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Strategies to Strengthen Executive Functions in Adults

Toolkit of Methods for developing, enhancing and improving executive functions in adult population



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O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

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 <p>IFRTS Corse Institut Corse de Formation et recherche en Travail Social, Médico-Social et Santé</p> <p>Institut Corse de Formation et Recherche en Travail Social (IFRTS) Lead Partner, France www.ifrtscore.eu</p>	
 <p>Civiform Società Cooperativa Sociale Project partner and O1 Activity Leading org., Italy www.civiform.it</p>	 <p>Petru Maior University of Tîrgu Mureş Project partner, Romania www.upm.ro</p>
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 <p>Volkshochschule im Landkreis Cham e.V. Project partner, Germany vhs-cham.de</p>	 <p>BEST Institut für berufsbezogene Weiterbildung und Personaltraining GmbH Project partner, Austria www.best.at</p>

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O2 - Toolkit of Methods for developing, enhancing,
improving executive functions in adult population

Table of contents

INTRODUCTION

Background

What is the SOFIA Toolkit of methods? Structure and content

Our approach: mindfulness and meditation

Methodology: the different steps to create this Toolkit of methods

I. WORKING MEMORY

1. Working memory deficit: theories, contexts, realities
2. Tools and instruments to develop adults' working memory
3. Virtual tools to promote cognitive skills in general and working memory in particular

II. EMOTIONAL MANAGEMENT

1. Emotional dysregulation: theories, contexts, realities
2. Tools and instruments to develop adults' emotional management
3. Virtual tools to promote cognitive skills in general and emotional management in particular

III. ORGANIZATIONAL SKILLS

1. Organizational Attention Deficit: theories, contexts, realities
2. Tools and instruments to develop adults' organizational skills
3. Virtual tools to promote cognitive skills in general and organizational skills in particular

BIBLIOGRAPHY



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

INTRODUCTION

Welcome to the SOFIA Toolkit of Methods for developing, enhancing, improving executive functions in adult population (O2). This document was co-written by the Erasmus+ SOFIA project partners. This includes Vocational Education and Training (VET) organisations, an organisation specialized in developing innovative e-learning tools and a university from 7 EU countries. The SOFIA Toolkit of Methods was co-developed by and for VET trainers, educators or career counsellors. It gives an account on what is Executive Functions Deficit (EFD), how it impacts adults' learning experience and daily life and how a VET trainer can improve three key Executive Functions amongst adult learners attending their training sessions.

Background

The **SOFIA - Strategies to strengthen executive Functions In Adults** - project focuses on enhancing Executive functions within adult population. The term of Executive Functions (EF) refers to the mental processes that control other brain processes and enable us to plan, focus attention, remember instructions and juggle with multiple tasks. In other words, EF can be compared to an air traffic controller. The air traffic control helps pilots to direct aircraft on the ground and through controlled airspace and provide advisory services to aircraft in non-controlled airspace. The aim is to prevent collisions, organise and control the flow of air traffic, to provide information and other support to pilots. Executive Functions - in the same way - help people in general and adult learners in particular to regulate the flow of information, to pay attention, to plan ahead, to remember important things and to follow rules. People usually manage their 'air traffic control' skills by establishing routines, modelling social behaviour, creating and maintaining supportive and reliable relationships.

The SOFIA Toolkit of methods (O2) is mainly based on the conclusions of another document: the SOFIA Handbook (O1) (both of them are downloadable on [our website](#)). The SOFIA partners have developed this Handbook during the first stage of the project. As a reminder, the Handbook was based on surveys administered to adult learners and VET trainers (i.e. our target groups) living in the 7 countries involved in the SOFIA project. The analysis of these surveys showed that VET trainers and adult learners with executive function disorders certified or not certified, pointed the following three Executive Functions (EF) as the ones that they need to develop, enhance and improve in priority:

- 1) **Working memory** is the EF that allows us to store, for a certain period, all the necessary information, processing and manipulating to connect past and present. Most of the adults interviewed reported that their greatest difficulty lies in working



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

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memory like a difficulty of sequencing different work processes, difficulty in understanding before and after and inability to organize work by completing it.

- 2) **Emotional management** refers to the EF that allows an individual to self-regulate his/her own emotions. It is the second most important EF that has been reported by the interviewees (see O1 Handbook). Effective emotional management affects cognitive competences. In other words, it impact your learning capacity. In fact, when our emotions reach a high level of intensity, we become unstable and our cognitive function will not work at full capacity. Research work show that emotions can be scary things for adults and this can mainly be explained by the fact that they do not know how to deal with them. Identifying emotions is the first step for learning how to cope with our emotions.
- 3) **Organizational skills** refer to the processes that enable us to plan things. Planning difficulties mainly occur during one's learning experience, at work or more generally during your daily life. It refers to the ability to use our time, energy, resources, and so on. Often related to self-discipline, having good organizational skills is crucial to achieve the things we want to achieve, such as completing a training programme.

What is the SOFIA Toolkit of methods? Structure and content

The present document is a Toolkit of methods for developing, enhancing and improving executive functions in adult population (O2). On one hand, it is based on a revision of the state of the art in International scientific literature and especially focusing in the research produced in partner countries. On the other hand, the three key executive functions covered in this Toolkit have been selected according to characteristics and needs expressed by adult learners and VET trainers interviewed in the SOFIA handbook (O1).

This Toolkit provides elements to establish a theoretical basis and include recommendations and proposals of methods that VET trainers can use in their daily training activity. They answer the needs that they expressed during local focus groups that were conducted in the 7 partner countries. More specifically the SOFIA Toolkit of methods provides:

- a. a review of theories currently used to explain Executive Function Disorders (EFD);
- b. a review of tools, instruments and methods that can be used by VET trainers to improve adult learners Executive Functions (EF) and to improve the quality of their teaching
- c. a review of virtual tools or apps that can be used to promote cognitive skills, in general, and working memory, emotional management and organizational skills in particular



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

The three parts of the review consolidate the grounds where the rest of the project was constructed. The innovative aspect of this Toolkit of Methods lays in the change of focus from international literature (that is actually mostly Anglo-Saxon) to bringing to the frontline best practices and methods developed within the 7 EU countries involved in the project. Although the SOFIA partners already have a strong theoretical standpoint, the systematization of quality methods, strategies and tools that have been used so far to tackle these problems in the partner countries is yet to be accomplished. Therefore, analyzing the international literature provides a broad vision on Executive Functions, but the review of tools and methods from the partner countries gives insights to the VET trainers to improve the overall learning experience of adult learners.

Our approach: mindfulness and meditation

SOFIA project's approach focuses on techniques such as mindfulness and meditation in order to address the challenge of enhancing the abilities related to executive functions. Emphasis is given to basic brain activity to assist the development of focusing and staying focused (i.e. mindfulness), while being relaxed enough and with enough oxygen in the brain (i.e. meditation).

The brain and the body are mutually connected. This is the point where 'mindfulness' finds its connecting piece in the three interrelated activities of the embedded body-brain system: the capacity of self-regulation of internal states, sensorimotor coupling with the environment and intersubjective interaction with other agents (Thompson and Varela, 2001). Bodily movements can actively influence emotions (Strack et al., 1988; Niedenthal et al., 2005), the manipulation of body posture can alter the regulation of mood (Veenstra et al., 2016), and intentional movement can regulate emotional states (Shafir et al., 2013), all of which are constitute a part of the 'mindfulness' experience. The notion of embodiment, or embodied cognition, supports that the whole body, not just the brain, is involved in building up emotions (Colombetti and Thompson, 2008; Slaby et al., 2013; Colombetti, 2014). Mindful emotion regulation, which is a meditational technique that can be used in a clinical context, is conceived as a unique emotion regulation strategy, that results from encountering diverse emotional states from a mindful mental state, which includes awareness and acceptance (Chambers et al., 2009; Farb and Segal, 2012; Chiesa et al., 2013; Grecucci et al., 2015a). Previous emotional states can strongly influence cognitions and attention processes (Okon-Singer et al., 2015), which then will drive the emotion regulation process. Furthermore, 'mindfulness' requires the focused attention to the present and it automatically leaves the past and the irrelevant aside. From that perspective, Working Memory, is directly linked to 'mindfulness' as well.



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

In clinical terms, 'mindfulness' consists of two main facets: present moment awareness and mindful acceptance of feelings and emotional states (Cardaciotto et al., 2008). It is a kind of awareness, a non-reactive and non-judgmental one, during which the individual intentionally pays attention to the essence of the present experience. In other words, the attention is focused on what is naturally there, uncontaminated by mental processes and schemas that categorize it as true or false.

Shapiro claims that mindfulness might act through changing attention, intention, and attitude (Shapiro et al., 2006). Furthermore, Hölzel proposed that mindfulness enacts its effects through plastic changes of mental and brain functions related to attention regulation, body awareness, emotion regulation and self-perspectives (Hölzel et al., 2011). An additional position states that mindfulness leads to changes in self-processing, through the development of self-awareness, self-regulation (Vago and Silbersweig, 2012).

'Mindfulness' has several impacts on cognitive, executive, and emotional functions. There is a great number of techniques through which one can practice "mindfulness". Meditation is a very popular way to practice "mindfulness". There are numerous types of meditation, such as "Breath Awareness Meditation", "Loving-Kindness Meditation", "Mindfulness Meditation", "Body Scan/ Progressive Relaxation", and "Zen Meditation". These are only a few examples of meditation types, all of which share two important elements: the lack of judging oneself or others, and discipline. Meditation can work for a lot of people, since one can adjust the practice to his/ her needs and time accordingly.

