- Socialization / Memory

THE BONDS OF BELONGING

Our sense of self and mental and physical health is deeply shaped by relationships and social connections, driven by cognitive processes we're still in the process of understanding.

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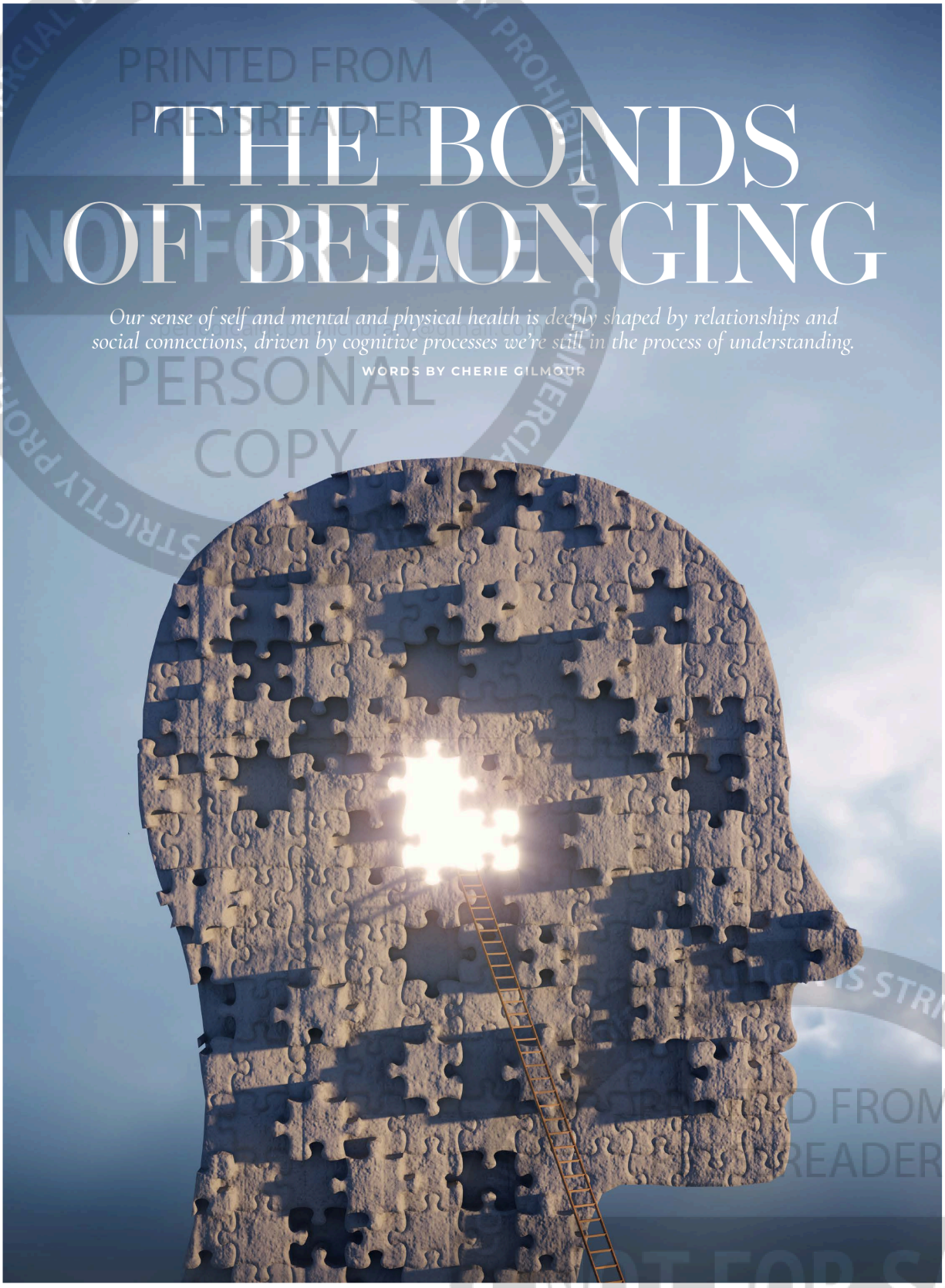

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There's a powerful scene in the 1990 film *Awakenings* with Robin Williams and Robert De Niro, which is based on the non-fiction book of the same name by neurologist Oliver Sacks. Williams plays doctor Malcolm Sayer, who arrives in a hospital in the Bronx, full of patients trapped in various states of catatonia caused by encephalitis lethargica. After learning that the drug L-DOPA had offered breakthroughs for patients with Parkinson's disease, Sayer wonders if the drug might help his patients. One night, after administering the drug to patient Leonard Lowe, played by Robert De Niro, who has been trapped in a catatonic state since childhood, Sayer wakes with a jump in the darkened ward to realise Lowe is no longer in bed.

As he walks around the ward, he finds Lowe sitting at a table, trying to draw. Lowe looks up, and the two make eye contact for the first time. It is the first 'awakening' that Sayer witnesses and spurs him on to continue his trials with the other patients.

