MEMORY LOSS AFTER BRAIN INJURY

NEW AND UPCOMING EVENTS

Now available @ OBIA.CA

- Bill 7 More Beds Better Care Act - Summary - [link here]

Coming soon:

- ODSP Increase Survey - [Report]
- Gaps and Barriers: Recommendations for Health Care - [Summary Report]
Dear Brain Injury Speaks Members:

Take a moment to think of a memory that you hold close to your heart. Maybe it’s time you spent with your loved ones, a vacation, or when you heard some exciting and long-anticipated news. Think about how you felt at that moment, who was there, the sights and the sounds, and the emotions that the memory elicits. The amazing thing about memory is the brain’s ability to recall information from months, or even years prior. We aren’t constantly conscious of those warm and fuzzy memories, but the feelings that are brought back when we are prompted to think about them are always the same.

Your memory is a part of what makes you...you! While you might think that memory is just the ability to remember previous experiences or information, it actually plays a crucial role in how we act and respond to our surroundings. Some things that you might not associate with memory are activities like cooking, driving, problem-solving, and even walking. You may have even used the term ‘muscle memory’ to refer to an activity or action that can be described as second nature in doing so. Our memories are at the core of almost everything we do, which is why losing or having challenges with memory can be so difficult.

Forgetting is a natural process of memory retention. Over time, it is normal to forget memories that aren’t relevant to your current experiences or information that you haven’t had to recall in a while. What makes memory loss different from the process of forgetting is that a large chunk of memory is not able to be recalled, rather than a single piece of information. Another aspect of memory loss that is common after an acquired brain injury is remembering to remember. Not to be confused with attention, remembering to remember can look like forgetting important appointments or brushing your teeth in the morning. Both of these actions are typically easy to remember with a functioning memory, but memory challenges can make it difficult to carry out the actions required to remember things like appointments or calling someone back.

In this month’s issue of The Voice: Brain Injury Speaks newsletter, we will be covering memory loss after a brain injury. The main article will discuss how memory works, why memory loss can occur after a brain injury and some strategies and resources that can be used to cope with memory loss. With this in mind, this newsletter will not cover memory loss related to neurodegenerative disorders such as dementia and Alzheimer’s disease, as such topics are beyond the scope of acquired brain injury.

In addition, this month’s newsletter will be hosting a Spotlight on Research. The Spotlight on Research will provide an overview of the long-term impacts of memory loss after brain injury. More specifically, we will dive into research exploring the vocational and emotional effects of memory loss after brain injury. ◊◊◊

NOVEMBER AFFIRMATION

"I am doing the best I can do. I should not fear what tomorrow holds, but take each day as a chance to learn something new and grow my confidence."
What Is Memory?

Simply put, memory is the process of acquiring, storing, retaining, and retrieving information. Human memory involves the ability to both preserve and recover information we take in from our surroundings and experiences. When we think of memory and remembering, we usually group every type of memory we have into one all-encompassing category. However, our memories can actually be separated into categories, each with its own unique role in how we store and retrieve information.

Sensory Memory

Sensory memory is the earliest stage of memory. In the first moments of stepping into a new sensory environment, such as a restaurant or a new house, we begin taking in the sensory information around us. Sensory memory allows us to piece together our surroundings based on the sights, sounds, and other sensory experiences in the environment. In the fleeting seconds where we observe our new sensory environment, our memory filters through and acquires relevant sensory information thus preparing it to be sent off to the next stage: short-term memory.

Short-term Memory

Short-term memory allows us to recall a limited amount of information for a short period of time. These memories disappear quickly, usually after 30 seconds to 1 minute. Some examples of short-term memory are repeating a person’s phone number while you grab a pen to jot it down, or where you parked your car in a multi-level parking garage. If you don’t take a moment to take a picture of the parking spot and level on your cell phone, you might find you wish you had as you scale the parking lot looking for your car!

Working Memory

Similar to short-term memory is working memory. Unlike short-term memory, working memory uses new information and manipulates it to work through the task at hand rather than forgetting it almost immediately. Some examples of working memory include cooking a recipe and having to recall ingredients that were already added, or participating in a debate and remembering the opponent’s main arguments.

