in the WAF during assessment, thus making a reliable assessment of attention impossible: a) throughout the test battery only very few visual and auditory stimuli are used, and they are very simple ones, and b) the subject/patient is tested for these stimuli before his perceptual performance is investigated. An important requirement of neuropsychological assessment is thus met – namely the need to take into account the possibility of pre-existing impairment of sensory functions.

WAFA:
The WAFA involves the measurement of reaction time in response to simple visual or auditory stimulus material. The stimulus is presented either with or without a warning signal in the same stimulus modality or the contrasting one (intrinsic vs. phasic alertness). A special norming process enables fatigue or stress parameters to be measured.

WAFV:
In the WAFV the subject is presented with visual and auditory stimuli which occasionally diminish somewhat in intensity. The subject's task is to respond to these occasional cases; when sustained attention is being measured they constitute around 25% of the stimuli while in the case of vigilance they make up some 5% of the stimuli.

## WAF Perception and Attention Functions

### Test battery for the assessment of attention

WAFR:
The spatial direction of attention is measured using either 4 or 8 spatial positions in a task similar to a Posner paradigm. Peripheral (exogenous) and central (endogenous) spatial cues are used. In the neglect test stimuli are presented at various positions in the right or left visual field or simultaneously in equivalent positions in both halves of the field of vision (extinction condition).

WAFF:
The subject is presented – depending on the subtest – with relevant visual or auditory stimuli which precede other distracting stimuli. The subject's task is to respond when two previously defined changes in relevant stimuli occur consecutively; he is to ignore all other stimuli.

WAFS:
The subject receives relevant and irrelevant stimuli in one or both presentation modalities; his task is to react to changes in the relevant stimuli while ignoring irrelevant ones.

WAFG:
The subject receives stimulus material on two visual channels or one visual one and one auditory one. He has to monitor both channels to determine whether one of the stimuli occurs twice in succession.

**Test forms / subtests:**
WAFA: 6 subtests
Intrinsic (visual), phasic (unimodal visual), phasic (crossmodal visual/auditory), intrinsic (auditory), phasic (unimodal auditory), phasic (crossmodal auditory/visual)

WAFV: 4 test forms
Vigilance (visual), vigilance (auditory), sustained attention (visual), sustained attention (auditory)

WAFR: 5 subtests
Subtests with either 4 or 8 stimulus positions and peripheral or central cues. In addition a test for visual field / extinction - neglect.

WAFF: 3 subtests
Unimodal (visual), unimodal (auditory), crossmodal

WAFS: 3 subtests
Unimodal (visual), unimodal (auditory), crossmodal

WAFG: 2 subtests
Unimodal (visual), crossmodal

**Scoring:**
In all WAF tests the reaction times and the various error types are scored. In addition for all main variables a comparison with the norm is given in the form of percentile ranks and T scores.

**Reliability:**
Very good reliabilities – particularly in view of the short testing time – are obtained for the main variables of the WAF tests.

| | |
|---|---|
| WAFA: | depending on subtest between $\alpha$=0.93 and $\alpha$=0.98 |
| WAFV: | depending on test form between $\alpha$=0.96 and $\alpha$=0.99 |
| WAFR: | no information available at present |
| WAFF: | depending on subtest between $\alpha$=0.93 and $\alpha$=0.97 |
| WAFS: | depending on subtest between $\alpha$=0.94 and $\alpha$=0.97 |
| WAFG: | depending on subtest between $\alpha$=0.96 and $\alpha$=0.97 |

**Validity:**
Studies of construct validity are currently being carried out.

**Norms:**
For all WAF tests norms representative of the general population are available; the norms relate to 300 individuals in the age range 17 - 80. The norms are also available separated according to education and gender. In addition all WAF tests provide raw scores adjusted for age effects for the main variables.
Work on enlarging the norm sample is currently in progress.

**Testing time:**
The time required to complete the individual WAF tests is relatively short. It is therefore possible to create batteries of tests for complex assessment purposes without requiring too much of the subject in terms of time or motivational commitment. It is usually not necessary to administer each test in all stimulus modalities. The tests to be administered must be decided by the user, taking into account any information about a patient's difficulties or disabilities that has already been gathered. The test results can only be interpreted without qualification if the subject/patient meets the sensory and motor requirements for satisfactory completion of the test.

WAFA: approx. 5 mins. for each subtest
WAFV: 15 – 30 mins., depending on test form
WAFR: approx. 5-10 mins. for each subtest
WAFF: approx. 10 mins. for each subtest
WAFS: approx. 8 mins. for each subtest
WAFG: approx. 12 mins. for each subtest

**Note:** A standard USB headset is required for the administration of the auditory and crossmodal subtests of the WAF tests.

## ZBA Time-Movement Anticipation

### Test to estimate speed

H. Bauer, G. Guttmann, M. Trimmel, M. Leodolter and U. Leodolter


**Novel test for the appraisal of the ability to measure speed and movement in space. This ability is especially relevant in traffic psychology.**

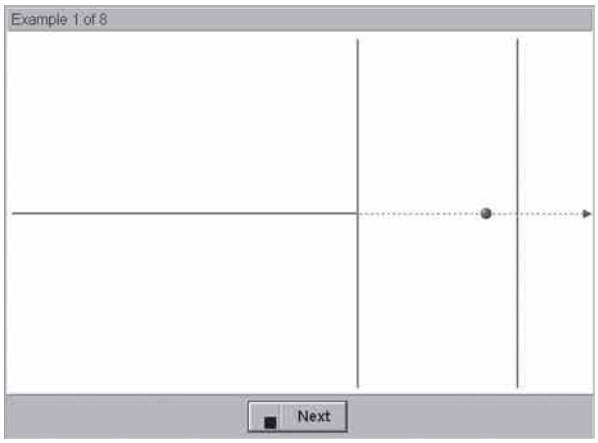
**Application:**
Estimate of speed and movement of objects in space.

**Main areas of application:** Traffic psychology, aviation psychology, health psychology (especially sport psychology).

**Theoretical background:**
A function that is very important in traffic psychology is the extent to which a person can get the feel of a movement and can correctly estimate the movement of objects in space.
The experiment of moving objects in certain trajectories while executing an eye-movement analysis was abandoned due to experiences with eye-movement analyses.

**Administration:**
A green slowly-moving ball can be seen on the screen. Then at an unknown point it disappears and two red lines are displayed instead. One of the lines is situated at the point where the green ball disappeared. The other line is the goal. To measure time anticipation, the respondent presses a button in the moment when he/she thinks that the ball should have reached the second line. To measure movement anticipation, the respondent is additionally asked to indicate the position where the ball will have reappeared. This is done by means of two keys that control an arrow on the screen. The respondent receives feedback only during the instruction phase. This includes both on the ball's prospective trajectory as well as on where the ball was located at the time he/she pressed the button. In the test phase, this feedback is no longer issued. The difficulty of the task is varied as follows: First the ball's movements are simple and linear. Then they are curved and linear. Next the movements are constant sine-waves that later on become modulated as regards amplitude, frequency, and a combination of amplitude and frequency.

**Test forms:**
There is a long form (S1) with 48 items, a short form (S2) with 12 ems, a linear form (S3) with 8 items, and a linear form for time estimation only (S4) with 30 items.




**Scoring:**
Time anticipation: The time error is registered as time difference in hundredth of seconds. Motion anticipation: The position error is registered as deviation from the correct position, in pixels. This value is calculated only in test forms S1 to S3.

**Reliability:**
The reliabilities at hand for the long form (inner consistency) show positive results above all for the time anticipation.
Time anticipation: Median deviation time (total) (r=.98), Median deviation time during a linear progression (r=.92), Median deviation time during a complex progression (r=.98), Median deviation time during a sine- wave progression (r=.92).
Motion anticipation: Median direction deviation (total) (r=.76), Median direction deviation during a linear progression (r=.69), Median direction deviation during a complex progression (r=.72), Median direction deviation during a sine-wave progression (r=.62).

**Validity:**
Currently there are validity studies available for a precursor of this test. What becomes clear from the results of an evaluation study using a driving test, is that overestimating distances is more problematic than underestimating them. An evaluation of the test is currently under way.

**Norms:**
Representative norm samples are available for the following test forms: S2 – N=301 persons; S3 – N=271 persons; S4 – N=433 persons. For test forms S3 and S4 these norms are available separated by age and gender.

**Testing time:**
About 10 minutes.

## 4DPI 4-Dimensional Personality Inventory

### Economical personality inventory

S. Menghin


**As an alternative to conventional rating scales, the questionnaire at hand uses the idea of an analogy scale. It was aimed at counteracting socially desired answers or the preference of certain answering styles, which was proven by the item analysis.**

**Application:**
The 4DPI is a Rasch-homogenous personality structure test, where the answers are given in a wedge-shaped diagram.

**Main areas of application:** personality-oriented aptitude diagnostics, industrial psychology, clinical psychology.

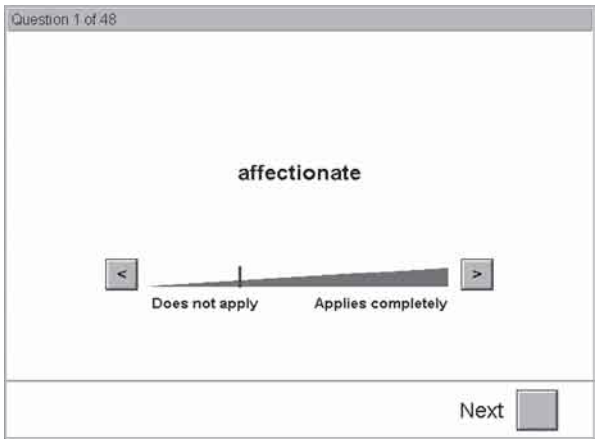
**Theoretical background:**
The items of the 4DPI were not designed according to the well-proven „Dictionary method" (Allport & Odbert) but following the Repertory-Grid-Technique (RGT), as the author was only interested in behavioral characteristics that indicate the things people have in common or not. The great number of adjectives achieved through the RGT was reduced to 100 by means of the German Monolingual Dictionary „Duden", edition „Words of semantic fields", and by an expert rating. The four Rasch- homogenous scales provide sufficient stability, which helped to comply with the aim to design a merely behavior-related instrument that meets high methodical demands.

**Administration:**
After a general instruction, the test items are presented one after the other. The respondent enters his/her answers in a wedge-shaped diagram. This is done by moving a marker to the right (applies more) and to the left (applies less). After the answer has been chosen, the next item appears immediately. No item can be corrected afterwards.

**Test forms:**
There is one test form available.

**Scoring:**
The following four dimensions are assessed:
- Extroversion
- (In)Compatibility
- Conscientiousness
- Sociability

The analogous answering method is dichotomized. However, two different dichotomizations are conducted: for the first two dimen-




sions, a dichotomization at 75:25 was conducted, whereas for the dimensions 3 and 4 it made sense at 50:50. Raw scores for all scales are calculated.

**Reliability:**
The reliability as an internal consistency is given due to the compliance with the Rasch model. Nevertheless, retest reliabilities have been calculated: They are situated (for an interval of three months) between r=.71 and r=.84.

**Validity:**
The validity of the 4 DPI is given, as a contextual relation between the demand of the items and the demand of a real-life situation is visible (context validity), a high correlation with other tests is given that assess the same abilities, and because there is no correlation with tests that assess other aspects (convergent and discriminant validity). Moreover, validity is given since the test complies with the theoretical ideas. This applies to the 4DPI because the different levels of difficulty of the various test sections can be explained by structural differences (construct validity).

**Norms:**
Personal parameters and norms are indicated as percentile ranks for all subscales. The comparative values result from a sample of N=1004 adults of the „Normal population".

**Testing time:**
About 15-20 minutes.

## EPP6 Eysenck-Personality-Profiler-V6

### Multi-dimensional personality questionnaire for use in personnel counseling

H. Eysenck, G. D. Wilson and C. J. Jackson


**This test provides a reliable assessment of the three personality factors extroversion, emotionality, and adventurousness according to Eysenck. One of the remarkable features of this test is the highly stable structure of its factors throughout the various cultural backgrounds.**

**Application:**
Multi-dimensional modular personality inventory for the assessment of the three dimensions extroversion, emotionality, and adventurousness according to Eysenck.

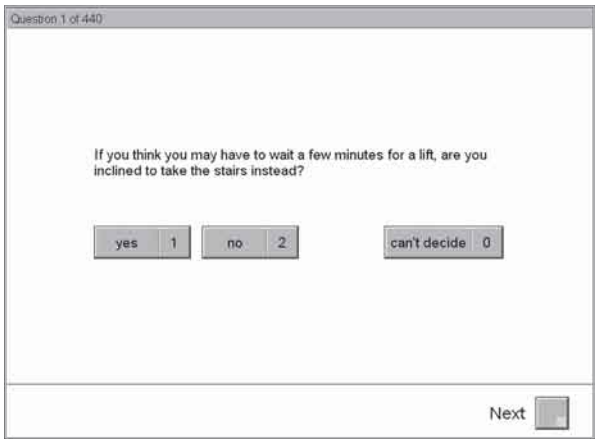
**Main areas of application:** aptitude testing regarding personality traits, occupational and organizational psychology, traffic psychology, aviation psychology, sports psychology, clinical psychology, and health psychology.

