# Cognitive Problems after Traumatic Brain Injury

*Dawn Neumann, PhD and Anthony Lequerica, PhD, Model Systems Knowledge Translation Center*

## What is cognition?

Cognition is the act of knowing or thinking. It includes the ability to choose, understand, remember and use information. Cognition includes:

- Attention and concentration.
- Processing and understanding information.
- Memory.
- Communication.
- Planning, organizing, and assembling.
- Reasoning, problem-solving, decision-making, and judgment.
- Controlling impulses and desires and being patient.

**How does TBI affect cognition and what can be done about it?**

After a TBI it is common for people to have problems with attention, concentration, speech and language, learning and memory, reasoning, planning and problem-solving.

## Attention and concentration problems

A person with TBI may be unable to focus, pay attention, or attend to more than one thing at a time. This may result in:

- Restlessness and being easily distracted.
- Difficulty finishing a project or working on more than one task at a time.
- Problems carrying on long conversations or sitting still for long periods of time.

Since attention skills are considered a "building block" of higher level skills (such as memory and reasoning), people with attention or concentration problems often show signs of other cognitive problems as well.

**What can be done to improve attention and concentration?**

- Decrease the distractions. For example, work in a quiet room.
- Focus on one task at a time.
- Begin practicing attention skills on simple, yet practical activities (such as reading a paragraph or adding numbers) in a quiet room. Gradually make the tasks harder (read a short story or balance a checkbook) or work in a more noisy environment.
- Take breaks when you get tired.

## Problems with processing and understanding information

After brain injury, a person's ability to process and understand information often slows down, resulting in the following problems:

- Taking longer to grasp what others are saying.
- Taking more time to understand and follow directions.
- Having trouble following television shows, movies, etc.
- Taking longer to read and understand written information including books, newspapers or magazines.
- Being slower to react. This is especially important for driving, which may become unsafe if the person cannot react fast enough to stop signs, traffic lights or other warning signs. Individuals with TBI should not drive until their visual skills and reaction time have been tested by a specialist.
- Being slower to carry out physical tasks, including routine activities like getting dressed or cooking.

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

- Place your full attention on what you are trying to understand. Decrease distractions.
- Allow more time to think about the information before moving on.
- Re-read information as needed. Take notes and summarize in your own words.
- If needed, ask people to repeat themselves, to say something in a different way, or to speak slower. Repeat what you just heard to make sure you understood it correctly.

## Language and communication problems

Communication problems can cause persons with TBI to have difficulty understanding and expressing information in some of the following ways:

- Difficulty thinking of the right word.
- Trouble starting or following conversations or understanding what others say.
- Rambling or getting off topic easily.
- Difficulty with more complex language skills, such as expressing thoughts in an organized manner.
- Trouble communicating thoughts and feelings using facial expressions, tone of voice and body language (non-verbal communication).
- Having problems reading others' emotions and not responding appropriately to another person's feelings or to the social situation.
- Misunderstanding jokes or sarcasm.

**What can be done to improve language and communication?**

Work with a speech therapist to identify areas that need work. Communication problems can keep improving for a long time after the injury.

How family members can help:

- Use kind words and a gentle tone of voice. Be careful not to "talk down" to the person.

- When talking with the injured person, ask every so often if he or she understands what you are saying, or ask the person a question to determine if he or she understood what you said.
- Do not speak too fast or say too much at once.
- Develop a signal (like raising a finger) that will let the injured person know when he or she has gotten off topic. Practice this ahead of time. If signals don't work, try saying "We were talking about…"
- Limit conversations to one person at a time.

## Problems learning and remembering new information

- Persons with TBI may have trouble learning and remembering new information and events.
- They may have difficulty remembering events that happened several weeks or months before the injury (although this often comes back over time). Persons with TBI are usually able to remember events that happened long ago.
- They may have problems remembering entire events or conversations. Therefore, the mind tries to "fill in the gaps" of missing information and recalls things that did not actually happen. Sometimes bits and pieces from several situations are remembered as one event. These false memories are not lies.

