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# Measuring cognitive change in subjects with prodromal Alzheimer's disease

T Mura\*, MD, PhD <sup>1, 2, 3, 4</sup>, C Proust-Lima, PhD <sup>5, 6</sup>, H Jacqmin-Gadda PhD <sup>5, 6</sup>, TN Akbaraly PhD <sup>1, 2, 7</sup>, J. Touchon, MD, PhD <sup>8, 2</sup>, B Dubois, MD, PhD <sup>9</sup>, C Berr, MD, PhD <sup>1, 2, 8</sup>.

<sup>1</sup> INSERM, U1061, Neuropsychiatrie : Recherche Epidémiologique et Clinique, 34093 Montpellier, Cedex 5, France

<sup>2</sup> Université Montpellier I, 34095 Montpellier, Cedex 5, France

<sup>3</sup> Département d'Information Médicale & Centre d'Investigation Clinique, CHRU Montpellier, 34093 Montpellier, France

<sup>4</sup> INSERM, CIC 1001, Montpellier, France

<sup>5</sup> INSERM U897, Equipe de Biostatistique, Centre de Recherche en Epidémiologie et Biostatistique, F-33076 Bordeaux, France

<sup>6</sup> Université Bordeaux Segalen, ISPED, F-33076 Bordeaux, France

<sup>7</sup> Department of Epidemiology and Public Health, University College London, London, United Kingdom.

<sup>8</sup> CMRR Languedoc Roussillon, service de Neurologie, CHRU Montpellier, 34093 Montpellier, France

<sup>9</sup> INSERM-UPMC UMRS 975, Institut de la Mémoire et de la Maladie d'Alzheimer, ICM, APHP, Salpêtrière Hospital, University Paris 6, Paris, France

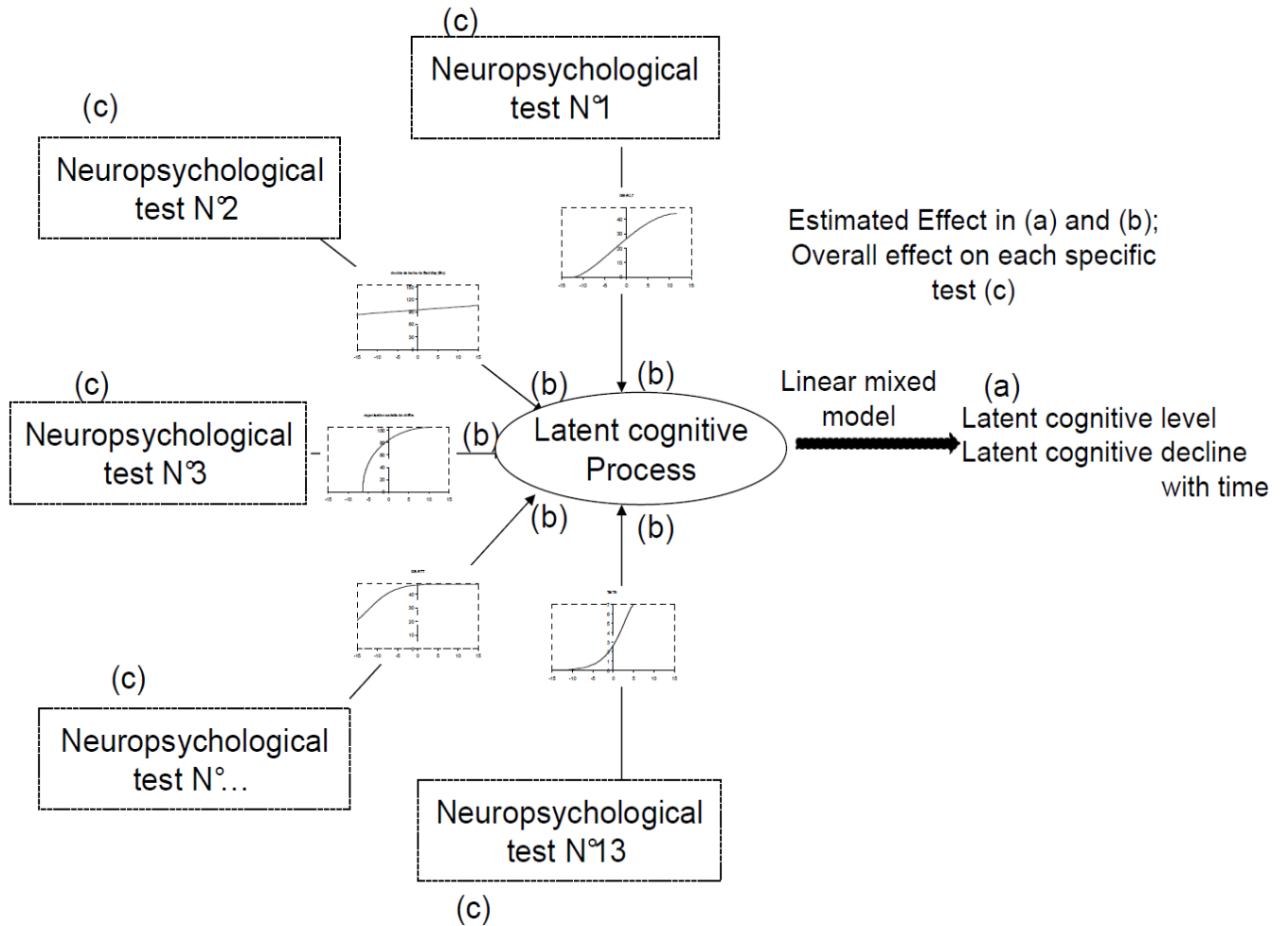
## **Corresponding author: Thibault Mura**