Methodology: the different steps to create this Toolkit of methods

In order to create this Toolkit of methods, the SOFIA partners first conducted a desk research aiming at giving an overview of the existing research work implemented in their home countries (O2, activity 1). Then, IFRTS and UPM facilitated an international brainstorming session that was held in Cividale del Friuli, Italy in July 2018, where all the partner countries presented their findings (O2, activity 2). This international brainstorming session was conducted according the Nominal group technique (NGT), which is a structured type of small-group discussion technique in order to reach consensus. NGT gathers information by asking persons to respond to several questions posed by a moderator, and then asking participants to prioritize the ideas or suggestions of all group members. This methodology prevented domination of one partner organization and enabled the SOFIA project partners to identify and prioritize the most relevant methods. This enabled IFRTS to share a proposal of the most important methods together with all the project partners (O2, activity 3). From this proposal, all the SOFIA partners conducted local focus groups gathering 4-6



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experts of EF in each country (O2, activity 4). Finally, all the project partners shared a report from their local focus group with IFRTS, which developed the present Toolkit of methods from the conclusions and recommendations made by the local experts during their focus group sessions (O2, activity 5).

This is the methodology that has been thoroughly carried out by all the SOFIA partners in order to ensure that the SOFIA Toolkit of methods the needs expressed by the trainers and adults with EFD certified or not certified.

O2 - Toolkit of Methods for developing, enhancing,
improving executive functions in adult population



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

I. WORKING MEMORY

1. Working memory deficit: theories, contexts, realities

Although there is no major research work about Executive Functions Deficit (EFD) written by experts from one of the 7 countries represented in the SOFIA project, the Anglo-Saxon literature has widely explored this field, including publications about working memory deficit.

a) **The Behavior Rating Inventory of Executive Function–Adult Version™ (BRIEF-A™)**

Researchers from Florida, USA together with the Psychological Assessment Resources (PAR) developed a standardized rating scale called **The Behavior Rating Inventory of Executive Function–Adult Version™ (BRIEF-A™)**. This screening tool for possible executive dysfunction provides an open window into *‘everyday behaviors associated with specific domains of the executive functions in adults ages 18 to 90 years’*. The BRIEF-A consists of equivalent *Self-Report and Informant Report Forms*, each having 75 items in nine nonoverlapping scales, as well as two summary index scales and a scale reflecting overall functioning (*Global Executive Composite [GEC]*) based on theoretical and statistical considerations. The *Behavioral Regulation Index (BRI)* is composed of four scales: *Inhibit, Shift, Emotional Control, and Self-Monitor*. The *Metacognition Index (MI)* is composed of five scales: *Initiate, Working Memory, Plan/Organize, Task Monitor, and Organization of Materials*. There also are three validity scales: *Negativity, Infrequency, and Inconsistency*. The BRIEF-A can serve as an *‘indicator of individuals’ awareness of their own self-regulatory functioning’*, where the user – or client – can self-assess his/her own executive functions.

From this, many BRIEF-A *‘interpretive Reports’* (which are the documents that come out when a client has completed BRIEF-A test) show that clients can experience difficulties with working memory. In order to rate this very specific difficulty, the American researchers have developed a **Working Memory scale** that measures *‘on-line representational memory’* defined as *‘the capacity to hold information in mind for the purpose of completing a task, encoding information, or generating goals, plans, and sequential steps to achieving goals’*. As already highlighted in the questionnaire administered among trainer and adults with EFD certified or not certified from 7 different EU countries, *‘working memory is essential to carry out multistep activities, complete mental manipulations such as mental arithmetic, and follow complex instructions’*.



For example, a BRIEF-A 'interpretive Report' that resulted from the completion of the BRIEF-A test by a male client aged 20, with 12 years of educational background, with no certified EFD¹ show that a young man with at first sight no particular EFD did experience *'substantial difficulty holding an appropriate amount of information in mind or in "active memory" for further processing, encoding, and/or mental manipulation'*. Having a high score on this scale suggests that this young man did actually have *'difficulties sustaining working memory, which has a negative impact on the ability to remain attentive and focused for appropriate lengths of time. Individuals with fragile or limited working memory may have trouble remembering things (e.g., phone numbers, instructions) even for a few seconds, keeping track of what they are doing as they work, or may forget what they are supposed to retrieve when sent on an errand. And this part of the report focusing on working memory concluded that: 'such individuals may miss information that exceeds their working memory capacity, such as instructions for an assignment'*.

In fact, the BRIEF-A self-assessment tool that was based from extensive research work, confirms that EFD affects all adults, including those who are not certified Executive Functions Deficit. Such investigation confirms the need of developing innovative and engaging methods for developing, enhancing, improving executive functions in adult population.

b) Miller's Magic Number (Miller, 1956)

George A. Miller questioned the limits of the short-term memory's capacity. In a renowned 1956 paper published in the journal Psychological Review, Miller cited the results of previous memory experiments, concluding that people tend only to be able to hold, on average, 7 chunks of information (plus or minus two) in the short-term memory before needing to further process them for longer storage. For instance, most people would be able to remember a 7-digit phone number but would struggle to remember a 10-digit number. This led to Miller describing the number 7 +/- 2 as a 'magical' number in our understanding of memory.

¹ BRIEF-A: Behavior Rating Inventory of Executive Function - Adult Version™, [Interpretive report, Sample Client](#), PAR Psychological Assessment Resources, Inc. 25/09/2006



O2 - Toolkit of Methods for developing, enhancing, improving executive functions in adult population

With a background in linguistics Miller understood that the brain was able to 'chunk' items of information together and that these chunks counted towards the 7-chunk limit of the STM. A long word, for example, consists of many letters, which in turn form numerous phonemes. Instead of only being able to remember a 7-letter word, the mind "recodes" it, chunking the individual items of data together. This process allows us to boost the limits of recollection to a list of 7 separate words.

Miller's understanding of the limits of human memory applies to both the short-term store in the multi-store model and Baddeley and Hitch's working memory. Only through sustained effort of rehearsing information are we able to memorize data for longer than a short period of time.

c) The interference Theory

The interference theory postulates that we forget memories due to other memories interfering with our recall. Interference can be either retroactive or proactive: new information can interfere with older memories, whilst information we already know can affect our ability to memorize new information.

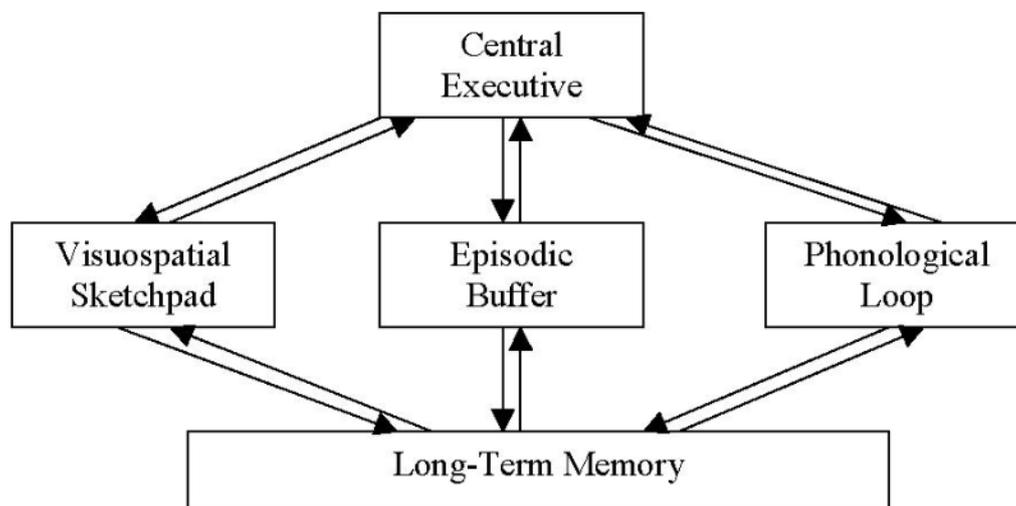
Both types of interference are more likely to occur when two memories are semantically related, as demonstrated in a 1960 experiment in which two groups of participants were given a list of word pairs to remember, so that they could recall the second 'response' word when given the first as a stimulus. A second group was also given a list to learn, but afterwards was asked to memorize a second list of word pairs. When both groups were asked to recall the words from the first list, those who had just learnt that list were able to recall more words than the group that had learnt a second list (Underwood & Postman, 1960). This supported the concept of retroactive interference: the second list impacted upon memories of words from the first list.

Interference also works in the opposite direction: existing memories sometimes inhibit our ability to memorize new information. This might occur when you receive a work schedule, for instance. When you are given a new schedule a few months later, you may find yourself adhering to the original times. The schedule that you already knew interferes with your memory of the new schedule.

d) Baddeley's theory on working memory

Alan Baddeley developed a model of working memory which assumes that working memory is a system with several different parts that control information being processed. Each component has a limited capacity and is to a great extent independent of the others.

The current multicomponent model for working memory, which was updated in 2000, contains four components (initially contained three components) and is represented graphically as follows:



2

The phonological loop processes sounds and is responsible for speech based information. However it is the part of working memory that deals with spoken and written materials. It supports the acquisition of language and new vocabulary, remembering instructions and problem –solving. The phonological loop consists of 2 parts:

1. The phonological store: is linked to speech perception and holds information in a speech-based form for 1-2 seconds
2. Articulatory control process is linked to speech production and acts like an inner voice rehearsing information from the phonological store. This is how we can retain the information in working memory, as long as we keep repeating it.

²<http://mercercognitivepsychology.pbworks.com/w/page/61198759/Baddeley%27s%20Model%20of%20Working%20Memory>



The visuo-spatial sketchpad is responsible for storing and processing information in visual and spatial form, as well as the location and movement of objects in space. This helps to keep track of our position in relation to objects around us and avoid bumping into things when we are walking for example around a classroom. Conscious awareness is assumed to be the principal mode of retrieval from the buffer.

The episodic buffer is assumed to have a limited capacity system (about four episodes) that provides temporary storage of information and play an active role in binding together information from different sources and from long-term memory. Conscious awareness is assumed to be the principal mode of retrieval from the buffer.