**Theoretical background:**
EPP6 is a multi-dimensional questionnaire based on Eysenck's personality theory. Due to the model's wide range of factors, Eysenck's factors Extraversion, Neuroticisms and Psychoticism fit well into the overlapping order structure of the „Five-factor model". These universal factors allow a more specific view. Personality features, however, did not become obsolete but are meant to be enhanced by them. The three dimensions mentioned in EPP6, namely Extraversion, Emotionality (Neuroticism) and Adventure (Psychoticism) prove this theory and summarize the values of seven sub scales each. Furthermore, the questionnaire was added with an openness scale.

**Administration:**
After a general instruction the test items are presented one after the other. The respondent enters his/her answers on a three-step scale. (yes, no, can't decide). After one item was answered the next appears instantly. Previous items can be corrected.

**Test forms:**
Long form S1 consists of 440 items, each consisting of 21 sub scales, the short form S2 consists of 200 items, each consisting of 9 sub scales.

**Scoring:**
The raw scores for all sub scales, openness scale and the number of the „Can't decide" answers are registered. The raw scores for the three dimensions are calculated out of the supplied respective scales.




**Reliability:**
Reliability values (internal consistency) of the S1 test form show results from. 56 (tough mindedness) to .85 (inferiority, unhappiness) with men and from .41 (tough mindedness) to .89 (unhappiness) with women. The S2 test form show results from .68 (irresponsibility) to .89 (unhappiness) with women and from 74 (assertiveness) to .85 (unhappiness) with men.

**Validity:**
Factor-analytical research reveals a distinct three-factor structure. The emotionality factor explains 27.2 %, the adventure factor 17.9%, and the extraversion factor 10.1% (cumulative 55.1%) of the variance. Eysenck, Barrett, Wilson & Jackson (1992) and Costa & McCrae (1995) had been able to reproduce these findings. Costa & McCrae (1995) further provide some alternative factorial solutions which are especially interesting in regard to the five-factor-theory. The factorial validity of the EPP6 further holds across different cultures and age groups with a highly equivalent factor structure among these different samples. (Eysenck, Wilson & Jackson, 2000).

**Norms:**
For all sub-scales and dimensions, norms are indicated in percentages and T-scores. The EPP6 paper-and-pencil version's norm sample was used consisting of N=1394.

**Testing time:**
Long form S1: 55 minutes.
Short form S2: 20 minutes.

## TCI Temperament and Character Inventory

### Test for the assessment of temperament and character

C. Cloninger, T. Przybeck, D. Svrakic, R. Wetzel
German adaptation and translation: J. Richter, M. Eisemann, G. Richter, C. Cloninger



**Comprehensive questionnaire test battery for the assessment of temperament and character, validated by a multitude of genetic studies.**

**Application:**
This test measures four temperament dimensions and three character dimensions (main dimensions) as well as 24 dimensions of a lower order.

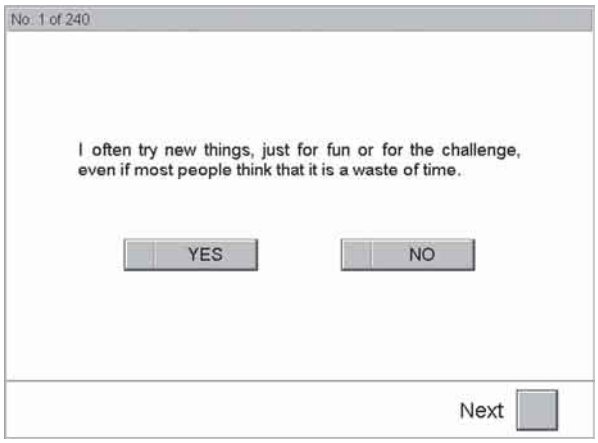
**Main areas of application:** clinical psychology, health psychology.

**Theoretical background:**
Temperament is defined as the automatic emotional reactions to an experience. These are partly hereditary and they stay relatively stable during one's entire life. Contrary to that, character refers to self- concepts, as well as to individual differences in aims and values, which influence the freedom of decision, the intentions, and the importance of one's experiences. Socio-cultural learning influences people's characters differently and constantly changes in the course of life. Each of these personality aspects is in interaction with the others, which guarantees adaptation to life's experiences and which influences the susceptibility to emotional and behavior disorders. The most prominent characteristic of this questionnaire is the multitude of clinical and genetic studies, which validate the TCI's results.

**Administration:**
240 questions that must be answered with „yes" or „no" are presented to the respondents. There is no obligation to answer; unanswered questions are presented again at the end. The seven scales of higher order can also be selected individually.

**Test forms:**
The computerized version of the TCI consists of the converted paper-and-pencil version and contains 240 items.

**Scoring:**
The scoring is effectuated for the seven dimensions of higher order as well as for the 24 dimensions of lower order. The four temperament dimensions measured are novelty seeking, harm avoidance, reward dependence and persistence. The three character dimensions measured are self-directedness, cooperativeness and self-transcendence.




**Reliability:**
The inner consistency (Cronbach's Alpha) varies between r=.54 (persistence) and r=.83 (novelty seeking) for the norm sample of healthy Germans.

**Validity:**
A multitude of validity studies were conducted. They showed correlations between novelty seeking and bad behavior in the military (r=0.35) and type 2 alcoholism (r=0.38). A study by Svrakic et al. (1993) found that the existence of some kind of personality disorder was highly determined by low point scores in self-directedness and cooperativeness. The TCI manual reports about studies – some of them using a precursor model of the TCI – that examine the genetic stability and the variability of the character dimensions. For example complex studies of more than 1400 pairs of twins showed that the four temperament dimensions novelty seeking, harm avoidance, reward dependence and persistence are genetically homogenous (Heath, Madden, Cloninger & Martin, 1994). There are also very comprehensive studies of the neurocognitive correlates of the temperament dimensions The TCI manual also reports studies of neuro-chemical and neuro-endocrinologic correlates of the temperament dimensions.

**Norms:**
In addition to the norms generated with the paper-and-pencil version - based on a German sample of N=509 healthy volunteers - a norm sample of N=306 people is available. The latter norms were generated in the research laboratory of the Dr. Gernot Schuhfried GmbH with the computerized version of the test and the sample consists of 144 men and 162 women.

**Testing time:**
When all scales are presented, about 30 minutes.

## AGDIA Agression Assessment Method

### Questionnaire for the assessment of agressive behavior

E. Raab-Steiner


**The AGDIA makes it possible to analyse and differentiate type and degree of aggressive behavior.**

**Application:**
Inventory for the differential assessment of aggressivity.

**Main areas of application:** clinical psychology, health psychology.

**Theoretical background:**
This procedure makes use of Rost & Schermer's model (1987) for the differential assessment of performance anxiety, but in this case the model is applied to the construct of aggressivity. This approach has been used previously by Lefevre (1997) in assessing the phenomenon of stress.

Separate assessments are made in the four areas of Triggers, Manifestation, Coping and Stabilisation. In view of the complexity of the phenomenon of aggressivity, this multi-faceted approach is significantly more appropriate than the simplified uni-dimensional form of assessment employed in most of the currently available inventories. When planning and implementing intervention measures it is particularly important to have information available in all four areas.

**Administration:**
The items are presented in combinations of four in a „forced choice" format like that used in, for example, the B-I-T (Career Interest Test) of Irle and Allehoff (1984). This format is intended to counteract any attempt to falsify the answers.
The subject is instructed to mark the statement which applies least to him with a minus sign and the one which is most applicable with a plus sign.
After a brief instruction phase an example is given to check that the instructions have been understood.
Each statement is presented to the subject twice, with different alternative answers on each occasion.
For the dominant aspects of Manifestation and Coping the strength of these traits is then assessed on an analogue scale.

The questionnaire consists of a total of 48 qualitative items and a varying number of quantitative ones. It is not possible to omit an item. The number of quantitative items presented depends on the results of the qualitative items.

### Questionnaire test

**Test forms:**
One test form is available; it is administered without a time limit.

**Scoring:**
The raw scores for the different scales are calculated as the sum of their component items. The results protocol consists of a results table with the raw and standard scores of all the scales and the working time, as well as a test profile and a test protocol which records the subject's responses.

**Reliability:**
The internal consistency (Cronbach's Alpha) of the quantitative scales lies between r=0.70 and r=0.90. The internal consistency of the qualitative scales lies between r=0.56 and r=0.74.

**Validity:**
Both for people convicted of offences and for a normal sample there are significant medium-strong correlations with scales of the FAF aggressivity questionnaire (Hampel & Selg, 1998).

**Norms:**
A representative norm sample (N=427) is available, covering an age range of 16 – 91 and separated by gender, age and education.

**Testing time:**
The time taken to administer the test varies between 20 and 30 minutes.

## AVIS Aggressive Driving Behavior

### Traffic psychology evaluation of aggressive behavior in normal and stressful situations

P. Yorck Herzberg and J. Guthke


**With the AVIS a valid test for the self-evaluation of aggressive behavior in road traffic is available. What is special about this test is that normal situations and stressful ones are compared.**

**Application:**
The test serves to record the extent and frequency of aggressive way of behavior in traffic.

**Main area of application:** traffic psychology.

**Theoretical background:**
The present test results from a theoretically grounded deduction of dimensions relevant to aggression, secured in a factor analytical way. It contains 65 items, presented in the first run with a standard instruction. Both the extent and the frequency of aggressive ways of behavior in road traffic are recorded. In a second run those same 65 items are presented under conditions of stress. The difference between the first and the second run serves as an indicator to record the tendency to give socially desirable answers.

**Administration:**
After the instruction the items of the first run are presented one after the other. The respondent chooses his/her answer out of eight answer categories from Very rarely to Very frequently. A one-time correction and the skipping of items are permitted. All unanswered items are presented again at the end of the run, but there is no obligation to answer. Then the instruction for the second run is presented on the screen and followed by the items from the previous run embedded, however, in conditions of stress.

**Test forms:**
There is one test form.

**Scoring:**
The variables „instrumental aggression", „aggravation", „acting out", „enjoyment of violence", „negativism", and „social conformity" as well as a „total" of the scales without social acceptance are recorded. Additionally the differences between normal and stressful conditions of the corresponding scales are recorded.

**Reliability:**
The inner consistency of the test was calculated as Cronbach's Alpha. For the normal conditions the inner consistency (mean value of all scales) is r=.96, for the stressful conditions it is r=.97.


**Validity:**
There are many studies on the construct and criteria validity of AVIS, see Herzberg (2001a) for an overview.
The construct validation is based on the analysis of individual differences in the test results, studies on the convergent and discriminant validity of AVIS and common factor analyses with validity- related and divergent tests. Psychometric personality tests as well as interpretative tests, traffic-specific tests and heteronomous evaluations were used.
The construct validity of the AVIS could be proven. The following criteria were used: number of warnings and fines, current total of points and number of points registered in the Flensburg Central Traffic Registry over the last 3 years, total number of accidents, number of accidents caused and withdrawal of the license. Due to the distribution characteristics and the general problems related to the criteria's reliability (Klebelsberg, 1982), an analysis based on structure equation models was effectuated of the relations between the scales of AVIS and the criteria. Statistically significant relations between the AVIS and all criteria could be proven.

**Norms:**
Overall norms as well as age- and age-/education-matched norms from a sample of N=342 people are available for all variables. These norms have been collected in Schuhfried's research laboratory. The norm sample is composed of N=157men and N=185 women.

**Testing time:**
About 25 minutes.

## DSI Differential Stress Inventory

### Procedure to provide a stress related personality profile

S. Lefèvre and K. D. Kubinger


**The Differential Stress Inventory makes it possible to analyse and differentiate stress behaviour and allocate to types of stress experience.**

**Application:**
The Differential Stress Inventory makes it possible to measure and differentiate between stress triggers, symptoms of stress, available coping strategies and risks of stress stabilisation. Both the extent and the cause of stress are identified.

**Main areas of application:** work psychology, company and organisation psychology, health psychology, clinical psychology.

**Theoretical background:**
The idea of developing the Differential Stress Inventory arose from the need to create a tool which would identify the way in which an individual deals with stress and which would do justice to the multidimensionality of the construct.
In view of the practical implications for counselling and therapy, a behaviour-theory model was considered to be the best basis for the construction of a stress questionnaire.
The theoretical basis of the construction of the Differential Stress Inventory was the concept of the diagnosis of achievement anxiety put forward by Rost and Schermer (1987).
The similarity between anxiety and stress which has often been remarked upon in the literature does indeed make such an approach seem appropriate.
The tool is made up of 9 dimensions which have been obtained by factor analysis and which measure different aspects of the causes and symptoms of stress, coping strategies and stress stabilisation.
It is also possible to assign subjects to one of five stress types, depending on how they experience and respond to stress: normal, overstressed, stress resistant, low stress – successful coping, high stress – successful coping.

**Administration:**
After instructions have been given the items are presented sequentially on the screen. The subject indicates his responses on a four-point verbally-marked scale (from is almost always true to is almost never true). It is not possible to omit items. The item immediately preceding the current one can be corrected once.

### Questionnaire test

**Test forms:**
There is one test form with 122 items covering four stress-related areas: causes of stress, symptoms of stress, coping and stress stabilisation.

**Scoring:**
The raw scores on the scales and the response times for each item are measured.
Output is provided in the form of a results table with raw scores and percentiles for all the scales together with the individual test profile. The following normed variables are covered:
Causes of stress: everyday events; interaction with others; anxieties about life circumstances.
Symptoms of stress: physical; emotional/cognitive.
Coping: palliative; instrumental.
Stress stabilisation: external; internal.
In addition, classification probabilities are calculated which identify the extent to which an individual's profile resembles five different reference profiles.

