catalog

2008

CogniPlus

**Training of
cognitive abilities**

▲ SCHUHFRIED
Qualität durch Kompetenz
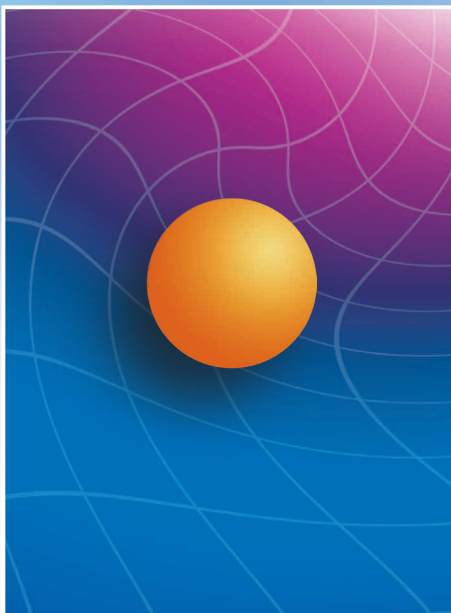
For ease of reading the pronouns "he" and "his" have been used throughout. This should of course be taken to include the feminine form.

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Why CogniPlus

CogniPlus stands for increased efficiency in the training of cognitive abilities. This technically advanced software package is our response to the demand from therapists for a training system which takes account of modern psychological insights and which, by means of training programs that simulate real-life situations, helps clients to integrate their progress into everyday life.

CogniPlus is a training battery which draws on the most up-to-date computer technology available to help you train cognitive functions using a multimedia approach.

Deficit-specific training

In developing these training programs we have placed particular emphasis on their **theory-led construction**. Likewise important were the proven trainability of the underlying ability dimensions and the **deficit-specific training approach.**

Realistic content of the training programs

Clients want to apply what they have learned to everyday life, and they expect to be motivated by their training program. CogniPlus helps you meet your clients' expectations, because training takes place in the context of **realistic scenarios.** These have been created with the aid of computer game programmers, who have generated dynamic 3-dimensional graphics all specially tailored to their specific purpose.

Training for all ability levels

Unlike earlier computerized cognitive training programs, the CogniPlus programs can be used across the **entire ability range**. This opens up completely new opportunities for use alongside the traditional areas of application such as the rehabilitation of patients with brain damage. For example, CogniPlus can be used to improve the driving-related abilities of people convicted of traffic offences and the attention of children with ADHD as well as to increase mental arousal of patients with MCI.

Automatic adaptation of difficulty level

CogniPlus is an intelligent, interactive system which reliably identifies your client's ability level and automatically adapts to it. This ensures that one of the central requirements of any successful training program is met: the users of the program are motivated. They are offered an efficient program which is neither too easy nor too demanding for them.

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Why CogniPlus

Independent training

The use of CogniPlus programs creates time for you. Make use of the benefits of the software and let your clients work through their training on their own. We do, however, recommend that where children and individuals with severe impairments are concerned progress should be closely supervised; such clients should not be left to work alone.

Intuitive administration software

We believe that potential users must always be involved in the development of a product if high product quality is to be achieved. Ease of use is one of our top priorities, and input from users ensures that our products are as user-friendly as they can possibly be. The CogniPlus menu demonstrates the value of this approach: it is not only attractively designed but also simple and intuitive to use, even for users with little computer knowledge.

The CogniPlus input device

You can use the classic Schuhfried input devices: the Standard or Universal response panel. These make training comfortable and convenient even for clients with little computer experience or limited hand movement.

Assessment – training – evaluation

The tests of the Vienna Test System (see page 20) and the training procedures of CogniPlus are inter-coordinated. The training programs are based on the same theoretical constructs as the tests to which they correspond; this provides an efficient and theoretically sound **link between assessment, training and the subsequent analysis of effectiveness.**

We suggest that you use the following procedure: First use the Vienna Test System to assess the cognitive areas in which your client requires training. Then use CogniPlus to provide deficit-specific training. The progress made can be tested by re-using the Vienna Test System.

Data protection

A sensitive area in the relationship of trust between therapist and client is the handling of client data. There are two aspects to this. Firstly, the client needs to be confident that his details will only be handled by authorized people. Secondly, it is important that clients practising on their own are not able to open the CogniPlus menu and view the results and personal details of other users. Our data protection fully covers both these aspects.

A typical training session

Training with CogniPlus makes practising both enjoyable and motivating. For therapists and clients alike all the programs are simple, easily understood, and easy to administer and run. On the following pages we shall show you how straightforward the system is to use.

