

Research suggests new ways to boost cognitive performance of older adults

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While some cognitive functions such as memory show decline in older adults, others improve with age, says Julia Spaniol, director of the Memory and Decision Processes (MAD) Laboratory.

(PhysOrg.com) -- Oscar Wilde once quipped, "The soul is born old but grows young. That is the comedy of life. And the body is born young and grows old. That is life's tragedy." Many would write this statement off as witty wordplay by a flamboyant poet, but Julia Spaniol would beg to differ.

As an assistant professor of psychology and director of the Memory and Decision Processes (MAD) Laboratory, Spaniol is well versed in the effects of aging on the human mind, body and soul. Spaniol arrived at Ryerson via the Rotman Research Institute at Baycrest, where she was a postdoctoral fellow studying the effects of aging on various brain

functions. At the MAD lab, housed in Ryerson's Psychology Research and Training Centre, Spaniol now focuses on the relationships between age, memory and decision-making.

Spaniol and her MAD lab team are working to advance understanding of memory and decision-making by using the theoretical perspectives and scientific methods of [cognitive psychology](#) (behavioural experimentation, mathematical modelling) and cognitive neuroscience (neuroimaging). To further their research, the MAD lab has received funding from the Natural Sciences and Engineering Research Council of Canada.

"Cognitive performance changes across the lifespan and, sadly, some aspects may decline with age," says Spaniol. "But there is exciting news: While some functions show decline, others actually seem to improve as we get older."

She points to two areas of improvement in particular: socio-emotional health and subjective well-being. "As people age," she explains, "many experience an increase in positive thoughts and feelings, along with a decrease in [negative emotions](#) like anger and frustration."

In one study, older adults who were shown a series of photos were better at remembering the images with positive content than their younger counterparts. In another study, motivational incentives boosted older adults' performance on [recognition memory](#) tests. Findings such as these suggest that older adults' [cognitive performance](#) can be enhanced by activating emotional and motivational circuits.

Spaniol admits the concept seems a little counter-intuitive: "Many of us associate old age with losses in domains such as physical health, mobility and personal relationships. And yet the incidence of depression among older adults isn't as high as you might think."

In fact, statistics show that younger adults are more likely to experience depression. One explanation for this paradox may be that older adults have better emotional regulation skills.

In addition to behavioural findings, Spaniol also points to the results of brain imaging studies, using techniques such as functional magnetic resonance imaging. Brain regions involved in emotion (for example, the amygdala) remain less affected by the aging process than areas that manage attention and memory (for example, the frontal lobes and the hippocampus).

Through research and discoveries at the MAD lab, Spaniol hopes her work will one day lead to treatments that boost the declining functions of older adults. As she says, "We want to use their [brains'] strengths to buffer the negative effects of aging." It's an increasingly important goal. Research suggests that more than 35 million people worldwide will suffer from Alzheimer's disease or other age-related dementias by 2010.

Provided by Ryerson University

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