**Reliability:**
All scales of the DSI have a high degree of internal consistency (Cronbach's Alpha between .73 and .94).

**Validity:**
Since the scales of the DSI have been obtained by factor analysis, construct validity as understood in classical test theory can be regarded as given.

**Norms:**
Norms were obtained for a representative sample of N=378 individuals (177 men, 201 women) in Austria in 2003 and 2004. Norms are also available differentiated by gender, educational background and age.

**Testing time:**
Approx. 15 minutes.

## FET Test of Leadership Ability

### Questionnaire for the assessment of the personal aptitude to take on leadership functions

W. Schmidt


**The Leadership Ability Test makes a transparent self-evaluation of one's own leadership behavior possible. This questionnaire is often regarded as indispensable aid for the new filling of leadership functions.**

**Application:**
Test, assessing the personal aptitude for taking on leadership functions or management positions.

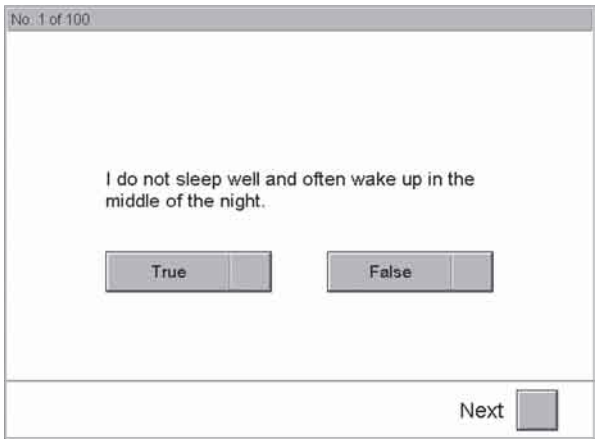
**Main areas of application:** organizational psychology (with the Leadership Aptitude Test superiors can be selected and developed), aptitude diagnostics in the area of personality (the FET can be an orientation tool for all those, who think about whether they want to strive for a leadership position, in order see their needs for personal development more clearly).

**Theoretical background:**
The design of this test is based on the conviction that leadership success (in part) depends on certain personal attitudes, since there is obviously a series of structural characteristics common to all leadership situations and certain personality attitudes required to master such situations.

Attitudes are complex entities consisting of both cognitive and affective components, as well as independence from the corresponding organizational form of an institution, whose own laws and the influence of personal learning and life experience also count.
The term attitude for the description of personality was also selected because the attitudes of the respondents answering the questions can be derived from the answers themselves.
The assessments of leadership abilities using an objective instrument for self-evaluation, which the FET is, is relevant in most areas inasmuch as respondentive inter-personal influences within the framework of a job interview or a promotion interview can be excluded.

**Administration:**
After the instructions the questions are presented one after the other on the monitor . The respondent answers 'correct' or 'incorrect'. One single correction per item and the skipping of items are permitted. All unanswered items are presented again at the end of the test, but there is no „obligation" to answer.

**Test forms:**
There is one test form with 138 items. The selection of individual items for test presentation is possible.




**Scoring:**
The following normed variables are presented „Forcefulness", „Self- assertion", „Self-confidence", „Composure", „Openness to contact", „Aggressive extroversion", „Conflict tendencies", „Irritability", „Feeling overstrained", „Mental balance". Additionally an item analysis protocol which lists the individual statements with the answers given can be displayed.

**Reliability:**
The consistency coefficients (Cronbach's Alpha) of the 10 scales are of r=.70.

**Validity:**
Between the scales of the Leadership Attitude Test and the external criteria career success and the leader-ship behavior highly significant correlations were found. For the development of the test extensive studies on employee-superior evaluation were conducted. So n=479 employees had to rate their around 100 superiors, e.g. concerning „Friendly attention or respect", „Control vs. laissez-faire" and „Control". Using these data comprehensive validation studies were conducted, taking into account various external criteria. Clear connection appeared, e.g. between „Steepness of income rise" and „Forcefulness" (r=.679) as well as between „Aggressive extraversion" and annual income before taxes (r=.531).

**Norms:**
The norming sample consists of 100 executives (71 department heads and 29 senior department heads and directors). Five career features (gross income, salary increase, job position, and two salary criteria) that take into account a person's education level, age, and years of work experience serve as external criteria. A second group of external criteria consists in the description and assessment of the subjects' leadership behavior by subordinates.

**Testing time:**
15-20 minutes.

## IVPE Inventory of Driving Related Personality Traits

### Traffic psychological personality inventory

M. Herle, M. Sommer, M. Wenzl and M. Litzenberger


**The IVPE is a multidimensional personality inventory, through which the legally stipulated personal characteristics to check the readiness for the adjustment to traffic can be captured fairly and reliably.**

**Application:**
The IVPE is used to capture the traffic psychologically relevant personality features of sensation seeking, social sense of responsibility, self-control and emotional stability, all in the context of traffic psychological assessments.

**Main areas of application:** traffic psychology.

**Theoretical background:**
The inventory is a computer-based personality test for the recording of traffic psychologically relevant personality features: social sense of responsibility, self-control, emotional stability and sensation seeking. Social behavior in traffic is viewed primarily in connection with the ability and the motivation to observe standards and rules. The recording of social sense of responsibility is based on the three- component model for the attitude towards social values of Stahlberg and Frey (1990). The General Theory of Crime by Gottfredson and Hirschi (1990) serves as the basis for the item construction of the self-control scale. Neuroticism, defined as the opposite of emotional stability, is registered in personal characteristics which, according to Ostendorf (1990), characterize these latent personality dimensions the best. The construct sensation seeking is ascertained with a scale which was designed based on the sub dimensions thrill and adventure seeking, posited by Zuckerman (1994). The choice of this subscale is justified by its significance for roadworthy behavior (cf. Jonah, 1997).

**Administration:**
The subject assesses the extent to which certain statements from the spheres of traffic, leisure time and work apply to him/her. The answer is entered on an answer bar with a sliding marker. A correction of the preceding item is possible.

### Questionnaire test

**Test forms:**
There is one test form available.

**Scoring:**
The analogous input is recalculated dichotomously by the evaluation program. Different calibrations of the analogous scales are used in each scale in order to meet the trend of socially desired answers. For all scales the results are issued in raw scores, T-values and percentile scores.

**Reliability:**
Reliability in terms of internal consistency is given due to compliance with the Rasch model for each scale.

**Validity:**
Construct validity of the individual scales can be expected due to compliance with the Rasch model and construction based on theory of items (Herle, 2004).
Criteria validity was proven in a study for comparison of persons with a high versus a low accident rate (Herle, 2004). Moreover, Sommer et al. (2004) could show that accident-free drivers can significantly be distinguished from capable persons who were admitted to a traffic psychological examination point according to § 14 (2) FSG-GV (driver's license law health ordinance) based on their results in the IVPE.

**Norms:**
A norm sample of N=360 is available. (56.9 % men, 43.1% women, 20-72 years of age). The data was collected in Vienna from late 2003 to early 2004.

**Testing time:**
About 15 minutes.

## MMG Multi-Motive-Grid

### Test to assess motives taking into account hope and fear

H.-D. Schmalt, K. Sokolowski and T. Langens


**The MMG combines aspects of the Thematic Apperception Test (TAT) with those of classic questionnaires. Similar to the TAT, 18 pictures are presented which provide a well-balanced set of situations linked to performance, control, and social acceptance. These pictures are accompanied by statements that represent important motivational states.**

**Application:**
Assessment of motives regarding performance, control and social acceptance.

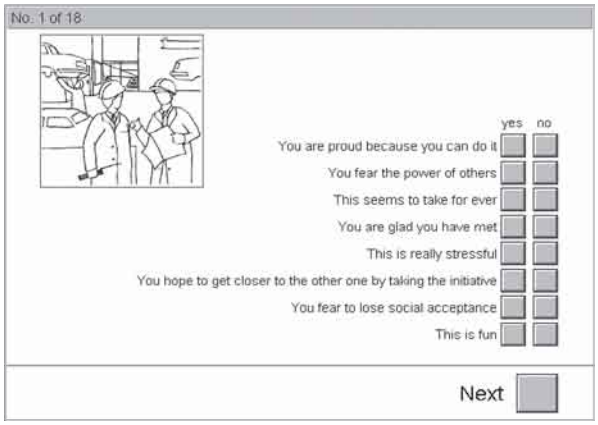
**Main areas of application:** personality aptitude diagnostics, industrial and organizational psychology, health psychology.

**Theoretical background:**
The MMG combines aspects of the Thematic Apperception Test (TAT) with those of classic questionnaires. Similar to the TAT, 18 pictures are presented which provide a well-balanced set of situations linked to performance, control, and social acceptance. These pictures are accompanied by statements that represent important motivational states. The following six variables are calculated:
„Hope for success" (performance) and „Fear of failure" (performance),
„Hope for control" (control) and „Fear of loss of control" (control),
„Hope for social acceptance" (acceptance) and „Fear of rejection" (acceptance).
Results of a factor analysis recommend a three-factor constellation: a „fear factor" (fear of failure, fear of losing control, and fear of rejection), a factor that represents the hope for performance and control (hope for success and for control), and a third factor „hope for acceptance".

**Administration:**
After the instruction phase, the items (pictures and statements) are presented on the screen one after the other. The respondent indicates his/her answer in a bipolar scale (yes/ no). She or he may not omit answers.

**Test forms:**
There is one test form with 18 pictures.

**Scoring:**
Pictures 1-4 are not included in the results, as there are mere Warm-up items to increase the respondent's acceptance of this test. The raw scores of all the scales are recorded. The scoring contains a results table with raw scores and standard values for all the scales as well as the working time. In addition, the test and an item profile analysis protocol of the respondent's answers can be optionally depicted.




**Reliability:**
The internal consistency (Cronbach's Alpha) of the scales varies between r=.78 and r=.90.

**Validity:**
Studies showed that highly motivated people performed well in leadership training, whereas people with a high control motivation learned a lot in such training.
Wegge, Quaeck and Kleinbeck (1996) investigated the influence of motives – assessed by means of the MMG, the TAT, and a questionnaire (AMS) – on the preference of video games. The respondents had a choice of three different games. One was a fighting game, one an adventure game, and one was a simulation of a motorbike race. „Fear of failure" was a good predictor for the recorded playing time. „Fear of losing control" and „Fear of failure" were good predictors for the time someone spent with video games. People with a great „Hope for acceptance" significantly preferred the adventure game.
When the respondents were asked about their general preferences in video games, those with a great „Hope for acceptance" indicated colors and music of the games, whereas people with a great „Hope for success" preferred games where they could chose the difficulty level themselves.

**Norms:**
Computer norms from the research laboratory of the Schuhfried Company of a representative sample of N=390 persons, age span 16 to 81 years, are available. The norms are available as partial samples broken down by gender and age.

**Testing time:**
About 8 to 10 minutes.

## SBUSB Scales for the Registration of Subjective Strain and Dissatisfaction

### Self-evaluation of the experienced stress and the dissatisfaction in one's job

G. Weyer, V. Hodapp and B. Kirkcaldy


**This test makes a theoretically grounded and valid assessment of essential aspects of the stress experience and the dissatisfaction in a professional context possible.**

**Application:**
Assessment of stress and dissatisfaction in the professional area. The scales for the assessment of the subjective stress in different areas of life try to achieve a description of different environments that are perceived as stressful.

**Main areas of application:** organizational psychology, health psychology, clinical psychology.

**Theoretical background:**
What was tried here was to use a novel approach to record stress at the work place in the sense of Lazarus' theory. What was to be recorded were not momentary emotional states (this methodology could only be applied directly to the work situation), but rather chronic episodes of stress experience. The scales for the assessment of subjective stress in different areas of life try to achieve a description – as exact as possible – of different environments in the episodes that are perceives as stressful.

**Administration:**
After the instruction the questions are presented on the monitor one after the other. The respondent answers by „Applies" or „Does not apply". A one-time correction and the skipping of items are permitted. All unanswered items are presented again at the end of the test, but there is no obligation to answer.

**Test forms:**
One test form with 55 items is available. The selection of individual scales for test presentation is possible.

**Scoring:**
The raw scores of the scales work stress, work dis-satisfaction, stressful work climate and lack of relaxation are calculated. The answer time for each item is recorded. The printout contains a result table with raw and standard scores for all scales, the working time, and as an option, a test profile as well as item analysis protocol of the respondent's answers.


**Reliability:**
The reliabilities (inner consistency) of the scales work stress, work dissatisfaction, stressful work climate and lack of relaxation vary between r=.67 and r=.88.

**Validity:**
A plethora of studies on the validity of the SBUSB was conducted, in which the construct validity of the test was proven.