1. Set up the training program

Opening CogniPlus takes you straight to a detailed and easy-to-use menu. As soon as you enter the name of your client in the field provided, CogniPlus opens a client record with four tab pages: "Client data", "Training", "Results" and "Logbook".
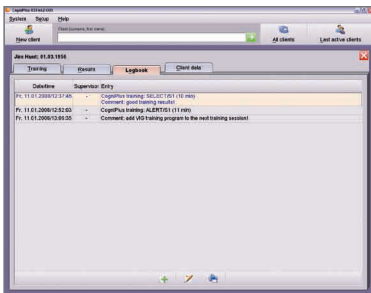
On the **"Client data"** tab page you can enter the client's details.

The **"Training"** tab page lists all the available training procedures. You can select the desired training and specify its duration. A session can consist of several different training procedures presented one after the other, in the order specified by you in the training sequence list.
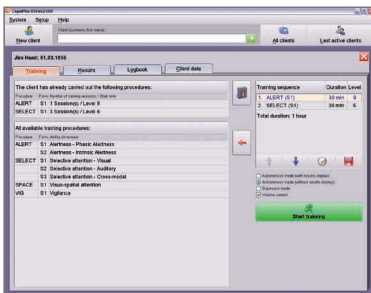
The **"Results"** and **"Logbook"** tab pages provide training results and session data. In the "Logbook" the system automatically records the details of each session. You can also add comments here. You thus have a compact but complete client record.

After selecting the training procedures to be used in a particular session, you should continue as follows:

If your client is able to work alone, you need to specify whether, having completed one program, he is to start the next one himself, thus working his way independently through the session. You do not then need to be present during training. If, however, the client needs personal attention (as is the case with children or individuals with severe impairment), you should monitor the progress of the session – intervening if necessary – and you should take responsibility for starting each new program.

Once the appropriate settings have been selected the session can begin.

CogniPlus

A typical training session

Each training program starts with an instruction phase. Simply formulated instructions inform the client of what he has to do. He can spend as much time reading these as he wishes since the length of time for which they are displayed is not pre-determined. This means that the client is not placed under stress.

We have taken care to ensure that the structure of all the CogniPlus training programs is standardized. This makes it easier for clients to use the system. Where appropriate we have built on clients' knowledge and experience of everyday activities; for example, the Start buttons are coloured green so that they resemble traffic lights. Guided by the careful use of size and colour on the screen, the way your client absorbs the information will be directly related to the importance of the various elements.

The instruction phase is also easy to use for patients with hemi-neglect or hemianopia, since CogniPlus provides them with a **half-screen view**. The text can appear either on the left-hand or on the right-hand half of the screen, depending on the area of the neglect or the visual field loss.

A typical training session

3. Practise phase

The instruction phase is always followed by a **practise phase**. If the client's responses indicate that he has not yet understood the task, the system will automatically repeat the instructions. Not until the system has confirmed the client's comprehension of the task will the subject be allowed to move on to the training program itself.

4. Training phase

You can use the CogniPlus programs to carry out training at **any level of difficulty across the ability range**. If a new client commences training, CogniPlus quickly and automatically identifies his ability level and adjusts the program accordingly. If the client has already completed one or more training sessions, the new session begins where the last one finished.

So that the program is neither too easy nor too difficult for clients, all the training procedures have been designed to be **adaptive**; that is, they adapt themselves continuously to the client's ability level.

CogniPlus

A typical training session

CogniPlus provides information on results in two different ways:

Each training procedure concludes with an easily read **chart of performance** in recent sessions. Note: if your client works through the session on his own, you are responsible for deciding whether the evaluation should appear on the screen.

At the end of the session you can view the **detailed results** of the various procedures used in the session. These include mean reaction times and the number of correct, delayed, incorrect and omitted responses at each level of difficulty. In addition a chart records each response made during the session in terms of difficulty level, reaction time and scoring (correct, delayed, etc.). You can if you wish also compare performance in the most recent session with that in the preceding sessions.