The central executive is assumed to be the most important component of the model. It doesn't act as a memory store but rather is responsible for coordinating and allocating data to the subsystems, like visuo-spatial sketchpad, phonological loop and relates them to long-term memory. The central executive is assumed to prioritize particular activities and makes decision about which issues deserve attention and which should be less focused on or ignored in a specific situation. It deals with cognitive tasks and problem solving.

In summary, it is important to underline, that Baddeley working memory model explains the range of tasks the memory process: verbal reasoning, comprehension, reading, problem-solving and visual and spatial processing and is underpinned by considerable experimental evidence. The model assumes that one can perform two tasks at the same time without much problem, if they don't interfere with one another and don't require to process information with the same component/resource.³

³ <https://www.simplypsychology.org/working%20memory.html>

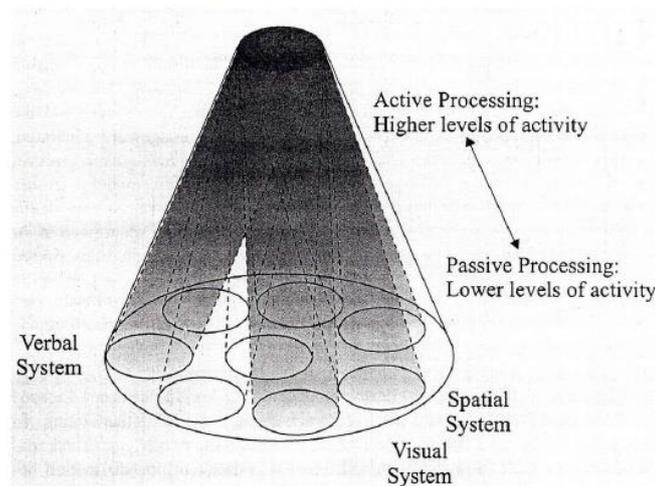


e) Cornoldi and Vecchi's model

Working memory is the ability to keep present and active information coming from outside and in this way allows people to understand and represent the external environment, to keep information about their experiences, to acquire new knowledge and the resolution of problems. A model that elaborates on some concepts of Baddeley's model was proposed in 2003 by Cornoldi and Vecchi.

The Continua Model

Cornoldi & Vecchi, 2003



It is a cone-shaped model that has two dimensions: a continuous vertical and a horizontal one. Along the vertical continuum you can group the most automated skills, in which the involvement of the working memory is low, and instead the more central processes, which instead require a higher active control. As the level of control increases, the demand for cognitive resources increases, the higher the degree of control required by an activity, the greater is incompatible with the unwinding of another central activity.

According to this model the simplest activities are strictly related to a certain type of information (es. the perception and immediate memory of the colors), while an activity at intermediate level maintains a weaker link and a central activity is almost completely detached from the nature of the information processed.



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The second feature of the model is the presence of a horizontal plane that relates the content of different types of information and the lesser or greater distance between them. The linguistic material and the visual - spatial material can be placed on two opposite points of this plane, while the visual and spatial material while occupying separate points may have greater contiguity.

f) Premack and Woodruff's theory of mind (ToM)

Theory of mind refers to the capacity to notice unusual perspective of others and its influence on their behavior – *'that is, other people have unique thoughts, plans, and points of view that are different than yours.'* ToM's classic assumptions were proposed in 1978 by Premack and Woodruff, primatologists studying chimpanzees.

Looking from the perspective of problems related to EFD 'ToM is defined as an implicit understanding of the individual mental states of others, and their influence upon behaviour. It is the understanding that others thoughts and feelings are unique and often different to one's own personal thoughts and feelings, and that both may differ from actual reality. The ability to grasp ToM implicates various aspects of social interaction such as cooperation, lying, following directions, and feeling empathy. Lacking adequate ToM will cause difficulty in understanding and predicting the behavior of others.' [Theory of Mind: How Children Understand Others' Thoughts and Feelings]

The classic version considers that ToM must be universal for all people regardless of their cultural diversity. The other empirical works on ToM, developed primarily in the field of research on autism, made it possible to put forward the thesis that ToM is not only a theory requiring the observer's knowledge but also has a component independent of conscious processes in the form of a cognitive mechanism known in the literature as "Theory of mind mechanism" (TOMM)

(PDF) Cultural differentiation and "Theory of the mind"

ToM impairment refers to the state in which ToM does not develop as expected. This state may result from a neurological, cognitive, or emotional deficit. This impairment exists most prominently in Autism spectrum disorders (ASD), and serves as one of the primary characteristics. Individuals with ASD who present high cognitive abilities and verbal knowledge, still display difficulties in passing ToM tasks. [Premack, D., & Woodruff, G. (1978). Does the chimpanzee have a theory of mind?. Behavioral and brain sciences]



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improving executive functions in adult population

ToM not only assumes the existence of the universal cognitive mechanism of TOMM, but also assumes that the lack of its proper functioning is strongly correlated with the impairment of human social competences (as in the case of autism, asperger and widely understood EFD).



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2. Tools and instruments to develop adults' working memory

a) Tool #1

Title of the activity:

Tratak- Concentration to A Candle Flame

Learning objectives:

Through this exercise the participants will learn to:

- Focus their attention on a single object. Meditate on the flame of a candle following specific instructions
- Clear their mind off thoughts and /or prevent distracting thoughts from arising
- During this exercise, they can be inserted into an relaxing, almost hypnotic state, where the mind settles allowing their mind therefore, to become still and quiet.
- Taking control of their emotional state and creating a deep state of inner peace Improve concentration ability and create more space in their minds to store new information.
- Experience inner peace and silence thoughts allowing their inner voice/intuition to be enhanced.

Duration of the activity: 5min

Instructions to conduct the activity:

Choose a quiet room. Find a place where you won't be disturbed for the duration of the exercise.

Dim the lights and remove any distractions by turning off your phone and/ or any other devices that may interrupt the exercise.

Wear comfortable clothing. Sit comfortably in a posture that is most convenient for you.

Place the candle or the image of the candle at eye level.

Get comfortable and start by taking a few long, deep breaths to relax; Bring your attention to the candle. Study the candle's form. Gaze at the candle (or the image of it) and let the flame occupy your mind.



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Let yourself become absorbed by the light. You may notice that your thoughts will naturally begin to wander. Each time you catch your mind drifting, just redirect your attention to the flame. A great way to deepen a candle meditation is to imagine that you are breathing the light of the candle in and out of yourself. Just keep your eyes fixed on the candle flame, and allow your natural breathing rhythm to fill your awareness. In such a situation, your brain receives no new information to process. It is the nerves of your eyes that send signals to your brain. But in this case, no signal is sent. As a result, images beside the candle begin to fade away from your vision. During the experience, while your eyes are open, you only see the flame and nothing else as long as you watch only the flame. To achieve this requires both mental stillness and the physical stillness of your eyes. As soon as you move your eyes around, your brain is flooded with new sensory input and you will instantly be able to see the room around you again. Remain still and focused on the candle, and you will slip back into this state of profoundly deep meditation quite quickly.

After 3 minutes of meditating on the flame of the candle, close your eyes and try to hold the image of the candle in your mind's eye for 2 more minutes. If you lose the image at any time, open your eyes, look at the candle again and repeat. Do that for 3-5 more minutes.

****** Before the exercise set a timer according to the time you want to practice. You'll need to train both your body and your mind to meditate, therefore it is better to start with short sessions, 3-5 minutes in length. You can repeat these short sessions throughout the day. Gradually you can increase the duration of the exercise to longer intervals of time. After several weeks of 3-minutes meditations for example, increase the time by 3 more minutes, then 5 minutes, etc.

List of items needed to conduct the activity:

- A candle or an animated image of a candle (video, gif animation etc)
- A smartphone, pc or television to watch the animated candle flame GIF on its screen
- A timer to set the time for meditation

Material needed to conduct this activity:

- Video with candle flame: https://www.youtube.com/watch?v=poNHx_rCf_Y
- Video with candle flame and music for meditation: <https://www.youtube.com/watch?v=JuSDmsoK4wc>
- Animated gif: <https://giphy.com/gifs/candle-fi9iBFsZXieAg>



O2 - Toolkit of Methods for developing, enhancing,
improving executive functions in adult population

Further resources:

- www.wikihow.com/Use-Candles-for-Meditation
- <https://blog.mindvalley.com/candle-meditation/>
- <https://yogainternational.com/article/view/candlelight-insight-trataka>
- <https://en.wikipedia.org/wiki/Tr%C4%81%E1%B9%ADaka>
- <https://awakeandmindful.com/how-to-do-a-candle-gazing-meditation-trataka/>
- <http://yogawithsubhash.com/2012/04/03/trataka-candle-gazing-cleansing-technique/>
- <https://surginglife.com/candle-meditation/>



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b) Tool #2 Matching pairs

Title of the activity:

Matching pairs

Learning objectives:

- Enhance power of concentration: Participants will be able to focus longer on a specific task
- Better visual perception: Participants improve their visual perception capacity
- Improve retentiveness: Participants will remember learning material quicker and for a longer term

Duration of the activity: 20-30 min

Instructions to conduct the activity:

You can use any memory card game (purchased/self-made). Shuffle cards and put it face down on the table. One after another (playable for two to ten participants) – turn over two faces down cards at the same time. If he/she finds a matching pair, he/she gets the pair and lay it face-up in front of him/her and can try again. The participant with the most pairs is the winner.

You can also make your own memory card game with participants. For example, language learning: take a picture of different things, which are new vocabularies for participants. Print it twice (with a quadratic frame) on a strong paper and cut it out.

There are also memory games for the computer or mobile phone available, played by the same rules.