**Norms:**
Norms are based on a sample of 1592 persons. Aside of this norm a representative norm sample is available for N=198 persons aged 18 to 65 years.
Moreover norms for the following vocational groups are available:
Occupational group – psychosocial and medical professions (N=414)
Occupational group – administration and clerical work (N=419). Additionally, age-specific norms of respondents under 29 and over 30 are available here.
Occupational group – police (N=572)
Occupational group – freelancers and artists (N=187)

**Testing time:**
About 5-10 minutes.

## SKASUK Scales for Service and Client Orientation

### Willingness to serve others

H.-G. Sonnenberg


**All efforts to reach demanding levels of performance criteria notwithstanding, it must not be forgotten that success in sales or the service industry lies in providing a service for other people. This test is very suited to examine this issue, not least because of its extensive calibration sample.**

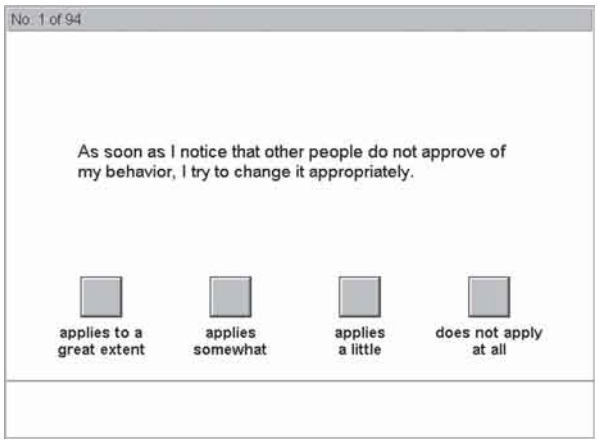
**Application:**
Assessment of aptitude and inclination for activities related to customer orientation.

**Main areas of application:** aptitude diagnostics in the area of personality, industrial and organizational psychology, school, study and career decisions.

**Theoretical background:**
The aim of the development of this test was the creation of a diagnostic tool for the assessment of people's aptitude and inclination for work in the area of client orientation by recording their attitudes and fields of interest in that area. Well-proven concepts were built, based on self-evaluations of the respondents. According to Stratemann (1991) and Kumpf (1990) the situation of the person working in service and sales can be modeled as an activity, or according to Zimolong & Sonnenberg (1986) as communication. From an aptitude-diagnostic viewpoint constructs arose that were defined according to classic test theory and checked according to certain quality criteria.
The scales assess motivational as well as competence-oriented concepts as relatively stable personality traits observed over a period of time. The test consists of 94 items, which can be linked to 8 scales. The scales extraversion, empathy, self-monitoring and frustration tolerance measure capacities, which have to be considered prerequisites for client-oriented behavior. The remaining four scales measure primarily the motivational factors: striving for social acceptance, performance motivation, motivation for providing assistance, and dominance.

**Administration:**
After the instruction the questions are presented one after the other on the monitor. The respondent answers on a four-level continuum from „Applies to a great extent" to „Does not apply at all". One correction per item is allowed. Skipping items is not possible.

**Test forms:**
There is one test form with 18 pictures.




**Scoring:**
The raw scores of all scales and the response time for each item are recorded. The printout contains a result table with the raw and standard scores for all scales and the working time, and optionally a test profile and an item analysis protocol of the respondent's entries.

**Reliability:**
The consistency coefficients (Cronbach's Alpha) of the 8 scales vary between r=.50 and r=.79.

**Validity:**
Results for the prognostic and construct validity are currently being examined, as well as the specific role of individual constructs in the prognosis of aptitude and suitability for certain professional functions, e.g. through configural models. In a sample of 370 bank employees in asset management consulting services, significant correlations were found between the scales of SKASUK and those of MMG (Multi-Motive- Grid).

**Norms:**
Norms of a representative norm sample of the general population in the size of N=306 are available. These data were collected in the research laboratory of the Dr. Gernot Schuhfried GmbH in the year 2003.
A standardization has also been carried out with various miscellaneous samples from consulting projects.
Data of 1654 people between the age of 17 and 35 are available.

**Testing time:**
About 20 minutes.

## AHA Attitude towards Work

### Short test battery for the assessment of attitude towards work

K. Kubinger and H. Ebenhöh


**Objective personality test to assess impulsiveness/reflexivity as well as aspiration level, performance motivation and frustration tolerance.**

**Application:**
Attitude towards work is an objective test battery to assess various personality dimensions by presenting simple tasks.

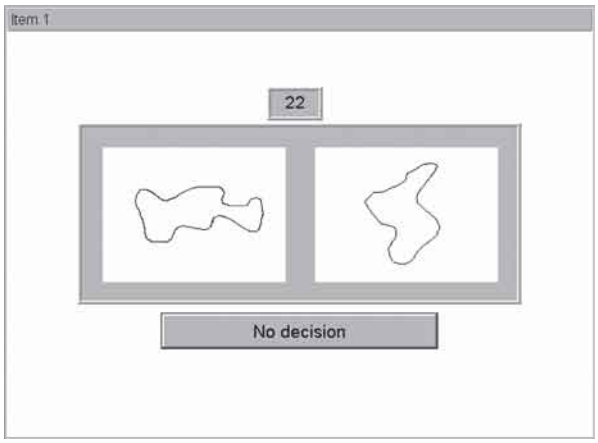
**Main areas of application:** personality-based aptitude diagnostics, industrial and organizational psychology, consulting regarding school, college and career decisions, sports psychology.

**Theoretical background:**
The test battery „Attitude towards Work" provides objective tests following R.B. Cattell, which examine the cognitive aspect Impulsivity/ Reflexivity as well as the motivational psychological constructs Aspiration level, Performance motivation and Frustration tolerance. The assessment of performance motivation follows the approaches by McClelland and Atkinson.

**Administration:**
The first subtest „Comparing surfaces" assesses impulsiveness/reflexivity. The respondent may chose among three possible answers (right/left/no decision) for deciding about which one of two simultaneously presented surfaces is larger. The second subtest „Coding symbols" assesses the aspiration level and the frustration tolerance of the respondents. They are to assign symbols to abstract shapes according to a pre-set code, and then they are asked to estimate their performance in the next task. In addition, they receive feedback messages. The third subtest „Differentiating figures" assesses performance motivation. The respondent is asked to indicate which one out of various symbols does not belong.

**Test forms:**
There is one test form.

**Scoring:**
Three characteristic values are calculated in the subtest „Comparing surfaces": „Exactitude „, „Decisiveness" and „Impulsiveness/ Reflexivity". The subtest „Coding symbols" provides the characteristic values „Performance level", „Aspiration level", „Frustration tolerance", „Time of maximum performance" and „Target discrepancy". The last subtest „Differentiating figures" calculates the characteristic value „Performance motivation".




**Reliability:**
The specification of a standardized assessment error seems not to be reasonable for the test Attitude towards Work.

**Validity:**
Due to the theoretically based derivation of the characteristic values, a content validity can be assumed. Ebenhöh (1994), Kubinger (1995) and Frebort (2003) showed that individual characteristic values differentiated significantly between successful and less successful co-workers or trainees. Corresponding to the theory, different characteristic values in the two studies proved to be advantageous. Moreover, Kubinger & Hofmann (1998) showed in a factor-analytical study that „Impulsiveness/ Reflexivity" correlates with extroversion, whereas „Frustration tolerance" correlates with conscientiousness. „Performance motivation" on the other hand seems to be a factor on its own and is not covered by the „Big Five". Wagner-Menghin (2003) reports on the results of a study about the identification of three types of motivation.

**Norms:**
A representative norm sample (N=231) is available. Furthermore, an evaluation sample (N=314) is also available which mainly encompasses students and employees and is thus not representative. In addition, there is a sample of job applicants of the enterprise NOKIA (N=498). Percentile ranks and T-scores are indicated, excluding for the moment of peak performance.

**Falsification:**
Various studies proved the test to be resistant against manipulation (e.g. Kubinger, 1995; Hofman & Kubinger, 2001; Benesch, 2003; Greifes, 2003).

**Testing time:**
The administration time of the subtests „Comparing surfaces" and „Coding symbols" amounts to about 15 minutes altogether. Note that the subtest „ Differentiating figures" will usually take at least 20 minutes (45 minutes maximum).

## HKSD Hyperkinetik Syndrome Assessment Method

### HKS-Screening with child-oriented item material

J. Häusler


**HKSD allows for the differential measuring of factors of work style with pre-school and primary school pupils.**

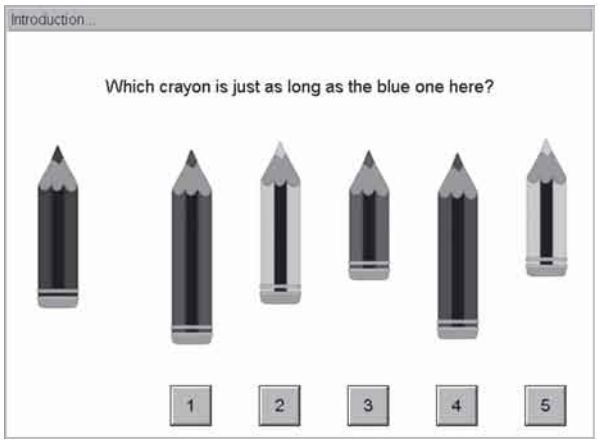
**Application:**
The HKSD is a Rasch homogeneous objective personality test with child-oriented item material to measure the style of work for pre-school and primary school pupils. During the execution of the test the item material is changed systematically with regard to complexity, difficulty, motivation and feedback and the reaction of the child in performance capacity and style of work is observed. Aside of the child's performance capacity in the intelligence dimension of perceptual speed, the dimensions of work style reflexivity, adaptation to difficulty, receptiveness towards motivation and adjustment to feedback are measured and permit a subtly differentiated examination for causes of inefficiencies in performance at school. Additionally, in contrast to common questionnaires or ratings by significant others, a psychometrically objective screening of work style related aspects of the hyperkinetic syndrome can be carried out. Applicable to people aged 5 and above.

**Main areas of application:** clinical psychology, school psychology, pedagogical psychology, sport psychology.

**Theoretical background:**
A vulnerability model, which starts out from the assumption of a genetically predisposed neuropsychological vulnerability, leads as a pathogenesis for the hyperkinetic syndrome. In case of unsatisfactory cognitive compensation (Barkley, 1998), it will lead to the syndrome being noticeable. The HKSD tests cognitive competences which can be used for the successful compensation of hyperkinetic pre-dispositions with Rasch homogeneous, child-oriented item material. Hence an objective diagnostic of those aspects of the hyperkinetic syndrome which come up in achievement-oriented situations (e.g. school) is possible.

**Administration:**
Following a general instruction and two examples for practice, 5 subtests with 6 to 15 items - depending on test form - are presented during the administration time. There is not any time limit, the time for processing is accounted for in the evaluation, though. Returning to or correcting already processed items is not possible.

**Test forms:**
There are four test forms available. Amongst them a parallel form, a shortened form and an easier form, which is more selective with groups performing below average.




**Scoring:**
The efficiency as a working-style free measure of the performance dimension perceptual speed and the reflexivity as a skill free measure of working style are returned as test values. Furthermore the receptiveness to motivation, the adaptive adjustment to the difficulty of the tasks and the adaptive adjustment to feedback are taken into account.

**Reliability:**
For the aspects of ability sufficient reliability of inner consistency can be considered given due to the validity of the Rasch model. Inner consistencies of the various measurements range from r=.71 to r=.93 .

**Validity:**
In relation to teacher assessment of „behavior in school" (N=107) the HKSD has a validity of 0.699. Further studies to determine the criterion validity in respect of completed ICD-10 diagnoses are currently under way.

**Norms:**
An evaluation sample (N=178) from normal population is available as overall norms and in 3 separate age groups.
The data was collected in 2004 at elementary schools in the city of Vienna (Austria) and in the course of school holiday activities organized by the city of Vienna.

**Testing time:**
About 15 minutes.

## OLMT Objective Achievement Motivation Test

### Finding out what motivates a person

L. Schmidt-Atzert


**Objective and personality test for behaviorally assessing achievement motivation under differing basic conditions.**

**Application:**
The Objective Achievement Motivation Test (OLMT) is a computerized test for behaviorally assessing achievement motivation. It provides information on the effort put into working the test under differing and important basic motivating conditions.

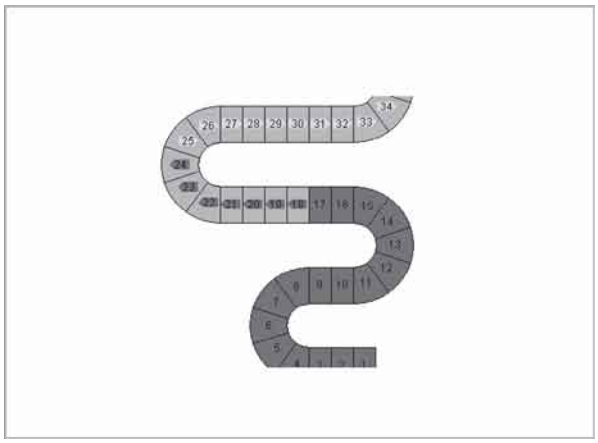
**The main areas of application include:** aptitude testing in personality applications, labor psychology, industrial psychology and organizational psychology, supporting decision-making processes in educational, university and occupational matters, and sports psychology.

**Theoretical background:**
This test was developed in compliance with the results from achievement motivation research (in compliance with motivating conditions, such as setting specific goals for the respondent, making the test performance solely dependent on the respondent giving performance feedback). Each of the three subtests is built around a particular motivating incentive that has proven to provide a relevant basic condition for motivating respondents' performance: motivation stemming from completing the test itself, motivation stemming from setting one's own goals, motivation stemming from competition.

**Administration:**
The respondent works the test by pressing one of two buttons in rapid succession to cover as many fields as possible in a set course on the screen for a run duration of 10 seconds. Every time a button is pressed, the respondent advances through the course one field either to the right or the left. The test records and informs the respondent of how many fields she covered in the 10 second run.

