

# WBHI.ORG **Mind** Over **Matter**

VOLUME 15

HELPING YOU PROTECT  
YOUR BRAIN HEALTH

**6 Pillars of  
*Brain Health***

**Too Young  
*to Worry?***

**Suddenly  
*Speechless***

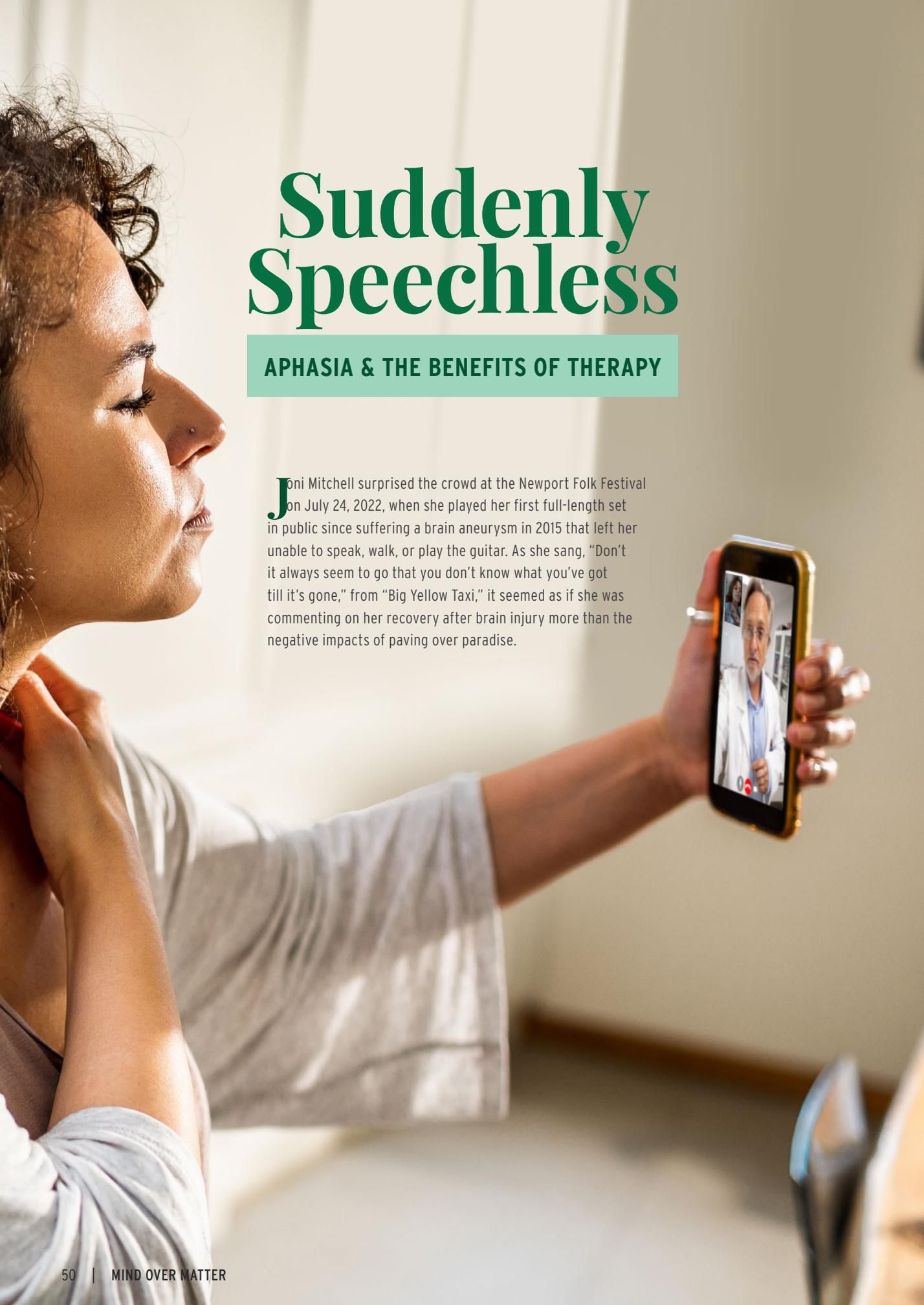
***Spring Clean  
Your Mind***

***Optimize  
Your Brain  
Health***

***On the  
Edge***



Women's Brain  
Health Initiative

A woman with dark, curly hair is shown in profile, looking towards the right. She is holding a smartphone in her right hand, which displays a video call with a man in a white lab coat. The background is a bright, out-of-focus indoor setting.

