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Spatial Working Memory Is Enhanced by the Differential Outcome Procedure in a Group of Participants with Mild Cognitive Impairment

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Abstract : Mild Cognitive Impairment (MCI) is considered an intermediate stage between normal and pathological aging, as a substantial percentage of people diagnosed with MCI converts later to dementia of the Alzheimer's type. Memory is of the first cognitive processes to deteriorate in this condition. In the present study we employed the differential outcomes procedure (DOP) to improve visuospatial memory in a group of participants with MCI. The DOP requires the structure of a conditional discriminative learning task in which a correct choice response to a specific stimulus-stimulus association is reinforced with a particular reinforcer or outcome. A group of 10 participants with MCI, and a matched control group had to learn and keep in working memory four target locations out of eight possible locations where a shape could be presented. Results showed that participants with MCI had a statistically significant better terminal accuracy when a unique outcome was paired with a location (76% accuracy) as compared to a non differential outcome condition (64%). This finding suggests that the DOP is useful in improving working memory in MCI patients, which may delay their conversion to dementia.

Keywords : mild cognitive impairment, working memory, differential outcomes, cognitive process
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