**Test forms:**
There is one test form.

**Scoring:**
The scoring is done automatically by the computer, providing values for the effort required to complete the test, for modifications in the respondent's performance stemming from setting personal goals and stemming from competition, as well as for demand level. The computer also corrects invalid reactions in the case of implausibly poor performances in individual runs. In addition, data is also given on the performance over the course of the test and on error percentage.



**Reliability:**
Internal consistency (alpha) for performance values comes to over .90, for demand level to between .80 and .90.

**Validity:**
Clear validity indications have been found, in particular for task- oriented effort in the form of positive correlations with very different performance indicators (final grades from the secondary school-leaving examination, level of occupational training, intelligence test performance and various attention evaluation tests).

**Norms:**
Norms from a sample representing various age groups among the normal population are available for Germany and Austria with a scope of N=314. The data were collected in Schuhfried's research laboratory in 2003.

**Testing time:**
The test, including the instruction phase, takes approximately 20 minutes to complete. The net working time, in which the subject covers a certain distance by pressing buttons in quick succession, comes to five minutes.

## RISIKO Risk Choice

### Objective personality test to assess the willingness to take risks

G. Guttmann and H. Bauer


**On the basis of its features as an objective personality test the risk choice behavior is considerably more tamper-resistant than a questionnaire test.**

**Application:**
Captures the general willingness to take risks.

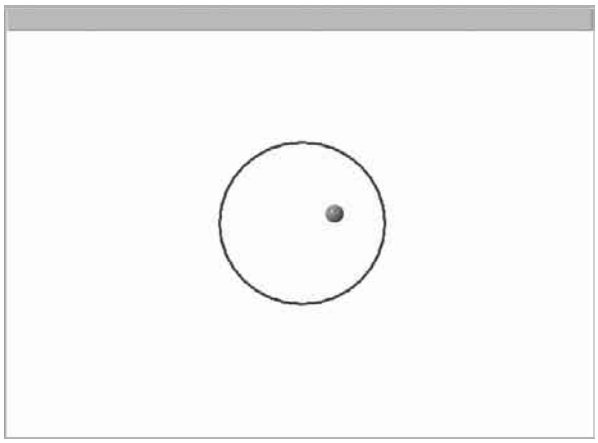
**Main areas of application:** traffic psychology, occupational and organizational psychology.

**Theoretical background:**
Based on Atkinson's model of risk preference (1957) and psychological research on the subject of selection of aspiration level, the general willingness of a person to take risks is measured through achievement motivation.

**Administration:**
A green ball moves across the screen with an unpredictable change of direction. The subject shall steer a circle so that s/he captures the green ball and traps it inside the circle by means of the joystick of the subject panel. As long as the ball is within the circle, the subject obtains scores. The goal is to achieve a score as high as possible. The maximum score to be reached depends on the radius of the circle, which the subject can adjust before each stage.
The test consists of altogether four test phases, and each of these consist of five runs. The administration phases differ with regard to the level of demand. The green point moves slowly during the first and fast during the second test phase. During the third phase the control of the circle is turned counter clockwise by 90° and in the fourth phase the conditions of the first three phases recur apparently coincidental.

**Test forms:**
There is one test form.

**Scoring:**
In test the main variables willingness to take risks, overall scores, efficiency and standard deviation of the radius as well as the additional variables ideal radius, radius in test 4 and median points in test 4 are evaluated. In addition the auxiliary variable radius adjustment may be interpreted. Raw scores and percentile scores are given as test values.



**Reliability:**
Due to the mode of calculation used the calculation of inner consistency is not meaningful. At present studies are under way to determine retest reliability and a long term stability, however.

**Validity:**
Initial statistical correlation analyses buck up the convergent and discriminant validity of the RISIKO test.

**Norms:**
A representative norm sample of N=451 persons (219 males, 232 females; aged 16 to 91 years of age) is available. The data was collected at the research laboratory of the Dr Gernot Schuhfried Company in 2004.

**Testing time:**
About 20 minutes.

## WRBTR Vienna Risk-Taking Test - revised version

### Test to assess the individual willingness to take risks

A. Hergovich and B. Bognar


**Test battery to assess the willingness to take risks with items using the latest multimedia technology.**

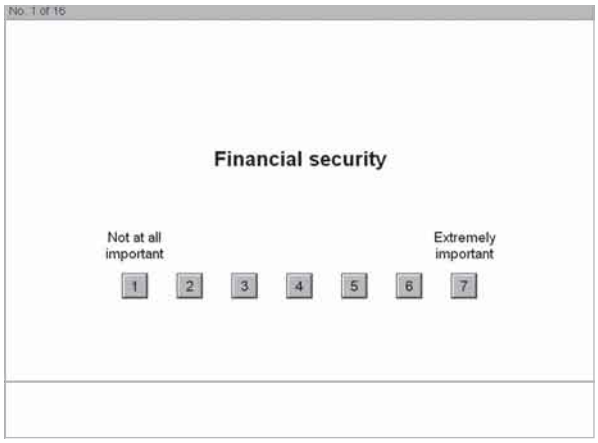
**Application:**
Assessment of the individual willingness to take risks.

**Main areas of application:** industrial and organizational psychology, assessment of the individual willingness to take risks.

**Theoretical background:**
In literature the term „risk" is not used in a uniform way at all. What all the definitions have in common is the moment of risk as well as the possibility of damage. On the one hand, this test follows the concept of Sensation Seeking by Zuckerman (1979), and on the other it takes into account the basis of decision and usage-related theories of risk-taking behavior (Yates, 1992). Apart from that, the operationalization of the construct was also influenced by heuristic considerations.

**Administration:**
In the subtest Life goals, the respondent has to assign certain values to seven categories of a scale with respect to the personal importance of these values for him/her. The second subtest Decisions requires the respondents to enter a figure between 0 and 100 as a means to respond to the question of how likely it is that they would do the described action. In the third subtest Games of chance, the respondents are confronted with different winning and losing situations. They can maximize their winnings or minimize a possible loss by acting appropriately. In the subtest Blue ball, the respondent has to steer a ball that moves from one side of the screen to the other. The ball must not touch either side. By determining the ball's change of direction, the respondents can either minimize the risk to lose points or, if they delay the change of direction, maximize their score, provided the ball does not touch the sides. In the next subtest, the respondents have the possibility to participate in a game of dice where they can put money on a selectable number of points. The possible profit is reciprocal to the chance of winning. The last subtest contains a simplified version of roulette. The respondents can decide how much money to put on single numbers or the colors red and black.

**Test forms:**
There is one test form.




**Scoring:**
Scale-specific test values are recorded for the different aspects of risk and risky behavior: „Need for physical stimuli", „Need for financial security", „Need for social security", „Willingness to take risks in decisive situations", „Risk behavior in winning situations", „Risk behavior in losing situations", „Blue ball", „Need for thrill", and „Willingness to take financial risks".

**Reliability:**
The internal consistencies are situated between 0.72 and 0.89.

**Validity:**
An extreme-group validation of the WRBT was realized with N=119 respondents. In addition, the relation to other relevant measurement instruments (extraversion tests, sensation seeking and other scales that measure the willingness to take risks) was determined in the course of the examination of the convergent/ discriminant validity. The result of this study underlines the convergent and discriminant validities of this test, as well as the criterion validity of individual test values.

**Norms:**
Norms of a norm sample of the „normal population" consisting of N=265 is available, as well as subsamples according to gender, age and education level. These data were collected in the research laboratory of the Dr. Gernot Schuhfried GmbH in the year 2003. An increase in collected normative data is under way.

**Testing time:**
About 30 minutes.

## WRBTV Vienna Risk-Taking Test Traffic

### Test to assess the willingness to take risks in traffic situations

A. Hergovich, B. Bognar, M. Arendasy und M. Sommer


**Objective personality test, resistant to falsification, for assessing the individual willingness to take risk in traffic situations, using items with the latest multimedia technology.**

**Application:**
Measurement of the subjectively accepted level of risk in traffic situations.

**Main areas of application:** traffic psychology, industrial and organizational psychology.

**Theoretical background:**
This test assesses risk-taking behavior in potentially dangerous driving situations. In the literature the term „risk" is not used in a way which is by any means uniform. However, defining elements which all the different definitions have in common are the potential danger and the possibility of harm. (Schuster, 2000). The theoretical model on which the WRBTV is based is Wilde's theory of risk homeostasis (Wilde 1978, 1994). The dimension measured is the subjectively accepted level of risk.

**Administration:**
Respondents are first asked to indicate the categories of vehicle for which they hold a driving license. Full instructions are then given; the subjects are told that they will be shown 24 driving situations. These are described in words before they are shown on-screen. Each driving situation is then presented twice. On the first occasion the respondents simply observe the situation. On the second occasion the respondent is required to press a key to indicate the point (the distance from the potential hazard) at which he would regard the selected driving manoeuvre as being critical or dangerous and would therefore no longer perform it. The first of the 24 driving situations serves as a practice item.

**Test forms:**
There is one test form.

**Scoring:**
The variable „willingness to take risks in traffic situations" measures behavior in potentially hazardous driving situations.

**Reliability:**
Because of the validity of the Latency Model (Scheiblechner, 1978, 1979, 1985) for the latency times in the driving situations of the WRBTV, internal consistency is given. The reliability as measured by Cronbach's $\alpha$ is .92.


**Validity:**
Three independent studies have demonstrated the test's construct validity with reference to the risk homeostasis theory of Wilde (1978, 1994) with the help of the Latency Model (Scheiblechner, 1978, 1979, 1985). All the studies showed that the WRBTV measures the unidimensional personality construct „subjectively accepted level of risk". In addition, studies of the convergent and divergent validity show significant correlations between the variable „readiness to take risks when driving" and various tests which measure sensation seeking and sense of responsibility. Correlations with unrelated personality traits and tests measuring mental speed and general intelligence do not differ significantly from zero.
Evidence for the criterion validity of the test was provided by a study carried out by Sommer, Arendasy, Schuhfried & Litzenberger (2005) which showed that a test battery which included WRBTV was able to correctly classify around 89 % of drivers who had either had no accidents or a number of accidents (R=.837; adj. R‡ = .636). The relative relevance of the WRBTV was 10.81%, which corresponds to a correlation coefficient of .197. In addition, Vogelsinger (2005) reports correlations of .32 and .23 between an individual's fastest speed on the motorway or the average motorway speed and the variable „readiness to take risks when driving".

**Norms:**
Norms are available for a sample of the normal population (N=682) in the age range 18 – 87; the sample is representative in terms of gender and age. The data was collected in 2005 in the Schuhfried research laboratory.

**Testing time:**
About 10 minutes.

## AIST General Interest Structure Test

### Sorting out of school and career interests

F. Eder and C. Bergmann


**The AIST is frequently used in career or academic counseling, because the results are easy to interpret and concrete careers are suggested for different education levels.**

**Application:**
The AIST is a differential test for the determination of school or career interests from the age of 14 onwards.

**Main areas of application:** consulting regarding school, study or career decisions, industrial and organizational psychology.

**Theoretical background:**
According to Holland (1985) there are six fundamental personality orientations in our cultural. Holland also postulates, that every person seeks the environment, that corresponds to his/her personality type and interests. If he succeeds, there is complete person-environment congruence. The AIST measures this congruence between a person and his or her environment. The test consists of 60 items, with which six interest dimensions are recorded: practical and technical, intellectual and investigative, artistic and linguistic, social, entrepreneurial as well as organizational and administrational interests. According to the concept of congruence, this test makes possible differential-psychological assignments of people to professions.

**Administration:**
After the instruction the items are presented one after the other on the monitor. The respondent enters his/her answers on a 5-tiered rating scale.
A one-time correction and the skipping of items are permitted. All unanswered items are presented again at the end of the test, but there is no obligation to answer.

**Test forms:**
At present seven test forms are available. S1 corresponds to the original test form as is primarily used in Germany. Other languages have their own test form. S3 (Swedish), S4 (Czech) and S6 (Portuguese) also contain, apart from the pure translation, modified career lists and their own norms based on the computer presentation. Test forms S5 and S7 contain modified career lists apart from the translation into Italian and English, even if they do not yet have their own norms. In the meantime the German norms are used, which has to be taken into account for the interpretation.

### Questionnaire test

**Scoring:**
The following variables are presented: „practical and technical", „intellectual and investigative", „artistic and linguistic", „social", „entrepreneurial" as well as „organizational and administrational" interests. The report of test results contains apart form the percentile ranks for the six dimensions also a list of professions on different education levels.

**Reliability:**
In studies with the norm samples of high school students, internal consistencies (Cronbach's alpha) of the interest-scales of between r=.79 and r=.85 have been found for the paper-and-pencil form. The repetition reliability varies for a test-retest interval of two days between r=.83 and r=.96 and for an interval of two years between r=.60 and r=.75. The split-half reliability of the computerized interest scales – recorded from 3000 clients of various Career Information Centers (BIZ) – varies between r=.74 and r=.89.

**Validity:**
There are detailed studies on the validity of AIST. Relations to existing interest tests (PIT, BITII and DIT) found on the basis of these studies proved among other things the convergent validity of the test. The following correlations with similar dimensions of the above-mentioned tests have been found: r=.40 to r=.78 (DIT), r=.51to r=.67 (BITII) and r=.25 to r=.51 (PIT). In another study, the factor structure, on which the AIST is based, could be replicated in different countries (Czech Rep., Portugal, Sweden, Germany). This means that the AIST's measurement concept can be transferred into different languages.

