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BRAIN Better understanding And prevention
of Neuropsychological difficulties

TOOLKIT FOR PROFESSIONALS
AND **YOUNG ADULTS**

CLINICAL BOOKLET

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Trousse d’information s’adressant à l’ensemble des professionnels oeuvrant auprès de la clientèle jeunesse et adulte – Volet théorique (ISBN 978-2-551-26094-2)

Trousse d’accompagnement s’adressant aux adolescents (12-17 ans) et aux professionnels œuvrant auprès de la clientèle jeunesse – Volet clinique (ISBN 978-2-551-26093-5)

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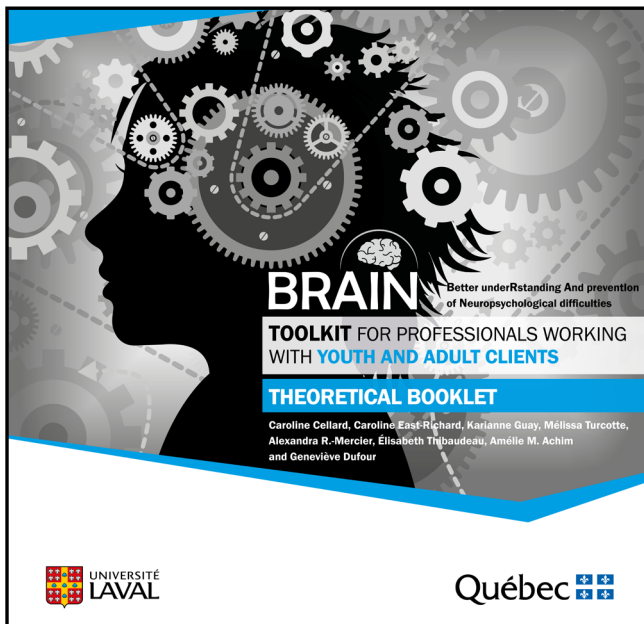
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How to Use This Toolkit?

This toolkit is a **resource tool** for professionals who work with young adults. It aims to provide a better understanding of neuropsychological difficulties and help direct people with suspected difficulties to a qualified professional. It can also be a **resource to read with people** to help them understand neuropsychological functioning. Then, the toolkit can be handed out to them directly so they can refer to it as needed. Finally, if neuropsychological difficulties do appear to be present, the toolkit provides some helpful strategies to try out with the person.

The **theoretical booklet** of the toolkit contains more information about neuropsychological functioning, risk and protective factors for the brain, and the impact of neuropsychological difficulties on daily life.



Available on
www.cerveau.psy.ulaval.ca

Neuropsychological Difficulties in Daily Life

Scenarios are presented in the following pages to show the impact that neuropsychological difficulties can have on everyday life. These are examples illustrating the day-to-day life of some young adults experiencing neuropsychological difficulties. It is important to bear in mind that a difficulty can be caused by various factors (such as psychological problems).

This toolkit also includes strategies that may be used to reduce the impact of neuropsychological difficulties. However, these strategies are presented for illustrative purposes only and are not meant to replace the expertise of a qualified professional in the assessment and management of neuropsychological difficulties.












NOTICE to Professionals and Young Adults

Since **each person has their own neuropsychological strengths and challenges**, you may recognize yourself in some of the scenarios. However, when neuropsychological difficulties become debilitating or start interfering with daily life, a qualified professional should be consulted.

Keep in mind that the purpose of this resource toolkit is to stimulate the interest of professionals and young adults in neuropsychological functioning. It also aims to raise awareness of strategies that may be used to mitigate the impact of neuropsychological difficulties on daily life. This toolkit is an information document and in no way replaces the expertise of a professional qualified to assess neuropsychological difficulties.