\_INSERM U1061, Hôpital La Colombière, 39 Avenue Charles Flahault, BP 34493, 34093 Montpellier, Cedex 5, France.

Phone: 33 (0)4 67 33 23 28, Fax: 33 (0)4 67 33 23 35

email: [t-mura@chu-montpellier.fr](mailto:t-mura@chu-montpellier.fr)

**Figure 1:** Conceptualization of the nonlinear mixed model involving a latent process to model cognition from several neuropsychological tests.

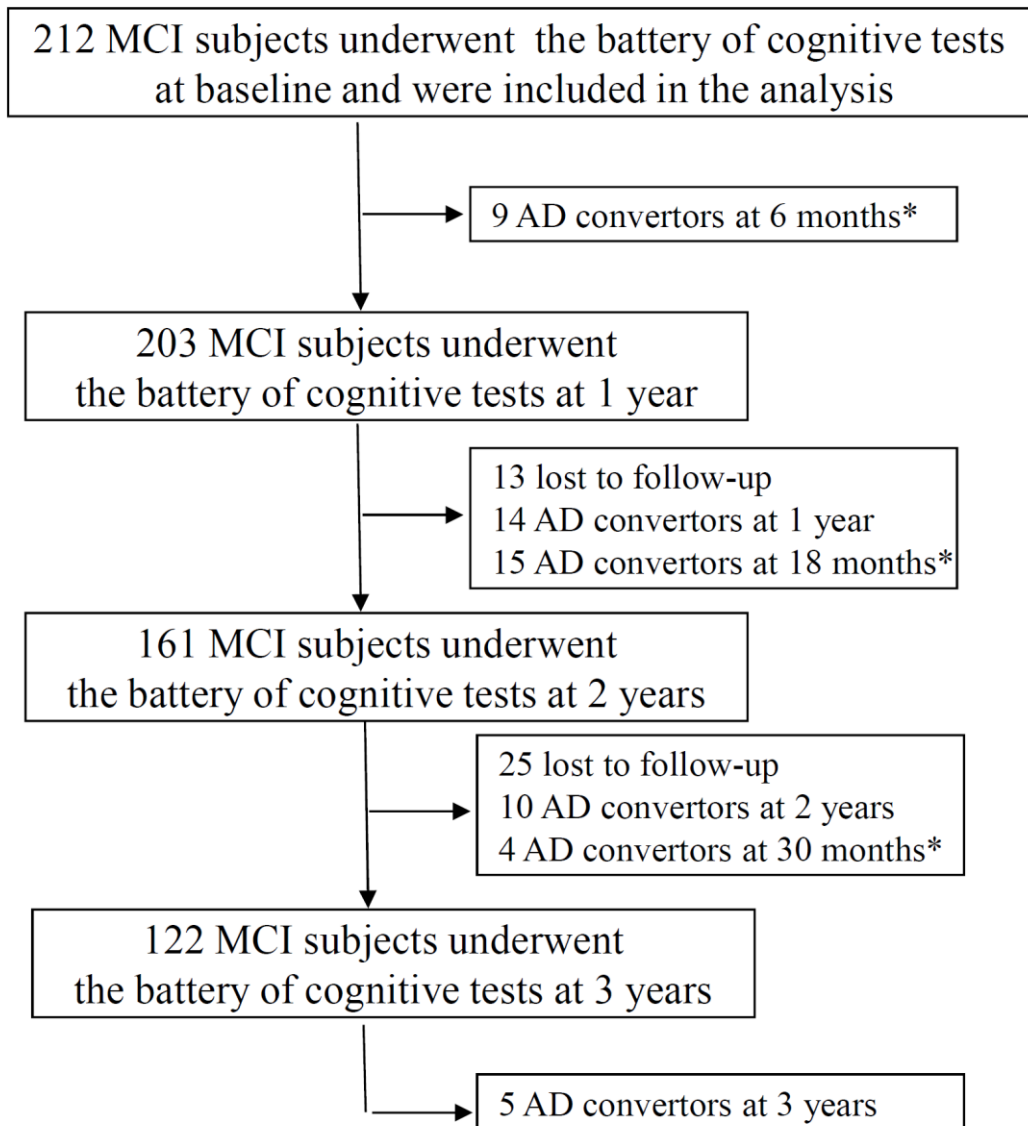


(a) A linear mixed model describes the change over time in the latent cognitive process and evaluates the common effects of covariates on this latent cognitive trajectory