# Suddenly Speechless

## APHASIA & THE BENEFITS OF THERAPY

Joni Mitchell surprised the crowd at the Newport Folk Festival on July 24, 2022, when she played her first full-length set in public since suffering a brain aneurysm in 2015 that left her unable to speak, walk, or play the guitar. As she sang, “Don’t it always seem to go that you don’t know what you’ve got till it’s gone,” from “Big Yellow Taxi,” it seemed as if she was commenting on her recovery after brain injury more than the negative impacts of paving over paradise.

You may also have recently read about actor Bruce Willis stepping away from acting following an aphasia diagnosis.

Aphasia is an impairment of language, affecting the production or comprehension of speech and the ability to read and/or write, according to the National Aphasia Association.

Aphasia is always caused by brain injury, most commonly from a stroke, but may also result after an aneurysm, head trauma, brain tumour, infection, or deterioration of brain tissue related to Alzheimer's disease or frontotemporal dementia.

Mind Over Matter® spoke to leading aphasia experts to learn more about aphasia, therapy options, common myths and misconceptions, and the research underway seeking to answer outstanding questions in the field.

## APHASIA

Aphasia manifests differently in each affected individual. It may cause severe language impairment making communication with others impossible, or it may be mild.

**SOMEONE WITH APHASIA MAY HAVE DIFFICULTY RECALLING THE NAMES OF THINGS, SPEAKING IN FULL SENTENCES, AND/OR READING.**

Multiple communication abilities are typically compromised yet some are still accessible for limited information exchange.

Most people who acquire aphasia after brain injury are middle-aged or older, but it can affect people of any age who experience a brain injury. Almost one-third of people who suffer a stroke develop aphasia.

According to a meta-analysis of sex differences in post-stroke aphasia published online in December 2018 in *PLOS ONE*, approximately 29.6% of females and approximately 26% of males were diagnosed with aphasia. Further analysis revealed that this difference was most likely attributable to a difference in age: women tend to be older than men at the time of stroke, and older individuals are more likely to develop aphasia after stroke than their younger counterparts.

Aphasia has a profound negative impact on one's quality of life. For example, stroke survivors with aphasia reported significant problems across several quality-of-life measures, including greater anxiety and depression, pain and discomfort, and difficulties with self-care, mobility, and daily activities at 90- and 180-days post-stroke compared to those who did not have aphasia, according to a recent study published in July 2022 in *Topics in Stroke Rehabilitation*.

"The big consequences of aphasia are social isolation and depression," said speech-language pathologist Wendy Duke, founder and Clinic Director of Columbia Speech and Language Services Inc., in Vancouver, British Columbia. "What's worse is mental health professionals are ill-equipped to assess or help people with an impaired ability to speak, listen, read, or write."

The only way to reduce the risk of aphasia is to lower the risk of brain injury through smart lifestyle choices that protect brain health. Mind Over Matter® readers are familiar with essential lifestyle habits for protecting brain health, including eating a healthy diet, getting enough exercise, sleep, and social interaction, minimizing the risk of traumatic brain injury, and following your doctor's advice if you have high blood pressure.

## APHASIA THERAPY

Aphasia therapy aims to remediate communication deficits, teach compensatory communication strategies, provide education and counselling, and help affected individuals return to participating in activities of daily life.

Speech-language pathologists with experience treating aphasia assess communication deficits and abilities, as well as develop personalized treatment plans for each patient, taking the severity of their impairment, goals, social support network, and needs into account.

**THERE ARE MANY EVIDENCE-BASED INTERVENTIONS FOR TREATING APHASIA DEPENDING ON THE SPECIFIC LANGUAGE IMPAIRMENT.**

For example, semantic feature analysis is a common method used to help those with difficulty retrieving words.