Long-term Memory

Long-term memory stores a wide variety of memories and experiences. Most memories that you recall are a part of long-term memory. When information is committed to long-term memory, it is categorized into two streams: implicit and explicit memory.

Implicit Memory

Implicit memory, also known as automatic memory, categorizes information we store that we don’t purposefully try to remember. We commit this information to long-term memory unconsciously, and we refer to it as automatic since we are not able to consciously bring it to awareness. Unlike other memories, we can’t verbally recall or sometimes even remember when or where we learned the information. In a sense, it feels ingrained in our memory.
Procedural memory makes up the largest portion of our implicit memories. Procedural memory encompasses task-based memories such as how to ride a bike or brush your teeth. Somewhere in the journey of life we learned how to do these things, but we aren’t consciously aware of when or even how. They are simply just a part of who we are and how we carry out our actions. The interesting thing about procedural memory is the ability to recall and carry out an action even if we haven’t done it for years. Take riding a bike for example, even after years without riding one, most people are able to hop on a bike and ride it effortlessly regardless of conscious thought. The actions and skills that we unconsciously store as procedural memories are ones that we don’t have to relearn every time we go to carry out an action. They occur automatically and, in the simplest way, can be described as ‘muscle memory.’

Explicit Memory

When you’re trying to intentionally or subconsciously remember something, this information is stored in your explicit memory. These are memories we use every day, from remembering the date and time of a doctor’s appointment to where you last saw your car keys. Explicit memory is also known as declarative memory because we can consciously recall and explain the information. Just like implicit memory, explicit memories can also be categorized. Memories are categorized based on their value and how and when they came to fruition.

Episodic memory is typically what we think of when we are prompted to describe what memory is. Episodic memory is recalling events or autobiographical facts, such as when you graduated high school or what you did for your birthday last year. Earlier, you were asked to think of a memory you hold close to your heart. When asked this, you more than likely thought of a memory that took place somewhere, possibly with friends or family, or an event or milestone that was meaningful to you. These types of memories are episodic memories! Episodic memories also encompass facts or information you know about other people through experience or personal connection, such as their birthdays or what their favourite hockey team is. Most episodic memories are personal, and we subconsciously commit them to long-term memory because of the importance they hold to us.

Semantic memory is the general knowledge about the world we acquire through learning and interest. Unlike episodic memory, semantic memories include information about experiences that do not happen to us personally. Think of it as learning about something you are passionate about but haven’t experienced directly. For example, a huge sports fan might know everything there is to know about baseball but has never played a day in their life. Or, someone may be fascinated with the history of Ancient Rome and dedicate their free time to studying the subject, but wasn’t alive in that time and never experienced its events firsthand. The information we acquire from learning and interest is stored and recalled as semantic memory.

Memory Loss After a Brain Injury

Memory loss associated with acquired brain injury is very common. Memory challenges can affect all levels of brain injury, ranging from mild to catastrophic. How memory loss occurs after a brain injury is usually related to damage or dysfunction of the structures of the brain associated with learning and memory. Direct or indirect damage from events like blunt-force trauma or restricted blood flow can cause issues with learning and memory post-injury. The brain, in many ways, is structured like a map. The structures associated with learning and memory are also a map, with certain areas contributing to different parts of learning and memory. Depending on which brain structures were affected will also influence which learning and memory abilities are lost.
While losing long-term memory after a brain injury is possible, it is not very common. Long-term memories are strategically stored throughout the cortex (outer structures of the brain, including the lobes), so unless severe wide-scale damage occurs, most long-term memory remains intact after injury. For most individuals with long-term memory loss, it’s not the memories themselves that have disappeared but rather the ability to recall them. This is because of damage to the structures associated with memory recall involved with explicit memories. Long-term memory loss very rarely affects procedural memory. Some studies have shown that individuals with an almost complete loss of long-term memory can still carry out tasks associated with procedural memory, like playing the piano or humming a tune from their childhood.

