

Cognitive Problems after Traumatic Brain Injury

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www.msktc.org/tbi/factsheets

TBI Factsheet

This factsheet explains common cognitive changes after TBI and how to manage them.

What is Cognition?

Cognition is the act of knowing or thinking. Some thinking abilities that can be affected by TBI include:

- Attention and concentration
- Processing and understanding information
- Memory
- Planning, organizing, and assembling
- Reasoning, problem-solving, decision-making, and judgment
- Monitoring and watching behavior to ensure that it is socially acceptable
- Communicating thoughts or ideas in ways that others can understand

Cognition after TBI

This factsheet discusses common difficulties with cognition (or thinking) that some individuals have after a TBI and presents some tips that may help reduce these challenges.

Attention

People who have experienced TBI might have trouble paying attention or staying focused. The ability to pay attention is an important thinking skill. Trouble paying attention can often lead to other problems and challenges, such as:

- Getting distracted more easily
- Having trouble finishing things
- Difficulty switching attention from one task to another
- Learning and remembering new information
- Difficulty holding long conversations or focusing on one conversation when many people are talking



The Traumatic Brain Injury Model Systems program is sponsored by the National Institute on Disability, Independent Living, and Rehabilitation Research, Administration for Community Living, U.S. Department of Health and Human Services. (See <http://www.msktc.org/tbi/model-system-centers> for more information).

What can be done to improve attention?

- Decrease distractions. Distractions can come from the environment or from within oneself, such as headaches or worries. Find the right place and the right time for activities that require more attention (e.g., reading). For example, work in a quiet room.
- Focus on one task at a time.
- Break large or complex tasks into smaller tasks.
- Practice attention skills on simple but practical activities (such as reading a paragraph or adding numbers) in a quiet room. Gradually make tasks harder. For example, read a short story, balance a checkbook, or work in a slightly noisier environment.
- Take breaks when doing tasks that require a lot of mental energy. Return to the task when you're more refreshed.
- Talk with a doctor if you think your mood (e.g., sadness or worrying) is making it harder to concentrate.
- Get plenty of rest. Talk to your doctor about any problems you have sleeping.

Processing and Understanding Information

After a TBI, a person's ability to process and understand information often slows down and can become more challenging. This can result in some of the following problems:

- Having trouble understanding what others are saying or needing more time to understand what others are saying.
- Taking more time to understand and follow directions.
- Having trouble following storylines in television shows and movies.
- Taking longer to read and understand written information, including books, newspapers, or magazines.
- Reacting slowly to changes or warning signs in the surroundings. Slow reactions make certain activities, such as driving, unsafe. For example, not reacting quickly enough to stop signs, traffic lights, and other warning signs.
- Taking longer to carry out physical tasks, including routine activities, such as getting dressed or cooking.



What can be done to improve the ability to process and understand information?

- Decrease distractions. For example, turn the television off and silence your phone so that you can focus fully on what you're trying to understand.
- Allow more time to think about the information before moving on.
- Re-read information as needed. Try using a highlighter to identify the most important parts of what you are reading.
- Take notes and summarize information in your own words.
- If needed, ask people to repeat themselves, to say something in a different way, or to speak slowly. Repeat what you just heard to make sure you understood it.

Cognitive Communication

Thinking difficulties can make it harder to express your thoughts and understand what others are trying to say. Examples of cognitive communication problems include:

- Difficulty thinking of the right word
- Trouble starting or following conversations or understanding what others say
- Rambling or getting off topic easily
- Difficulty expressing thoughts in an organized manner
- Trouble expressing your thoughts and feelings through facial expressions, tone of voice, and body language (nonverbal communication)
- Having problems reading others' nonverbal communication and social cues that indicate others' feelings, thoughts, expectations, or intentions
- Misunderstanding jokes or sarcasm
- Aphasia is a disorder that can affect your speech or your ability to understand language properly. A speech therapist can test you for aphasia. Some of the suggestions below may be helpful to individuals with aphasia. However, speech therapy with a trained therapist who can teach strategies specific to aphasia may be needed.



What can people with TBI do to improve communication?

