

# Presentation of New Screening Tools to Detect Lexico-Semantic Disorders in Minor Neurocognitive Disorder and in Alzheimer's Disease

Sarah Gilis<sup>1\*</sup>, Florine Rouze<sup>1\*</sup>, Aurélie Rendon de la Cruz<sup>1</sup>, Sandrine Basaglia-Pappas<sup>1,2</sup>, Laurent Lefebvre<sup>1</sup>, & Isabelle Simoes Loureiro<sup>1</sup>

\*Both first co-author

<sup>1</sup>Cognitive Psychology and Neuropsychology Department, Institute of Health Sciences and Technologies, University of Mons, Belgium ; <sup>2</sup>North Hospital, CMRR, CHU Saint-Etienne, France

## Introduction

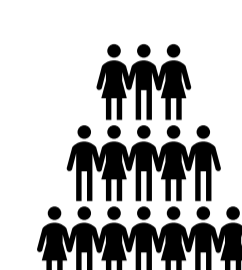
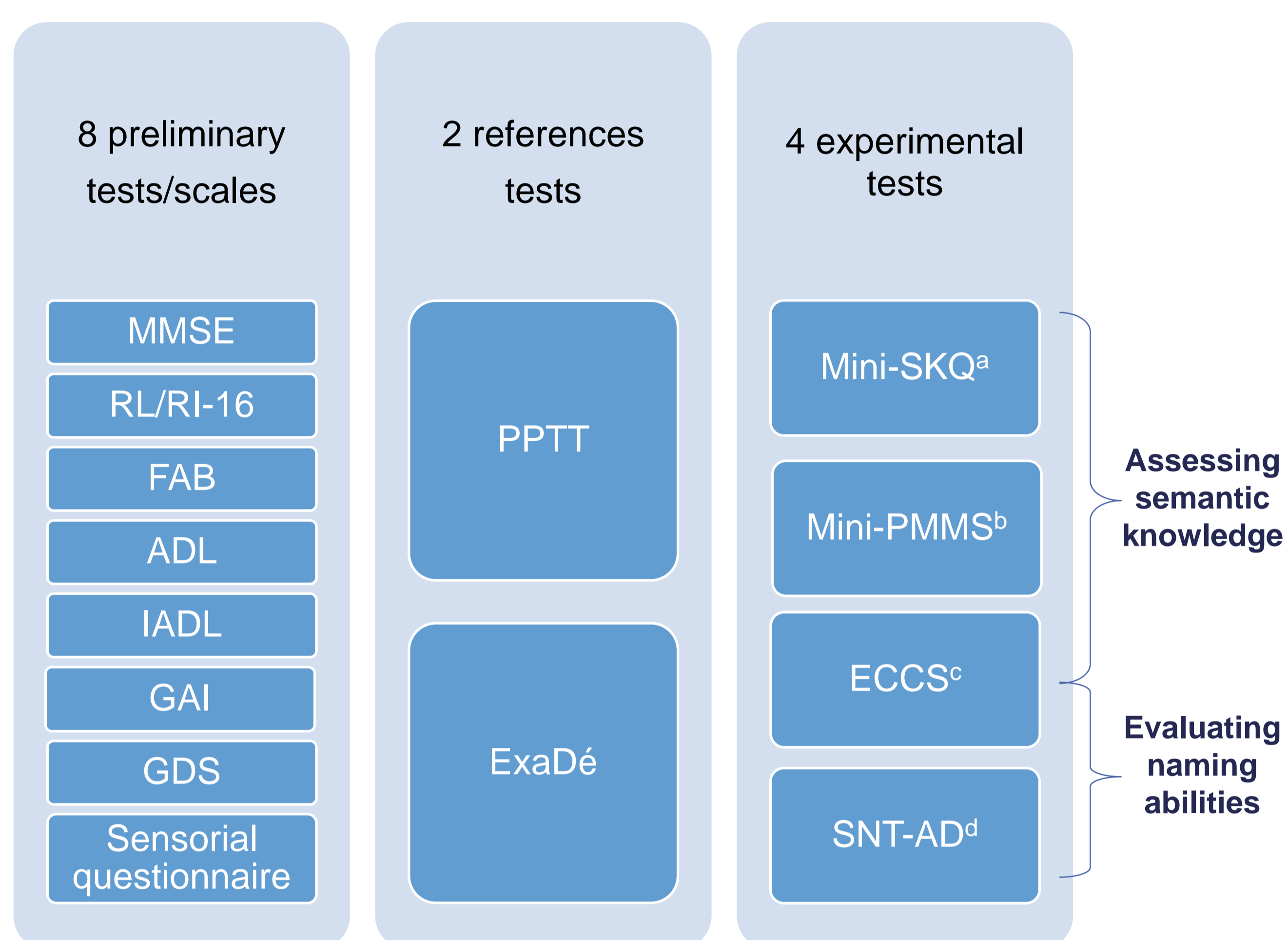
Episodic memory impairment in Alzheimer's Disease (AD) has been widely studied. Recently, the interest of researchers also focused on the semantic deficit. Recent studies demonstrated an early breakdown of semantic memory in the prodromal stage of AD. This phenomenon notably results into lexico-semantic difficulties affecting retrieval of words and their meaning. This deterioration also occurs in the Minor Neurocognitive Disorder (MND), but to a lesser extent. However, there are still few quick screening tools in French that may demonstrate the naming and semantic deficit in MND and AD.

