Longitudinal profiling of Mild Cognitive Impairment subtypes

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Statement of Ethical Conduct

The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government’s Office of the Gene Technology Regulator, and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

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Abstract

Mild Cognitive Impairment (MCI) was originally conceptualized as a condition that manifested prior to the onset of clinical dementia, particularly Alzheimer’s disease. However, longitudinal studies show that MCI has an unstable course and may lead to various outcomes including dementia, but also stability of cognitive deficits or recovery to age appropriate levels of functioning. As a result, the status of MCI as a genuine diagnostic entity remains questionable. The aim of the present thesis was to examine the validity of the MCI concept by tracking groups of individuals classified into one of the MCI subtypes and to monitor their neuropsychological profiles over time. To avoid previous criticisms of circularity, participants were classified as MCI on a neuropsychological test battery and then reassessed longitudinally using an alternate battery of neuropsychological tests. At each stage of testing, participants were assessed on a comprehensive neuropsychological test battery tapping the cognitive domains implicated in MCI. Findings from this thesis indicate that multiple domain amnestic MCI may be the most valid subtype of MCI due to consistently poor performance over time on a range of neuropsychological measures. Results also demonstrate that those who are likely to remain on the MCI spectrum can be differentiated from healthy older adults using reliable and valid measures of sustained attention, semantic memory, verbal episodic memory, visual and verbal working memory, selective attention and strategy use. Despite these findings, evidence from this thesis indicates that existing MCI clinical criteria lack sufficient sensitivity and specificity. Although the concept of MCI remains useful, it cannot be considered a clinical diagnostic entity. Future research should prioritize the observation of those presenting with a multiple domain amnestic profile as these individuals may have the poorest prognosis. Further, studies must utilize comprehensive testing protocols to increase the sensitivity and specificity of identifying those with genuine subclinical impairments.
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