Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 94 (2013) 94 – 95

Procedia Social and Behavioral Sciences

51st Academy of Aphasia Proceedings

Mild Cognitive Impairment: on-line and off-line processing of Slovenian pseudo-words

Manouilidou C.[a,*], Dolenc B.[b], Marvin T.[c], Marjanovič K.[c], Pirtošek Z.[b]

[a] *University of Patras*
[b] *University Medical Centre, Ljubljana*
[c] *University of Ljubljana*

Introduction

Mild Cognitive Impairment (MCI) refers to a condition often seen as prodromal for dementia (Chertkow, 2002). The linguistic features of this group are still under investigation. Previous studies revealed disturbances at the *lexical-semantic level* (Taler & Jarema, 2004; 2006; Duong et al, 2006) reflecting an impaired semantic network. We examined aspects of both controlled (off-line) and automatic (on-line) lexical processing in MCI by looking at patients' performance in pseudo-words which appear to violate different constraints of Slovenian word-formation. The goal is to present data regarding the boundaries of lexical representations and their decay in this population, thus contributing to the establishment of the nature of linguistic deficits in MCI.

Methods

Materials

A. **Non-Words** based on non-existing stems and existing suffixes (**dovin-a,* 'conper-er')
B. PseudoWs violating **grammatical category** constraints of the base (* *črkilec* 'letter-er')
C. PseudoWs violating **thematic constraints** of the base (* *počivalec* 'rest-er')
D. PseudoWs violating **aspectual constraints** of base (* *preplavalec* (from preplavati 'to swim-perfective'))
E. **Possible unattested Ws** without violations (* *kuhalec* (possible but blocked by *kuhar* 'cook'))
F. **Real Words** (*plavalec* ('swimmer')

Six healthy volunteers and eight MCI individuals performed an off-line acceptability task and an on-line lexical decision task. Testing is still being carried out targeting a total of 15 participants for each group.

Results Results are displayed in Table 1. Patients' percentages of correct responses were similar to controls' with the exception of aspectual violations (p=0.11). RTs revealed a main effect of word-type and a significant difference between MCI & controls for non-words (p=0.02) and unattested words (p=0.05) while the difference between other types of pseudo-words were not significant. In a comparison of the two tasks, we observe that patients accepted significantly more pseudo-words with aspectual violations (p=0.01), thematic violations, (p=0.04) and unattested ones (p<0.001) in the on-line task, revealing an important task effect and subsequent differences between controlled and automatic processing.

* Corresponding author.
E-mail address: chmanouilidou@upatras.gr .

Selection and peer-review under responsibility of The Academy of Aphasia.
doi:10.1016/j.sbspro.2013.09.045

Discussion

Off-line results show patients' ability to detect violations, which suggests preservation of word-formation rules. However, the higher percentages in aspectual violations suggest that their lexical representations are becoming loose and their lexicons more flexible. The on-line task confirmed in a more robust way the differences between the two populations, revealing that when automatic processing is required, MCI patients fail to behave as healthy participants do. In other words, patients perform within normal range when there is no time pressure, but do worse under time pressure, revealing a reduced speed of processing. This task effect is suggestive of the potential of on-line studies for the detection of risk groups for dementia.

References

Chertkow, H. (2002). Mild cognitive impairment. *Current Opinion in Neurology, 15,* 401-407.

Duong, A., Whitehead, V., Hanratty, K., & Chertkow, H. (2006). The nature of lexico-semantic processing deficits in mild cognitive impairment. *Neuropsychologia, 44,* 1928–1935.

Taler, V., & Jarema, G. (2004). Processing of mass/count information in Alzheimer's disease and mild cognitive impairment. *Brain and Language, 90,* 262-275.

Taler, V., & Jarema, G. (2006). On-line lexical processing in AD and MCI: An early measure of cognitive impairment? *Journal of Neurolinguistics, 19,* 38-55.

Table 1: Off-line and on-line results for both groups of participants

Off-line acceptability task: Mean percentages of correct responses

	Non-words	Categorial	Thematic	Aspectual	Unattested	Real Words
MCI	94	95	87	78	62	97
Control	97	97	87	66	61	97

On-line lexical decision task: Mean RTs in ms of correct responses

	Non-words	Categorial	Thematic	Aspectual	Unattested	Real Words
MCI	1891	1926	1955	2327	2255	1205
Control	1298	1501	1674	2242	1802	1101

On-line lexical decision task: Accuracy (percentages of correct responses)

	Non-words	Categorial	Thematic	Aspectual	Unattested	Real Words
MCI	93	90	68	50	54	99
Control	97	95	77	58	61	98