(b) Test-specific measurement models relate each administration of the psychometric tests with the latent cognitive process, by accounting for and describing the metrological properties of the tests and test-specific associations with covariates.

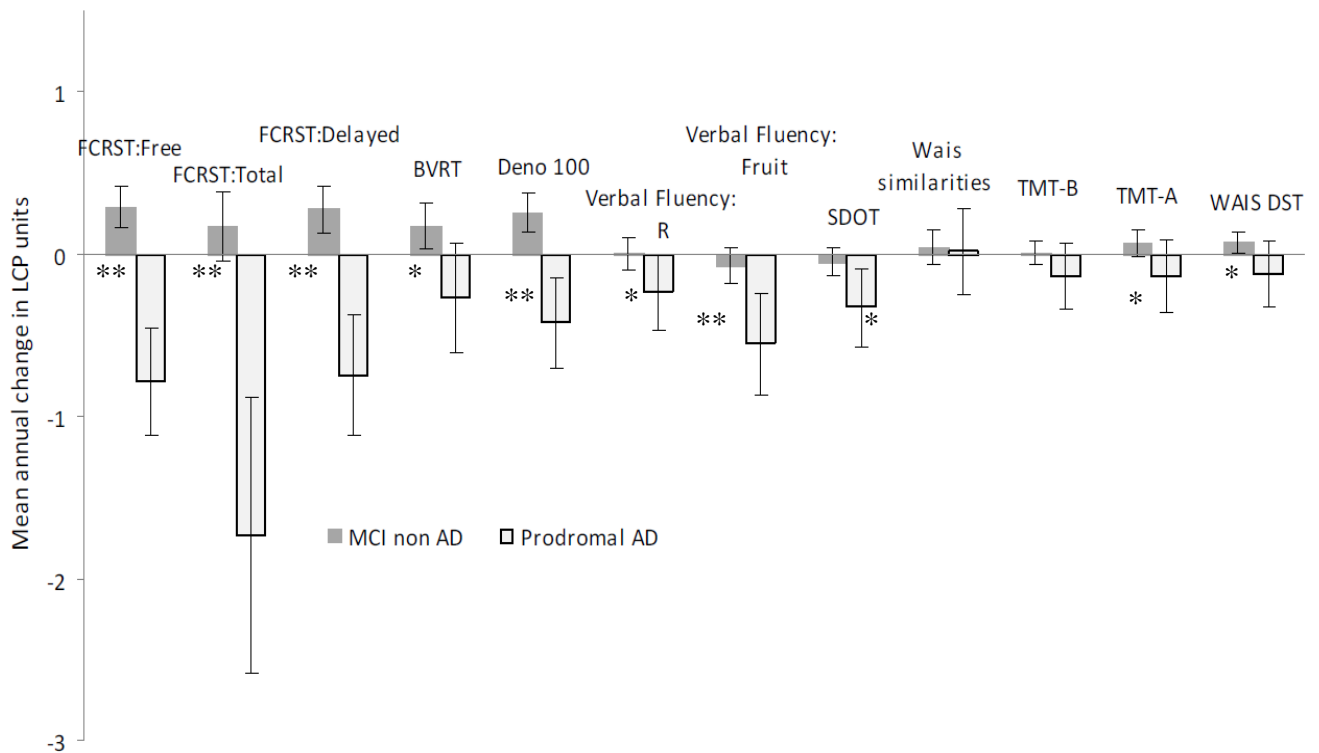
(c) Overall effect of a covariate on each specific test is calculated by adding together the effect of the covariate on the latent cognitive process (a) and the test-specific effect (b).