**Norms:**
An overall and a gender specific representative norm sample of N=267 Austrian adults is available for test form S1. In addition, the following overall and gender specific paper-and-pencil norms (in total N=4393 adolescents aged 14 to 20 years from Austria's most relevant schools and vocational training centers) and computer norms (N=3000 clients of various Austrian employment information centers) are available. S3 was collected from a sample of N=1239 Swedish job seekers. Furthermore there is as sample of N=1263 Swedish adults. For S4 norms of N=1688 Czech job seekers aged 14 to 20 years are available. The German norms for test forms S1 are available for test forms S5 and S7. S6 has norms for N=5202 Portuguese IEFP clients.

**Testing time:**
About 20 minutes.

## ATV Alcoholic Selection Procedure

### Test to assess the alcohol risk level

B. Biehl


**The test ATV is the only questionnaire for sale that assesses the alcohol risk level in a Rasch-homogenous short form.**

**Application:**
Assessment of „incorrect" attitudes that may lead to alcohol abuse.

**Main areas of application:** traffic psychology, clinical psychology.

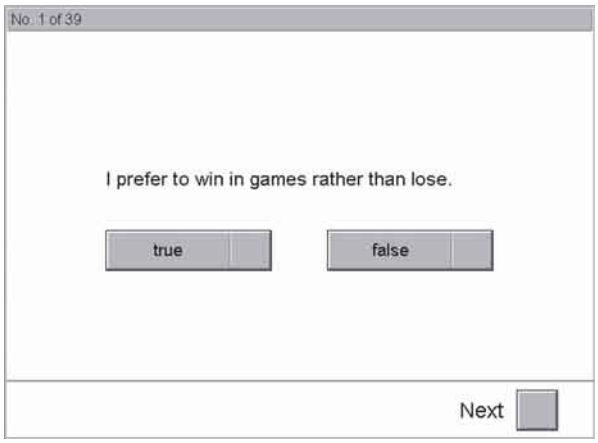
**Theoretical background:**
The present test was derived by Böcher (1965) from the American „Manson Evaluation". It encompasses 39 questions altogether that had mainly been translated from the Manson Questionnaire. This test is an instrument not mainly used to assess manifest alcoholism, but to focus in particular on attitudes that may lead to increased alcohol consumption.

**Administration:**
After the instruction phase, the items are presented on the screen one at a time. The respondents can chose between „True" and „False", and have the possibility to correct an item once as well as to skip items. All omitted items are presented one more time at the end of the test. However, the respondents may choose whether or not to respond.

**Test forms:**
There is a long form with 39, and a Rasch-homogenous short form with 29 items.

**Scoring:**
The following variables are assessed: „Alcohol risk" and „Dissimulation". The results contain a table with raw scores and standard scores for the variables, the working time, and an optional item analysis protocol.

**Reliability:**
The internal consistency of the test was calculated as Cronbach's Alpha. The reliabilities of the test for both variables, „Alcohol risk" and „Dissimulation" vary between r=.73 and r=.79 (or r=.72 and r=.76 for the short form). The consistency of the assessment of the individual variables is sufficient. Thus the ATV can be considered as a sufficiently precise diagnostic instrument.




The variables „Alcohol risk" and „Dissimulation" in both, the long and the short form, correlate to a great extent, i.e. both variables assess the same aspects (Alcohol risk: r=.97; p=.000; N=100/ Dissimulation: r=.99; p=.000; N=98).

**Validity:**
The test was administered to n=345 people, divided into two groups (Biehl, 1972). One group (n=180) consisted of people with a driver's license who where stopped by the police one or several times because they seemed to be driving under the influence and were sent to traffic psychological examinations. Thus they were not alcohol addicts in the clinical sense. The other group (n=165) consisted of people with a driver's license who had not yet attracted policemen's attention so far due to potential alcohol consumption.
The variable „Alcohol risk" distinguishes significantly between these two groups, whereas „Dissimulation" showed no significant differences between them, that is, this variable was similar for both groups.

**Norms:**
The variables „Alcohol risk" and „Dissimulation" were standardized. The present norms were compiled in traffic-psychological examinations. The comparative sample (N=427) consists of 361 men (84%) and 66 women (16%). The sample is available in two age- specific groups that differ significantly form each other.

**Testing time:**
About 10 minutes.

## FBS Questionnaire for the Determination of Suicide Risk

### Questionnaire to assess and quantify the suicide potential

J. Stork


**Objective assessment of the suicide potential excluding possible patient-therapist interactions.**

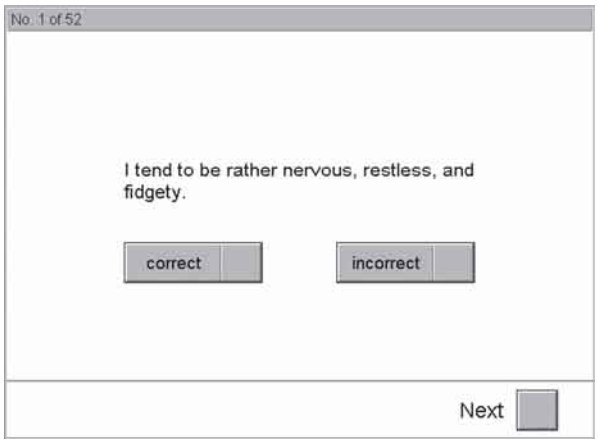
**Application:**
Assessment of the suicidal depressive state; applicable from 17 years onwards.

**Main area of application:** clinical psychology.

**Theoretical background:**
With the help of the present test the „conscious suicidal field" is recorded, which according to the author's opinion consists of suicide, attempted suicide and suicidal tendencies (suicidal thought, suicidal intentions and the fear of committing suicide).
Apart from the suicide potential ways of behavior are also measured, whom the test author counts as belonging to the unconscious suicidal field (e.g. alcohol or drug abuse, antisocial behavior).
For the construction of the final form of the test a sample of over 2700 respondents was used. Four groups were formed, after an analysis of the suicide behavior, which differ by the extent of suicidal tendencies (suicidal thoughts, suicidal intentions and the fear of committing suicide) as well by the presence of actual suicide attempts. Using the point values of these groups as background, the suicidal-depressive state was assessed and the respondent's suicide potential was assessed.

**Administration:**
After the instruction the 52 items of the FBS are presented one after the other on the monitor. The respondent enters his/her answers on a bipolar scale (correct/incorrect).
A one-time correction and the skipping of items are permitted. All unanswered are presented again at the end of the test, but there is no „obligation" to answer.

**Test forms:**
There is one test form with 52 items.




**Scoring:**
A total score (raw score) and the answer time for each item are recorded. Depending on how high the total score is the respondent is assigned to one of 5 areas („Normalcy", „Normalcy doubtful", „Low suicide risk", „High suicide risk" and „Extremely high suicide risk").

**Reliability:**
Separate studies with a sample of psychiatric patients showed a split-half coefficient of r=.89 for the variable „total score". Schmidtke and Schaller studied the retest reliability on samples of adolescents. The calculated stability coefficients between r =.81 and r =.85.

**Validity:**
Examinations showed significant correlations with some of the scales of the „Giessen Tests" (negative vs. positively experienced social resonance r=-.39 hypomania vs. depressive disorder r=.55.) and the „Einstellungsfragebogen des Generalisierten Anderen" (experience of rejection and disdain on the part of others r=-.50 positive vs. negative attitude towards the social environment r=- .41, restrictions in the area of performance r=-.41, dominance and willingness to lead r=-.34).

**Norms:**
The subjects' total scores are placed in one of five categories. In the computer version a comparative sample of 266 psychiatric patients serves as the basis for this assessment.

**Testing time:**
10-15 minutes.

## FFT Questionnaire on Functional Drinking

### Self-evaluation questionnaire on the subjectively felt mental and social function of drinking alcohol

E. Belitz-Weihmann and P. Metzler


**Rasch-homogenous questionnaire that assesses the effects, the functions and the subjectively felt symptoms of alcohol consumption and estimates the risk of alcohol abuse.**

**Application:**
The questionnaire assesses the positively felt mental effect and social function of alcohol. This questionnaire is applicable to all respondents who have experiences with alcohol. It gives indications on respondents at risk in a preliminary stage of dependency, and recognizes alcoholism by the extent of the positively felt effects of alcohol. In addition, the FFT supplies reliable information on counseling and therapy in individual cases, with little effort.

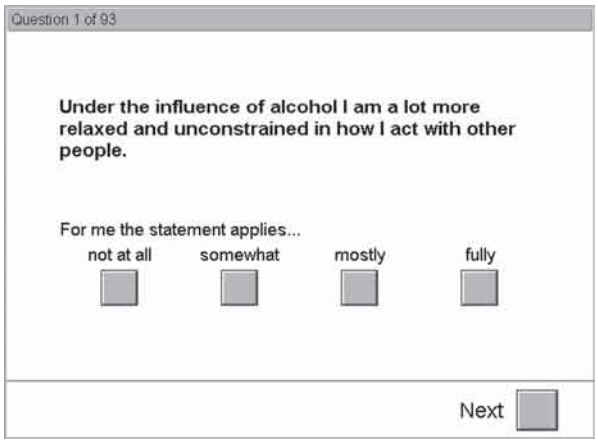
**Main areas of application:** Clinical psychology, health psychology, psychotherapy.

**Theoretical background:**
The FFT is based on results of social-cognitive and learning-theoretical alcoholism research, which has to some extent also entered the concepts of recidivism independency. What is specially emphasized is the individual amplifier value of alcohol in case of a lack of alter- native strategies. Items from 17 different function areas of alcohol can be categorized in 5 scales scaled according to the Rasch model to assess 1. „Excitatory effect of alcohol", 2. „Psychopharmacological effect of alcohol", 3. „Sociodynamic function of drinking", 4. „Exploiting a social context" and 5. „symptoms of mental and physical dependency". The FFT is one of the few questionnaires that are homogenous in the sense of the Rasch model. During the construction the use of questions that can cause denial tendencies in alcoholics (e.g. questions about the amount of alcohol) was avoided deliberately.

**Administration:**
The items of the FFT are presented in sequence on the monitor. The subject always has to choose one out of four alternative answers on a fixed rating scale.

**Test forms:**
There are two long forms with 93 items (present and past) and a standard short form (present without scale 5) with 64 items. There is a possibility to select individual scales in the test manager window.

**Scoring:**
The following variables are presented: „Excitatory effect of alcohol", „psychopharmacological effect of alcohol", „sociodynamic function of drinking", „exploiting a social context", „symptoms of mental and physical dependency". Additionally a discriminant score is calculated, which estimates a value for the risk of alcohol abuse. An item analysis protocol can be issued that presents the answers to the individual statements.




**Reliability:**
The reliabilities (Cronbach's Alpha) for the 5 scales lie between r=.87 and r=.96 Measurement precision is given due to the validity of the Rasch model for all 5 scales. Due to the proven unidimensionality of the test, scaling fairness can be deemed as given. This means that the various groups of people are not systematically put at a disadvantage or favored concerning individual items.

**Validity:**
Even without taking into account scale 5, the FFT separates normal drinkers from respondents dependent on alcohol with the utmost certainty. Apart from that profile differences are proved depending on gender, age, type of dependency and the degree of chronification.

**Norms:**
The standardization of test forms S1-S3 refers to scores of N=244 alcohol dependent abstinent patients from 12 different in-patient and outpatient treatment centers and N=95 subjects with normal alcohol consumption from the research laboratory of the company Dr. Gernot Schuhfried. In addition, norms of N=98 people who were apprehended for bad driving behavior and collected during driving diagnostics of INFAR are available. Furthermore a norm sample of N=284 persons, collected in the research laboratory of Dr. Gernot Schuhfried in the year 2003, is available for test form S3.

**Testing time:**
About 15-20 minutes.

## FSV Questionnaire Concerning Reaction to Pain

### Measurement of the way the strain of chronic pain is dealt with

U. Klages


**Objective and transparent assessment of relevant aspects of pain behavior excluding influencing therapist-patient interactions.**

**Application:**
Test for the qualitative assessment of ways of behavior and coping with the strain of chronic pain.

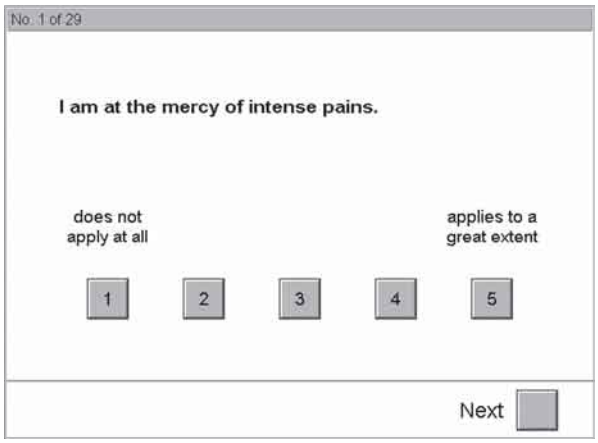
**Main areas of application:** clinical psychology (indication for a psychological pain therapy as well as treatment planning. Due to the economical handling, the test is useful for the control of therapy courses).

**Theoretical background:**
Within the framework of behavioral-medical concepts treatment programs are offered for patients in chronic pain. In practice the indication often proves to be a problem, especially with multi- professional teams. The FSV assesses with four factor based scales sub-capacities in coping with pain, which correspond to training elements in pain treatment concepts.
The scales avoidance, activity and social support are based on the theory of operant pain learning, according to which the experience of pain is intensified by negative reinforcement (ending of an aversive state by retreat). Conversely it can have a beneficial effect by positive reinforcement (turning towards important persons of reference) and finally it can be reduced by confrontation (continuation of activities).The scale cognitive control refers to experimentally checked capacities of relaxation, imagination and self-instruction.