Major Cognitive Domains*

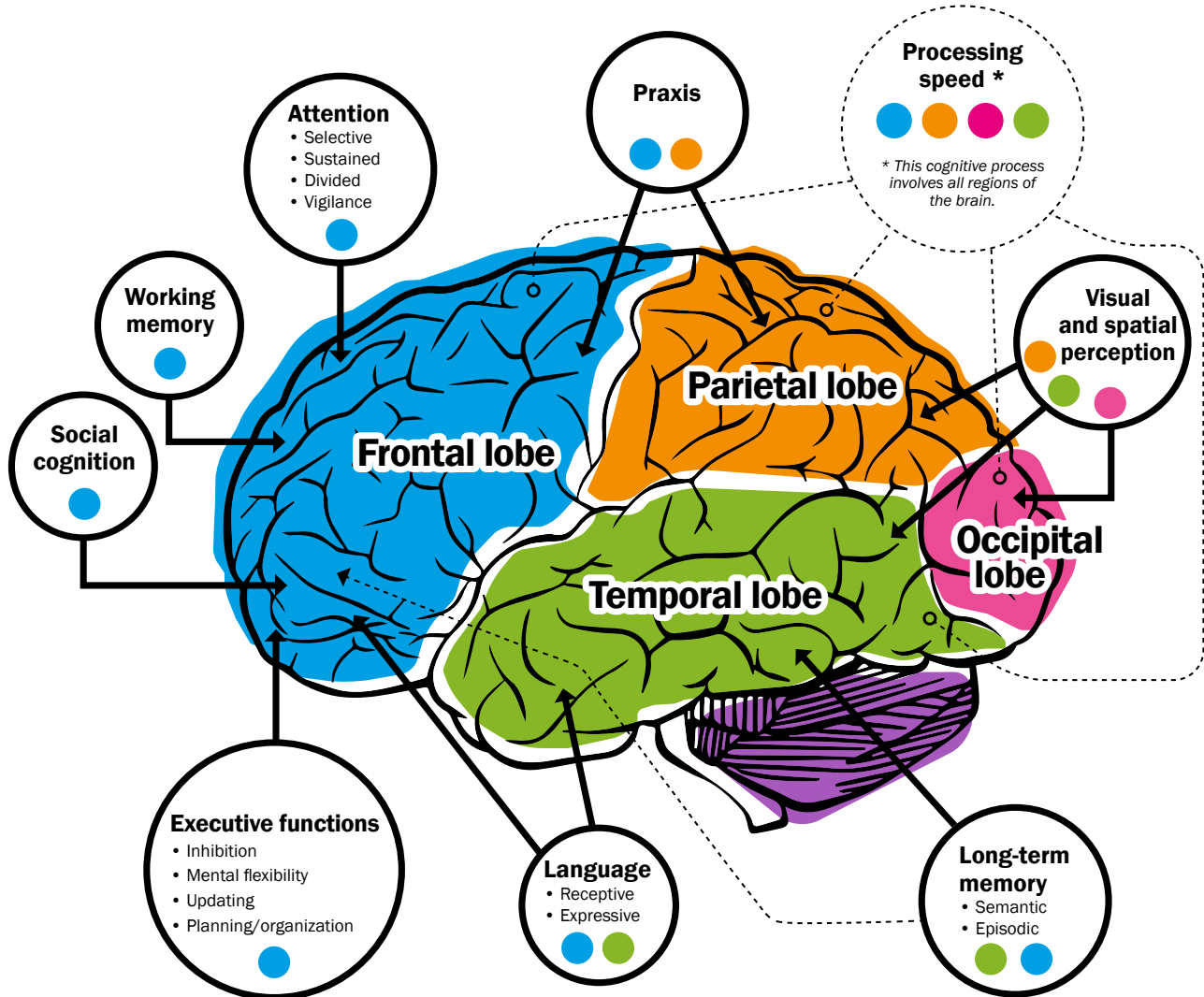
● Frontal lobe
 ● Parietal lobe
 ● Occipital lobe
 ● Temporal lobe

Processing speed		Speed or rhythm at which a person processes information or initiates mental operations or tasks.
Attention		Capacity to attain a level of alertness that allows us to focus on various situations.
Working memory		Ability to temporarily maintain and manipulate information in memory, for short time periods (seconds).
Long-term memory		Ability to remember everyday life events, things learned in school, etc. Long-term memory processes include episodic memory (events in our personal lives) and semantic memory (general knowledge).
Executive functions		Processes involved in new or complex situations. These include inhibition, mental flexibility (or cognitive flexibility), updating, and planning/organization. These processes coordinate other cognitive functions, much like an orchestra conductor.
Praxis		Ability to coordinate purposeful movements.
Visual and spatial perception		Ability to perceive surrounding objects according to their orientation, shape, colour, distance, and location in space / the environment.
Social cognition		Processes that support our understanding of the people around us and social interactions.
Language		Allows for communication and includes expressive language (speaking and writing) and receptive language (understanding what is heard or read).

*These are cognitive domains usually assessed in neuropsychology, but other cognitive processes also exist.

Cognitive Processes and the Brain

Cognitive processes are supported by different parts of the brain, but they rarely rely on a single brain region. This figure shows the brain regions most often associated with the main cognitive domains.





Processing Speed

LEWIS

Lewis has noticed that he often feels overwhelmed, everything seems to be happening too fast around him. This difficulty could be explained, in part, by a slower **processing speed**—the speed at which the brain processes information we perceive or think about.