**What can be done to improve memory problems?**

- Put together a structured routine of daily tasks and activities.
- Be organized and have a set location for keeping things.
- Learn to use memory aids such as memory notebooks, calendars, daily schedules, daily task lists, computer reminder programs and cue cards.
- Devote time and attention to review and practice new information often.
- Be well rested and try to reduce anxiety as much as possible.
- Speak with your doctor about how medications may affect your memory.

## Planning and Organization Problems

- Persons with TBI may have difficulty planning their day and scheduling appointments.
- They may have trouble with tasks that require multiple steps done in a particular order, such as laundry or cooking.

**What can be done to improve planning and organization?**

- Make a list of things that need to be done and when. List them in order of what should be done first.
- 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.

## Problems with reasoning, problem-solving and judgment

- Individuals with TBI may have difficulty recognizing when there is a problem, which is the first step in problem-solving.

- They may have trouble analyzing information or changing the way they are thinking (being flexible).
- When solving problems, they may have difficulty deciding the best solution, or get stuck on one solution and not consider other, better options.
- They may make quick decisions without thinking about the consequences, or not use the best judgment.

**What can be done to improve reasoning and problem-solving?**

- A speech therapist or psychologist experienced in cognitive rehabilitation can teach an organized approach for daily problem-solving.
- Work through a step-by-step problem-solving strategy in writing: define the problem; brainstorm possible solutions; list the pros and cons of each solution; pick a solution to try; evaluate the success of the solution; and try another solution if the first one doesn't work.

## Inappropriate, embarrassing or impulsive behavior

- Individuals with brain injuries may lack self-control and self-awareness, and as a result they may behave inappropriately or impulsively (without thinking it through) in social situations.
- They may deny they have cognitive problems, even if these are obvious to others.
- They may say hurtful or insensitive things, act out of place, or behave in inconsiderate ways.
- They may lack awareness of social boundaries and others' feelings, such as being too personal with people they don't know well or not realizing when they have made someone uncomfortable.

**What causes it?**

- Impulsive and socially inappropriate behavior results from decreased reasoning abilities and lack of control. The injured person may not reason that "If I say or do this, something bad is going to happen."
- Self-awareness requires complex thinking skills that are often weakened after brain injury.

**What can be done about it?**

Things family members can do:

- Think ahead about situations that might bring about poor judgment.
- Give realistic, supportive feedback as you observe inappropriate behavior.
- Provide clear expectations for desirable behavior before events.
- Plan and rehearse social interactions so they will be predictable and consistent.
- Establish verbal and non-verbal cues to signal the person to "stop and think." For example, you could hold up your hand to signal "stop," shake your head "no," or say a special word you have both agreed on. Practice this ahead of time.
- If undesired behavior occurs, stop whatever activity you are doing. For example, if you are at the mall, return home immediately.

## Cognitive outcome/recovery and rehabilitation

Cognition is usually evaluated by a neuropsychologist. Since there are many factors that can affect how someone will improve cognitively, it is very difficult to predict how much someone will recover. With practice, cognitive problems usually improve to some degree.

Cognitive rehabilitation is therapy to improve cognitive skills and has two main approaches, remediation and compensation:

- Remediation focuses on improving skills that have been lost or impaired.
- Compensation helps you learn to use different ways to achieve a goal.

## 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. It is important to mention new problems as they develop. New problems could be the result of medication or require further evaluation.

**Recommended reading**

- Managing Cognitive Issues, in Making Life Work after Head Injury, South Carolina Department of Disabilities and Special Needs. www.state.sc.us/ddsn/pubs/head/issues.htm
- Guideposts to Recognition: Cognition, Memory and Brain Injury, in The Road to Rehabilitation, Brain Injury Association of America. www.biausa.org/publications/roadToRehab3.pdf
- Cognitive and Communication Disorders, in TBI Resource Guide, Centre for Neuro Skills. www.neuroskills.com/cogcomm.shtml
- Cognitive Rehabilitation, Brain Injury Resource Center. www.headinjury.com/rehabcognitive.html

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