Our research aims at proposing four quick tools allowing the screening of semantic memory impairment in MND and AD.

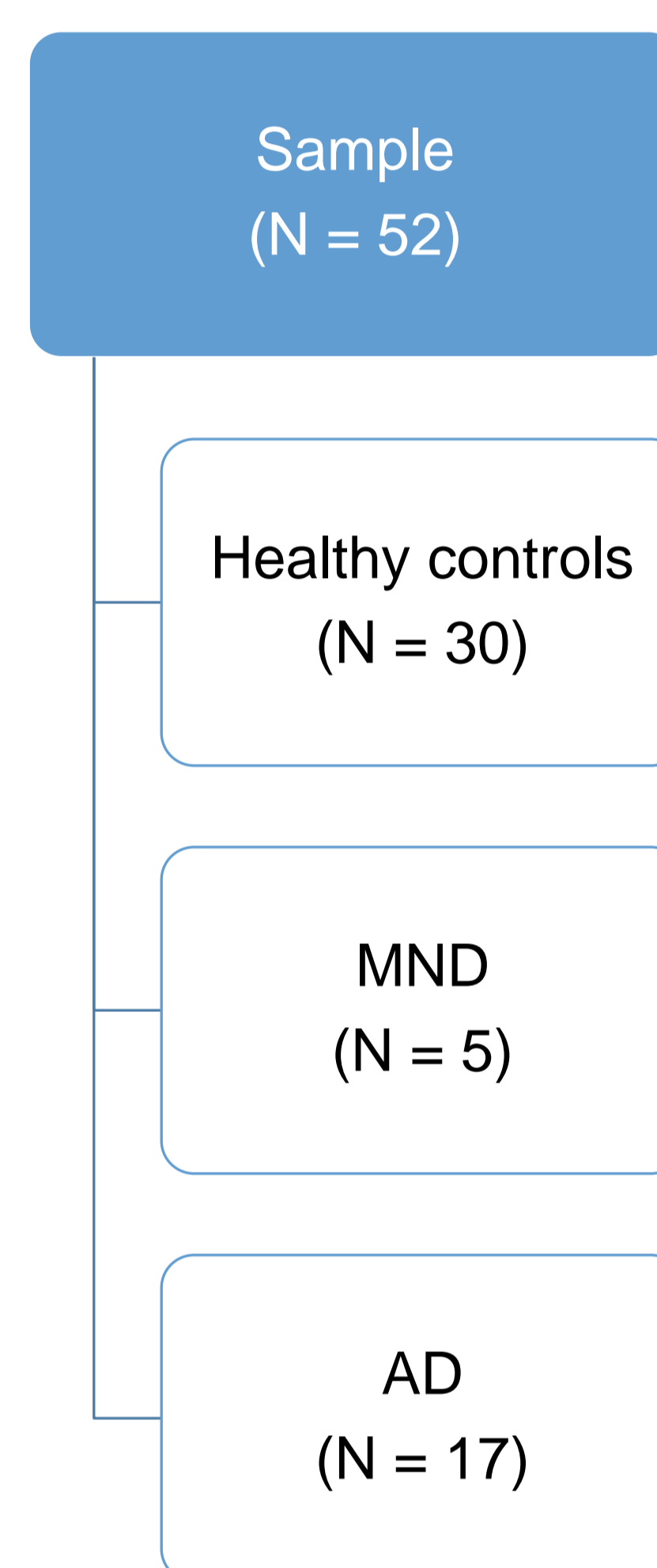
## Methods



### Material



### Participants



	Healthy Controls	MND	AD	Chi-squared test or Kruskal Wallis test
Distribution W/M	19/11	2/3	15/2	$\chi^2(2) = 5.38 ; p = .068$
Age	72,5 (65-82)	73 (65-82)	82 (69-89)	$\chi^2(2) = 12.36 ; p = .002$
Education (years)	13 (9-18)	12 (8-15)	10 (6-17)	$\chi^2(2) = 17.96 ; p < .001$
GDS	2 (0-15)	11 (5-11)	9 (2-22)	$\chi^2(2) = 18.99 ; p < .001$
GAI	1,5 (0-13)	4 (0-9)	5 (0-12)	$\chi^2(2) = 6.99 ; p = .030$
ADL	6 (6-6)	6 (6-6)	6 (6-6)	$\chi^2(2) < .001 ; p = 1.000$
IADL	8 (8-8)	8 (8-8)	2 (1-7)	$\chi^2(2) = 48.59 ; p < .001$
MMSE	29 (28-30)	26 (25-29)	22 (20-25)	$\chi^2(2) = 39.68 ; p < .001$
FAB	17 (16-18)	15 (13-18)	13 (10-16)	$\chi^2(2) = 35.00 ; p < .001$

Medians (minimum and maximum values)

W = women ; M = men

GDS = Geriatric Depression Scale (Cut-off = 5)

GAI = Geriatric Anxiety Inventory (Cut-off = 9)

(I)ADL = (Instrumental) Activities of Daily Living

MMSE = Mini Mental State Examination; Cut-off MMSE (MND) = 26-28 ; Cut-off MMSE (AD) = 20-25

FAB = Frontal Assessment Battery

## Results

	Healthy Controls	MND	AD	Kruskal Wallis test
Mini-PMMS	25 (24-26)	25 (24-25)	21 (16-26)	$\chi^2(2) = 29.08 ; p < .001$
Mini-SKQ	12 (11-12)	10 (8-12)	9 (6-11)	$\chi^2(2) = 34.56 ; p < .001$
SNT-AD	9 (8-10)	8 (7-10)	6 (3-8)	$\chi^2(2) = 33.37 ; p < .001$
ECCS	65,33 (60.33-68.33)	55,99 (52.17-64.83)	48,16 (38.15-57.32)	$\chi^2(2) = 36.8 ; p < .001$
PPTT	51 (48-52)	51 (48-52)	43 (37-51)	$\chi^2(2) = 30.25 ; p < .001$
ExaDé	86 (78-90)	78 (75-83)	64 (44-82)	$\chi^2(2) = 37.53 ; p < .001$

Medians (minimum and maximum values)

