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### ► To cite this version:

Thibault Mura, Cécile Proust-Lima, Hélène Jacqmin-Gadda, Tasnime N. Akbaraly, Jacques Touchon, et al.. Measuring cognitive change in subjects with prodromal Alzheimer's disease.. Journal of Neurology, Neurosurgery and Psychiatry, 2014, 85 (4), pp.363-70. 10.1136/jnnp-2013-305078 . inserm-00854469

**HAL Id: inserm-00854469**

**<https://inserm.hal.science/inserm-00854469v1>**

Submitted on 27 Aug 2013

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

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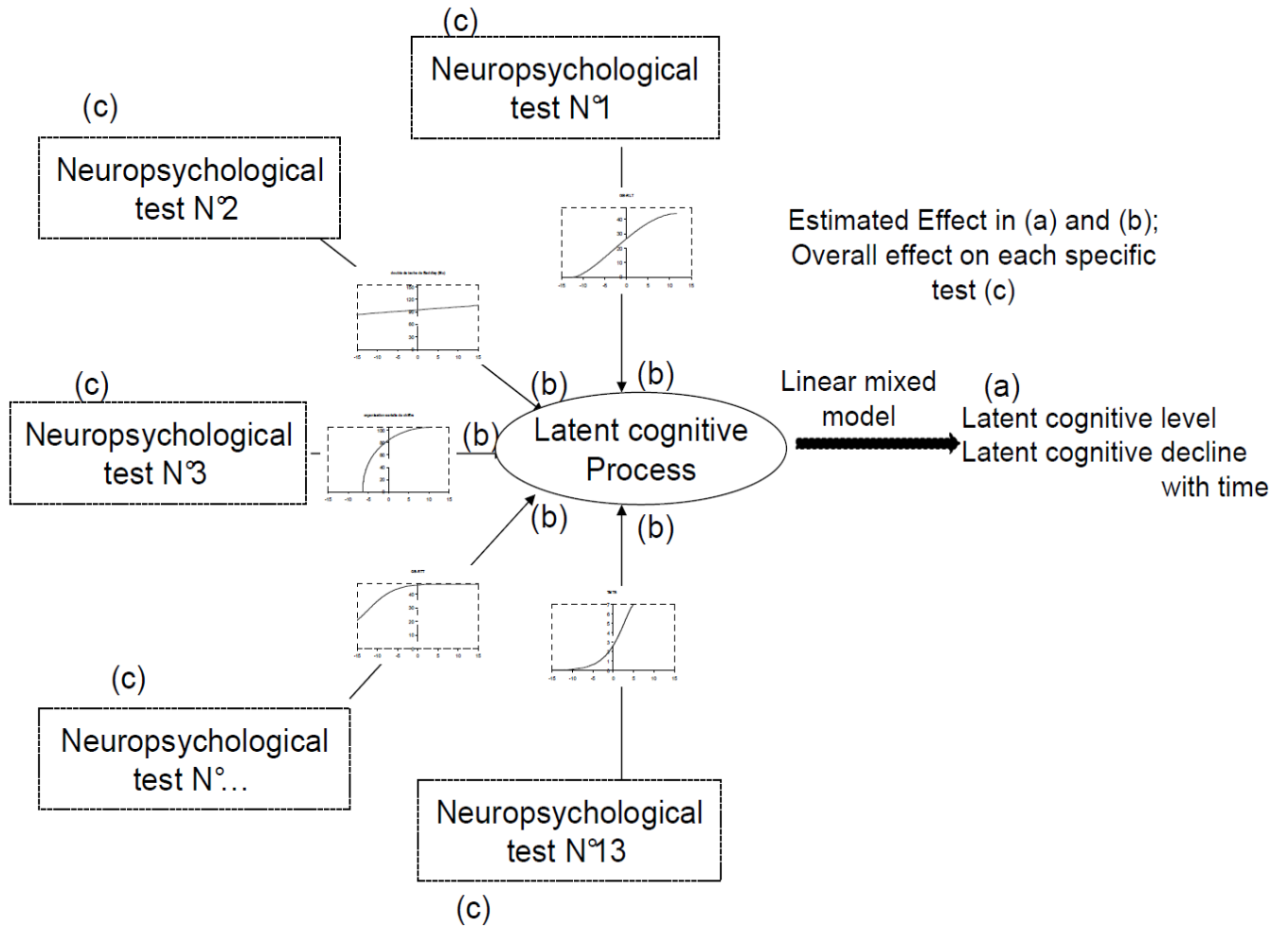
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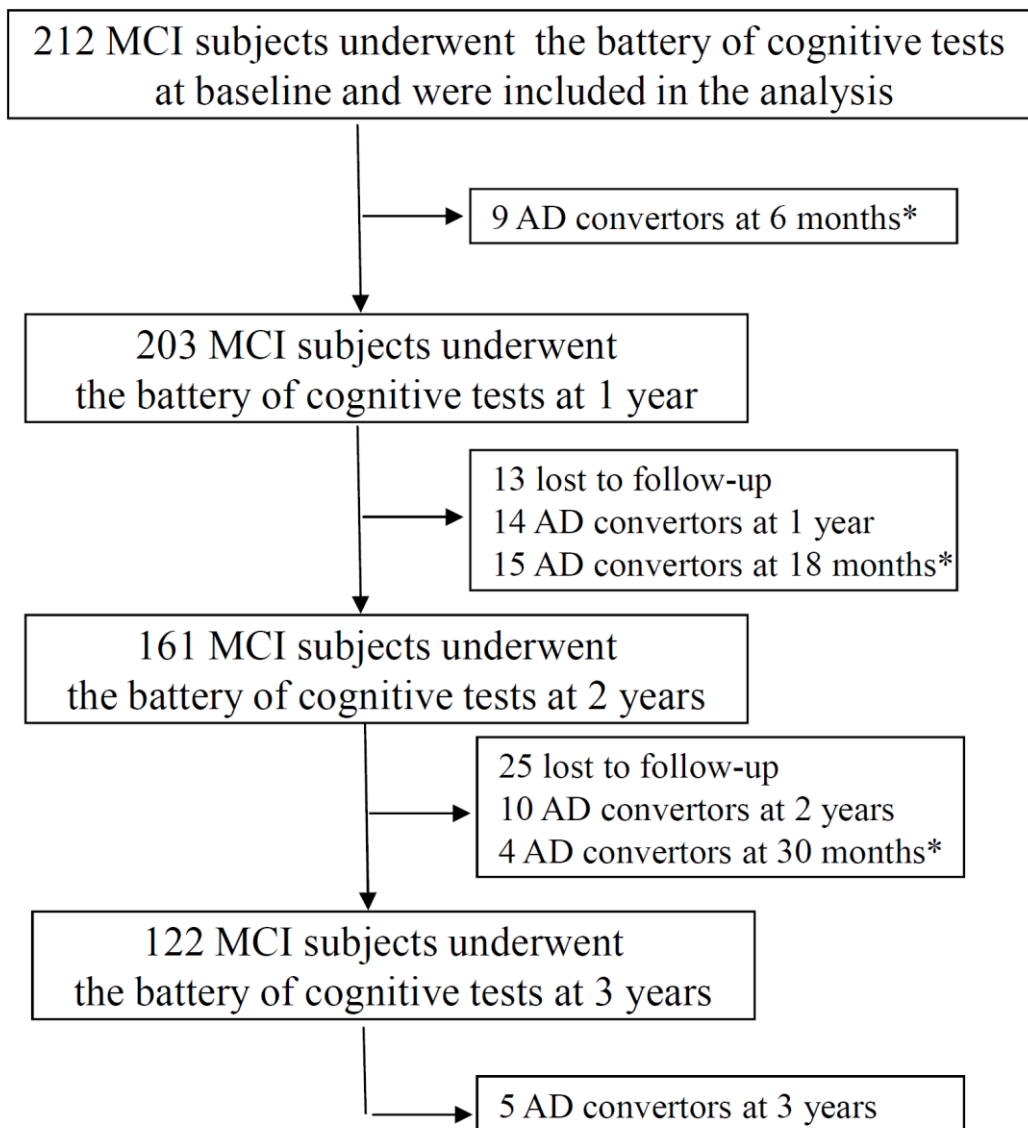
email: [t-mura@chu-montpellier.fr](mailto:t-mura@chu-montpellier.fr)

