



Sherif Karama, MD PhD FRCPC

Dr. Karama, a clinical psychiatrist with a PhD in neuroscience, is an **Assistant Professor** in the [Department of Psychiatry at McGill](#) and an affiliated faculty member of the [McConnell Brain Imaging Center](#) at the Montreal Neurological Institute. He works at the [Douglas Mental Health University Institute](#) and is a Principal Investigator in the [Ludmer Centre for Neuroinformatics & Mental Health](#).

A leading researcher in the neurobiology of cognitive-ability differences, Dr. Karama researches the exogenous (e.g. smoking) and endogenous (e.g. hormones) factors shaping brain development and cognitive ability, specifically intelligence (IQ). He believes the integration of genetic and evolving neuroimaging technologies will lead to a more mechanistic understanding of neurodevelopmental disorders. He uses neuroimaging, which is extending research beyond the brain's grey matter into previously inaccessible white matter and neural circuits, to expand understanding of the neurobiological underpinnings of IQ differences and cognitive changes across the lifespan. His work extends beyond particular brain regions to the connections between them, and how these connections, through neural wiring, impact cognitive abilities. Drawing on his extensive training in brain imaging and genetics, **Dr Karama is leading today's increasing complex studies.** He also has extensive local and international collaborations that provide access to the vital longitudinal datasets required to conduct this research.

Dr Karama's research has advanced our understanding of the link between the thickness of the cortex—the outer layer of the brain where critical cognitive functions (e.g., language, perception) occur—and higher cognitive capacities and healthy aging. His research found that elderly individuals with a thicker cortex have a greater chance of remaining cognitively sharp and that environmental factors, such as long-term smoking, could cause cortical thinning. He believes **cognitive decline is not strictly due to a lack of stimulation as we age but the endpoint of a host of culminating factors across our lifespan** (e.g., genes, stress, stimulating environment, exercise, diet, smoking). Adding weight to this view, Dr Karama found that childhood intelligence, as measured by IQ, was a key determinant of an individual's cognitive ability later in life, up to six decades after being tested in childhood. This suggests **the timing of interventions, early-childhood versus old age, may be pivotal to maintaining cognitive abilities.**

The exact relationship between higher IQ and greater cortical thickness requires more research. Although genetic factors may be important to a thicker cortex initially, brain development is also exquisitely dependent upon life experiences. Dr Karama continues to explore the relationships between brain structure, function and cognitive ability across the human lifespan to better understand the contributions of genetics and life experiences to the development and maintenance of our cognitive potential. Identifying the brain parameters that are most predictive of cognitive ability and changes will ultimately unlock new insights into impaired cognition in neurological and psychiatric diseases from Alzheimer's to schizophrenia, and improve understanding of learning disabilities such as dyslexia and ADHD.

Dr Karama has a BS in Biology and Psychology (1996), an MSc in Neuroscience (1998), an MD (2002), and a PhD in Neuroscience (2014) from the Université de Montréal. He completed a his psychiatry residency at McGill (2002-08), a postdoctoral fellowship in the Genetics of Executive Functions at the Douglas (2003-04), and a postdoctoral fellowship in brain imaging at the Montreal Neurological Institute (2008-12). In addition to receiving numerous awards such as the Canadian Institutes of Health Research's prestigious **New Investigator Salary Award**, Dr Karama was an invited scholar at Harvard (1998), hosted the 2017 [International Society for Intelligence Research](#) conference, and is a founding member of the [Neuroscience of Intellect and Cognitive Enhancement Consortium](#).