**Non-pharmacological interventions, with an emphasis on foreign language learning, enhance mother tongue mental lexicon in Greek MCI older adults**

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### Abstract

### Backgrounds: Most people show a gradual cognitive decline, mainly concerning mnemonic function. The intermediate state between normal ageing and dementia is termed Mild Cognitive Impairment (MCI). The mental lexicon can be employed as a predictor of cognitive decline, because it depicts the way each speaker activates, stores, processes and retrieves the lexical units of their mother tongue. The present 15-month research (funded by the Partnership Agreement for the Development Framework 2014-2020, Project title: Translation Prototypes for the Appropriation of Foreign Language Cognitive Disorder Screening Tests and Cross-Scientific Networks of Neuropsychological Intervention; Project code: MIS 5005306) aimed at examining whether foreign language (FL) learning may constitute a non-pharmacological intervention for Greek MCI older adults while re-invigorating their mother tongue mental lexicon. Methods: The 6-month long experiment was conducted in Thessaloniki, Greece, from October 2018 till March 2019. The 11 participants were taught English as an FL for 44 hours and were assessed three times (pre-, mid-, and post-intervention) on two tests: a Greek translated version of the Swedish Lexical Decision Test, which assesses pre-morbid intelligence, and on 3 English-adapted versions of the test, each comprising specialised vocabulary elicited from every stage of the intervention. Lessons learned: The statistical analysis of the seniors’ performance demonstrated that over the course of the English lessons their mother tongue lexicon improved. Interestingly, the more demanding the level of English, the higher the scores on the mother tongue test. Apparently, the systematic in-class acquisition process of a natural language triggers mother tongue lexical knowledge even in MCI people. The results of the FL intervention have been further confirmed by other non-pharmacological programmes (i.e. computer training, physical exercise, and sleep hygiene) implemented within the same EU funded research project. Conclusions: This innovating research suggests that carefully designed cognitive and non-cognitive interventions may be fruitful for pre-morbid MCI seniors. Considering the global prevalence of dementia, the engagement in preventive programmes may delay the cognitive decline in this large population, hence prolonging quality of life for themselves and their caregivers.

**Recent Publications**

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3. Goswami U (2014) The neural basis of dyslexia may originate in primary auditory cortex. Brain 137:3100-3102.
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5. Kaye J, Mattek N, Dodge HH, Campbell I, Hayes T, Austin D, Hatt W, Wild K, Jimison H, Pavel M (2014). Unobtrusive measurement of daily computer use to detect mild cognitive impairment. Alzheimer’s & Dementia 10:10-7.
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8. World Health Organization (2006) Chapter 4: Conclusions and Recommendations. In Neurological Disorders: Public Health Challenges.



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She has spent four years of study in the field of English Language & Literature at the National & Kapodistrian University of Athens, Greece. She has developed a particular interest in Human Communication which led to an MSc awarded by University College London, University of London, UK. She is advancing her understanding of non-pharmacological interventions in older adults with dementia through PhD study at the Department of Medicine of the Aristotle University of Thessaloniki, Greece.

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