While looking at a picture of an object, such as an apple, the participant tries to name the object after answering a series of questions: What type of food is it? What is it used for? What does it do? Where do you find it? What does it make you think of? What does it look like (i.e., colour, shape, and size)? What does it taste, smell, and sound like?

Verb strengthening network treatment is another word retrieval therapy that aims to strengthen words around verbs. The therapist encourages the participant to think about people or things that perform actions and the nouns that receive the actions, such as "daughter drives car."

Additionally, the multiple oral re-reading technique, which involves a participant re-reading text out loud, may be helpful for individuals with difficulty reading (alexia).

These are just a few examples of the many different types →

## COMMON TYPES OF APHASIA

Experts have identified common types of aphasia based on patterns of language deficits, including whether an affected individual can speak fluently, comprehend spoken language, and repeat words or phrases.

### Global aphasia

The most severe type of aphasia in which individuals produce few understandable words and comprehend little to no spoken language. They cannot read or write.

### Broca's aphasia

Speech is halting, effortful, and typically limited to less than four words at a time. Accessing vocabulary is limited and forming sounds is often challenging. Understanding speech and reading may be less affected, yet writing is limited.

### Wernicke's aphasia

The ability to comprehend meaning from spoken language is impaired. The individual can speak easily but uses abnormal sentence structure and inserts irrelevant words. Reading and writing are typically very impaired.

### Anomic aphasia

The individual is unable to come up with the right words (especially significant nouns and verbs), making speech full of vague approximations.

### Primary progressive aphasia (PPA)

Unlike other types of aphasia caused by a stroke or brain injury, PPA is caused by neurodegenerative diseases such as Alzheimer's disease or frontotemporal dementia. Brain tissue important for speech and language deteriorates, causing communication problems initially, and other cognitive difficulties later.

### Other aphasia types

Many different combinations of deficits do not fit into the above categories. For example, after a stroke, some individuals may have trouble only with reading (alexia) or both reading and writing (alexia and agraphia).

*\*Adapted from Aphasia Definitions by the National Aphasia Association.*

of aphasia therapy. "There is a long history of behavioural interventions for poststroke aphasia with hundreds of studies supporting the benefits of aphasia treatment.

However, interventions for aphasia are complex, with many interacting components. No single treatment is appropriate for all persons with aphasia," according to Dr. Leora Cherney, Scientific Chair of the Think + Speak Lab and Director of the Center for Aphasia Research and Treatment at the Shirley Ryan AbilityLab in Chicago, Illinois.

Aphasia therapy may take place one-on-one or in small groups with a speech-language pathologist. A recent therapy delivery method, the Intensive Comprehensive Aphasia Program (ICAP), provides a minimum of three hours of daily treatment for at least two weeks with a small group of individuals participating in the program together from start to finish.

## THE GOAL IS TO IMPROVE COMMUNICATION AND PROMOTE CHANGES IN THE BRAIN NETWORKS AFFECTED BY APHASIA THROUGH INTENSIVE PRACTICE.

Several ICAPs are available, including at the Shirley Ryan AbilityLab and the Intensive Treatment for Aphasia in Western Canada (iTAWC) program, which is co-led by Duke in Vancouver, British Columbia.

Speech and language therapy for aphasia after stroke effectively improves communication, reading, writing, and expressive language compared to no treatment, according to a systematic review published in *Cochrane Reviews* in June 2016. The authors concluded that high-intensity, high-dose, or extended-period aphasia therapy may be beneficial but may not be acceptable for all individuals.

Dr. Cherney said that standard aphasia therapy in Canada and the United States is not sufficiently long enough to provide the support required for longer-term gains. She recommended looking for aphasia treatment research studies or group programs facilitated by speech-language pathologists.

The Aphasia Institute of Toronto, for example, offers group programs and trains volunteers who conduct home visits. Some universities offer modified ICAPs, providing therapy for individuals with aphasia and essential training opportunities for speech-language pathology students, Dr. Cherney noted.