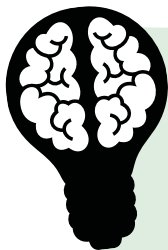


DIFFICULTIES WITH PROCESSING SPEED



Lewis works in a warehouse. Even though he is familiar with the different aisles, he often has difficulty keeping up on very busy days. When he tries to go faster, he makes more mistakes (for example: taking out the wrong box or putting boxes in the wrong places).

Lewis also has trouble following his boss's instructions because his boss speaks very quickly. He is quickly overwhelmed which causes him to take even longer to respond to his boss's requests.



Supportive strategies for processing speed difficulties

- Do not hesitate to ask questions to clarify things during a discussion (for example: check with a colleague to make sure you've properly understood the task).
- Ask people to slow down if they are speaking too quickly.
- Perform tasks at your own pace and/or choose tasks suited to your pace, when possible.

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Attention

HELENA

Helena is studying to become an accounting technician. To pay for school she has a part-time job as a security guard at a shopping mall. Helena has noticed that she has a hard time staying focused in certain situations. She sometimes has difficulty paying **attention**.



ATTENTION DIFFICULTIES

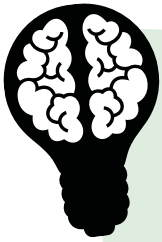
As part of her job, Helena has to watch surveillance monitors to make sure no one steals anything. It requires her to stay focused for several minutes at a time. Theft is quite rare at the mall, but a few days ago she identified a person who had just stolen a lady's purse. Helena noticed it because she was being vigilant.

Vigilance is a type of attention that allows us to detect changes in a routine situation where there is little action or novelty.

Helena sometimes patrols the shopping center with her colleague Hakim. However, when they walk around, all the noise and conversations around them make it difficult for Helena to focus on what Hakim is saying. She has difficulties with **selective attention**. This type of attention allows us to ignore irrelevant information (for example: surrounding noise) so that we can focus entirely on information that matters for the task at hand (for example: focusing on a conversation).



For school, Helena sometimes has to write long essays. It requires deep focus over long periods of time. Despite her tendency to get distracted, Helena is able to concentrate on this kind of task and has no trouble with repetitive activities that require sustained concentration over long periods of time. That means she does not have a problem with **sustained attention** (focusing for long periods of time). Sometimes she is even able to listen to the news on the radio while doing her schoolwork. She can focus on both activities because she has no difficulty with **divided attention**, which allows people to focus on more than one thing at a time (for example: the radio and schoolwork).



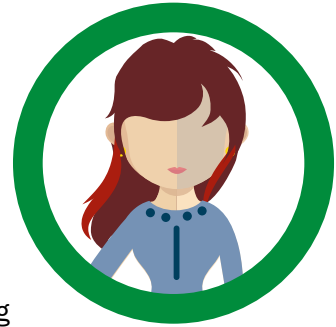
Supportive strategies for attention difficulties

- Avoid distractions (for example: cellphone, music, pictures, windows, etc.) and wear earplugs if necessary.
- Take frequent breaks to avoid fatigue.
- Perform more demanding tasks when you are most alert (for example: do long tasks when you feel fully awake).
- Alternate between tasks and assignments on different subjects.

Working Memory

SARAH

Sarah has noticed that it is difficult for her to follow conversations and remember what people say. Her problems could be explained by difficulties with **working memory**, which is the ability to maintain information and manipulate it in your mind for a few seconds up to a minute. The amount of information that can be temporarily maintained and manipulated in working memory is limited and varies from one person to another.

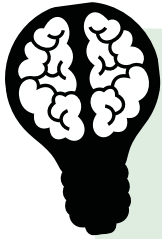


DIFFICULTIES WITH WORKING MEMORY



Last week, Sarah was eating with her friends. At the start of the evening, Sarah's friend asked her to help make the dessert. Sarah had a lot of trouble following her friend's verbal instructions. She was having problems remembering all the instructions for the recipe, as if she was overloaded with too much information in her mind at the same time. Sarah's problems with temporary information retention are explained by issues with **maintaining information** in working memory. Information maintenance allows us to temporarily retain information that we have read, seen, or heard for up to a minute.

When chatting with her friends, Sarah was unable to follow the conversation. Every time she spoke, she always felt like she was off topic. That is because she was having difficulty **manipulating information** in her working memory. Information manipulation makes it possible to juggle several pieces of information in your head, which is necessary to follow a conversation.