List of items needed to conduct the activity:

- A memory card game (purchased/self-made)
- A computer with internet connection
- A mobile phone



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Material needed to conduct this activity:

-

Further resources:

- <https://www.spielregeln.de/memory.html>
- <http://spiels.at/memory-spiele/>
- http://www.jetztspielen.de/suchen?from=wdg_page_labels&searchTerm=memory
- <http://spiele.woxikon.de/denkspiele/memory>
- <https://www.meinspiel.de/memory-kaufen-oder-memospiel-mit-fotos-gestalten-drucken>



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c) Tool #3 The flash cards

Title of the activity: Flash card

Flash cards-method is an effective tool to increase memory skills and has been a preferred study method in Germany for decades. These are portable learning materials, less bulky in comparison to textbooks and can be carried anywhere and anytime. They are especially used for studying a foreign language and new vocabulary. However, it proved to be a good study method for disciplines where the learners have a huge work load of factual information, historical dates, memorizing key facts, mathematical, chemical or physics formulae. Currently, there are many flashcards-apps and programs related to different subjects, which can be downloaded for free or subject to charge. Hereafter it will be referred to the “classic” model which is paper flashcards and how to create them.

Learning objectives:

- Learn new information effectively and in a creative way
- Promote autonomous learning and develop the skills how to organize and manage the learning process
- Improve learners’ engagement and engage “active recall”. Flashcards facilitate repetition, by creating multiple memory-enhancing recall events
- Foster self-reflection and metacognitive capabilities. It occurs, when comparing and assessing the correctness of the own answer with the answer given on the flashcard.
- Engage visual memory, especially when the information written on the paper flashcards is sorted in categories and colors.
- Improve the ability to identify correlations between facts. It helps to discover associations between two pieces of information if they might have been missed before.

Duration of the activity: 15-20 min

Instructions to conduct the activity:

Paper flashcards are two-sided: on one side is written the question and on the other the answer. The idea is to produce correctly the answer, when is presented the opposite side. After recalling the information from the memory, one have the possibility to check the correctness of own answer.



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The cards can be sorted in different areas and for each area to choose a specific color. (e.g. for learning new vocabulary, write all adjectives on green flashcards, and all nouns on yellow ones).

Flashcards are an effective method to memorize factual knowledge when they are used smartly. The best practices for creating them are:

- Write short and simple information in your own words per card
- Break down the complex information into multiple questions
- Mix pictures and words: a post-picture sentence improves attention, helps engage visual memory and increases the brain's ability to recall what have been learned.
- Study the flash cards in both directions, review them from both sides
- Make groups of cards: related to one area;

If the correct answer was given more than 3 times in the learning process, this card, and/ or pile of cards will be put aside.

List of items needed to conduct the activity:

- Colorful paper flashcards (commercially also available) in different size and weight
- Pens/ pencils
- Use pictures from the internet or draw them by yourself.

Further resources:

- <https://www.brainscape.com/blog/2011/04/reasons-why-flashcards-are-so-effective/>
- <https://www.myprivatetutor.ae/blog/5-benefits-of-using-flash-cards-in-education>



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3. Virtual tools to promote cognitive skills in general and working memory in particular

a) Cheer up! HAPPYneuron is there to improve your working memory

Link: <http://www.happyneuron.fr/jeux#memory>

- **Tidy up!:** This exercise combines the memorization of a series of words, facilitated by their grouping into logical categories, and the learning of the spatial arrangement of the category tables. The user can select different difficulty levels. The purpose of this exercise is to work on the ability to logically group elements into different categories (language function) and to associate each word with a category (which facilitates their memorization), the semantic memory (memory of words), the spatial memory and the ability to concentrate.
- **Objects, where are you?:** This exercise consists of memorizing the location of 6, 8 or 10 images (figurative or abstract) on a grid cells and then find this association according to different response models. This exercise makes the user to create links between two pieces of information: one on the shape of an image and the other on its location. This link facilitates their memorization. Good visual analysis and concentration are needed.
- **Shapes and colours:** First, the user must memorize 6, 8 or 10 figures and then recognize them among others that differ in their shape or in their colour. This exercise activates the visual memory of geometric shapes. It also requires excellent concentration because these forms are difficult to verbalize, that is to say that we cannot give them a name (as opposed to a concrete object), and we must be attentive to the details.
- **Elephant memory:** The user must memorize 25 words presented in a grid. Then he/she has to find these words mixed among others in 15-word boards. This exercise leads him/her to easily find the words of a list. It will lead him/her to develop his/her own methods of memorization (by grouping elements ...), essential when the user wants to memorize a lot of information.



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b) Working out your working memory with CogniFit

Link: www.cognifit.com

- **Candy Factory:** In order to advance through this game, the user will have to code, store, and recover the different types of information they see. Doing this exercise will activate the neural patterns used when storing memories. Improving this skill can help the user become more efficient in daily activities, like studying or remembering where the car keys are.
- **Water Lilies:** In this brain game, the user will have to use their memory to retain and remember the order in which the stimuli on the screen light up. With this game, we can stimulate the brain connections used in the different types of memory. This exercise can help store information as memory more easily.
- **Piece Making:** In this game, the user will have to remember the stimuli that were previously shown. This activity will activate and strengthen the neural circuits used in memory. Reinforcing these connections can help when it comes to daily activities, like remembering client's names or faces, knowing where you parked the car, or going grocery shopping.
- **Numbers Line:** This memory game was created to test the user's ability to store and manipulate information. The user will have to remember the different numbers on the screen and be able to do mental math to reach the target number. Doing this will strengthen the neural networks used in working memory, and improving working memory can help us be more efficient in complex cognitive tasks, like language comprehension, reading, maths, learning, or reasoning.

c) Enlightening your working memory with Lumosity

Link: www.lumosity.com

Memory Match and **Monster Garden** exercises both target the improvement of working memory. Memory Match is a speeded n-back task where users must compare the current stimulus with those presented previously - you quickly memorize a group of tiles on a grid. That means remembering their location, and maybe even the shapes they create. The goal of Monster Garden is to navigate through a maze while relying on spatial memory to avoid obstacles. The number of



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obstacles increases as the user's ability to navigate the maze improves. Both exercises incorporate game-like elements such as scoring and bonus points.

d) Feeding your ability to memorize with Memozor

Link: www.memozor.com

These memory games are specifically designed for adults, that allow to train memory or just to play. These memory games are divided into different levels of increasing difficulty:

- ✓ level 1: easy memory games for adults' beginner
 - simple shapes, no traps
 - 16 cards
 - many themes available



- ✓ Level 2: memory games of low difficulty
 - more complex shapes, some traps
 - 20 cards
 - many themes available
- ✓ Level 3: memory for adults' medium difficulty
 - complex shapes, many traps
 - 20 cards
 - many themes available
- ✓ Level 4: difficult memory for adult
 - complex shapes, many traps
 - 36 cards
 - many themes available



II. EMOTIONAL MANAGEMENT

1. Emotional dysregulation: theories, contexts, realities

a) Tools to measure emotional regulation

‘Emotional regulation’ is a term generally used to describe a person’s ability to effectively manage and respond to an emotional experience. People unconsciously use emotional regulation strategies to cope with difficult situations many times throughout each day. Most of us use a variety of emotional regulation strategies and are able to apply them to different situations in order to adapt to the demands of our environment. Some of these are healthy, some are not. Healthy coping strategies, such as managing stress with a walking program, do not cause harm. They can help to diffuse strong emotions, often allowing for a greater understanding of what led to the emotional experience. “Emotional dysregulation” is the term used to describe an inability to regularly use healthy strategies to diffuse or moderate negative emotions. While all people occasionally use less than ideal emotional regulation strategies, individuals who regularly experience what feels like overwhelming, intense negative emotions are much more likely to rely on unhealthy strategies, like self-injury.

One of the most popular scale to measure emotional regulation is DERS. The Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004) is a popular but controversial self-report measure that aims to assess emotional dysregulation, broadly conceptualized. The model upon which the DERS is based (Gratz and Roemer, 2004) proposes four broad facets of emotional regulation: (a) awareness and understanding of emotions; (b) acceptance of emotions; (c) the ability to control impulses and behave in accordance with goals in the presence of negative affect; and (d) access to emotion regulation strategies that are perceived to be effective for feeling better. This model has been embraced primarily within applied clinical research and treatment contexts.

Another important tool to assess emotion is the Emotion Regulation Questionnaire (ERQ) which is a 10-item self-report scale designed to assess habitual use of two commonly used strategies to alter emotion: cognitive reappraisal and expressive suppression. Participants respond to each item using a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). Cognitive reappraisal involves thinking differently about a situation in order to change its meaning in order to alter



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one's emotional experience. Expressive suppression involves decreasing the outward expression of emotion. Six items contribute to the subscale for cognitive reappraisal (e.g., "When I'm faced with a stressful situation, I make myself think about it in a way that helps me stay calm"). Four items contribute to the subscale for expressive suppression (e.g., "When I am feeling negative emotions, I make sure not to express them").

b) The Behavior Rating Inventory of Executive Function–Adult Version™ (BRIEF-A™)

The BRIEF-A self-assessment test also covers this very specific EFD: emotional dysregulation. American researchers have developed two different scales that enable adults taking the test to self-assess their emotional control and their ability to self-monitor.

On one hand, **the Emotional Control scale** measures *'the impact of executive function problems on emotional expression and assesses an individual's ability to modulate or control his or her emotional responses'*. For example, if we refer to the Investigate Report mentioned earlier (i.e. the male client aged 20 who took the BRIEF-A self-assessment test in 2006⁴), it appears that this young person is *'within the average range as compared to like-aged peers'*. This implies that he views himself as adequately able to modulate or regulate his emotions in general. He generally describes himself as *'reacting to events appropriately, without outbursts, sudden and/or frequent mood changes, or excessive periods of emotional upset'*. On the other hand, **the Self-Monitor scale** *'assesses aspects of social or interpersonal awareness. It captures the degree to which an individual perceives himself as aware of the effect that his behavior has on others'*. Regarding this very specific aspect, the young man mentioned above sees himself as having *'no perceived difficulty with monitoring the impact of his own behavior in social settings'*. There is no doubt that the results of his test on these very specific scales are positive, although we have noticed that the BRIEF-A self-assessment test has revealed difficulties for this young man to hold and encode information (see Chapter I Working memory) and we will see later on that the same person has other executive function disorders.