The most common type of memory loss after a brain injury is short-term memory loss. Short-term memory loss can be associated with damage to the structures involved with learning and memory, but it also can be related to the overall stress and fatigue of injury to the brain. For those who have incurred damage to those structures, short-term memory loss may be a lifelong impairment. Short-term memory loss associated with the stress and fatigue of recovering from a brain injury may improve over time as the injury heals. Some common issues associated with short-term memory loss are forgetting the details of a conversation you just had, forgetting where you left things, like a cell phone or keys, or feeling unsure about what you did the day before.

Some individuals with a brain injury may have no memory problems in the days or weeks following their injury but have absolutely no recollection of the injury itself. They may even have no recollection of the moments leading up to or the period of time after the injury occurred. This is known as post-traumatic amnesia. Post-traumatic amnesia does not typically occur because of structural damage to the brain but rather a psychological shutdown of the brain’s learning and memory systems. Some individuals may begin to remember their injury after the emotional shock wears off, and some never do. Common symptoms of post-traumatic amnesia include confusion, agitation, anxiety, and distress. These symptoms occur typically because the individual has no idea why they are in the hospital and is unaware that any injury occurred in the first place.

Coping With Memory Loss After a Brain Injury

It goes without saying that any type of memory loss after a brain injury is challenging. Memory loss in any capacity can cause difficulties with activities of daily living, friends and family, relationships, work and school, and even personal identity and awareness. We hold our memories and experiences close to our hearts, and when these abilities are challenged, they can affect every aspect of our lives. While there is no one-stop shop for overcoming memory loss, strategies and activities can assist with memory challenges after a brain injury.
Adapting the Environment

One of the simplest ways to help with memory problems is to adapt your environment in a way that makes you rely on your memory less often.1 Adapting your environment and setting up your surroundings in a way that helps you remember things you might forget leaves less opportunity for forgetting. Some ideas you can try are:

- Keeping a notepad by the phone or in your pocket to make notes of phone calls and messages
- Putting essential information (e.g., doctors’ appointments, bill payments) on a noticeboard where you are most likely to see it (i.e., the fridge in the kitchen, above your dresser in the bedroom, etc.)
- Have a designated place in your home for important objects such as keys, wallets, or documents.
- Labelling cupboards and drawers as a reminder of where things are kept
- Labelling doors as a reminder of which room is which5

Using External Memory Aids

Many people use external memory aids regardless of how good their memory is.5 Relying on external memory aids can be helpful as it limits the work your memory has to do. Making a note of important dates, appointments, shopping lists, or anything else you feel is important makes for easy and effective use of external memory aids.5 Some examples include:

- Smartphones, specifically the ‘Notes’ or ‘Reminders’ applications that are built into the software
- Notebooks, agendas, or checklists
- Calendars, both physical and electronic
- Alarm clocks, specifically the alarm clocks on your smartphone if you have one.
  - Pro tip: you can customize the alarm clock on your smartphone to go off at any time and include specific instructions for when the alarm chimes.
- Daily or weekly pill boxes for medications and medication reminder phone apps
Follow a Set Routine

Having a daily and weekly routine can help individuals with memory difficulties get used to what to expect and alleviate the demands on memory for activities of daily living.\(^5\) Constant changes in routine can be confusing and may lead to frustration and anxiety when things begin to fall out of place. To limit reliance on memory, try planning the days and weeks ahead of time. This can also prepare you for changes in routine, especially if you know an upcoming event or appointment will mix up your schedule.\(^5\) Some strategies you can try are:

- Having a weekly or monthly planner on your nightstand that you can read through when you wake up
- Making a note of appointments and events in a notebook or calendar as soon as you make them
- Leaving out important items, like clothes, your toothbrush, or your medications (if it is safe) to cue actions.\(^5\)

Improving General Well-being

The best way to improve yourself is to take care of yourself. Memory is crucial in giving us a sense of identity.\(^5\) Memory challenges can often have major emotional effects leading to feelings of anger, anxiety, and depression. While it is completely okay and normal to have these feelings after a brain injury, it is important to establish a support system to lean into during these times and promote healthy strategies for coping with them. Memory challenges can also be made worse by feelings of stress and anxiety, so limiting stressors and ensuring sufficient self-care is crucial.\(^5\) Some ways to promote healthy habits and alleviate stress and anxiety include:

- Proper rest and sufficient sleep
- Eating a healthy, balanced diet
- Physical exercise and movement (if possible and safe)
- Identifying activities that you find enjoyable and relaxing and taking the time to indulge in them\(^5\)
  - This can be anything! A hobby you enjoyed before your injury, listening to music, arts, and crafts, socializing with friends or family, or whatever your heart desires!