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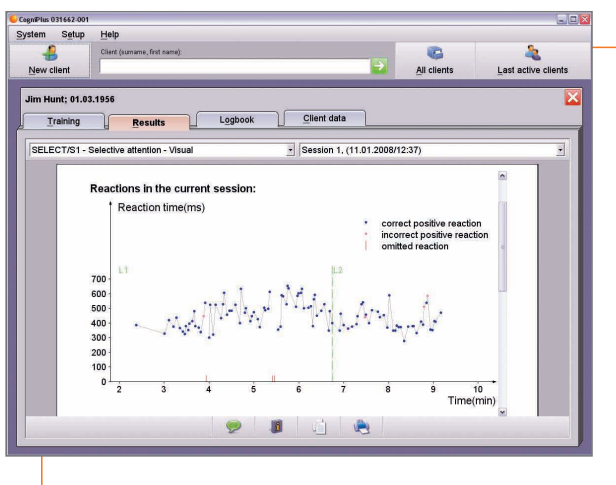
Input devices

You can carry out training with a keyboard, but also with our Standard or Universal response panel.

All our response panels are of course ideally suited for use by individuals with limited motor ability in the hand.

Standard response panel:

- 7 colour keys
- 10 number keys
- 1 sensor key
- Connection for foot-operated keys
- USB port

Universal response panel:

- 7 colour keys
- 10 number keys
- 1 sensor key
- 2 speed regulators
- 2 analogue joysticks
- Connection for foot-operated keys
- USB port

The Standard and Universal response panel can also be used for the Vienna Test System (page 20)!

Training

Attention is an important requirement for a range of everyday abilities such as perception, planning, taking action, and speaking.

The range of training procedures in CogniPlus covers all the attention functions which are currently considered to be relevant:

Training program	Attention function
ALERT	Alertness
VIG	Vigilance
SPACE	Visuo-spatial attention
SELECT	Selective attention
FOCUS	Focused attention
DIVID	Divided attention

Theoretical background

Intensity
- Alertness
- Sustained attention/Vigilanz

- Visuo-spatial attention

Selectivity
- Selective attention
- Focused attention
- Divided attention

It is recognized in general psychology and neuropsychology that attention is multi-dimensional. Modern taxonomies (Sturm, 2005) distinguish between the aspects of selectivity and intensity, which in turn are subdivided into more specific components. The intensity aspect of attention is made up of alertness and vigilance components – that is, of the basal processes of short-term and of longer-term attention activation and the sustaining of this arousal. With regard to the selectivity aspect of attention processes, distinctions are made between selective, focused and divided attention. The visuo-spatial attention represents an additional, independent dimension.

In 1993 Prof. Sturm et al. created the MS-DOS software package AIXTENT for the treatment of disorders of the alertness and vigilance attention dimensions and of selective and divided attention. Efficacy studies which were carried out with these programs yielded a fundamental insight:

Training programs are only effective if they utilise a deficit-specific approach. Any effective training program must therefore be based on a careful assessment of the client's deficits and subsequent treatment with specific training procedures.

Working with Prof. Sturm, we were able to build on these insights and develop a second-generation version of AIXTENT which formed the basis for the creation of the Windows-based CogniPlus system. All the modules have been created from scratch, but they follow the same paradigms which were successfully used in AIXTENT. We have, in particular, emphasized the theory-led embedding of the typical demands on attention in situations resembling everyday life. We have also taken care to ensure that patients whose visual field is restricted or who have hemineglect can still cope with the training.

Attention

Training procedures

Ability/dimension

The ALERT training program trains the alertness dimension of attention – the ability to temporarily increase and sustain the intensity of attention.

Theory

When the intensity of attention is temporarily aroused exogenously by a warning signal, phasic alertness is involved. If the arousal occurs without a cue, the situation involves intrinsic alertness. The aim of alertness training must be to improve the intrinsic alertness, since only then the arousal is controlled entirely cognitively. Where there are deficits related to alertness it is necessary to first improve phasic alertness and only then to proceed to working on intrinsic alertness.

Setting and task

A motorcycle is driven along a winding road. The subject's task is to carefully observe the stretch of road in front of him and to press the reaction key as quickly as possible when obstacles appear. If the reaction is delayed there is an "emergency stop"; there is a loud braking noise, the motorcycle comes to a halt and in addition a yellow exclamation mark appears on the screen.

Training forms

The ALERT training program consists of two training forms. The S1 training form trains phasic alertness, while the S2 training form trains intrinsic alertness. In the S1 training form the obstacles designed to externally arouse the client's attention are preceded by acoustic and visual warning signals. In the S2 training form the acoustic and visual warning signals are omitted. The motorcycle then travels through a foggy night-time landscape in which the obstacles suddenly appear out of the mist.