⁴ BRIEF-A: Behavior Rating Inventory of Executive Function - Adult Version™, [Interpretive report, Sample Client](#), PAR Psychological Assessment Resources, Inc. 25/09/2006



c) Gross' Model for Emotion Regulation

One of the most popular and useful theories of regulating emotions comes from the psychologist James Gross (2014). His "process model of emotion regulation," assumes that emotions are reactions to the world, so if somebody wants to feel differently, should try thinking or paying attention differently, or even acting differently. Gross thinks emotion regulation is the process of individual for what kind of emotions, when emotions appear, how to affect the expression of emotional experience and expression. Emotion regulation involves the process of the change of the latent period of emotion, the occurrence time, the duration, the behavior expression, the psychological experience, the physiological reaction and so on (Gross, 2002).

Gross (2001) describes a process model of emotion regulation using the following definition: 'Emotion regulation includes all of the conscious and nonconscious strategies we use to increase, maintain, or decrease one or more components of an emotional response' (Gross, 2001). Increasing components of an emotional response is called up-regulation of an emotion, and decreasing these components is called down-regulation of an emotion. The components he considers are (1) the experiential component, (the subjective feeling of the emotion), (2) the behavioral component (behavioral responses), and (3) the physiological component (responses such as heart rate and respiration). Humans use strategies to affect their level of emotional response for a given type of emotion. He differentiates between antecedent-focused strategies and response focused strategies. Antecedent-focused strategies are applied to the process preparing for response tendencies before they are fully activated. Response-focused strategies are applied to the activation of the actual emotional response, when an emotion is already underway.

In his model, Gross distinguishes four different types of antecedent-focused emotion regulation strategies, which can be applied at different points in the process of emotion generation:

- a. situation selection: a person chooses to be in a situation that matches the emotional response level the person wants to have for a certain emotion
- b. situation modification: a person modifies an existing situation so as to obtain a different level of emotion



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- c. attentional deployment: shifting your attention to a certain aspect and cognitive change
- d. cognitive change: selecting a cognitive meaning to an event.

The fifth emotion regulation strategy, response modulation, a response-focused strategy, is applied after the emotion response tendencies have been generated: a person tries to affect the process of response tendencies becoming a behavioral response. In his article, Gross predicts that early emotion regulation strategies are more effective than strategies that are applied at a later time point in the process (Gross, 2001).

d) A-B-C-D Model for Anger Management

One of our basic emotions is anger.

Anger is a kind of state of mind, it is a reaction to the frustration that arises when one of our needs is deprived, unsatisfied when we have difficulty in achieving the goal and we add to the whole situation a certain "philosophy". In other words, to difficult situations that appear in our lives, we make up our own ideology, resulting in the formation of a specific attitude, a specific pattern of our behaviors and reactions. The basis of anger is therefore an "angry" attitude towards oneself, towards people or the surrounding us reality.

Anger is one of those emotions that brings with it a lot of energy. That's why when we're annoyed, angry, full of anger and dissatisfaction, we can feel energized. Then we have the desire and the strength to act, which results in a certain activity. However, what is important is the activity and where the flow of this energy is directed.

Anger is a perfectly normal human emotion and, when dealt with appropriately, can even be considered a healthy emotion. We all feel angry from time to time, yet this feeling can lead us to say or do things that we later regret. Anger can reduce our inhibitions and make us act inappropriately. [www.skillsyouneed.com]

The A-B-C-D model is a classic cognitive behavioral therapy (CBT) technique developed by one of CBT's founders, Albert Ellis. When applied effectively, this can help address a variety of emotional difficulties, including anger management problems. This post explains how the model works and how to start using it.



Overview of the A-B-C-D Model in Context of Anger Management:

- A = Activating Event

This refers to the initial situation or “trigger” to your anger.

- B = Belief System

Your belief system refers to how you interpret the activating event (A). What do you tell yourself about what happened? What are your beliefs and expectations of how others should behave?

- C = Consequences

This how you feel and what you do in response to your belief system; in other words, the emotional and behavioral consequences that result from A + B. When angry, it’s common to also feel other emotions, like fear, since anger is a secondary emotion. Other “consequences” may include subtle physical changes, like feeling warm, clenching your fists and taking more shallow breaths. More dramatic behavioral displays of anger include yelling, name-calling and physical violence.

- D = Dispute

D refers to a very important step in the anger management process. You need to examine your beliefs and expectations. Are they unrealistic or irrational? If so, what may be an alternative and calmer way to relate to the situation? By “disputing” those knee-jerk beliefs about the situation, you can take a more rational and balanced approach, which can help you control your anger.[Anger Management: A Cognitive-Behavioral Therapy Manual]



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2. Tools and instruments to develop adults' emotional management

a) Tool #1 The breath technique

Breath determines our existence. This is obvious but not appreciated. We perform thousands of breaths every day without thinking that proper breathing affects our health and mood. Breath is not only a source of energy - it is also a remedy for troubled nerves and a key to understanding yourself.

Do it - a simple exercise to reduce anger (try to find a few minutes of exercise during the day):

- Sit back, relax your muscles, close your eyes.
- Breathe in the nose, exhale through your mouth.
- While inhaling, push the abdominal region (using the abdominal muscles and the diaphragm), pushing the air into the lower part of the lungs.
- Hold your breath and count to five.
- Then slowly exhale, loosening the shoulders, torso and stomach.
- Breathe freely, deeply.
- Draw imaginary air as a life-giving, cleansing stream. Along with exhalation, visualize the dirt leaving you.

Abdominal breathing is the basic way to breathe in Buddhist practice and tai-chi. It involves pushing the abdomen while inhaling and pulling in when exhaling. It is taught, among other things, in maternity schools, because it helps to relax muscles during childbirth. In tai-chi, the reverse breath is also used: during the inhale, the abdomen is pulled up and expelled when exhaled. This technique is used to accumulate energy and increase the efficiency of the body. We breathe like this, for example by lifting some weight.

People practicing yoga use Pranayama - a breathing technique that consists of breathing in, exhaling and stopping the breath. Inhale provides life force, exhale cleanses the body of toxins. At the moment of breath holding, energy spreads throughout the body.

In the 1980s, Rebirthing, popularized by the American Leonard Orr, was a popular method of conscious breathing. Breath control is here an element of self-development



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and is aimed at rebirth by reaching for birth experiences and overcoming the blockages associated with it.

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Currently, “Breath connection” is used in therapies, combining several methods. This technique was developed by an Australian, yoga teacher Nemi Nath. Breath connection is also working on yourself. Conscious breathing here consists in a smooth breathing in the exhale. During the one-hour therapeutic session, the nervous system is silenced, emotions are discharged, we calm down.

All breathing techniques teach one - that breathing is a powerful source of health and peace. It can be our internal guide, with which we reach the subconscious, we teach each other, we communicate with our intuition. Strong, deep breathing can bring immediate relief during stress. We often use it instinctively ... even yawning. Breath is an excellent medicine, which, in addition, costs nothing and which we can always use.

Good to know: Man makes 12-14 breaths per minute. In a minute, he inhales and exhales 6 liters of air



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b) Tool #2 The 'right shoes' role-play technique

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Title of the activity:

Try walking in my shoes - Roleplay

Learning objectives:

- Enhance communication skills and problem-solving ability. Participants can try out several methods of communication and behaviour in simulated environment and find out which solution are effective or not
- Extend new perspectives: Participant become more familiar with several aspects and perspectives and can enlarge their problem-solving ability
- Better self-observation and observation of others: Participants are able to reflect the behavior of their own and others more better

Duration of the activity: 15-30 min (variable duration)

Instructions to conduct the activity:

You can differentiate between spontaneous and instructed roleplay. A spontaneous roleplay pick up everyday situations and problems, e.g. a conflict in the classroom. In this case only a short atonement and a background story should be given, the game process and role-design should be flexible.

In an instructed roleplay, defined situations and problems become processed, e.g. a job interview, discussion with a costumer, etc. Instructed roleplays are subdivided into preparation phase, playing period and evaluation phase. The teacher has to prepare the roleplay: maybe prepare information material and needed equipment, define various roles etc. In the preparation phase participants get information about the starting situation (e.g. job interview) and different roles (e.g. job interviewer, applicant).

During the paying period, when selected participants perform, other participants observe the roleplay and take note about the actor's behaviour. The teacher should not take corrective action. If a video camera is available you can record the roleplay on video, so actors can also observe their performance afterwards.

In the evaluation phase actors have the opportunity to talk about the performance, their role and their emotions. Other participants who have observed the roleplay, are invited to provide feedback on the roleplay. Suggestions of improvement can be developed as a further and closing step.



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List of items needed to conduct the activity:

- According to demand: desk, chairs, information material, role cards, ...

Material needed to conduct this activity:

-

Further resources:

- <http://methodenpool.uni-koeln.de/download/rollenspiele.pdf>
- <http://www.bpb.de/lernen/grafstat/grafstat-bundestagswahl-2013/148888/rollenspiel-durchfuehren>
- https://de.islcollective.com/resources/search_result?Tags=rollenspiel
- <https://bewerbung.com/rollenspiel/>



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c) Tool #3 The 'inner team'

Title of the activity: The 'Inner-Team'- Friedemann Schulz von Thun

Friedemann Schulz von Thun claimed that when we listen within ourselves, we rarely find a single “voice” when dealing with a particular situation or topic. The different “inner voices”, which can be considered also as an inner team, are in most cases not in agreement; some team members are louder and dominant, trying to influence the team work. Thus, the “inner team” influences our communication and our actions steadily. Accordingly, the quarrelling bunch inside a person can be extremely annoying and disturbing and can lead to behavioral paralysis. However, this is a not mental disorder, but a normal human condition. This “inner plurality” is ultimately desirable because it expresses the different perspectives and point of views. They can also reflect different past experiences, needs, priorities in life. Only when a person has “united” all “voices” inside, in other words, when the team members find a compromise, one will react externally. The challenge is to identify the appropriate “internal team members” and the balance among them, in order to agree on a given problem.