Supportive strategies for working memory difficulties

- Repeat the same information over and over in your head (for example: the next step of a recipe or a friend's phone number).
- Write and simplify instructions for tasks for future reference (for example: try to summarize the steps in a recipe in a few simple words).
- Use external aids as needed (for example: a calculator or notepad).





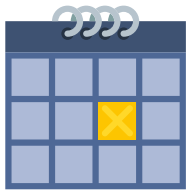
Long-Term Memory

BRIDGET

Bridget works as an administrative agent at a clinic. Although she takes her job seriously, she often forgets about team meetings and to follow up on calls. Bridget's difficulties could be explained by issues with her **long-term memory**, which allows us to learn new information and form memories.



DIFFICULTIES WITH LONG-TERM MEMORY



Last week, Bridget had a feeling she was forgetting something important on her way to work. She knew she had something to do in the afternoon, but she could not remember what it was. Bridget often has memory lapses, as if certain information was not properly recorded. Bridget's long-term memory issues also affect her ability to learn new information. For example, the telephone system was recently changed at work, and she has had great difficulty learning the new telephone extensions. The other administrative agents seemed to memorize the new numbers very quickly, but Bridget still needs to check her sheet.

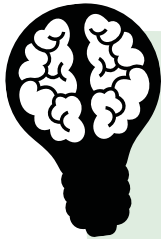
Bridget's difficulties are explained by a specific type of long-term memory: episodic memory. **Episodic memory** includes memories of events experienced in the recent past (for example: 20 minutes ago) and the more distant past (for example: last week, 5 years ago, etc.). These memories include the temporal context (the moment), the place where the event occurred, and the emotions experienced at the time. For example, people can often recall who they were with, where they were, and the strong feelings they felt when their favourite sports team won a big game or recall the fact that they booked a dentist appointment while at work.



Due to difficulties with episodic memory, Bridget often has gaps in her memory regarding important tasks she needs to do. Episodic memory also allows us to learn new things. This explains why Bridget has trouble learning and remembering new information like the new telephone extensions.



However, Bridget is very good at remembering information that she has learned, like the capitals of different countries and the names and professions of famous people. She has even been told that she has an excellent memory and is unbeatable at trivia! Bridget is good at answering these types of questions because she has no problems with her **semantic memory**, which is also part of long-term memory. Semantic memory encompasses general knowledge about objects, concepts, and words and their meanings. It is kind of like a personal dictionary. It contains general knowledge (for example: grass is green, and Ottawa is the capital of Canada) that is not associated with a specific context. Unlike episodic memory, a person who remembers which city is the capital of Canada does not recall where they were, who they were with, or how they were feeling when they learned the information.



Supportive strategies for difficulties with episodic memory

- Always put things in the same place (for example: keep your pencils in a case and always leave it in the same spot and keep your keys on a shelf by the door).
- Use external memory aids (for example: a planner for appointments, phone alarms for meetings, and sticky notes or notepads).
- Create mental images when you learn new information (visualize words or images in your head).
- Make connections between information that needs to be memorized and events you have experienced or existing knowledge (for example: when learning a new person's name, you can link it to someone you already know with the same name).
- Repeat, rephrase, and summarize new information.

Executive Functions

ROMAN

Roman rarely thinks ahead of time, which can cause issues in his daily life, especially when it comes to managing his budget. Roman's difficulties are explained in part by issues with his **executive functions**. You might think of executive functions as an orchestra conductor that coordinates and blends



together a whole range of musical instruments to produce a beautiful melody. The conductor watches over all the instruments and sometimes asks certain ones to play louder than others. Like a conductor, our executive functions coordinate and manage cognitive processes (for example: attention) to ensure optimal neuropsychological functioning. Our executive functions are especially important in new or complex situations that require increased adaption and problem solving.

DIFFICULTIES WITH EXECUTIVE FUNCTIONS

Roman often buys things impulsively without thinking. While his purchases may seem practical to him at the time, they often turn out to be unnecessary. Roman has **inhibition** issues. Inhibition is like a filter or a brake that we impose on our behaviours and thoughts. It allows us to refrain from saying and doing things that are inappropriate or unnecessary in different contexts. It also allows us to think about and accomplish tasks without being bombarded with irrelevant information. Roman's inhibition issues are reflected in the impulsivity of his purchases and the fact that he does not always take the time to think about the consequences of his actions (for example: spending more than expected).



Roman also finds it difficult to stick to budget on vacations because he does not plan or organize his trips in advance. For example, last weekend, he was going to a cottage with his girlfriend. It was only after they hit the road that he realized he had neglected to plan the route. Roman and his girlfriend got lost on the way and had to stay at a hotel because they were too tired to make it all the way to the cottage. Unexpected events during his trip (for example: the hotel stay) led to unforeseen expenses and threw him off budget. Roman presents **planning and organization** difficulties. These functions are involved in planning the various actions required to reach a goal.