A big bonus of enjoying and engaging in hobbies you enjoy is the unconscious memory you store and recall each time you do it. The brain is like a muscle, and the more you recall and use information, the better it gets at flexing those learning and memory muscles in everyday activities.\(^3\)

Other Supports

Memory loss doesn’t only affect routine and activities of daily living but also our identity and livelihood. For some, school and work may be of key importance to their identity. If you suffer from memory challenges after a brain injury and are committed to finishing school or continuing to work, speaking with your school’s Disability Support Services or your employer’s Human Resources can be beneficial.\(^3\) These supports can help remove obstacles and provide additional resources to ensure you can give your best performance. Service providers such as social workers or case managers may also be helpful. Social workers and case managers can help the individual with the brain injury, and their family and friends adapt to the ‘new normal.’\(^3\) Case managers and social workers can help develop routines, establish coping mechanisms, and direct family members and individuals to other service providers if needed.
We hope you enjoyed this month’s edition of *The Voice: Brain Injury Speaks Newsletter* covering Memory Loss after Brain Injury. Just like brain injury, memory loss is not one size fits all for everyone. Our experiences and our memories make us who we are, and when we have challenges associated with memory, it is understandably frustrating and confusing. We hope that learning about memory and the coping strategies provided can assist you or your loved one in their brain injury recovery. If you are experiencing memory loss after your brain injury and find this article helpful, we suggest discussing these strategies with your healthcare provider and/or family and friends to come up with a plan that helps you with your challenges with memory loss. Some examples of healthcare providers and support services that can assist with memory loss after a brain injury include occupational therapists, personal support workers, neuropsychologists, and many more. We recommend reading the July issue of The Voice covering the Circle of Care for more information on service providers that can assist with brain injury recovery.

**References**


I Deserve to Bloom

By France Theriault, Brain Injury Speaks Member

I chose this photo because it represents so much to me after many years of being affected by debilitating persistent post-concussion symptoms.

This photo was taken during a summer solo getaway. Freedom, exploration, newness, beauty, discoveries as well as possibilities were inviting me to be open during my travel along Lake Huron. Trusting myself was a big one.

Listening to music in the car, I passionately enjoyed the scenery around me while two green eyes admired the sky, the clouds and the sunshine piercing through them.

For a few years after I had a tragic cycling accident, I felt robbed from enjoying life. One of the insights I gained shortly after being concussed is LIFE IS FRAGILE AND VERY PRECIOUS. In the blink of an eye, our life can be shattered.

I felt privileged to be alive, so I took this second lease on life with reverence. How privileged I was to have been invited to reassess my life and reinvent myself. I said YES to both.

No postponing, I live in the now, and I enjoy everything because there’s beauty in all of it. That is a truth I live by.

After numerous trials and errors, I finally feel confident to start creatively living beyond fears. I am dreaming of many fabulous outcomes; I see them, and I know it is possible. I am ready to follow my inspiration and create something beautiful.

I am so grateful for this transformative growth process. May 25, 2013 will forever be a significant and pivotal moment in my life. An extraordinary blessing in disguise.

“There is no one way to live this glorious life! There’s many, many ways!”

I am creating this beautiful new life one day at a time, moment by moment. ◊◊◊

INTERESTED IN SHARING YOUR STORY?
You can submit your story and photo to the "Voices of Brain Injury - a PhotoVoice Collective" for a chance to be featured in The Voice: Brain Injury Speaks Newsletter!
**In the News**

**Ontario Supporting Stronger, More Accessible Communities – Government of Ontario**

The Government of Ontario is building stronger and more accessible communities by investing up to $1.5 million in 2022-2023 EnAbling Change Program. The program is designed to provide grants to non-profit organizations and projects that show the value and benefits of accessibility by developing tools and educational resources that make Ontario open to people of all abilities. This year, the EnAbling Change Program will be focusing on projects that drive a culture of respect and dignity for people with disabilities, support awareness of requirements and regulatory compliance under the Accessibility for Ontarians with Disabilities Act (AODA), and create equitable opportunities in the jobs market.