Learning objectives:

- To be able to identify the causes which influence the own emotional state
- To raise awareness of the own concerns and develop critical thinking
- To learn to tackle the problems and not procrastinate them
- To foster self-responsibility

Duration of the activity: 20-25 minutes

Instructions to conduct the activity:

This method can be used in a coaching-session, using empty chairs setting them in a circle. Each “inner team member” is assigned to one chair. The coach takes the leadership of this “team” and arranges an “Inner team meeting”. The client will sit subsequently on the different chairs and try to represent the respective point of view of this “interior” personality. Following issues could be discussed:

- what are your strengths and your role in the team?
- what risks are associated with your actions?
- how are you dealing with the other team members?



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- what do you need to fully develop your strengths?

In an “internal team meeting”, the client becomes often aware of internal “hidden” conflicts and recognizes which “member” in his/her “inner team” might be too strong, too weak or realise that the “team leader” acts just biased and doesn’t consider other perspectives.

List of items needed to conduct the activity:

- 4-5 empty chairs
- One room for individual coaching.

Further resources:

- <http://psyche-und-arbeit.de/?p=6152>
- <https://projekte-leicht-gemacht.de/blog/pm-methoden-erklaert/das-innere-team-bist-du-nur-einer-oder-doch-viele/>



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1. Virtual tools to promote cognitive skills in general and emotional management in particular

a) The Institute for Health and Human Potential emotional intelligence quiz

Link: <http://www.ihhp.com/free-eq-quiz/>

- **Test Your Emotional Intelligence:** The Institute for Health and Human Potential emotional intelligence quiz describes situations that everyone experiences in everyday life (e.g. receiving negative feedback). Answering the questions will provide the most accurate assessment of Emotional Intelligence level. The quiz consists of answering a series of 26 questions according to a satisfaction scale: 'strongly disagree', 'disagree', 'neither agree nor disagree', 'agree' or 'strongly agree'.

Test Your Emotional Intelligence (EQ)

1. I do not become defensive when criticized. *

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

The first part is about how the user reacts under different situations. In the second part, the user is asked to answer questions about his/her perceptions of his/her boss. For example, four questions are about the estimated percentage of time the user avoided a particular situation at work. The last two questions focus on the effect that avoiding things had on the user.

Once the user has taken the quiz, he/she will receive results as well as recommendations on how he/she can better manage his/her emotions and connect more efficiently with others, especially when he/she finds him/herself under pressure.



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b) Retiaperte

Link:?.....

- [Eserciziperlamente](#) is a collection of simple software specially created for this type of training. It is a heterogeneous set of tasks, among which the therapist can choose the type of exercises that best suits the characteristics of the individual patient, modulating the difficulties and how to perform. The software does not require specific installation. After the downloading, simply unzip the file to use it. This program can be copied, distributed and run freely. Any use for it is excluded and the exercises are in Italian.

c) Emotional Intelligence Toolkit

Link: <https://www.helpguide.org/articles/mental-health/emotional-intelligence-toolkit.htm>

Emotional Intelligence Toolkit is a virtual guidebook to managing unpleasant thoughts, managing stress and strong emotions, improving your relationships ability. The Toolkit can help you to:

- Change self-defeating moods and attitudes
- Quickly manage stress and anxiety
- Stay connected to what you feel as well as think
- Follow through on your hopes and dreams

The Toolkit is built in such a way that each section contains video material, proactive advice in the form of text and exercises based on meditation.

Beginning meditation – 16 minutes

Learn how to relax and open yourself up to discovering physical and emotional sensations throughout your body. **Move up to the intermediate meditation** when you feel attuned to the feelings and sensations throughout your body.



The toolkit is based on the recent transformations that have taken place in the field of psychology. Emotion is now at the heart of clinical theory and is seen as the foundation



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to psychological change. We also now know that all of our thinking benefits greatly from having an emotional component. As you develop the capacity to better recognize and understand your own emotions, you'll find it easier to appreciate how others are feeling, improving how you communicate and helping your personal and professional relationships to flourish. And as you bring stress into balance and learn to tolerate even unpleasant emotions, you'll discover that your capacity for experiencing positive emotions has grown and intensified. You'll find it easier to play, laugh, and experience joy. No matter how stressed or emotionally out of control you feel now, by drawing on these tools, life can and will get lighter and brighter. [HelpGuide's co-founder, Dr. Jeanne Segal]

d) The PsyTech-MATRIX Platform

Link: <http://www.cognitrom.ro/platforma-paxonline> (UPM, International brainstorming session in Cividale, July 2018) - includes Personal Development Programs : stress management, improvement of interpersonal relationships, positive emotions, time management, quality of sleep.

The Cognitrom Psychotherapy Center is a private psychotherapy and research center that brings together specialists in psychology, cognitive neuroscience and IT. Activities target: • Psychotherapy of anxiety, both in the classical format (ie face-to-face meetings, at the cabinet) and online (or combined) through the PAXonline professional psychotherapy platform; • psychological evaluation and diagnosis, through validated clinical interviews and psychological instruments; as well as • research and development in e-mental health (eg PAXonline platform) and in psychodiagnostics (eg CAS platform, PDSQ, EMAS) https://www.paxonline.ro/?q=ce_este_PAX

For each anxiety disorder there is a psychotherapy and personal development program consisting of several modules. Each module consists of a series of information and exercises designed to optimize personal status. These modules can be run independently or with the assistance of a psychotherapist, according to the wishes of each user. The psychotherapist is assisted either by asynchronous communication (written messages) or by synchronous communication (videochat). The construction of these psychotherapy programs was based on the principles of cognitive-behavioral psychotherapy (TCC). This involves active involvement, repeated practice, persistence, consistency and patience. What is addictive to this form of psychotherapy is that it really works. CBT is more effective than medication in the treatment of depression, anxiety disorders and has no negative side effects with drugs

Beyond following one or more psychotherapy and personal development programs, we have several other applications available within the PAX Platform that will help increase the effectiveness of these interventions. This is the Resources and Specifics component, the Personal Portfolio, the Discussion Forum, and the Psychotherapeutic Assistance. The 6 psychotherapy and personal development programs plus the adjacent applications described above are available after signing up for the platform https://www.paxonline.ro/?q=cine_suntem



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The PsyTech-MATRIX Platform is the first one in Romania and one of the most advanced systems in the world, building on „state of the art technology” and combining significant psychotherapeutic methods.

Professor Daniel David, a specialist on virtual reality therapy at the BBU, is the director of the ambitious „Star-Gate Psy” project. He has been conducting treatment and research for various symptoms such as anxiety, phobias, depression, and ADHD. „Virtual reality therapy has a lot of advantages in respect to control, safety, precise measurements, time reducing, and sometimes even cost-effectiveness, compared to traditional psychotherapy methods. Virtual techniques can be incorporated in any know form of psychotherapy, from cognitive-behavioral to psychodynamic and humanistic-existential,” said Daniel David.

„An immersive virtual reality environment is as close as it can be to a real environment. It allows us to get accurate results and control the information that the client receives in a natural setting. In a marginal performance, this type of treatment is very helpful as it facilitates us to look into more complex processes, integration and understanding of psychotherapy processes.

A full installation of the Icube interactive 3D system, supplied by EON Reality, has taken place in the new building called AVALON (Advanced Virtual Application Laboratories of Napocensis), as a part of the “Star-Gate Psy” project, based on a grant from the Romanian National Authority for Research Government.

The platform is composed of a „Center for Robot Therapy and Virtual Reality Therapy” and consists of five laboratories, each one equipped with immersive systems like the EON Icube environment including a „Star Trek-Holodeck Lab, Stress Control Lab, Virtual Classroom, Pain Control Lab, and a Data Lab focusing on using robots in psychotherapy. All five top laboratories are equipped with the latest technology, supported mainly by the national and international grants of Professor, Ph.D., Daniel David.

The project is set up in collaboration with leading universities, international organizations, and businesses devoted to new technologies and virtual reality therapy

<https://danieldavidubb.wordpress.com/inovatii/>

<http://clinicalpsychology.psiedu.ubbcluj.ro/diverse/reactii-in-pres-stiintifica-internationala-despre-activitatile-de-pe-plaforma-matrix/>

<http://clinicalpsychology.psiedu.ubbcluj.ro/diverse/plaforma-skyra-avanpremiera/>

<http://www.psytech.ro>

<http://www.psychotherapy.ro>

www.eonreality.com

III. ORGANIZATIONAL SKILLS



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1. Organizational Attention Deficit: theories, contexts, realities

a) The Behavior Rating Inventory of Executive Function–Adult Version™ (BRIEF-A™)

Once again, **The Behavior Rating Inventory of Executive Function–Adult Version™ (BRIEF-A™)** has identified organizational Attention Deficit as a main difficulty as their sample population expressed that they had problems with planning and organization that it interfered their ability to complete everyday tasks at home or at work.