Despite these difficulties, Roman is able to adapt to changes. That means he does not have problems with mental flexibility, which allows people to move from one idea or instruction to another. **Mental flexibility** also makes it possible to consider multiple ways of seeing or doing things, thereby preventing automatic responses which are not necessarily appropriate. Mental flexibility issues can, for example, cause people to have trouble adjusting to a new topic of conversation, causing them to “get stuck” on the previous topic.

Roman is responsible for doing the grocery shopping. Sometimes his girlfriend calls him while he is at the grocery store to ask him to buy an item that is on sale instead of one that is not (for example: grape juice instead of orange juice). Roman has no trouble replacing the old information with the new instruction, even if it is not written on the grocery list. Information **updating** allows people to retain new information and adapt their behaviour accordingly.



Supportive strategies for executive functioning difficulties

Inhibition

- Take a step back before you speak or act to ask “*Do I really need to do this?*” (for example: before buying something at the store).
- Find ways to reduce impatience when things do not go as planned (for example: take a break, switch to a different activity or task).
- Before you act, remember the positive effects of good behaviour and the negative consequences of inappropriate behaviour (for example: “*it will be fun if I buy this video game, but I might not have enough money left to pay the rent*”).

Planning and organization

- Make a checklist of activities/tasks to accomplish for the day or in order to achieve a goal (for example: a checklist of tasks you need to do at work or before going on a trip).
- Divide up larger tasks: set a goal, identify sub-objectives (for example: divide up the different tasks you need to accomplish for a trip to go as planned, like packing, making an itinerary, booking accommodations, etc.).
- Establish a daily routine (for example: at work or at home).

Mental flexibility

- Take note of changes in instructions or tasks (for example: do all similar tasks that follow the same instructions before moving on to tasks with different requirements).
- Manage or do fewer things at the same time.
- Perform tasks at your own pace. Avoid putting too much pressure on yourself.

Updating

- Write new information down so you can refer to it as needed (for example: update your shopping list to include the new information).
- Take extra time to process and adjust to new information.



Praxis

VINCENT

Vincent often stumbles and bumps into things when he plays sports. People who know him generally consider him to be clumsy. Vincent has difficulties with **praxis**, which is the ability to voluntarily coordinate and adapt his movements and direct them toward a goal.

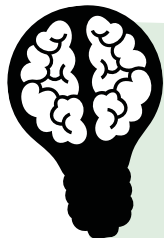


DIFFICULTIES WITH PRAXIS

Vincent's friends invited him to play soccer with them. Vincent tripped and missed the ball several times during the game. This happens regularly when Vincent plays sports that require agility and precision. He has difficulty coordinating, planning, and executing gesture sequences (for example: kicking a soccer ball). These are **praxis** difficulties. Every time Vincent executes a gesture sequence, it is like he is doing it for the first time. He always needs to think about the gestures and break them down into steps, unlike his friends who perform the different steps more automatically.



However, Vincent has no problem with writing or when he handles small objects. In fact, his **fine motor skills** are good, which are the precise movements that make it possible to reach, grasp and manipulate small objects, mainly using the fingers (for example: writing with a pencil). Difficulty with fine motor skills can cause people to drop things. It is a bit like writing or handling small things while wearing boxing gloves.



Supportive strategies for praxis difficulties

- Ask a loved one to help guide your actions. They can direct you at the beginning and gradually let you do the actions more and more independently.
- Rehearse and train certain action sequences to make them more automatic.





Visual and Spatial Perception

FATIMA

Fatima does not always see her surroundings properly and sometimes has trouble recognizing people. She has difficulty with **visual and spatial perception**, which allows us to clearly perceive the objects that surround us (shape, colour, and orientation), along with their location in space and their distance away from us.

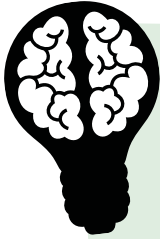


DIFFICULTIES WITH VISUAL AND SPATIAL PERCEPTION

Fatima loves to colour for relaxation, but she has noticed that she often goes outside the lines. She also finds it difficult to assess how far objects are away from her. She actually spills milk on the counter almost every morning while trying to pour it into her coffee. Fatima has **spatial perception** difficulties, which is the ability to analyze how far away things are and their location/movement in space.