**Figure 2:** Diagram mapping the administration of the neuropsychological tests and the occurrence of AD during the three-year follow-up (FU) of the study.



\* In the event of a suspected conversion, the patient underwent an additional neuropsychological evaluation 6 months later.

**Figure 3:** Mean annual change for each neuropsychological test according to the occurrence of AD during the follow-up (in latent cognitive process units).



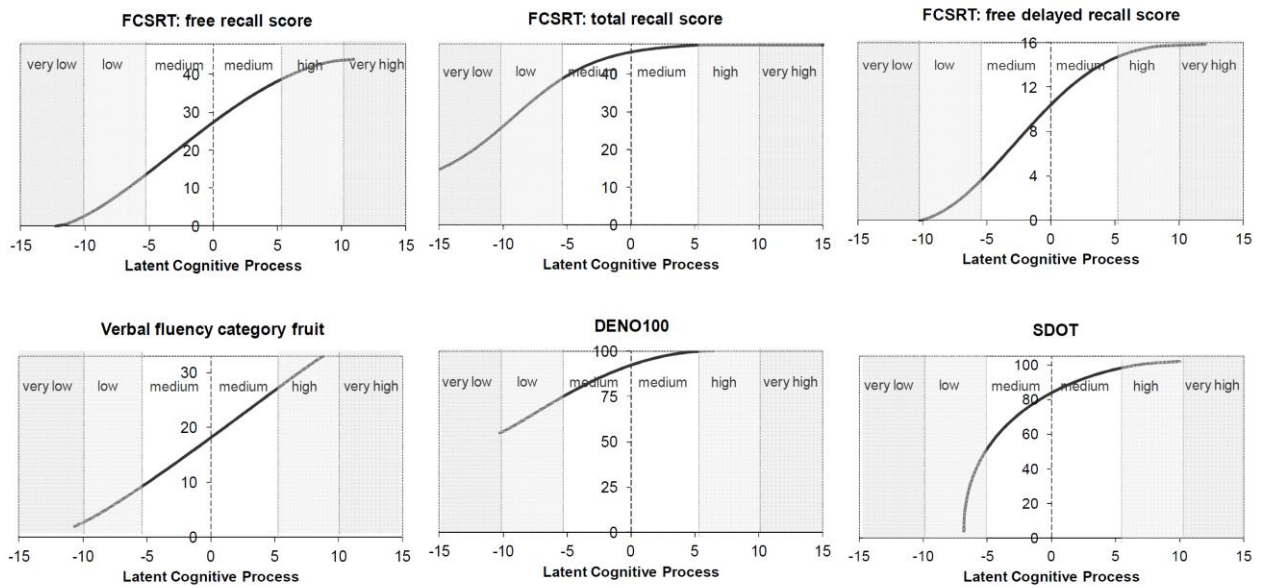
Mean annual change with 95% confidence interval for each neuropsychological test (in latent cognitive process unit) for a 71.8 year-old woman with a low level of education.