Difficulty structure

Each of the two training forms is made up of 18 levels of difficulty. The degree of challenge is increased by shortening the maximum permitted reaction time. At the first level the client has 1.8 seconds in which to react to an obstacle, but at the highest level only 0.3 seconds elapse between the sudden appearance of an obstacle and the emergency stop.
At the first session the speed of the client's initial reactions is assessed and he is assigned to a difficulty level appropriate to his ability. This ensures that from the outset the training program is optimally adapted to the client's ability and is never either too easy or too difficult for him.

Note

The ALERT training program can also be used with patients with impairments of the visual field. The instruction pages are then displayed on only one half of the screen and the obstacles, too, appear on only one side (for example, trees fall across the carriageway only from the right-hand side).

Attention

Training procedures

Ability/dimension

The VIG training program trains the attention dimension of vigilance – the ability to sustain attention over a lengthy period of time under monotonous stimulus conditions.

Theory

Long-term alertness tasks require the client's attention to be focused continuously for long periods of time on one or more sources of information, in order to detect and respond to small changes in the information presented (Davies et al. 1984). Vigilance represents a special variant of attention. Vigilance makes demands on attention over a long period of time – often a number of hours – and the relevant stimuli typically occur at very irregular intervals and at a very low frequency compared to the number of irrelevant stimuli. Vigilance training cannot be effective unless a training session lasts for more than 30 minutes at the minimum.

Setting and task

The client is presented with a situation in which he appears to be driving along a straight highway. At irregular intervals other vehicles come towards him on the opposite carriageway or overtake him. The client's task is to react by pressing a button when an overtaking vehicle suddenly brakes in front of him. Once he has reacted the vehicle's brake lights go out and it accelerates away from him. If the client fails to react within the permitted time, the brake lights start to flash. Eventually there is a loud squeaking noise, which is designed to draw the client's attention to what is happening.

Difficulty structure

The VIG training program has 30 difficulty levels. A decreasing stimulus frequency makes it more and more difficult for the client to sustain his attention: he is overtaken by other cars increasingly rarely, the surroundings become more monotonous as darkness falls and the number of sudden braking manoeuvres from overtaking vehicles decreases. In addition, the intensity of the feedback on delayed and omitted reactions becomes weaker as the difficulty level increases. The challenge therefore changes gradually from a sustained attention task to one requiring real vigilance.

At each difficulty level the maximum permitted reaction time adapts to the speed of the client's reactions. Taking the client's first valid reactions as a starting point, an individual reaction time limit is determined and used as a basis for measuring all further reactions made in the course of the training program. This ensures that from the outset the training program is optimally adapted to the client's ability and is neither too easy nor too difficult for him.

Note

The VIG training program can also be used with clients with impairments of the visual field. The instructions are then displayed on only one side of the screen.

Training procedures

Ability/dimension

The SPACE training program was created for patients with hemineglect but it can also be used successfully with patients who have an impairment of the visual field. It improves the visuo-spatial attention and is intended to train the specific ability to direct attention to stimuli on the contralesional side of the field of vision.

Theory

In everyday life our attention may be focused on a different source from our perceptive organs. Peripheral stimuli lying outside our central field of vision can attract the focus of attention to themselves. They then bring about a change in the direction of gaze or a turning of the head towards an object or event (visuo-spatial attention). Peripheral cues tend to bring about an automatic (exogenous) spatial shift of attention, while central cues (e.g. an arrow in the fixation point pointing to the left or right) are more likely to produce a cognitively controlled (endogenous) shift of attention, since a particular expectation is generated. Both peripheral and central cues cause a covert shift of attention to the right or left and thus make it easier to detect stimuli in the half of the visual field in which the cues occur or to which they point (valid condition). However, if the cue is in the wrong half or points in the wrong direction (invalid condition), the speed of reaction to the target stimulus is slowed, since attention must first be shifted from the "wrong" focus to the correct spatial position.

Setting and task

The client takes on the role of a photographer. His task is to observe various scenes such as a market place, airport, office, children's playground etc. The camera viewfinder moves towards a particular point in the area under observation. The task is to take a "photo" by pressing the reaction key as soon the viewfinder stops and has "captured" an object. In each scene there is a fixation point in the middle towards which the client can direct his gaze and where he can find the viewfinder if he has lost sight of it.

Difficulty structure

There are ten different difficulty levels, each of which displays a different scene of interest on the screen. The level of difficulty is increased by varying the way in which the viewfinder moves (continuous movement, jumping movement, with and without a return to the centre) and the complexity of the scene. In addition, at the lower levels of difficulty the task is made easier by an acoustic and visual cue (sound and arrow in the middle of the viewfinder) which indicates the direction of the next movement. At the higher levels of difficulty only irregular cues are given, and cues may give no indication of direction or even be completely wrong – for example, the arrow in the viewfinder may point to the upper right while the viewfinder jumps to the lower left.