## DISPELLING APHASIA MYTHS

"Aphasia affects language ability, not intellect," said Duke. "It may look like a cognitive problem because we verbalize thoughts in our minds. That can be challenging for people

with significant aphasia, but it is an indirect consequence not directly related to intelligence.”

Another major misconception is that recovery plateaus after a certain amount of speech and language therapy. “In the earliest weeks or even a few months after a brain injury, significant spontaneous recovery occurs, which may include a subsidence of swelling in the brain or reabsorption of extra blood, and early improvements can be dramatic,” Duke explained.

“Recovery after that point may slow or come to a standstill for those who do not receive therapy. However, there’s always room for improvement if the therapy is appropriately intense and focused. The gains may become smaller over time and harder won but can still occur many years, even ten years later.”

As an example, Duke recommended watching YouTube videos of Gabby Giffords, an American politician who experienced severe aphasia and difficulty walking after surviving a gunshot to the head in 2011. “Compare her speech at the Democratic National Convention in 2016 and then four years later in 2020. Her remarkable progress is a testament to continued therapy and hard work over many years.”

## APHASIA RESEARCH DIRECTIONS

“There are many behavioural interventions, and we know aphasia therapy works, but many questions remain that we are actively investigating, such as optimal dose and timing,” said Dr. Cherney.

“For example, should participants practice daily, multiple times per day over four weeks, or a few times per week over a longer period? Also, emerging evidence suggests time gaps between treatments may be beneficial for consolidating learning.”

Another question is how early to begin aphasia therapy. “Generally, the earlier the better, but exactly when is an outstanding question. The brain recovers in different ways in the first few days and weeks after a stroke compared to months later,” said Dr. Cherney. “Therapy dose and frequency may need to be modified for different recovery periods.”

“Typical aphasia treatment is front-loaded and certainly helps participants and their loved ones become educated and involved in recovery,” said Duke. “However, if funding is limited, I would prefer to see participants take half of the money spent on therapy in the acute phase of recovery and reserve it for six months or a year after they have completed acute stroke rehabilitation and have a greater awareness of their deficits.”

To answer outstanding critical questions about aphasia therapy, Dr. Cherney and colleagues at the Shirley Ryan AbilityLab are measuring whether interventions result in lasting changes in

the brain using resting-state functional magnetic resonance imaging before and after treatments at various time points.

“We’re not evaluating areas of brain damage; we are evaluating how different brain regions connect to each other and how these connections change after an intervention,” she explained. For this work, Dr. Cherney is using some of the behavioural interventions she co-developed, Oral Reading for Language in Aphasia (ORLA®) and Aphasia Scripts®, which are both commercially available and can be performed with a speech-language pathologist or practiced at home using a computer.

Dr. Cherney and colleagues are also investigating whether adding transcranial direct current stimulation (tDCS) to other interventions could be beneficial. This non-invasive, painless treatment uses direct electrical currents applied with a device to stimulate areas of the brain. Currently, tDCS for aphasia therapy is only accessible through clinical trials in Canada and the United States.

Finally, Dr. Cherney and her team are investigating ways to detect anxiety and depression in individuals with aphasia such as measuring eye tracking movements and heart rate variability.

There are many types of aphasia and several therapy options available. If you or a loved one are affected, then keep in mind that while mileage may vary on the road to recovery, important gains are still possible many years after brain injury. 🌐

### ADDITIONAL APHASIA RESOURCES

Learn more about aphasia and therapy options from:

- Intensive Treatment for Aphasia in Western Canada (iTAWC), a specialty clinic of Columbia Speech and Language Services Inc. located in Vancouver, British Columbia ([itawc.com](http://itawc.com)); and
- The Center for Aphasia Research and Treatment at the Shirley Ryan AbilityLab located in Chicago, Illinois ([sralab.org/aphasia](http://sralab.org/aphasia)).

At-home therapy tools and mobile applications are also available from Tactus Therapy ([tactustherapy.com](http://tactustherapy.com)).

Additionally, be sure to visit [aphasia.com/virtual-connections-info](http://aphasia.com/virtual-connections-info) for free virtual support groups facilitated by speech-language pathologists from Lingraphica.