The Plan/Organize scale measures an *‘individual’s ability to manage current and future-oriented task demands’*. The scale is composed of two elements: plan and organize. On one hand, the Plan component captures *‘the ability to anticipate future events, to set goals, and to develop appropriate sequential steps ahead of time in order to carry out a task or activity’*. On the other hand, The Organize component refers to *‘the ability to bring order to information and to appreciate main ideas or key concepts when learning or communicating information’*. If we look at the Investigate Report mentioned earlier (i.e. the male client aged 20 who took the BRIEF-A self-assessment test in 2006⁵), this young man showed relatively high difficulties with *‘the planning and the organization of information, which has a negative impact on his approach to problem solving’*. Once again, the BRIEF-A test confirms that organizational Attention Deficit may affect anyone of us. This can have a greater impact on our daily lives and especially in our professional activities.

b) The Posner and Rothbart Posner Development

The Posner and Rothbart Posner Development Theory provides information on the potential role played by conflict resolution in the development of the executive function (Posner and Rothbart, 2001). They suggest that the previous attentional system is important to the executive function and call it the executive attention network. The role of this network would be to resolve the conflict, thus regulating activity in other brain networks. Furthermore, Posner, Rothbart et al. Have identified major advances in the functioning of the executive attention network during the pre-school period.

⁵ BRIEF-A: Behavior Rating Inventory of Executive Function - Adult Version™, [Interpretive report, Sample Client](#), PAR Psychological Assessment Resources, Inc. 25/09/2006



c) The Wisconsin Card Sorting Test (WCST)

The Wisconsin Card Sorting Test (WCST) is widely used in neuropsychology to evaluate abstract reasoning and the ability to change cognitive strategies in response to changes in the environment.

This test involves the organization and planning of a person. The individual must use the feedback of his environment to modify his response scheme, to direct his behavior towards the achievement of the goal and to moderate his impulsive responses.

The items are cards on which are drawn geometric figures with different color (red, green, yellow or blue), different shape (triangle, star, cross or round) or different number (one, two, three or four figures) by card).

The individual must then match each of the cards with one of the four reference cards presented in front of him according to a rule that is not indicated to him and that he must discover. According to the administrator's feedback, the subject must then reason to answer correctly.

Unlike other measures of abstract reasoning, the WCST provides information on the overall success, but also on the specific difficulties of the task that may be related to dysfunctions such as: difficulty in developing categories, failure in maintaining a response strategy, perseverances, learning difficulties during the test ...

The WCST allows the evaluation of executive functions, and more specifically mental flexibility and conceptualization. It is a fun tool, interesting, useful and easy to use.



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2. Tools and instruments to develop adults' organizational skills

a) Tool #1 The colourful calendar

Title of the activity:

The colourful calendar

Learning objectives:

- To be able to set our priorities by fixing our personal and professional appointments
- To be able to complete several types of tasks at the same time or within a short notice (e.g. remind us of a meeting, a payment, a birthday, important professional or personal deadline, take medicine)

Duration of the activity: from a few minutes or up one hour every day
(depending on the number of tasks)

Instructions to conduct the activity:

It is increasingly important to have a tool available to help us to mark our work and personal commitments / appointments. Here are more examples on online and offline calendars:

- **Google Calendar**

The first free resource that comes to mind when it comes to organizing appointments, commitments and various activities is Google Calendar. We like it for many reasons: it is simple and intuitive, it is synchronized on all the devices with which you access your Google account (PC, smartphone, tablet) and allows you to easily organize all your activities.

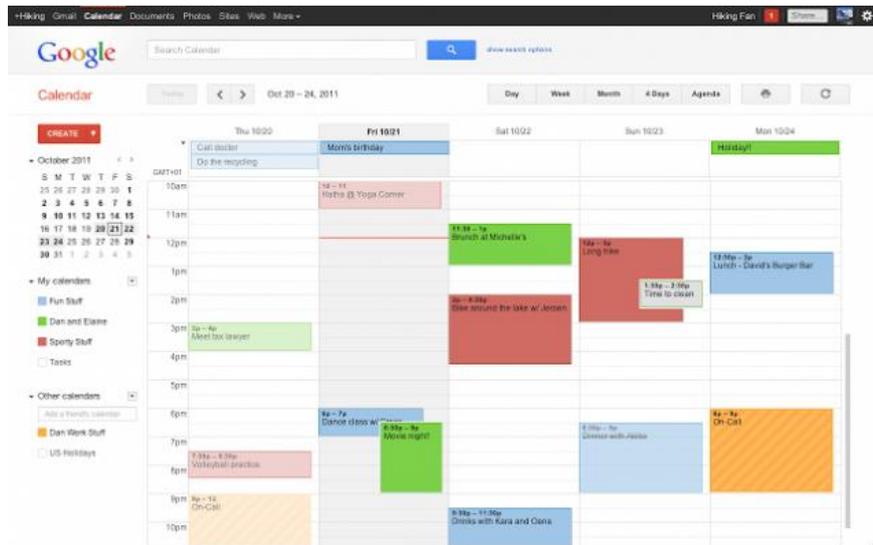
You can mark an appointment, you can record different activities to play and assign each one a specific color, so as to categorize and recognize them immediately, and you can also memorize an event that is repeated continuously and for a long time.



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In just a few steps, Google Calendar offers an effective free diary even for those who have little confidence with the PC and the Web.



- **Microsoft Office**

With Word and Excel, you can take advantage of free daily, monthly or annual calendar templates, which allow you to track and organize all your activities, depending on the frequency and frequency with which you do them.

Office offers you many free templates, which you can customize as you wish. Not only that, you can also create agendas of different types and with different objectives: agenda for conferences, agenda for business meetings, the automatic meeting agenda, which allows you to schedule agenda items whose duration is automatically adjusted according to the adding or editing other items.



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- Mozilla Thunderbird

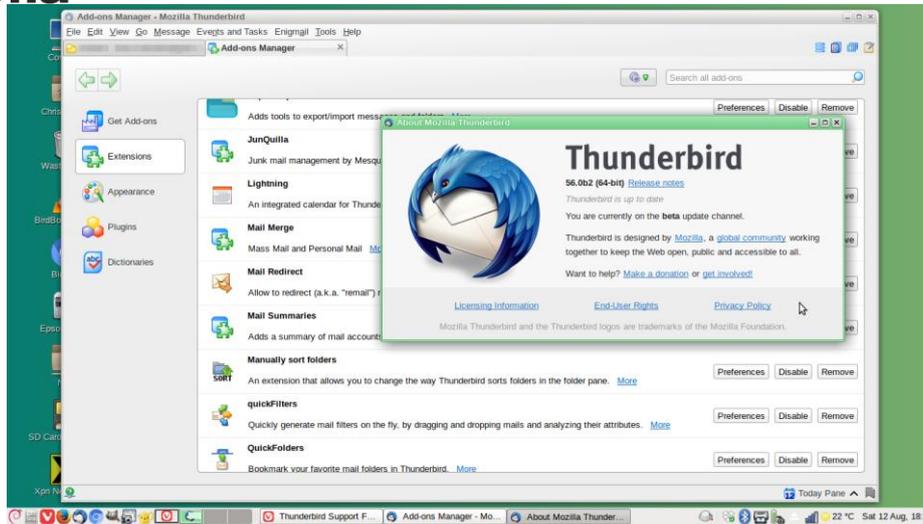
Mozilla Thunderbird is one of the most advanced and effective software for managing e-mail, diary and calendar. It is easy to configure and customize and has many features.

How to backup email on Gmail, Mozilla, Thunderbird is a free open source software that allows you to simultaneously manage different mailboxes, to store sent and received emails on your PC, to schedule your schedule.

In addition, the software is compatible with all major operating systems (Linux, Windows, MacOS) and provides you with a series of free extensions that allow you to better customize your experience, depending on your needs and needs.



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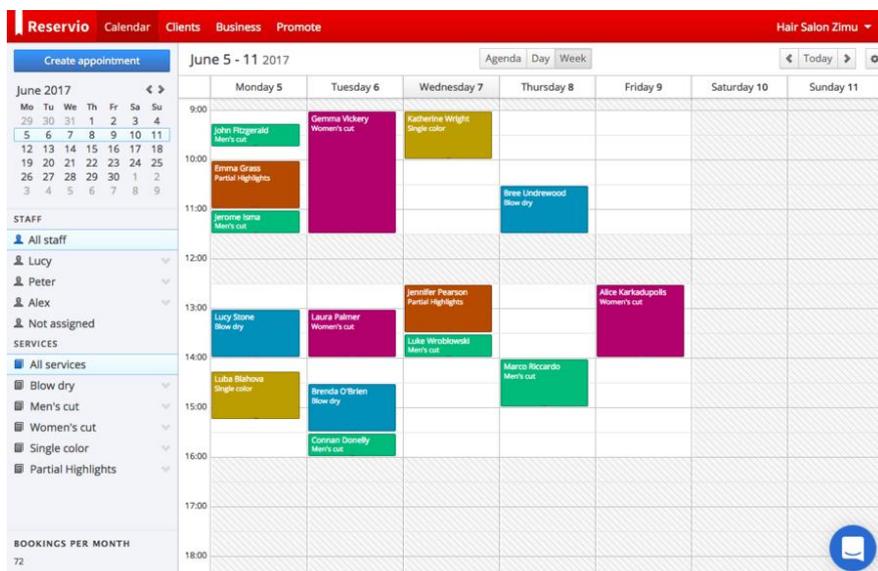


- Reservio

Reservio is a very complete program, with which you can access many functions and organize both your work and your daily activities with efficiency and simplicity.

Reservio allows you to schedule group meetings and appointments online for free, to have a reminder of your customers and also to provide them with a reminder service to remember the appointment set by sending a notification via email or text message.

Not only that, the software allows you to schedule online bookings 24 hours a day, 7 days a week, to get reports about activities, appointments, customers, and to integrate the other communication tools you use, such as Google Calendar and your website.





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- Rainlendar

Rainlendar is a free online program for calendars and calendars: on your desktop you can view, customize and organize activities, appointments and appointments. Rainlendar has two very important qualities: it offers you an easily customizable interface and offers you a very useful and simple reminder system to set up.