Note

The instructions for the SPACE training program are displayed on only one side of the screen and are therefore easily read by patients with neglect or visual field impairment.

We recommend the use of monitors with a screen diagonal of at least 19"; this enables the largest possible area of the visual field to be trained.

Attention

Training procedures

Ability/dimension

The SELECT training program trains selective attention - the ability to respond quickly to relevant stimuli and to suppress inappropriate responses.

Theory

A selective attention training program should help the client to distinguish rapidly between relevant and irrelevant aspects of a task. Most selective attention tasks require a quick decision within a set of stimuli in which the relevant and irrelevant stimuli are clearly defined.

Setting and task

The client drives in a small mine wagon through a tunnel. Relevant and irrelevant stimuli (optical, acoustic or cross-modal) suddenly emerge from the darkness. The client's task is to respond only to relevant stimuli. If he responds late to a relevant stimulus or fails to respond at all, negative feedback is given in the form of a crash of thunder and a flash of lightning. If the client responds in error to an irrelevant stimulus, the figure or the sound source is illuminated in red.

Training forms

The SELECT training program consists of three training forms. The S1 training form trains selective attention in the visual modality (creatures appear in the tunnel). S2 is the acoustic training form, in which the client's task is to respond to relevant sounds. In the S3 training form the client is instructed to respond to specific stimulus combinations (figures which make particular noises).

Difficulty structure

There are 15 difficulty levels for each training form. SELECT adapts to the client's ability level in two ways. Firstly, the number of relevant or irrelevant stimuli increases or decreases. Secondly, at each difficulty level the maximum permitted reaction time adapts to the speed of the client's reactions. Thus for a skilled client the carriage gets faster after the first few responses. This ensures that from the outset the training program is optimally adapted to the client's ability and is never either too easy or too difficult for him.

Note

The SELECT training program can also be used with patients with impairments of the visual field. The instructions are then displayed on only one side of the screen. The relevant and irrelevant stimuli, too, are only presented on one half of the screen.

Attention

## Training procedures

Ability/dimension

The FOCUS training program trains focused attention – the ability to respond only to relevant stimuli when there is a high density of distracting stimuli.

Theory

Focused attention describes the ability to isolate a segment of reality in order to be able to analyse it more closely. It is particularly important to be able to maintain this focus in the face of distractions and to suppress the interference caused by the simultaneous and automatic processing of information.

Setting and task

A boat travels through a lush African landscape. The client is confronted with a wide range of different stimuli: screeching birds, flying dragonflies, a ruin on the banks of a river, a waterfall etc. His task is to respond to pre-defined relevant stimuli without letting himself be distracted by the large number of other stimuli.
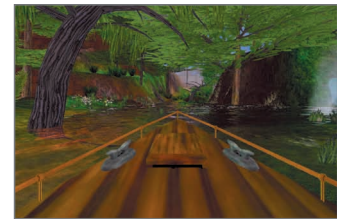
Training forms

The FOCUS training program consists of three training forms. The S1 training form requires the client to recognise visual stimuli against a background of distracting stimuli which may be acoustic, visual, or a combination of the two. In the S2 training form the task is to detect acoustic stimuli in the face of other stimuli which may likewise be acoustic, visual, or a combination of both. In the S3 training form the client's task is to respond to relevant stimuli which may be either visual or acoustic without being distracted by the high-density background stimuli.

Difficulty structure

The difficulty structure of the FOCUS training program is designed to adapt to the client's perceptual capacity. Thus a weak client will be presented with a low-stimulus environment, while a stronger client will be confronted with a large number of distractor stimuli. The number of distractor stimuli presented is carefully graded and the time allowed for recognition of a stimulus is adapted to the client's ability.

Note

The FOCUS training program can also be used with patients with impairments of the visual field. The instructions are then displayed on only one side of the screen. Relevant stimuli, too, are only presented on one half of the screen.

Attention

Training procedures

Ability/dimension

The DIVID training program trains divided attention - the ability to perform different tasks simultaneously.

Theory

The ability to divide one's attention depends on the processing resources available and on the nature of the combined tasks. The more similar the tasks, the greater the interference that arises between them (Wickens, 1984). In everyday life the ability to split one's attention is relevant to many skills – for example, driving a car, which normally requires the simultaneous monitoring of a number of different information streams.