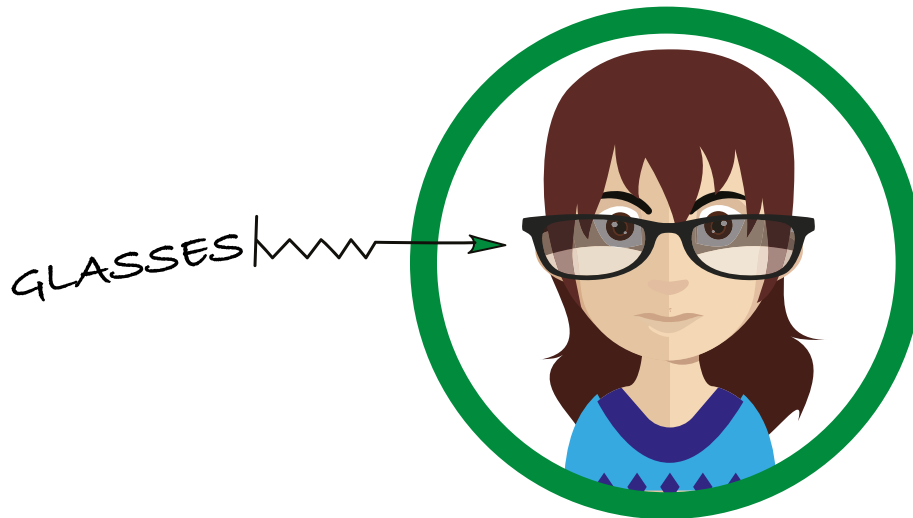
From time to time, she also fails to recognize certain people she knows well. She has discovered that it is actually easier to recognize people by other characteristics such as their voice or accessories (for example: glasses) than by their face. She presents difficulties with **facial perception**. These difficulties are even greater for people she does not see very often or when she sees people in an unusual context.

However, Fatima does not have any trouble recognizing objects around her. For example, she can tell the difference between her television remote and her cellphone. So she does not have difficulty with **visual perception of objects**, which makes it possible to recognize objects and things, no matter the angle of sight from which we see them.



Supportive strategies for visual and spatial perception difficulties

- Use other intact sensory modalities to aid recognition (for example: use touch to recognize objects that are hard to pick out visually).
- Change your viewing perspective to aid recognition of objects (look from a more usual angle of sight).
- Keep your environment structured and predictable (for example: put objects in the same spots so you recognize them right away).
- Pay attention to specific features to identify/recognize faces (for example: tone of voice, glasses, hair colour, or hairstyle).



Social Cognition

KARINE

Karine often has misunderstandings with people around her. She has trouble understanding what they want and their thoughts and feelings. She sometimes feels that people are mad at her, or that she has done something wrong. Karine has **social cognition** difficulties, which refers to the set of processes used to understand others and adjust behaviour during social interactions.



DIFFICULTIES WITH SOCIAL COGNITION



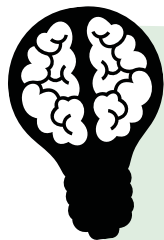
Karine often has difficulty understanding sarcasm and insinuations. For example, while shopping with her brother, he looked at a frame and said sarcastically, “Wow, what a beautiful frame!” Karine thought he actually liked the frame and decided to give it to him for his birthday. When he opened the gift, Karine noticed he did not seem very happy. Her brother explained that his comment at the store was sarcastic and that he had actually meant he thought the frame was ugly.

Karine has trouble with **theory of mind**, which is the ability to understand other people’s mental states (for example: their intentions, knowledge, beliefs, or emotions). That is why Karine did not quite understand the real intention behind her brother’s comment at the store.

Karine often tends to blame herself in different situations. Last week, her boss arrived at work in a bad mood and she quickly began to imagine that it was because of her, possibly because she had not finished a task quickly enough. During lunch, her boss told her that he was involved in a car accident on the way to the office. So he was not angry with Karine at all, but rather concerned about the accident. Karine has difficulties with **attributional style**, which refers to the way people interpret the causes of events or social interactions. We talk about attributional biases when a person makes mistakes in their interpretation of different social situations in their daily life. There are several types of attributional biases that can cause people to blame themselves or others.

Social cognition also includes other functions like emotion processing and social perception. **Emotion processing** encompasses emotion recognition and emotional regulation. **Emotion recognition** is how we recognize facial expressions, tone of voice, and non-verbal language (for example: posture, gestures, etc.). **Emotional regulation**, on the other hand, refers to the ability to effectively manage our emotional responses. For example, Karine did not start to cry or get angry when her brother told her he did not like her gift.

Social perception includes **social knowledge**, which refers to understanding the roles, rules, and behaviours typically expected in different social situations. For example, Karine knows that the behaviour expected at a restaurant differs from what is typically expected in a classroom.