Oxford University neurologist Masud Husain has a similar story of an 'awakening', albeit less dramatic, in his new book, *Our Brains, Our Selves,* that illustrates through stories of patients he's worked with that our brains not only power so many of our bodily functions and how we perceive the world but also contribute to our understanding of self and our sense of belonging.

In Husain's story, a man in his 30s called David comes in to see him. He'd had a small stroke and had recovered well, except that his personality had changed. "Previously, he'd been a very outgoing, highly motivated extrovert. But now he seemed entirely different ... he appeared bored. He lacked enthusiasm," Husain writes. On further investigation, Husain learns that David had had two small strokes that affected the basal ganglia region of his brain. This part of the brain communicates with the frontal cortex and, when damaged, causes profound changes in body movement, such as the symptoms of Parkinson's, Huntington's and Wilson's disease. But David hadn't struggled with any unwanted movement in his body; it was simply his motivation. Husain then realises that the part of the basal ganglia affected by David's strokes was the ventral pallidum, which he explains is a key region in controlling motivation, citing studies done on rats who, when this region is affected, "become disinterested in putting in effort to acquire rewarding outcomes such as food that they previously prized highly," Husain writes.

In an incredible 'awakening', David goes from being unkempt, arriving in the office in unwashed clothes, crumbs in his overgrown beard and dirty, uncut fingernails, to the clean-cut, well-dressed, confident man he formerly was. "I'm different!" he exclaims to Dr Husain, who observes David, a little in shock. Husain had tried a drug called ropinirole, which is often used for Parkinson's patients to stimulate dopamine receptors in neurons. The results spoke for themselves; David had become someone once again motivated to look after himself and follow the often unspoken rules of belonging.

Husain is primarily interested in this idea of belonging and how our brains function to facilitate our social relationships. David had been living with well-meaning friends who were trying to accommodate and support him. Still, before Husain discovered that ropinirole would help activate the motivating parts of David's brain, he'd become a drain on his friends, unable to help around the house or contribute to daily life. "Motivation is a key attribute of human brains and of being human. It's a brain 'function' we usually take for granted, but it shapes our identities," says Husain. He had previously thought that some people were simply more motivated than others, but David's case showed him that it might be a biological function that determines a person's inherent motivation.

> "WHEN MEMORIES START TO DECLINE, OUR SENSE OF SELF AND OUR RELATIONSHIPS WITH OTHERS CAN BE RATTLED."

How we understand the 'self' is an ongoing exploration that covers so many fields of research, like philosophy, neurology and sociology, to name a few. Husain touches on how the ideas of 'the personal self' and 'the social self' have changed over time and throughout different cultures. He cites a 1950s study where psychologists Manfred Kuhn and Thomas McPartland asked participants to write 20 statements that describe who they are, starting with, 'I am ...'. In the earliest studies, the participants identified themselves by the groups they belonged to, for example. 'I am Catholic' or 'I am American' whereas decades later, the responses were based more on personal traits rather than group affiliation.

But Husain argues that neurological disorders can enormously impact our sense of belonging as we are, by nature, social animals. "People who do not conform to our in-group expectations are considered outsiders. This also may be the case for people who were once insiders but now have developed brain disorders which make them behave differently," he writes. He states that studying patients afflicted with these disorders reveals "how fundamental cognitive processes are essential to creating our social identities."

One of these cognitive processes is how we form and retain memories. Husain quotes philosopher and physician John Locke, who argued that memory is the glue that keeps the self together. When memories start to decline, both long-term and short-term, our sense of self and our relationships with others can be rattled. Husain tells the story of Trish, a woman in her mid-fifties whose concerned partner, Steve, brought her in for an appointment. She'd been displaying symptoms of memory loss and confabulation of memories. One incident struck Husain and helped him narrow down the affected parts of Trish's brain. According to her partner Steve, they had gone to Cornwall for a few days. When it was time to leave, Steve told Husain that Trish clearly didn't remember who he was and didn't want him to get in the car with her to go back to London as her partner Steve would find out about their 'affair'. Steve convinced her that he was actually a friend of her partner Steve and she should call him to confirm that it was alright for him to come home with her. While she called Steve in the car, he walked away and responded to her on his phone, convincing her to let his 'friend' come home.

The hippocampus is the part of the brain located in the temporal lobe responsible for episodic memory, that is, the ability to bind together information regarding an episode in time: the 'who, what and where' of an event. "Damage in the hippocampus leads to deficits in episodic memory," Husain writes, and can often be indicative of conditions like Alzheimer's disease, which becomes Trish's eventual diagnosis. Trish had been in denial that her problems with memory were any more than any other person her age, which made it extremely difficult for her partner Steve to communicate his concerns and try to help her as her condition worsened. It was only when she admitted she had been struggling and started to believe Husain's diagnosis that she was able to repair her relationship with Steve and lean on him for the support she needed. This once again confirmed to Husain that our relationships and social connections play a huge role in our sense of self and have more to do with cognitive processes than we may have previously realised.

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10 TIPS TO PROTECT THE BRAIN

Protecting brain health is essential for maintaining cognitive function, preventing neurodegenerative diseases, and enhancing overall wellbeing.

