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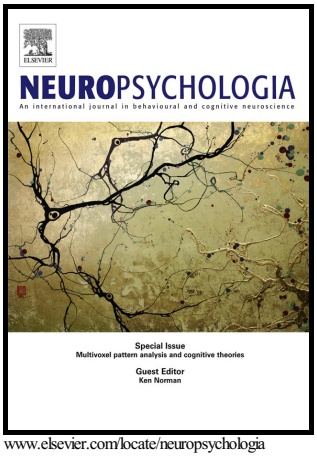

www.elsevier.com/locate/neuropsychologia

PII: S0028-3932(16)30339-6
DOI: http://dx.doi.org/10.1016/j.neuropsychologia.2016.09.002
Reference: NSY6124

To appear in: *Neuropsychologia*

Received date: 2 March 2016
Revised date: 30 August 2016
Accepted date: 3 September 2016

Cite this article as: Isabelle Simoes Loureiro and Laurent Lefebvre, Distinc progression of the deterioration of thematic and taxonomic links in natural an manufactured objects in Alzheimer's disease, *Neuropsychologia* http://dx.doi.org/10.1016/j.neuropsychologia.2016.09.002

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Distinct progression of the deterioration of thematic and taxonomic links in natural and manufactured objects in Alzheimer's disease

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Abstract

Taxonomic and thematic relationships are core elements of lexico-semantic networks. However, the weight of both links differs in semantic memory, with distinct support for natural and manufactured objects: natural objects tend to be more taxonomically identified while manufactured objects benefit more from the underlying thematic relationships. Alzheimer's disease (AD) causes early semantic memory impairment characterized by a category-specific deterioration, where natural objects are more sensitive to the disease than manufactured objects. However, relatively few studies have examined the progressive deterioration of specific thematic versus taxonomic relations in both categories of objects in AD. To better understand semantic memory disorganization in AD and analyze the potential interaction effect between the category (natural/manufactured), the condition (thematic/taxonomic) and AD, we will investigate the lexico-semantic network in 82 AD patients (divided into three groups depending on their global cognitive deterioration and their performance in a preliminary semantic knowledge questionnaire (mild (AD1), moderate (AD2) and advanced (AD3) stages of semantic knowledge alteration). The experimental protocol contains two tasks: an implicit semantic priming paradigm and an explicit card-sorting test that uses the same items, equally divided between natural and manufactured objects. Results show a distinct taxonomic and thematic evolution pattern with early taxonomic deterioration. Natural objects are also more vulnerable to the disease. Lastly, there is an interaction effect between the category and the condition in the priming task indicating that natural objects are more taxonomically organized and manufactured objects benefit more

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