Setting and task

In this training program the client takes on the role of a security official at an airport. He has to simultaneously observe both a range of scenes on several control monitors (sliding doors at the entrance, ticket counter, luggage conveyor) and announcements made over the loudspeaker system. His task is to deal with problems that occur by pressing the response key. If the client fails to react promptly to a problem or a relevant announcement, the picture is frozen on all channels and the channel on which the problem occurred is framed in red or marked acoustically. The events displayed do not continue until the reaction button is pressed.

Difficulty structure

DIVID adapts to the client's ability level in two ways. Firstly, the number of scenes increases or decreases. Secondly, at each difficulty level the maximum permitted reaction time adapts to the speed of the client's reactions. This ensures that from the outset the training program is optimally adapted to the client's ability and is never either too easy or too difficult for him.

Note

The DIVID training program can also be used with patients with impairments of the visual field. The instructions and the visual channels are then displayed on only one side of the screen.
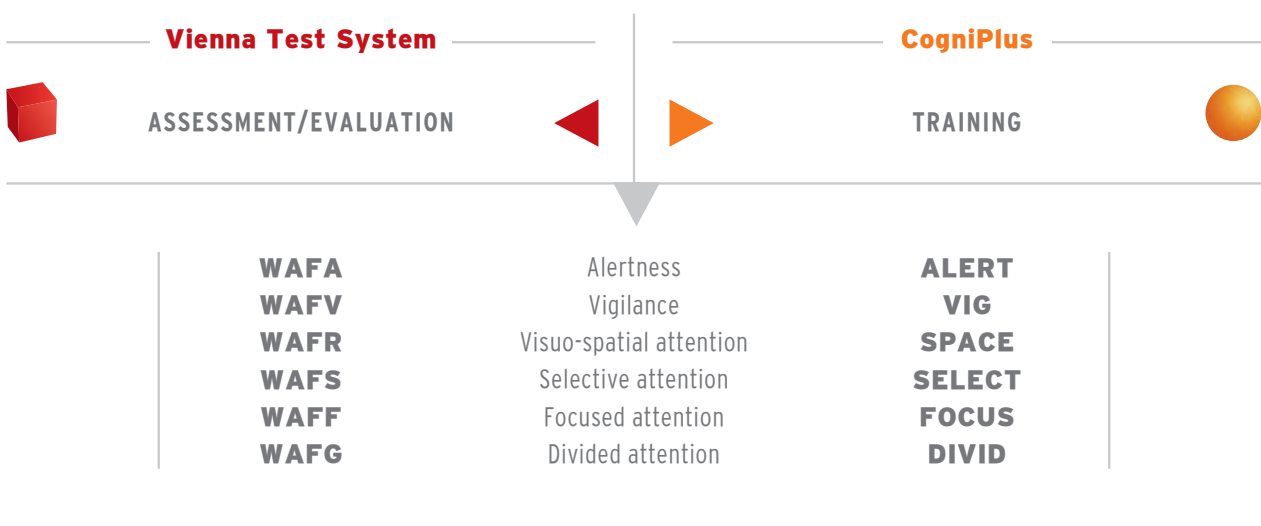
Assessment

Working with Prof. Sturm, a series of new tests was created for the Vienna Test System for investigating the sub-functions of attention: the WAF test battery. The theoretical basis of these tests and the CogniPlus training programs was the taxonomy of attention which draw on Sturm's work and take account of the most up-to-date psychological insights available.

Advantages of the WAF tests

- the option of choosing between **visual, auditory or cross-modal presentation of stimuli**. This means that modality-specific attention abilities can be separately assessed.

- the option of presenting **simple stimuli**. The tests are therefore suitable for use with clients with impaired perceptual functions. In addition, WAFW can be used to determine whether the client has the minimum perceptual ability required for administration of the WAF tests.

- The distinction between marked and minimal changes in stimulus intensity enables separate assessment of automatic and controlled aspects of attention.

The content of CogniPlus is closely linked to the Vienna Test System. This means that **assessment, treatment and follow-up efficacy analysis** can be efficiently linked. Since the corresponding tests and training programs do not include the same materials, a reliable distinction can be made between the material-specific learning effect and the material-independent training effect which is being aimed at.