\*denotes a significant difference (adjusted for age, sex and level of education) between Prodromal-AD and MCI Non-AD ( $p < 0.05$ ), \*\* for  $p < 0.01$

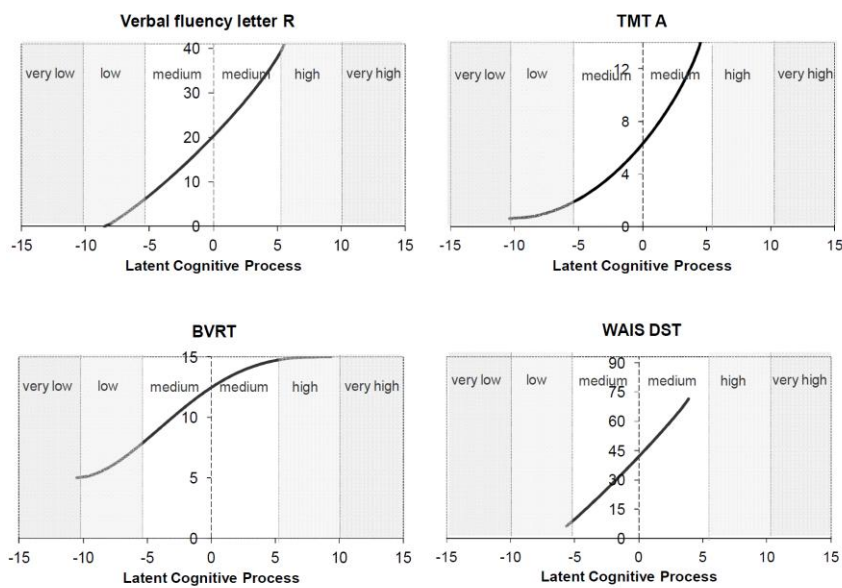
Baddeley Mü was not represented in this figure because of its high level of individual variability; this test did not significantly change over time in any group and was not different between groups.

**Figure 4:** Metrological properties of the thirteen neuropsychological scores used in the study

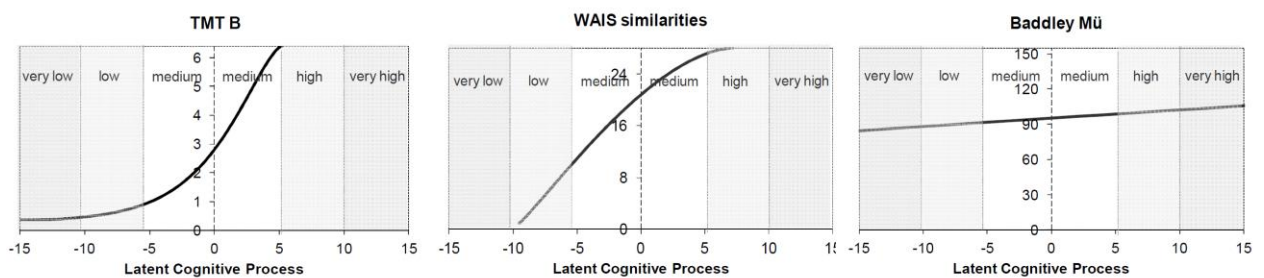
Neuropsychological tests with high sensitivity to changes due to prodromal-AD\*



Neuropsychological tests with medium sensitivity to changes due to prodromal-AD\*



Neuropsychological tests with low sensitivity to changes due to prodromal-AD\*



\*according to the previous results display in figure 3