Supportive strategies for difficulties with social cognition

- Before jumping to conclusions, take a step back from your initial judgment and ask yourself: *“Do I have enough information to properly understand the situation? Does the information I have allow me to make a judgment (who, what, when, where)?”*
- Consider other explanations: *“Could the person have another intention that I have not considered? What other reasons could explain this situation?”*
- When possible, ask the person if your feeling or perceptions are accurate: *“Are you mad at me?”*
- Ask yourself how you would like others to behave in the same situation and do that.



Language

RAPHAEL

Raphael has trouble understanding and meeting his employers' expectations. Although he reads the documents that are sent to him and listens carefully to what his colleagues say, he has problems understanding the full message. Raphael has difficulties with his **language** abilities.



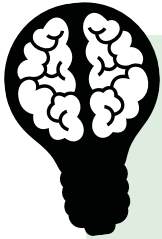
LANGUAGE DIFFICULTIES



Raphael has just been hired as a graphic designer for a new company. As far back as he can remember, he has always preferred to express himself through visual art rather than with language. Furthermore, his art portfolio has received a lot of praise from his past teachers. However, although he finds it easy to come up with designs that fit his client's needs, he has trouble coming up with slogans and catchphrases to accompany his work. It is as if he is unable to find the right words to express his thoughts. He has the same problem writing emails. Words seem to jostle around in his head and his sentence structure and word choices often make his messages difficult to understand. Raphael has difficulties with **expressive language**, the dimension of language that allows us to express ourselves both in writing and verbally.



As part of his job, Raphael has to meet with clients to determine their needs and preferences. It is a challenge for Raphael because he finds it difficult to discern client needs from all the information that he receives. It is even worse for written requests. It takes him a long time to deconstruct all the long sentences in the requests and he often makes reading mistakes. All this is due to difficulties with **receptive language**, the dimension of language that enables people to understand meaning in writing and speech.



Supportive strategies for language difficulties

- When you need to write a text (for example: an email or letter), start by making a plan in order to organize your ideas.
- Use spell check whenever you need to write something.
- Try to separate the tasks you need to carry out into short statements to simplify the instructions (one sentence per idea).
- Repeat or re-explain instructions in short, simple sentences to ensure understanding. If possible, request a demonstration of the task that needs to be performed.
- When you need to read something (for example: a request for an illustration from a client), highlight the important ideas and summarize each paragraph in the margins.
- Look up words you do not know in the dictionary.

Resources

When certain difficulties become too overwhelming or interfere with daily functioning, a qualified professional needs to be consulted. This section lists useful resources.

Family physician

Psychologist or neuropsychologist:

Professional qualified in the assessment and treatment of affective and neuropsychological difficulties.

Speech therapist:

Professional qualified in the assessment and treatment of language difficulties or disorders.

Psychoeducator:

Professional who works with people with behavioural adjustment problems in their various environments.

Social worker:

Professional who helps people and communities experiencing problems associated with difficult, crisis or day-to-day situations.

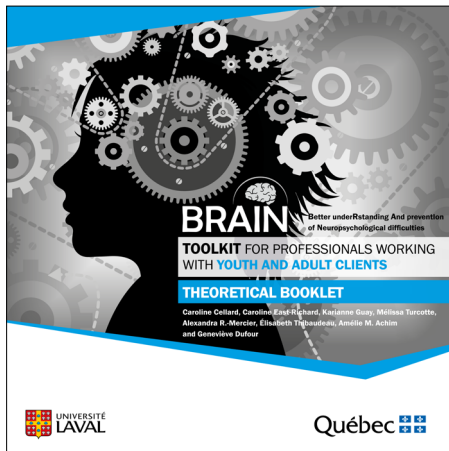
Remedial teacher:

Professional who assesses and intervenes with people who may have learning difficulties.

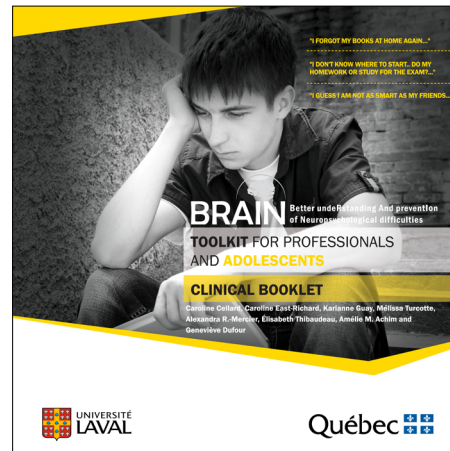
Associations or community organizations in your local area:

Various services that can be offered for you or your loved ones.