**Administration:**
An exemplar item is presented after the test instruction.
The respondent enters his/her answers on a five-tiered rating scale with the poles „does not apply at all" and „applies to a great extent".

**Test forms:**
There is one test form with 29 items.

**Scoring:**
The following variables are displayed: avoidance, cognitive control, social support, activity.
In addition an item-analysis protocol can be printed out, in which all items are mentioned with the corresponding answer.




**Reliability:**
Coefficients (Cronbach's Alpha) were calculated for four subtests. Depending on the scale and sample they vary between r=.68 and r=.84.

**Validity:**
Different studies showed a statistically significant connection with pain adjective scales in the expected direction.
Also found were links to irrational attitudes, self-communication and situational bodily and emotional reaction tendencies.
Samples of patients with rheumatism or headaches differ for three of four scales in statistically significant ways.
In the case of patients with polyarthritis 38% of the scale „avoidance" could be statistically predicted.

**Norms:**
Norm values are presented separately for:
- rheumatism patients, N=325
- headache patients, N=124

Until the norms of the computer version of this test are available, the norms for the paper-pencil test form will be used.

**Testing time:**
About 3 to 5 minutes.

## MSS Multi-Dimensional Pain Scale

### Questionnaire for the quantitative and qualitative assessment of pain

S. Lehrl, R. Cziske and L. Blaha


**The MSS enables a client to make a reliable assessment of the quality and intensity of his/her pain.**

**Application:**
Test to conduct a quantitative and qualitative assessment of pain.

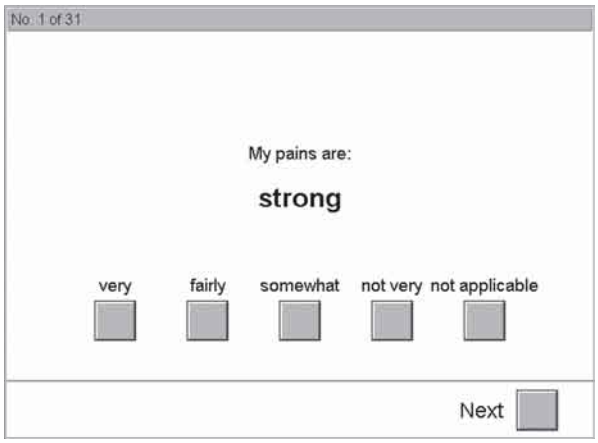
**Main areas of application:** clinical psychology and psychopharmacology.

**Theoretical background:**
Assessments by others, for instance by the examining doctor, are highly subjective. In examinations of the course of a treatment (often with various examiners), the verbal communication between doctor and patient turned out to be rather imprecise and unreliable.
Thus the authors intended to present a standardized instrument to assess pain. The questionnaire was created as a self-assessment scale with a rating scheme consisting of five levels – originally it was aimed at objectifying analgesic effects.
The basis for developing this test was the search and selection of adjectives to describe different kinds of pain with rational criteria. Then experts eliminated the rather unspecific or colloquial words, and words that are hardly used to specify types of pain. The remaining list consisted of 45 words and was reduced to 29 by means of data collected from an analysis sample, and following statistical item selection procedures.

**Administration:**
After the instruction, the items are presented on the screen one after the other. It is possible to correct the item that the person taking the test just responded to, and to omit items. All unanswered items are presented once again at the end of the questionnaire.

**Test forms:**
There is one test form with 29 items.

**Scoring:**
The following scale raw scores are indicated:
„Intensity"
„Rhythmical pains"
„Shooting pains"
„Sudden pains"
„Pains in general"
„Spread-out pains"
„Annoying pains"
„Persistent pains"
„Electric pains"




„Chemical pains"
„Thermal pains"
Moreover, the time a person spent answering the questions is assessed, too.
The item analysis protocol lists every item assigned to a specific scale with the respective answer that the respondent gave.

**Reliability:**
Examinations with various samples to determine the internal consistency and the retest-reliability of the scales resulted in coefficients between r=.83 and r=.93.

**Validity:**
It is hard to prove validity for subjective pain due to a lack of objective external criteria, and the fact, that it is obviously impossible that someone else assesses one's pain.
However, a content and logical validity can be assumed, as the MSS measures exactly the validation range that plays a role in the subjective and qualitative description of pain intensity. In addition, there are some references from medication studies (e.g. with analgesics) and from invasive operations. From a factor analytical point of view, the scale independence can be considered satisfactory.
(For further information on the evaluation of this test: see manual of the MSS-R by Lehrl et al., 1980).

**Norms:**
According to the authors, standardization as usual seems to be not very reasonable for examinations of subjective (current) pain. The results of nine different patient samples (mean values, dispersion, etc.) are described in the manual of the MSS-R by Lehrl et al. (1980), which is included in the delivery of the computerized test.

**Testing time:**
About 4-6 minutes.

## TQ Test Generator for Questionnaire Tests

### Creating your own questionnaire test using the Test Generator

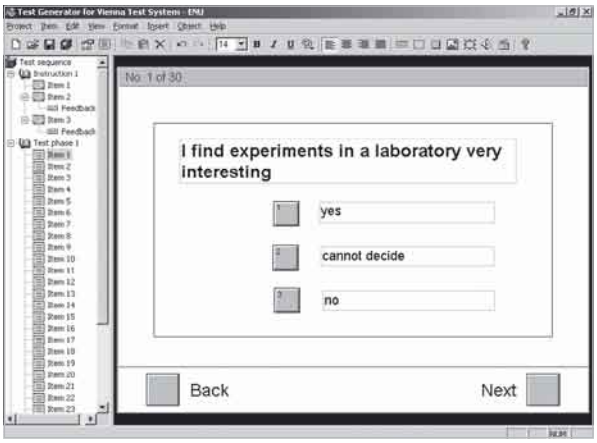


**This complex but easy to use program assists you in the creation of your own questionnaire tests. Neither the knowledge of a programming language nor of technological details is necessary. This program enables you to adjust the Vienna Test System easily and effectively to your own requirements.**

**Test creation:**
The Test Generator provides two test models for creating questionnaire tests:

**a. Power tests**
This test category has the following characteristics:

- Every test item has a correct solution which the respondent has to find.
- Items can also be omitted (i.e. the respondent can switch to the next item without entering a response for the current one).
  The button „Next" has to be clicked to call up the next item.
- Items which have already been answered can be called up again any number of times (possibly within a specified time limit) in order to complete or correct them.
- If a time limit is specified and the test does not contain more than 46 items, it is also possible to switch to any test item desired after the last test item is answered.
- The header always shows the items which were not yet answered.
- The subject can select the answer in a multiple-choice procedure or enter it as a number via a (virtual) numerical keypad. You can determine the desired response model during test creation.




**b. Personality tests**
This test category has the following characteristics:

- There are generally no correct or incorrect answers.
- All items have to be answered. It is not possible to switch to the next item unless a respondent has answered the current item. This ensures a reliable evaluation.
- The program automatically switches to the next item after the respondent has entered an answer.
- The previous item can only be corrected once.
- The only answer model available is multiple-choice.

**Scoring:**
The number of test variables and their names for scoring can be defined freely by the user. Variables are calculated by counting out items that have been assigned via a scoring key or via sum or mean calculations from other test variables. In personality tests every answer given by the respondent can also be assigned to several test variables. The test results can be issued in the form of result tables, profiles and test protocols (answer, evaluation and working time).

## TT Test Generator for Tachistoscopic Tests

### Creating a tachistoscopic test using the Test Generator



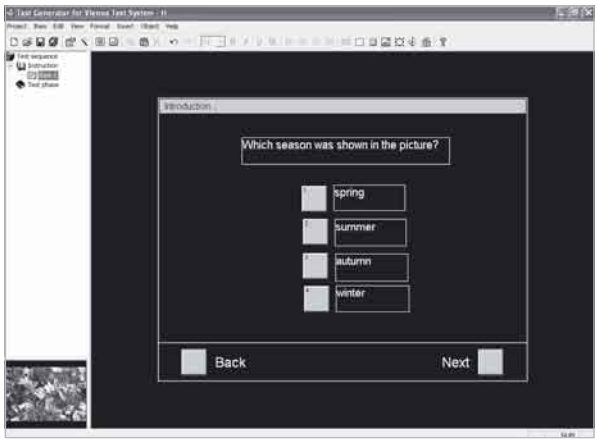
**This complex but easy to use program assists you in the creation of your own questionnaire tests. Neither the knowledge of a programming language nor of technological details is necessary. This program enables you to adjust the Vienna Test System easily and effectively to your own requirements.**

**Test creation:**

In tachistoscopic tests, pictures or series of pictures are displayed for a relatively short time. The subject can be asked questions regarding an individual picture or a series of pictures.
The picture presentation time can be set to anywhere between 100 milliseconds and 99,95 seconds in increments of 50 milliseconds. For technical reasons, the actual presentation time can only be a multiple of the refresh rate. It is thus subject to a certain degree of inaccuracy (about 8...16 milliseconds, depending on refresh rate). In order to minimize the percentage of inaccuracy, the lowest possible refresh rate is limited to 100 milliseconds.
If no question is asked between two picture presentations, the interval between 1 and 99,95 seconds can be set in 50-millisecond increments.

The following parameters have been defined for every item:

- Image file for the tachistoscopic picture
- Duration of picture display
- Interval duration
- Item text (contains the question and response alternatives)
- Correct answer or correct answer range




**Scoring:**

During scoring the program calculates the number of correctly and incorrectly answered questions. The sum, mean and standard deviation of the answer times are also calculated. The test results can be issued in the form of result tables, profiles and test protocols (answer, evaluation and working time).

| | Arabic | Chinese | Croatian | Czech | Dutch | English | Finnish | French | German | Greek | Hebrew | Hindi | Hungarian | Italian | Polish | Portuguese | Romanian | Russian | Serbian | Slovakian | Spanish | Swedish | Turkish |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WINWTS | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| 2D | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 2HAND | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| 3D | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| 4DPI | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| A3DW | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ |
| ABI | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ADANA | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| AGDIA | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| AHA | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ |
| AIST | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| AISTR | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| ALS | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ |
| AMT | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| ANF | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| APM | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| ATV | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| AVEM | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| AVIS | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| AZAFO | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| B19 | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| B5PO | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| BFW | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| COG | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| CORSI | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ |
| CPM | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| DAI | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| DAKT | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| DAUF | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ |
| DSI | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| DT | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| DTKI | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| EBF | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| EBFSPO | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| EPP6 | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| EPPD | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FABA | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ |
| FBIL | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FBS | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FET | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
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| FLIM | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FOLO | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ |
| FSV | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| FVW | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ |
| GAT | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| GESTA | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| HKSD | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| IBF | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ |
| IGS | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| INSBAT | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| IPS | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| IVPE | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☑ |
| KKT | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| KOEPS | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| LEVE | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| LEWITE | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |

# Matrix of available languages

| | Arabic | Chinese | Croatian | Czech | Dutch | English | Finnish | French | German | Greek | Hebrew | Hindi | Hungarian | Italian | Polish | Portuguese | Romanian | Russian | Serbian | Slovakian | Spanish | Swedish | Turkish |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LMT | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| LVT | ☑ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ |
| META | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| MIP | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| MLS | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| MMG | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ |
| MR | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| MSS | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| MTA | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ |
| NTA | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| NVLT | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| OLMT | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| PASAT | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| PERSEV | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ |
| POMS | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| PP | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| PST | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| RA | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| RIS | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ |
| RISIKO | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| RT | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ |
| SASSR | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| SBUSB | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| SIGNAL | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ |
| SIMKAP | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| SKASUK | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ |
| SMK | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ |
| SOZU | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| SPM | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| SPMPLS | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ |
| SSU | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| STROOP | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ |
| TAVTMB | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| TCI | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| TQ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| TT | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| UFB | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| VERGED | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| VIGIL | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ |
| VISGED | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| VLT | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WAFA | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WAFF | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WAFG | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WAFS | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WAFV | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WRBTR | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| WRBTV | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ |
| ZBA | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |

If you are missing a test in a certain language, please contact us or one of our distributors.
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| | Aptitude diagnostics - personality traits | Aptitude diagnostics - potential analysis | Diagnostics concerning motor behavior | Clinical psychology | Neuropsychology | Traffic psychology | Aviation psychology | Sports psychology | Occupational and organizational psychology | Decisions concerning school, college, university career | Pedagogical psychology | Health psychology | Medical and pharmaceutical fields |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2D | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| 2HAND | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| 3D | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| 4DPI | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| A3DW | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| AGDIA | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| AHA | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ |
| AIST | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| ALS | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| AMT | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ |
| ANF | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ |
| APM | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ |
| ATV | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| AVIS | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| B19 | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ |
| COG | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| CORSI | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ |
| CPM | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ |
| DAKT | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| DAUF | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ |
| DSI | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ |
| DT | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| DTKI | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| EPP6 | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ |
| FBS | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FET | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| FFT | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FLIM | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| FOLO | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FSV | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| FVW | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☑ |
| GESTA | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| HKSD | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ |
| IBF | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ |
| INSBAT | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ |
| IVPE | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| LVT | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ |
| MIP | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| MLS | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| MMG | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ |
| MR | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| MSS | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ |
| MTA | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ |
| NTA | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ |
| NVLT | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ |
| OLMT | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ |
| PERSEV | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☐ |
| PP | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ |
| PST | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| RA | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ |
| RIS | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| RISIKO | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| RT | ☐ | ☑ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ | ☑ |
| SBUSB | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ |
| SIGNAL | ☐ | ☑ | ☐ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☑ | ☑ | ☑ | ☐ |
| SIMKAP | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ |
| SKASUK | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☑ | ☑ | ☐ | ☐ | ☐ |
| SMK | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ |

# Tests listed
## by their fields of application

| | Aptitude diagnostics - personality traits | Aptitude diagnostics - potential analysis | Diagnostics concerning motor behavior | Clinical psychology | Neuropsychology | Traffic psychology | Aviation psychology | Sports psychology | Occupational and organizational psychology | Decisions concerning school, college, university career | Pedagogical psychology | Health psychology | Medical and pharmaceutical fields |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SPM | ☐ | **☑** | ☐ | ☑ | ☐ | ☑ | ☑ | ☐ | **☑** | ☑ | ☐ | ☐ | ☑ |
| SPMPLS | ☐ | **☑** | ☐ | ☑ | ☐ | ☐ | ☑ | ☐ | **☑** | ☑ | ☐ | ☐ | ☑ |
| STROOP | ☐ | ☐ | ☐ | ☑ | **☑** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| TAVTMB | ☐ | ☐ | ☐ | ☐ | ☐ | **☑** | **☑** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ |
| TCI | ☐ | ☐ | ☐ | **☑** | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | ☐ | **☑** | ☐ |
| VIGIL | ☐ | ☑ | ☐ | ☑ | **☑** | ☐ | **☑** | ☑ | ☑ | ☑ | ☑ | ☐ | ☐ |
| VISGED | ☐ | **☑** | ☐ | ☐ | ☐ | ☐ | ☑ | ☐ | **☑** | ☑ | ☐ | ☐ | ☑ |
| WAFA | ☐ | ☑ | ☐ | ☑ | **☑** | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ |
| WAFF | ☐ | ☑ | ☐ | ☑ | **☑** | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ |
| WAFG | ☐ | ☑ | ☐ | ☑ | **☑** | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ |
| WAFS | ☐ | ☑ | ☐ | ☑ | **☑** | ☑ | ☑ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ |
| WAFV | ☐ | ☑ | ☐ | ☑ | **☑** | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☑ | ☑ |
| WRBTR | ☐ | ☐ | ☐ | ☐ | ☐ | **☑** | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| WRBTV | ☐ | ☐ | ☐ | ☐ | ☐ | **☑** | ☐ | ☐ | ☑ | ☐ | ☐ | ☐ | ☐ |
| ZBA | ☐ | ☐ | ☐ | ☐ | ☐ | **☑** | ☑ | ☑ | ☐ | ☐ | ☐ | ☐ | ☐ |

Legend: **☑** main fields of application
☑ other fields of application

The following specifications refer to a **typical Test System configuration.** Some tests require additional or better system components. You can find the corresponding information on the following page.

## Computer

- PC or laptop with Pentium CPU (or compatible, e.g. Athlon), at least 500 Mhz
- At least 128 megabytes (MB) of RAM
- Display adapter with 24 or 32-bit color depth (16 million colors)
- 16-bit sound card with speakers and/or headphones
- CD or DVD drive, 3.5" floppy drive, hard disk, mouse, keyboard
- USB ports for license dongle and peripheral hardware (in case all USB ports on the PC are used up a USB hub with external power supply is required)
- Network adapter to connect the PC to a data network (e.g. for the installation of a Vienna Test System Network)
- Windows 98, 98SE, ME, 2000, XP or Server 2003 (Windows NT4 on request)
- Internet Explorer 5.5 or higher

**Please ensure that no programs which can interfere with the test presentation (e.g. by heavy CPU usage or on-screen presentations) are installed on the computer!**

## Monitor

15" to 19" CRT or LCD color monitor

A refresh frequency of at least 75 Hz has to be set for **CRT monitors.**
With **flat panel LCD monitors** the following has to be considered:

- We recommend using flat panel LCD monitors with a resolution of at least 1280x960 pixels.
- For technical reasons a light pen can not be used with a flat panel LCD monitor. A device with a built in touch screen can be used instead. Please contact us for advice regarding suitable equipment.
- For measurements of reaction time (e.g. with DT, RA, RT) a monitor has to be used which is working synchronously with the graphic card. The rise+fall response time of the monitor must not exceed 25 milliseconds and a display delay of exactly 4 milliseconds is preferable. Please contact us for advice regarding suitable equipment.

## Printer

Laser or inkjet printer, black and white or color

## Safety Devices

If the Vienna Test System is used in health care facilities the use of the following devices may be mandatory:

- Isolating transformer for medical equipment according to EN 60601
- Galvanic (medical) network isolation according to EN 60601 (if the computer is connected to a data network)

**Please inquire with your company's safety representative.**

Products of the Dr. Schuhfried Company are developed and in accordance with the requirements of the European Union guideline 93/42/EWG. The CE mark proves that safety-relevant regulations, EMC Standards for Medical Devices (EN 60601), Biocompatibility Evaluation of Medical Devices (EN30993), product specific regulations and the underlying quality management system are adhered to.

**Please contact us before acquiring new equipment so that we may give you the best possible advice.**

### The following tests require additional or special system components:

**PP:**
- A serial interface to connect the peripheral device Peripheral Perception

**DT, RT, RA:**
- If a TFT monitor is used, this has to be suitable for measurement of reaction time (see page 106).

**DTKI:**
- If a TFT monitor is used, this has to be suitable for measurement of reaction time (see page 106).
- For an accurate and comparable test result only USB audio equipment approved by us must be used. Please contact us for advice regarding suitable devices.
- Windows NT4 can **not** be used.

**WAFA, WAFF, WAFG, WAFS, WAFV:**
- If a TFT monitor is used, this has to be suitable for measurement of reaction time (see page 106).
- For an accurate and comparable test result for test forms or subtests which output acoustic signals only USB audio equipment approved by us must be used. Please contact us for advice regarding suitable devices.
- Windows NT4 can **not** be used.

**TAVTMB:**
- A powerful enough display adapter / CPU to display an image within 10 milliseconds (ms). The test software automatically verifies the system performance and reports a corresponding message in case the specification is not met by the computer. The installation of the demo version is sufficient in order to test the hardware before the purchase.

### How it all began...

The Schuhfried company was founded in 1947 by Dr. Felix Schuhfried. He worked initially on the production of electromedical and scientific equipment, particularly electrotherapy devices, non-invasive blood flow measurement equipment and ECG machines.

### The first psychological test device

Around ten years later the production of psychological testing devices began. The first devices – the Determination Unit and the Motor Performance Series – were those for measuring reaction times. Devices of this type still form part of our range, although they now incorporate the latest technology. The machines used in those days were electro-mechanical devices with motors, relays and step-by-step switching. It has always been the company's philosophy to use the most up-to-date technology. Expensive electro-mechanical systems were therefore soon replaced by reliable electronic components.

### New premises, new technology

The psychological part of the business was hived off and in 1974 new premises were built for it in Moedling. In the following years the building was repeatedly enlarged.

When the first microprocessors appeared on the market the company immediately seized on the new technology. Soon the first freely programmable test devices controlled by microprocessors were being produced.

### The creation of the Vienna Test System

Leading on from this, the first test system for computerised psychological assessment was developed at the beginning of the 1980s. The initial stages involved a great deal of pioneering work as neither ready-made computers nor monitors were available. Even the operating system and programming language had to be developed and produced by the company. Solutions which we identified then are still being used – modified to a greater or lesser extent – by many producers of computerised tests.

In the middle of the 1980s IBM's personal computer became standard and the Vienna Test System was quick to make use of it. However, a great deal of additional hardware was necessary as neither the computational power nor the graphics capability was adequate. As computers became more powerful, more and more functions could be taken over by the industry standard hardware and software. The programs were written in DOS. The year 1995 saw the introduction of the Windows GUI for the Vienna Test System. This placed many demands on the skill of the programmers, since the requirements ranged from an ergonomic interface to precise measurement of time.

### Intensified psychological research and development work

The Schuhfried company saw itself originally as a manufacturer of psychological equipment. In the last twenty years this image has changed as the company has turned increasingly to the publishing of computerised psychological tests. A strong psychological development department has been set up. Working both with a range of university institutes and independently, new tests and methods have been developed.

The company has a high level of competence in the development of hardware, software programming and psychological methodology. This combination of skills ensures that the possibilities offered by computerised assessment are utilised to the full without being compromised by methodological or technical errors.

Speech output and the presentation of videos make new types of tests possible. One of our priorities was and is the development of adaptive tests. An innovative procedure is the combining of the results of the tests of a test battery by means of artificial neural networks to form a highly valid global assessment. A planned step is the development of personality tests which are resistant to falsification.

### In use all over the world

The Schuhfried company has built up an international network of distributors. 2002 saw the contract signed with our 25th agency. The German market is serviced by us directly from our offices in Mannheim.

### Schuhfried – Quality by competence

The high quality of our products and services has made our company recipient of many awards. In 2001 it received EN ISO 9001 and EN 46991 certification. In the same year it was awarded the Austrian national coat of arms for special business achievement.

TÜV Österreich, vom österreichischen Bundesministerium für wirtschaftliche Angelegenheiten akkreditierte Prüf-, Überwachungs- und Zertifizierungsstelle
*TÜV Austria testing, inspection and certification body accredited by the Austrian Ministry for Economic Affairs*

TÜV ÖSTERREICH

# Zertifikat - Certificate

Nr.: TÜV-A-MT-1/05/E032R1

Konformitätsbescheinigung des Qualitätsmanagementsystems
*Quality management system approval certificate*

| | |
|---|---|
| Unternehmen:<br>*Company:* | Dr. Gernot Schuhfried Gesellschaft m.b.H.<br>2340 Mödling, Hyrtlstrasse 45, Austria |
| Geltungsbereich:<br>*Scope:* | Forschung, Entwicklung, Fertigung, Verlag und Vertrieb von computergestützter psychologischer Diagnostik und kognitiver Rehabilitation<br>Entwicklung, Produktion und Vertrieb von medizinischen elektrischen Geräten, im speziellen Biofeedback- und Reizstromgeräte<br>*Research, development, production, editing and sales of computer assisted psychological diagnostics and cognitive rehabilitation*<br>*Development, production and sales of electrical medical devices, in particular biofeedback- and stimulant current devices* |
| Normen:<br>*Standards:* | EN ISO 13485:2003<br>Qualitätsmanagementsystem Medizinprodukte<br>*Quality management system Medical devices* |
| Bericht(e):<br>*Report(s):* | 05MT0362PÖ |

Hiermit bescheinigt der TÜV Österreich, daß das oben angeführte Unternehmen für den angeführten Geltungsbereich ein Qualitätsmanagement eingeführt hat und anwendet. Durch ein Audit wurde der Nachweis erbracht, daß die Forderungen der Nachweis-Normen erfüllt sind.
*TUV Austria certifies that the above mentioned manufacturer has introduced and uses a quality management system for the led scope. By an audit the proof was furnished that the demands of the standards are fulfilled.*

Technischer Überwachungs-Verein TÜV ÖSTERREICH Österreich

| | | |
|---|---|---|
| 17.03.2005 | Dipl.-Ing. Franz Josef Fegerl | 16.03.2008 |
| Datum der Ausstellung<br>*Date of issue* | Zertifizierungsbeauftragter<br>*Certification representative* | Ende der Gültigkeit<br>*End of validity* |

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Rev. 00

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# Notes

# Further computerized systems

## RehaCom and CogniPlus

**computerized cognitive rehabilitation**


**RehaCom** is a modular system for the training of cognitive functions. A robust panel enables safe operation for clients with very restricted manual motor skills. Due to the adaptive presentation of the tasks, therapy becomes more motivating.

**CogniPlus** is a newly developed training battery which uses the latest computer technology in a multimedia approach to the training of cognitive functions. The Vienna Test System and CogniPlus are perfect partners, providing all the required elements of assessment, training and evaluation.

## Signs of excellence

Very few of Austria's best companies are awarded the right to bear the Austrian Coat of Arms, a recognition awarded by the Austrian Ministry of Economic Affairs. Superiority in innovation, economic performance and quality is required to qualify.

TÜV ÖSTERREICH ZERTIFIZIERT
EN ISO 13485:2003
Zert.Nr.: E032RI

STAATLICHE AUSZEICHNUNG

CE

**The global market leader in computerized psychological assessment**


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Hyrtlstrasse 45, 2340 Moedling, Austria
Tel: +43 (0) 2236 - 423 15, Fax: +43 (0) 2236 - 465 97
e-mail: info@schuhfried.at


## Biofeedback 2000 *x-pert*

**computerized biofeedback**

Small measurement modules attached to the body, wireless transmission of the readings to the computer and practical software – all these features make biofeedback very user friendly.

Four radio modules are available, measuring the following parameters:

| | | |
|---|---|---|
| **MULTI:** | EDA: | skin conductance |
| | PULS: | pulse amplitude and frequency |
| | TEMP: | temperature |
| | MOT: | motility (movement) |
| **RESP:** | respiration | |
| **EMG:** | electromyography (muscle tension) | |
| **EEG:** | electroencephalogram (electrical brain activity) | |

The software is very simple and intuitive to use. The basic modul provides the most important functions; additional therapy modules for more specialized applications can be added as required.

**www.schuhfried.at**

SCHUHFRIED
Qualität durch Kompetenz