- Practice communicating one on one or in small groups and in environments with few distractions.
- If someone is speaking too fast, ask them to speak slowly so you can better understand them.
- If people are trying to tell you too much at once, ask them to tell you one thing at a time or ask one question at a time.
- If people ask too many questions at once, ask for one question at a time.
- If you didn't understand something someone said to you, ask him or her to repeat it or say it in a different way.
- To make sure you understand what someone says, offer to summarize what you heard.
- Before you start a conversation, think about the main point that you want to communicate. Plan what you need to say and consider what, if any, background information the person may need to better understand your message.
- When you write emails and post to social media, make sure to proofread, and read the text aloud before sending or posting it.

How can others help with communication?

People with TBI may not be able to interpret or understand words, messages, thoughts, and feelings that are part of a conversation. In such instances, others can help people with TBI by:

- Using kind words and a gentle tone of voice.
- Limiting conversations to one person at a time.
- Clearly communicate to your loved one what you are thinking or feeling or want.
- Helping them practice communication tips outlined above. Practice should be one on one or small group settings in environments with few distractions.
- Helping to redirect the conversation if the person gets off topic, by saying, "We were talking about..."
- If you are working with a speech therapist, it can be helpful to have a loved one join those sessions. Including family members in sessions can help you to carry over new skills to everyday life.



Learning and Remembering New Information

People with TBI may have trouble learning and remembering new information and events. People with TBI may also have problems remembering entire events or conversations. When this happens, the mind will sometimes try to fill in the gaps of missing information with things that did not really happen. These false memories are not lies. False memories are the brain's attempt to use the best information it has to make up for what is missing.

What can be done to improve memory problems?

- Structure your day with routine daily tasks and activities.
- Be organized: always put commonly used items back in the same place.
- Learn to use memory aids, such as:
 - memory notebooks to keep track of important information.
 - calendar reminders on smartphones, tablets, and computers to remember appointments and scheduled activities.
- Minimize distractions when learning new information and tasks (e.g. sit in a quiet area).
- Devote time and attention to reviewing and practicing new information you want to memorize.
- Link the information you want to remember with an image. Rehearse this connection either out loud or writing it down.
- Try to connect new information with something you already know. Building on existing knowledge can improve memory.
- Write down step-by-step instructions that you can reference when learning something new, such as directions to a new location, a new recipe, or learning a new computer task.
- Get plenty of rest. This will improve your focus during learning and result in better memory.
- Use relaxation techniques, such as deep breaths or meditation. This could help you focus better and reduce memory problems associated with stress and anxiety.
- Pay attention to possible side-effects of your medications, which may affect your thinking. If you notice changes in memory and are taking prescription medications, speak with your doctor about how your prescription medications may affect your memory.



Planning and Organization

People with TBI may have trouble planning the steps needed to accomplish a goal or organizing their ideas or belongings in a systematic way. Examples include:

- Difficulty planning their day and scheduling appointments
- Trouble organizing and keeping track of things like important papers, mail, and other items
- Trouble with tasks that require multiple steps to be completed in a particular order, such as laundry or cooking



What can be done to improve planning and organization?

- Use a calendar to schedule appointments and tasks. Look out for scheduling conflicts.
- List goals or things that need to be done and when. List them in order of what should be done first.
- Many mobile phones have apps with calendars and checklists that can be helpful.

- Break down activities into smaller steps.
- When figuring out what steps you need to do first to complete an activity, think of the end goal and work backwards.
- Organize items based on similarity and use. For example, store all medical bills in one place and separate them by the type of medical service.
- Look for free smartphone apps designed to plan, organize, and remind you of appointments and events. Some apps may allow you to set alarms for reminders throughout the day.

Judgment, Reasoning, Problem-Solving, and Self-Awareness

Judgment, reasoning, problem-solving and self-monitoring are complex cognitive skills that are often affected after a TBI. Problems in these areas also impact decision-making and behaviors. People with TBI who have difficulty in these areas may have the following problems:

- Analyzing information or changing the way they think (being flexible)
- Deciding the best solution to a problem
- Getting stuck on one solution and not considering other options
- Acting quickly without thinking about the possible consequences
- Knowing what information is needed and how to evaluate the information needed to make decisions
- Judging what is safe versus unsafe behavior
- Being unaware of cognitive problems, even if the problems are clear to others
- Lacking awareness of social boundaries and others' feelings, such as being too personal with people they don't know well or not realizing what they have done or said to make someone feel uncomfortable



What can people with TBI do to improve judgment, reasoning, problem-solving, and awareness?