List of items needed to conduct the activity:

- A computer, a tablet and/or a smartphone
- Downloading the apps and software mentioned above

Material needed to conduct this activity:

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Further resources:

- <https://calendar.google.com/calendar/r>
- <https://office.live.com/start/Calendar.aspx>
- <https://www.thunderbird.net/en-US/calendar/>
- <https://www.reservio.com/features/calendar/>
- <https://www.rainlendar.net/cms/index.php>



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b) Tool #2 The Pomodoro technique

Title of the activity:

Pomodoro technique

Learning objectives:

- Enhance interest and concentration: Participants will be capable of doing focused work
- Improve personal time management: Participants learn to set priorities and cope with many multiple tasks
- Better mental agility: the change of focused work and periodical breaks will enhance the participants intellectual mobility

Duration of the activity: 30-150 min (variable duration)

Instructions to conduct the activity:

The Pomodoro technique is based on the idea, that frequent breaks enhance the mental agility. The technique consists of five steps: 1) Give the participants written tasks. 2) Set the timer/kitchen clock for 25 minutes. 3) Participants work focussed on their defined tasks until the alarm rings. 4) Participants make a mark (X) and make then a 5-minute break. 5) Go on with the same/another task for the next 25 minutes until the alarm rings again, make a break, work focussed, After four pomodoros/reruns a longer break (15-20 minutes) is useful.

The pomodoro technique can be used for extensive tasks. It is useful to sort the task list by priority. After settlement one tasks it becomes crossed out. This gives a sense of accomplishment to participants.

List of items needed to conduct the activity:

- Timer, kitchen clock
- Various written tasks (whichever paper & pencil, a computer...)



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Material needed to conduct this activity:

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Further resources:

- <https://de.wikipedia.org/wiki/Pomodoro-Technik>
- <https://francescocirillo.com/pages/pomodoro-technique>
- <https://tomato-timer.com/>



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c) Tool #3 The project technique

Title of the activity:

Project technique

Learning objectives:

- the ability to make choices
- Enhance freedom to make decisions
- the ability to analytically consider issues and problems
- ability to build a benefit and risk map
- the ability to delegate and perform the tasks received
- ability to work in a group

Duration of the activity: 60-180 min (variable duration)

Instructions to conduct the activity:

Working with the project method is a good and proven teaching and educational tool. It puts participants of the project in the face of the need to take the initiative in the didactic process, which modifies their attitude, leading to greater independence and activity. They develop their skills in group work and effective communication. They also prepare for professional work because such skills are more and more often sought after by employees.

In this method, a clear division of roles into the project supervisor and project groups composed of participants is important.

The tasks of the project's supervisor are:

- Defining the thematic scope of the project.
- Making a decision about the duration of the project.
- Making the decision on the composition of groups.
- Teams should have from 4 to 6 people, and their members can be selected at the discretion of the supervisor, the decision of the participants themselves or randomly.
- Explanation or reminder of the principles of work using the project method.
- Presentation of project evaluation criteria.
- Help groups to set goals and work tools.



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- Care for a fair division of tasks and their adaptation to the skills of participants and participants of the project.
- Deciding on the shape of consultative meetings and running them.
- The supervisor depends on the course of the meeting and the decision whether all or one project team will participate in it.
- Accompanying groups during project implementation, help in finding answers to questions that will appear.
- Motivating participants and participants of the project.
- Help in solving all problems and conflicts in the group.

The tasks of the project group are:

- Creating a plan and schedule of activities in line with the objectives of the project.
- Diligent and independent performance of tasks in accordance with the schedule adopted by the group.
- Staying in touch with the project supervisor, informing him during the consultation meetings on the progress of work and possible problems.
- Systematic filling out of work sheets.
- Preparing project documentation that can be helpful in creating the final presentation of work results.
- Preparation of an attractive presentation of the effects of work.

Common tasks are:

- Setting convenient dates for consultation meetings.
- Supporting the contact of the supervisor and project groups at consultation meetings and electronically.
- Conscientiousness in the performance of tasks.
- Caring for a good working atmosphere.
- Maintaining the attitude of openness to new experiences and ideas of other people.
- Discussing and evaluating the effects of work.

A good and motivating idea is to present the effects of group work to a wider audience. You can do it in the form of an exhibition, festival or post them on the website.



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3. Virtual tools to promote cognitive skills in general and organizational skills in particular

a) The Quizmoz Organization and Planning Skills Test

Link : www.quizmoz.com

- **Organization and Planning Skills:** The Quizmoz Organization and Planning Skills Test is designed in a way that will help the user to estimate how methodical and regular he/she is both in his/her personal and professional life. This test will also help the user to estimate how well-planned he/she is and his/her life. This test will also give him/her a detailed, in-depth analysis of his organization and planning skills and how he/she can improve on his/her weaker points. The user has to answer 25 questions according to a satisfaction scale as followed:

1.	I like things to be organized a certain way, and I like for them to continue being organized in that fashion.	
a.	<input type="radio"/>	This statement about me is completely true
b.	<input type="radio"/>	This statement about me is mostly true
c.	<input checked="" type="radio"/>	this statement can be true or false but it depends on things
d.	<input type="radio"/>	This statement about me is mostly false
e.	<input type="radio"/>	This statement about me is completely false

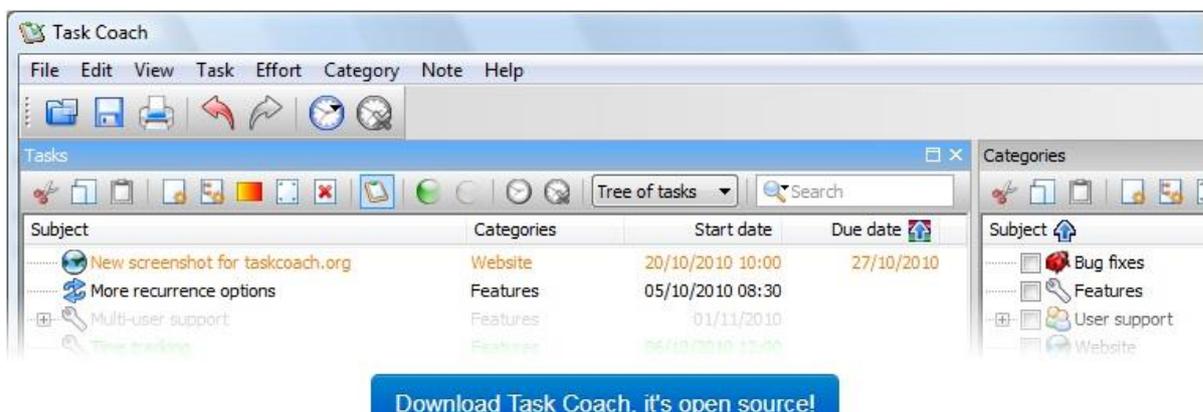


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b) Task Coach

Link: <https://www.taskcoach.org/>

Popular application to manage your tasks, available completely free and based on open sources. The central objects in Task Coach are tasks themselves. The application has the ability to coordinate tasks with your mailbox and calendar.



It is designed for composite tasks, and also offers effort tracking, categories, notes and more. Task Coach is available for [Windows](#), [Mac OS X](#), [Linux](#), [BSD](#), [iPhone](#), [iPad](#), and [iPod Touch](#).

The desktop version of Task Coach has the main following features:

- Creating, editing, and deleting tasks and subtasks
- Tasks have a subject, description, priority, start date, due date, a completion date and an optional reminder. Tasks can recur on a daily, weekly or monthly basis.
- Tasks can be viewed as a list or as a tree.
- Tasks can be sorted by all task attributes, e.g. subject, budget, budget left, due date, etc.
- Several filters to e.g. hide completed tasks or view only tasks that are due today.
- Tasks can be created by dragging an e-mail message from a mail user onto a task viewer.
- Attachments can be added to tasks, notes, and categories by dragging and dropping files, e-mail messages, or URL's onto a task, note or category.
- Task status depends on its subtask and vice versa. E.g. if you mark the last uncompleted subtask as completed, the parent task is automatically marked as completed too.



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c) The “Virtual Classroom Intervention” system for ADHD”

Link: <http://clinicalpsychology.psiedu.ubbcluj.ro/diverse/reactii-in-presa-stiintifica-internationala-despre-activitatile-de-pe-platforma-matrix/>
<https://danieldavidubb.wordpress.com/inovatii/>

By applying techniques used in cognitive behaviour therapy into an immersive virtual environment, researchers at the [Babes-Bolyai University](#), in Romania has developed a program that promises great success for ADHD treatment.

Professor Daniel David, a specialist on virtual reality therapy at the Department of Clinical Psychology and Psychotherapy at the Babes-Bolyai University, in Cluj-Napoca, Romania, has together with a team of researchers developed a new concept for a “Virtual Classroom Intervention” system for ADHD.

Previously, the “Virtual Classroom” systems for ADHD were mainly focused on assessment rather than interventions. It is the first program for ADHD treatment that allows clinicians to use Cognitive Behaviour Therapy (CBT) techniques in an immersive, dynamic 3D environment where interaction, behavioural tracking and performance recording is possible.

“Virtual Classroom Intervention” system provides a cost-effective and time reducing tool for attention performance measurements and treatment, beyond the existing traditional methods.

“The ability to implement the CBT techniques designed for a real classroom in a virtual one, combined with the possibility of improved control, safety, measurements, time reducing, makes this application a very innovative one”, Professor Daniel David says. “One of the main advantages of this new program is that the procedure is highly accurate and requires a significantly shorter time compared to using a traditional approach”, David Opris adds.

The “Virtual Classroom Intervention” system for ADHD” is a collaboration project between the [USC Institute for Creative Technologies, San Diego, California](#), USA, [Digital Mediaworks](#), Canada and the [Department of Clinical Psychology and Psychotherapy / International Institute for the Advanced Studies of Psychotherapy and Applied Mental Health](#) at the [Babes-Bolyai University](#), Romania.



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