1 MAINTAIN A HEALTHY DIET
Consuming foods rich in antioxidants, healthy fats, vitamins and minerals can help protect the brain from oxidative stress and inflammation. The Mediterranean diet, which includes plenty of fruits, vegetables, whole grains, lean proteins, and healthy fats like olive oil, is linked to a lower risk of cognitive decline. Omega-3 fatty acids, found in fatty fish such as salmon and walnuts, are particularly beneficial for brain function.

2 EXERCISE REGULARLY
Physical activity has been shown to enhance cognitive function and reduce the risk of neurological disorders. Exercise improves blood flow to the brain, encourages the growth of new neurons, and helps regulate mood-related chemicals such as serotonin and dopamine. Aim for at least 150 minutes of moderate-intensity exercise per week.

3 GET QUALITY SLEEP
Sleep is essential for brain function and memory consolidation. The brain removes toxins that accumulate throughout the day, supporting long-term cognitive health. Adults should aim for 7-9 hours of quality sleep per night by maintaining a consistent sleep schedule, reducing screen time before bed, and creating a relaxing environment.

4 MANAGE STRESS
Chronic stress can negatively impact brain function, leading to memory problems, anxiety, and an increased risk of mental health disorders. Practices such as mindfulness meditation, deep breathing exercises, and engaging in hobbies can all help reduce stress levels.

5 STAY MENTALLY ACTIVE
Keeping the brain engaged through lifelong learning and mental challenges can help build cognitive resilience. Activities such as reading, puzzles, and learning a language or musical instrument stimulate neural connections and promote brain plasticity.

6 STAY SOCIALLY CONNECTED
Strong social connections can lower the risk of dementia and depression. Engaging in meaningful conversations, participating in community activities, and maintaining relationships with friends and family contribute to overall brain health.

7 AVOID SMOKING AND EXCESSIVE ALCOHOL
Both smoking and excessive alcohol consumption can have detrimental effects on brain health. Smoking restricts blood flow to the brain and increases the risk of neurodegenerative disease and stroke. Excessive alcohol intake can damage brain cells and impair health.

8 PROTECT YOUR HEAD FROM INJURY
Head injuries can lead to long-term cognitive problems, including memory loss and an increased risk of conditions such as chronic traumatic encephalopathy (CTE). Wearing helmets when cycling or playing contact sports, using seat belts in vehicles, and preventing falls by keeping living spaces safe are essential measures to reduce the risk of traumatic brain injuries.

9 MONITOR AND MANAGE HEALTH CONDITIONS
Chronic health conditions such as high blood pressure, diabetes, and obesity can negatively impact brain health.

10 LIMIT EXPOSURE TO ENVIRONMENTAL TOXINS
Environmental toxins, such as air pollution, heavy metals and pesticides can contribute to cognitive decline and neurological disorders.

Liesl hasn't been to the surgery for two years. "I'm just too busy," she explains, her stilettoed foot jiggling. Despite her immaculate outward appearance and carefully applied makeup, Liesl looks exhausted. "I'm working 16-hour days, and I can't remember when I last had a weekend off. The firm is restructuring, and the workload is brutal." Liesl is a lawyer. She has always been ambitious and worked hard.

"I've decided to take a week off and signed up to go to a health retreat to do a complete detox," she now says. "I need to lose weight, to give my liver and kidneys a break. My body is out of whack, and I want to clear out the toxins and start afresh." Liesl hands me a form. "They asked me to get a clearance from my doctor."

Sally is in her late twenties and planning to start a family. She has developed adult acne which has worsened over the past year despite trying a range of topical treatments that promise to cleanse, exfoliate, and rejuvenate her skin. She is also on a very restrictive diet recommended by a 'skinfluencer,' in the hope of losing weight while cleaning her skin. "I'm getting married in six months and I don't want awful skin in my wedding photos." Sally prods at her abdomen. "I'm often bloated and constipated. The only way I can go is to use laxatives which eases the bloating for a day or two."

It is a popular idea, that you can 'fix' yourself up', clean out 'toxins' or follow a strict faddish diet and get your body and mind back into harmony. There are myriad programs promising to 'cleanse' your liver, beat the bloat, cure constipation and flush out the kidneys with specially formulated juices, supplements and various regimes that promise to get your body back into balance.

LONG-TERM STRATEGIES

A week at a health resort will have all sorts of benefits, especially for a woman like Liesl who works punishing hours and takes little time to focus on her health. She will have long unscheduled days, will get to indulge in massages, get lots of sleep and it will give her mental space to take stock of her life. However, an effective long-term strategy is needed to address her lack of sleep, poor diet, stress levels and excessive alcohol. Small, lasting changes and consistency (not perfection) are the key.

Our bodies have an extraordinary ability to regulate our internal environment including fluid balance, temperature, pH (acidity), blood sugar levels, immune function, and removal of waste. Our organs work in harmony to maintain a very tight internal balance and stability (termed homeostasis). This is often despite poor diet, excessive alcohol, poor sleep, stress, and disease processes.

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