Mini-PMMS = Mini-Montreal Semantic Memory Protocol

Mini-SKQ = Mini-Semantic Knowledge Questionnaire

SNT-AD = Short Naming Test for Alzheimer's Disease patient

ECCS = Short Assessment of Semantic Knowledge

PPTT = Pyramid and Palm Trees Test

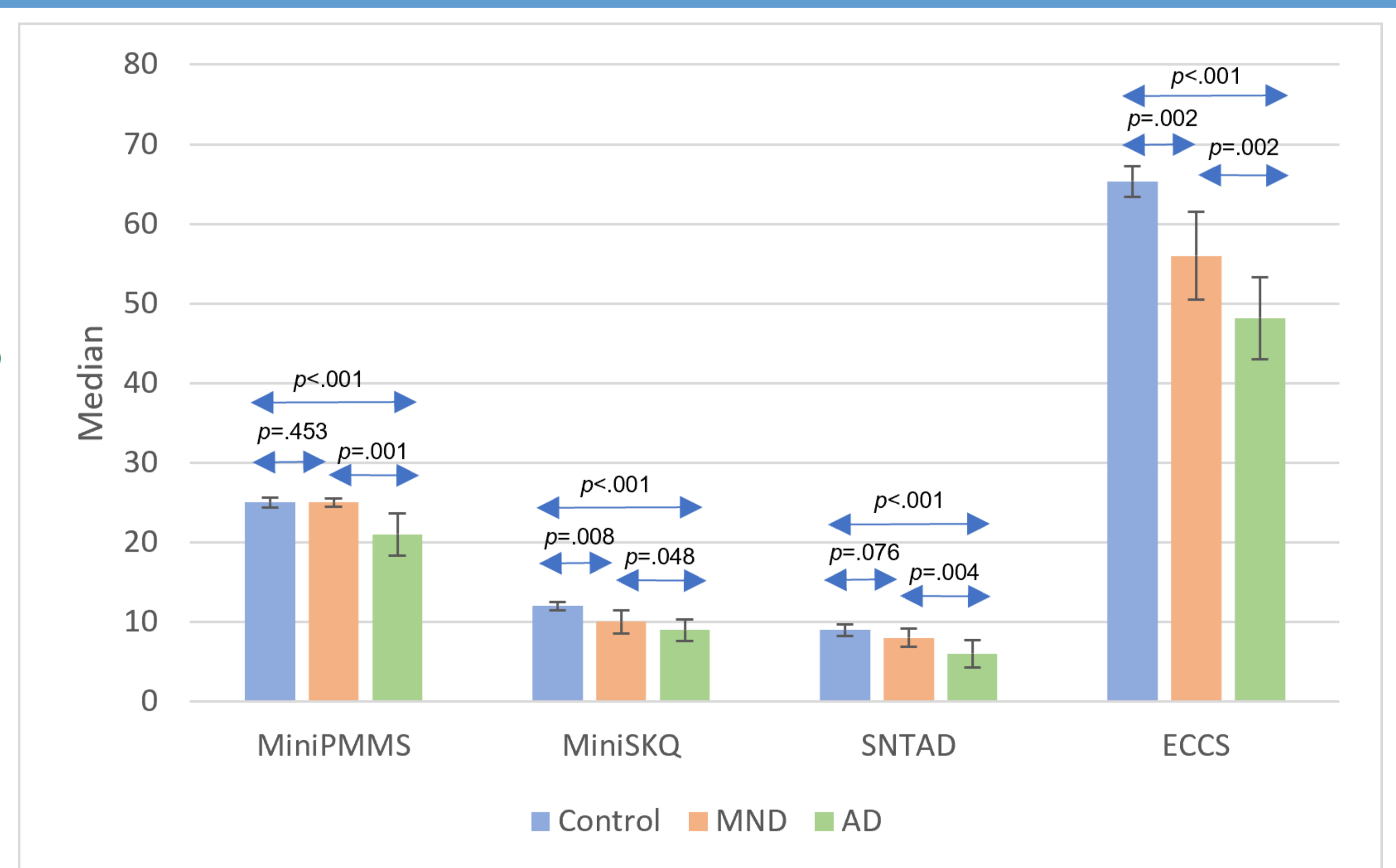
ExaDé = Battery of denomination

$r = .68$

$r = .734$

$r = .789$

$r = .739$



## Discussion

The four quick tools make it possible to detect lexico-semantic disorders between the healthy controls and AD participants but also between the MND and AD participants. However, the Mini-PMMS and SNT-AD do not allow for lexico-semantic disorders detection between the healthy controls and MND participants. While the mini-SKQ and the ECCS allow for this detection.

→ In the clinical setting, these tests can be effective screening tools prior to more in-depth evaluation.

## Limits

There is significant difference between the three groups in terms of age, education, depression and anxiety. Furthermore, our groups are not equally balanced.

→ Further research should include equivalent and matched groups.