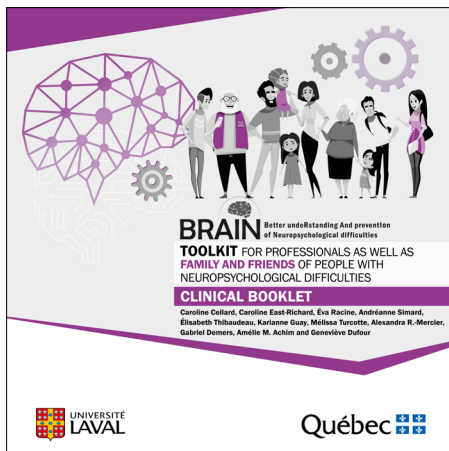
In the Same Collection



THEORETICAL BOOKLET



CLINICAL BOOKLET (adolescents)

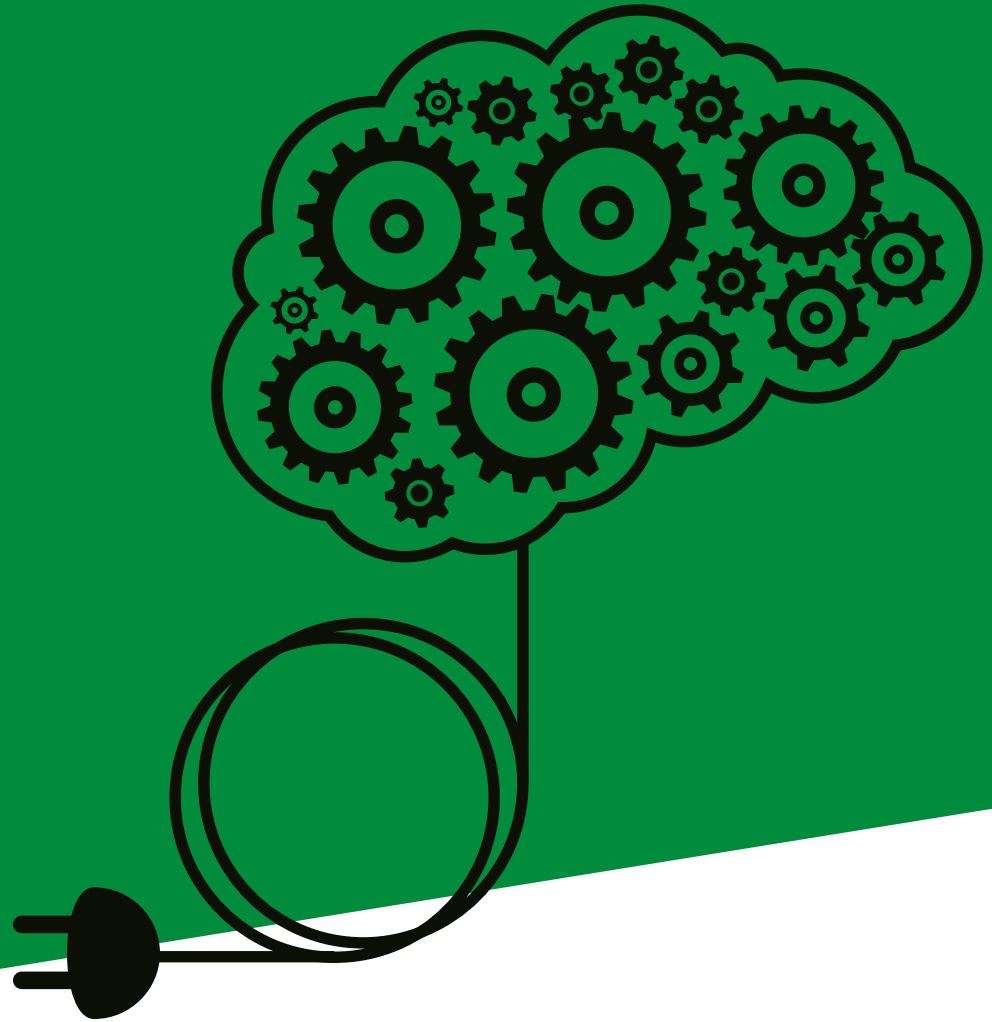


CLINICAL BOOKLET (family and friends)

Available on the website of the BRAIN toolkit:
www.cerveau.psy.ulaval.ca

Video vignettes are also available on this website.

If you have any questions about the BRAIN toolkit, please write to caroline.cellard@psy.ulaval.ca



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