Vienna Test System		CogniPlus
ASSESSMENT/EVALUATION		TRAINING
WAFA	Alertness	ALERT
WAFV	Vigilance	VIG
WAFR	Visuo-spatial attention	SPACE
WAFS	Selective attention	SELECT
WAFF	Focused attention	FOCUS
WAFG	Divided attention	DIVID

Tests

The WAF test battery can be administered individually or in any desired combination as a test battery:

WAFA – Alertness

The WAFA involves the measurement of reaction time in response to simple visual or auditory stimulus material. As well as forms for measuring intrinsic alertness there are also forms for measuring phasic alertness; in the latter the signal stimulus is preceded by a cue which may be presented in the same modality as the signal or cross-modally.

WAFV – Vigilance / sustained attention

WAFV presents the subject with visual or auditory stimuli, some of which change slightly in intensity. The subject's task is to respond to these occasional changes in intensity. 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.

WAFR – Spatial attention

The subject is required to react to visual stimuli which are presented in either four or eight spatial positions, depending on the test form. Some signals are preceded by either a peripheral visual cue (a marker in the relevant quadrant) or a central one (an arrow in the square). In all test forms responses without the warning signal and with the correct or incorrect cue can be scored separately.

In addition there is a test for neglect in which stimuli are presented at various positions in the right or left visual field or simultaneously in equivalent positions in both halves of the visual field (extinction condition).

WAFS – Selective attention

Relevant and irrelevant stimuli are presented unimodally and cross-modally. The subject's task is to respond only to the relevant stimuli.

WAFF – Focused attention

The subject is presented with relevant visual and auditory stimuli against a background of other distracting stimuli. His task is to react when two pre-defined changes in the relevant stimuli occur in a row.
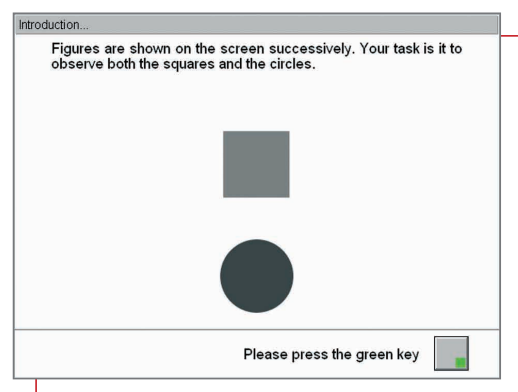
WAFG

WAFG – Divided attention

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

For more information request our free Vienna Test System catalog.

The Vienna Test System - a brief description

The Vienna Test System (VTS) is known world-wide as a leading computerized psychological assessment tool. The system consists of powerful administrative software, a large range of individual tests and additional optional input devices.

More than 80 tests

From our **wide test palette** you can choose any combination appropriate to the issue you wish to address.

These tests include not only computerized versions of familiar paper-and-pencil tests but also auditory, multi-media and adaptive tests.

- Intelligence tests
- Ability tests
- Personality tests
- Attitude tests
- Clinical tests

Computerization for maximum administration and scoring objectivity

The powerful **administration software** is easy to use and provides you with an at-a-glance overview of the options and additional functions available within the Vienna Test System.

Your clients, too, will find it easy to use. Standardized instructions and interactive practise phases prepare them thoroughly for the tasks they will be presented with in the test session.

Our systems guarantee a high level of **objectivity** since the tests are worked without the test administrator's involvement.

All the test results are **printed out in easy-to-read form** and saved in a database.

Special input devices

With special input devices such as the Light Pen and the Response Panels, in addition to classic peripherals such as the PC keyboard and mouse, even individuals with little computer experience are not put at a disadvantage.

If you need to test a large number of people you can set up a Test System Network; we shall be happy to advise you on the details.

Request our free Vienna Test System catalog from info@schuhfried.at

It contains details of the various functions of the basic software and input devices as well as full descriptions of all the tests in the Vienna Test System.

Cogniplus - System requirements

January 2008

COMPUTER

- PC with pentium or compatible CPU, min. 2.5 GHz
- at least 512 MB RAM
- 3D-graphic card compatible with DirectX 9.0 and at least 128 MB of RAM as well as a graphic chip by NVIDIA (GeForce FX5200 or better) or ATI (Radeon 9500 or better). The display driver must support Open-GL starting from version 1.4.
- USB-headset or USB-loudspeaker. Please contact your dealer or the SCHUHFRIED GmbH for advice regarding suitable equipment.
- DVD drive, hard drive, mouse, keyboard
- USB ports for license dongle and peripheral hardware (in case all USB ports on the PC are used, a USB hub with external power supply is required)
- Serial port (if a Test System Interface is used)
- A network interface card to connect the computer to a data network (e.g. for setup of a group system)
- Operating system: Windows 2000 or Windows XP (recommended)

It is important that no programs which can interfere with the training (e.g. by heavy CPU usage or on-screen presentations) are installed on the computer!