## References

- Simoes Loureiro, I., Taverne, M., & Lefebvre, L. (2018). Le mini-QCS : un outil de dépistage rapide des troubles de la mémoire sémantique de la maladie d'Alzheimer. *Gériatrie et Psychologie Neuropsychiatrie du vieillissement*, 16(4), 429-438. <https://doi.org/10.1684/prv.2018.0770>
- Joubert, S., Langlois, R., Hamel, C., Lacombe, J., & Fontaine, F. (2008). Présentation d'une nouvelle batterie clinique d'évaluation de la mémoire sémantique et de son utilité auprès de populations cliniques âgées. Communication présentée au Xème Colloque International sur le Vieillessement Cognitif, 26-27, Paris.
- Basaglia-Pappas, S., Bourgey, R., Boulangé, A., Getenet, J.-C., Simoes Loureiro, I., Lefebvre, L. (2021). Evaluation multimodale courte des connaissances sémantiques dans le cadre de l'aphasie primaire progressive variant sémantique et la maladie d'Alzheimer. *Revue Neurologique*, 177. doi: 10.1016/j.neuro.2021.02.073
- Simoes Loureiro, I., Taverne, M., Malou, V., Basaglia-Pappas, S., Besin, R., Invernizzi, S., & Lefebvre, L. (2021). Présentation du test court de dénomination adapté à la maladie d'Alzheimer (TCD-MA). *Revue Neuropsychologique*, 13 (3), 214-22. doi:10.1684/nrp.2021.0683