Abstract

Due to rapid aging trends, increasing numbers will be afflicted with age-related cognitive impairment, potentially escalating into a healthcare crisis. Despite decades of research, there are still gaps in our understanding of age-related cognitive impairment within the three broad areas of diagnosis/classification, disease progression tracking, and treatment. Research in these areas would inform the optimal allocation of healthcare resources and ultimately enhance patient outcomes. To this end, I will present novel findings in these areas from five studies. Focusing on executive functions and memory decline, these studies used various methods (e.g., neuropsychological assessments, diffusion tensor and structural imaging, meta-analytic and transcranial direct current stimulation) to study a wide spectrum of cognitive impairment (e.g., healthy, mild cognitive impairment, Alzheimer’s disease, and frontotemporal dementia). Together, these findings sought to refine the diagnostic nosology of early cognitive impairment, inform treatment decisions as well as exploit brain-behavior relationships for the early detection and progression tracking of cognitive decline. In light of these findings, the role and future of neuropsychology will be discussed.