

## Executive function deficit affects online morphological processing: evidence from Mild Cognitive Impairment.

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Pseudo-words of the type *re-happy* present with a conflict in terms of stem-suffix combinability. Apart from knowledge of grammar, processing this type of pseudo-words demands the involvement of executive functions which allow the processor to evaluate the conflicting information (*re-* + *adj*) and detect the violation. We explored the relationship between executive control and morphological processing through the performance of MCI individuals, a population with a manifested executive dysfunction.

*Method:* 23 Slovenian-speaking MCIs and 21 age-matched controls performed a grammaticality judgment task and an on-line lexical decision task on complex pseudo-words with three types of mismatches, in terms of: [a] lexical category of the base (*črkilec* 'letter-er'), [b] argument structure properties of the base (*trpelec* 'sufferer'), [c] aspectual properties of the base (*preplavalec* 'swimmer-perfective').

*Results:* No differences between MCI and controls in the grammaticality task. Both populations successfully rejected inappropriate pseudo-words and they could tell them apart by yielding different acceptance rates for each type ([a]<[b]<[c]). In the on-line task, MCIs were slower than controls ( $p < 0.001$ ). Also, while the control group produced distinct RTs for each type ([a]<[b]<[c]), no significant difference was found among them in the MCI group. Finally, Pearson's  $r$  correlations showed a correlation between RTs of the MCI group and their performance on executive function tests.

*Discussion:* The ceiling performance in detecting violations in grammaticality judgment suggests preservation of morphological rules. However, under time pressure, patients are slower than controls and fail to tell apart the different kinds of mismatches. The evidence suggests that while morphological rule knowledge is preserved in MCI, the processing times of these violations are indicative of a deficit which appears to rely on the extra-linguistic cognitive system and correlates with executive dysfunction.

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