To read the full article: [CLICK HERE](#)

**Disability Benefit Search Tool Launched by Prosper Canada – Investment Executive**

Every year, 1 in 5 people with low incomes miss out on potentially hundreds or thousands of dollars in benefits they could receive. In response to this startling statistic, Prosper Canada – a National financial literacy charity – has launched the Disability Benefits Compass. This Disability Benefits Compass is a new online tool designed to help Canadians with disabilities learn about and access national and provincial disability income supports. The Disability Benefits Compass is free and is available English and French and you can access it at [https://disability.benefitswayfinder.org/](https://disability.benefitswayfinder.org/)

To read the full article: [CLICK HERE](#)

**Spotlight on Research**

The long-term impacts of memory loss after sustaining a brain injury have become a growing topic of concern in the management of brain injuries. Whether a person sustains a brain injury playing contact sports, in a motor vehicle accident, or in any other scenario you can imagine – any head trauma puts an individual at risk for a brain injury that can cause memory loss. For many people with brain injuries, memory loss involves difficulty remembering new information and confusion. However, recent research suggests that memory loss from a brain injury is more than just forgetting everyday tasks or details. It is a serious manifestation that can have long-term consequences.

In this edition of “The Voice,” our goal is to provide the latest research on the long-term impacts of memory loss after sustaining a brain injury. Here, we will focus on two studies that discuss how memory loss after a brain injury can be life-changing for the individual who has sustained the injury and for the people around them – even years after their accident.

**The Emotional Impact of Memory Loss**

Researchers at the Research Institute of Rehabilitation Medicine conducted a study to investigate the effects of memory loss from a traumatic brain injury (TBI) on emotions such as depression, anxiety, and agitation. In the study, 80 individuals with TBI completed neuropsychological assessments using targeted surveys to determine if there was a relationship between memory loss from a TBI and emotional
functioning. The researchers found that individuals with TBI and memory impairments were more likely to be depressed, anxious, and agitated than those individuals with TBI without memory impairments, with approximately 30% of people having an anxiety disorder, depression, or both an anxiety disorder and depression eight years after their injury.\(^2\)

To read the full article: [CLICK HERE](#)

### The Vocational Impact of Memory Loss\(^3\)

The feelings of depression, anxiety, or agitation are enough to keep anyone away from social situations. However, according to a study done in 2019, memory loss from a brain injury often exacerbates withdrawal as it prevents people from going to work, school, and other social settings. In the study, 86 individuals with TBI completed numerous questionnaires, surveys, and neuropsychological assessments to determine the long-term impacts of memory loss from a brain injury on job and school participation and overall independence levels. The study found that 44 percent of individuals with TBI reported that memory loss has negatively affected their ability to work eight years after their injury, with 70 percent of those people having to quit their job due to their memory impairments. Furthermore, 41 percent of individuals with brain injuries who were students did not work after finishing their education. It is important to note that withdrawal from these social situations is also significantly associated with independence in personal care, the ability to use public or private transportation, and to manage financial duties. Thus, many people with brain injuries who experience memory loss often heavily rely on coping strategies and the people around them.

To read the full article: [CLICK HERE](#)

### Conclusion

The results from these studies are important as it provides imperative information regarding neurorehabilitation and interventions following a brain injury. The studies can help to develop and suggest a framework for predicting emotional functioning and vocational participation after TBI, but also for identifying people who are at high risk of suffering from serious emotional and independence impairments. Thus, being reminded of the long-term effects of memory loss from a brain injury in a clinical setting could help determine the direction of rehabilitation interventions. If you are interested in learning more about the long-term impacts of memory loss after brain injury or have any other questions related to brain injury research, please email lhughes@obia.on.ca

### References


3. (See footnote 2). ◊◊◊