MONITOR

CRT or TFT with an image diagonal of at least 15" (19" for the training program SPACE).
For CRT monitors a refresh rate of at least 75 Hz has to be set.
It is recommended to use only synchronous **TFT monitors**, since disturbing flicker effects can occur with asynchronous monitors. Whether a monitor works synchronously or asynchronously can be determined with a test program (PixPerAn).

PRINTER (OPTIONAL)

Laser or inkjet printer, black and white or colour.

SAFETY DEVICES

If CogniPlus 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 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 your dealer or the SCHUHFRIED GmbH directly if you have any questions.

Quality through competence

The quality of our products is proven. In 2003 our company received ISO 9001 certification and it has been awarded the Austrian coat of arms.

ISO 9001

Our company has introduced a quality management system in accordance with EN ISO 9001 and EN ISO 13485, covering all areas of our activity. We have received the CE symbol for this. This certifies that we comply with the requirements of the Medical Products Act and EU Directive 93/42/EEC.

Coat of arms

We are particularly proud to have been awarded the Austrian coat of arms. In 2001 the Federal Minister for Economics and Labour awarded us the right to bear the coat of arms. This is the highest award granted in Austria and it is only awarded to business which can demonstrate a high level of exports, first-class financial standing, innovative ability, quality management and significant investment in research and development.

Customer service

EN ISO 13485:2003
Zert.Nr.: E032RI

Our Customer Service is here to help you in all matters concerning our company and our products. We can provide support in the following areas:

Specialist psychological advice

You need interpretation help for an evaluation? You are uncertain which tests to use in a particular situation? The expert know-how of our team of experienced psychologists is at your disposal.

Help-Desk

Our Help Desk can offer practical advice on all aspects of the installation and technical operation of the Vienna Test System and CogniPlus.

Tel: +43 2236 42315-60; e-mail: support@schuhfried.at

Seminars and Workshops

Do you want to know more about our products? You may know the basics about individual products, but perhaps there are specific assessment issues which interest you? Then take the opportunity to participate in one of our seminars. Both half- and full-day events are available. Our courses provide clear and concise information at both basic and more specialized levels, depending on the topic. A list of currently scheduled events is on our website: **www.schuhfried.at**

Acknowledgements

The SCHUHFRIED company would like to thank its staff and external partners for their commitment and competence in working on the development of CogniPlus. Each person's work has been a valuable part of the success of the whole project.

In particular we should like to thank Prof. Dr. Walter Sturm for his outstanding work. We are most fortunate to have found in Prof. Sturm a partner whose extensive experience in researching attention functions and developing training programs has made a significant contribution to our project.

Since 1995 Prof. Sturm has been head of the Clinical Neuropsychology section at the neurological clinic of the medical faculty of the RWTH in Aachen. His research has focused on neuropsychological assessment, treatment of attention impairments, functional reorganisation after attention therapy and functional imaging of attention functions.

catalog - CogniPlus

Biofeedback 2000 *x-pert*

Computerized Biofeedback

A new feature of Biofeedback 2000 *x-pert* is the cordless transmission of readings to the computer.

Four radio modules are available, designed for high precision and ease of use.

MULTI: EDA: skin conductance
PULS: pulse amplitude, pulse frequency
TEMP: temperature
MOT: motility
RESP: respiration
EMG: muscle tension
EEG: electroencephalogram

The cordless transmission of data opens up new therapeutic applications, for example in sports medicine.

You can purchase therapy modules for special applications separately and combine them if required.
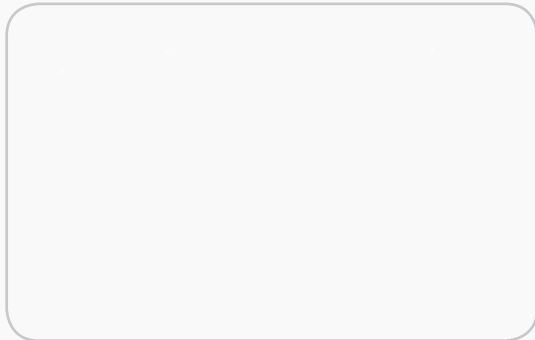
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SCHUHFRIED

Qualität durch Kompetenz