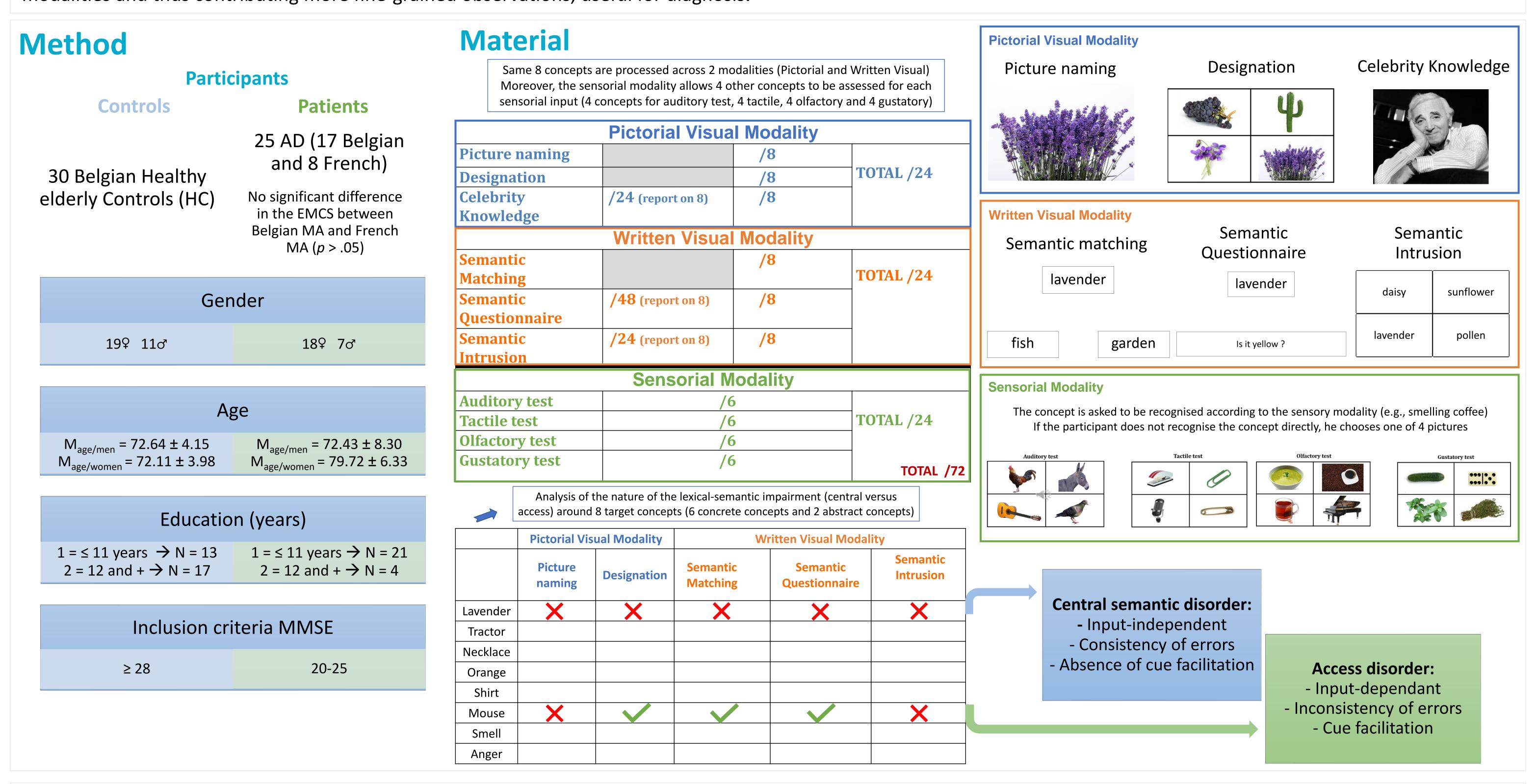


Validation of a new tool to investigate multimodal lexical-semantic deterioration in Alzheimer's disease: the multimodal semantic knowledge assessment (EMCS)

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Introduction

While episodic memory impairment is the most recognized initial symptom of Alzheimer's disease (AD), semantic memory breakdown is also an early specific feature of the disease. This phenomenon notably results into lexical-semantic disorders¹ affecting words retrieval and their meaning in all modalities (visual, auditory, tactile, olfactory, taste). However, there are still few tools in French to assess semantic deficit through all modalities. In clinical practice, these difficulties are mainly assessed by verbal tests, whereas it is accepted that the deficit should be observed in several modalities. Our research aims to normalize a new tool for multimodal semantic knowledge assessment called EMCS (Basaglia-Pappas et al., in press²). This tool offers the clinician the possibility of testing semantic memory, in terms of both access and integrity, using several modalities and thus contributing more fine-grained observations, useful for diagnosis.



Preliminary Results

Preliminary norms

N = 30						
Percentiles	EMCS total	Pictorial Visual Modality	Written Visual Modality	Sensorial Modality		
	(/72)	(/24)	(/24)	(/24)		
5	60,5	21,3	21,7	16,8		
10	62,7	21,8	22,3	17,1		
25	64,7	22,3	22,7	17,9		
50	65,3	23	23,1	19,5		
75	66,9	23,5	23,3	20,1		
90	67,9	24	23,7	21		
95	68,3	24	23,7	21,7		

Future objective = propose norms according to age, socio-cultural level and gender

Comparison between healthy controls and AD group

		Healthy Controls N = 30	AD N = 25	Mann-Whitney test
All scores under the 5 th percentile	EMCS total (/72)	65.33 (60.33-68.33)	48.5 (38.15-61.20)	U = 2; $p < .001$
	Pictorial Visual modality (/24)	23 (20.83-24)	16.16 (11.66-22.70)	<i>U</i> = 13 ; <i>p</i> < .001
	Written Visual modality (/24)	23.08 (21.33-23.67)	20.16 (15.99-23)	<i>U</i> = 35.5 ; <i>p</i> < .001
	Sensorial modality (/24)	19.5 (16.50-22)	12 (8.50-17.50)	U = 5; $p < .001$
-	Medians (minimum and maxim	um values)		

At this preliminary step, the Receiver Operating Characteristic (ROC) analysis established the optimal cut-off score of the EMCS at 60.2 (sensitivity 96 %, specificity 100 %), differentiating AD patients to healthy controls participants

Discussion

The aim of this study is to standardise the EMCS for a Belgian control population. The EMCS is used to detect multimodal semantic disorders in Alzheimer's disease. For the moment, this tool offers high psychometric quality, with excellent sensitivity and specificity for AD. The EMCS aids diagnosis and enables clinicians to define, at an early stage of the disease, the nature of the semantic impairment^{2,3,4}. On the five subtests of the visual pictorial and visual written modalities, if a minimum of three errors for the same item are observed, the impairment is central. An access disorder is revealed when there is maximum two errors as the errors are inconsistent. Evaluating semantic memory across all modalities is useful for the clinician in order to guide the diagnosis and better define the treatment plan. It is therefore necessary to continue this standardisation.

Références

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