- Engage a trusted family member or friend when solving problems; they don't need to be solved alone.
- Use the steps below to work through a step-by-step problem-solving strategy. Depending on your needs, this could be done with the help of a family member or friend, or on your own.
 - Goal: Define the problem and the ultimate goal.
 - Plan: Brainstorm possible solutions, list the pros and cons of each solution, and pick a solution.
 - Do: Try the solution.
 - Check: Evaluate the success of the solution, and try another solution if the first one doesn't work.
- Before acting on a decision, wait a few hours or sleep on it overnight. Seek advice about your decision from a trusted friend or family member before acting on it.
- Work with friends and family to come up with cues to alert you to stop and monitor what you are doing.
- Think about your actions ahead of time and consider how they might appear to others and the consequences that your actions may have on yourself and others. Practice this with a family member or friend and make it a habit to do on your own.

How can family members help?

- Attend therapy sessions with your loved one in order to know what they are working on and help reinforce skills which are being taught.
- Give the person extra time to think things through and arrive at a solution.
- Offer to work with your loved one to problem-solve together, instead of solving problems for them.
- Give realistic, supportive feedback referring to a situation that happened and the unwanted consequence. Work together to come up with a different approach.
- Help your loved one to generate different options and alternative solutions to problems.

Cognitive Evaluation, Recovery, and Rehabilitation

- A neuropsychologist usually evaluates changes in thinking abilities after TBI. The results of this testing can be used to design a treatment plan.
- Many factors affect how someone's cognition will improve over time, which makes it very difficult to predict how much someone's cognition will recover.
- In many cases, cognition can improve with cognitive rehabilitation. Cognitive rehabilitation is a therapy known to help improve many of the cognitive skills described above.
- Some cognitive therapy approaches focus on improving skills that have been lost or impaired. Other approaches help the person to learn different ways to achieve a goal.
- Individuals with changes in thinking skills after TBI should consider getting help from a therapist who specializes in cognitive rehabilitation.
- Clinicians—such as occupational therapists, speech therapists, and neuropsychologists—often deliver cognitive therapy. A clinical psychologist or psychotherapist may not directly deal with cognitive difficulties but can be helpful in cases where depression, anxiety, or frustration are interfering with clear thinking.

Discuss Your Concerns With Your Physician or Treatment Provider

You should discuss any questions or concerns you have with a physiatrist (rehabilitation specialist) or the rehabilitation team. Do not ignore new problems. Mention new problems as they develop to your health care team. New problems could be the result of medication or require further evaluation. Bring a journal to your doctor appointments. Because you have a limited amount of time with the doctor, it is helpful to have a list of things you want to discuss prepared ahead of time so that you do not miss the opportunity to discuss important issues or ask questions. A journal can also be used during your appointment to take notes with regard to what the doctor tells you so that you can remember it later.



Recommended Reading

Check out these other MSKTC factsheets and infocomics on the impact of TBI on cognition:

- *Memory and Traumatic Brain Injury*
<https://msktc.org/tbi/factsheets/memory-and-traumatic-brain-injury>
- *Emotional Problems after Traumatic Brain Injury*
<https://msktc.org/tbi/factsheets/emotional-problems-after-traumatic-brain-injury>
- *Emotional Changes after Traumatic Brain Injury*
<https://msktc.org/tbi/infocomics/emotional-changes-after-tbi-infocomic>
- *Fatigue and Traumatic Brain Injury* <https://msktc.org/tbi/factsheets/fatigue-and-traumatic-brain-injury>
- *Sleep and Traumatic Brain Injury* <https://msktc.org/tbi/factsheets/sleep-and-traumatic-brain-injury>
- *Traumatic Brain Injury and Sleep* <https://msktc.org/tbi/infocomics/tbi-and-sleep-infocomic>
- *Social Skills after Traumatic Brain Injury* <https://msktc.org/tbi/factsheets/social-skills-after-traumatic-brain-injury>



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