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



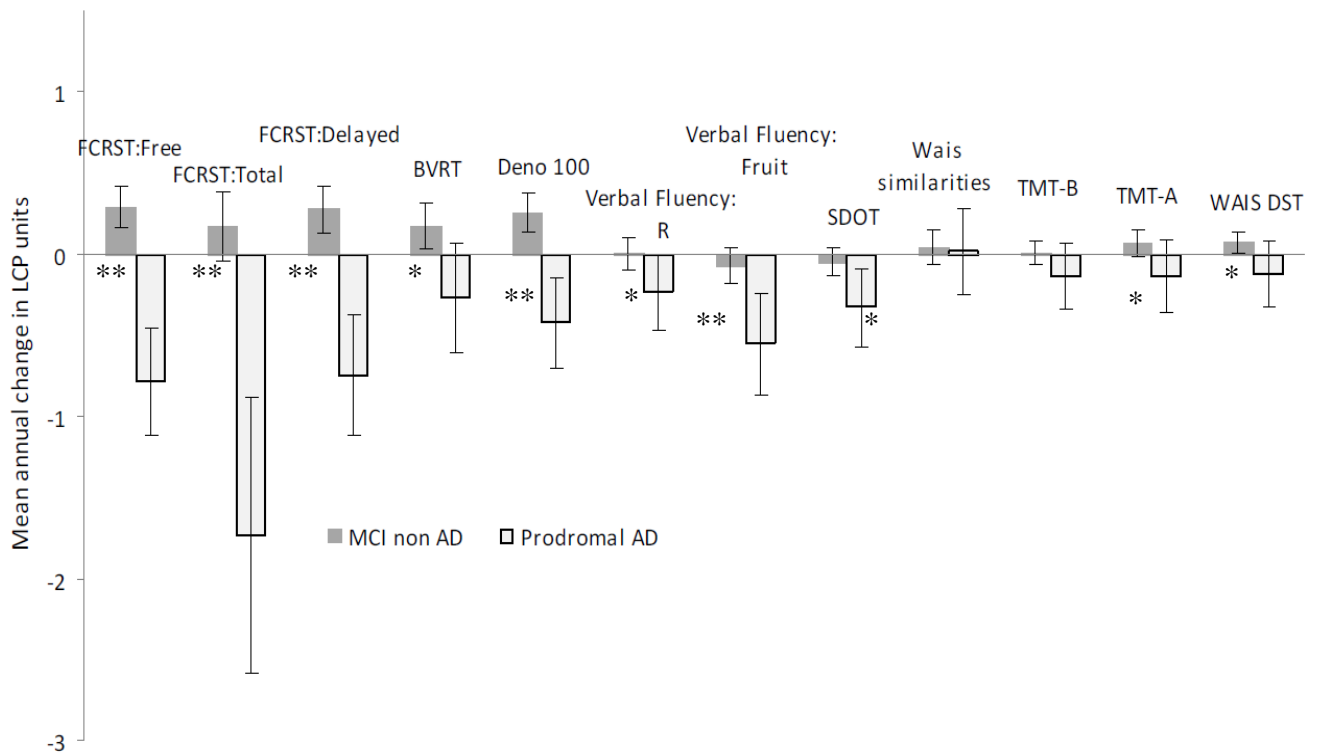
- (a) A linear mixed model describes the change over time in the latent cognitive process and evaluates the common effects of covariates on this latent cognitive trajectory
- (b) Test-specific measurement models relate each administration of the psychometric tests with the latent cognitive process, by 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).



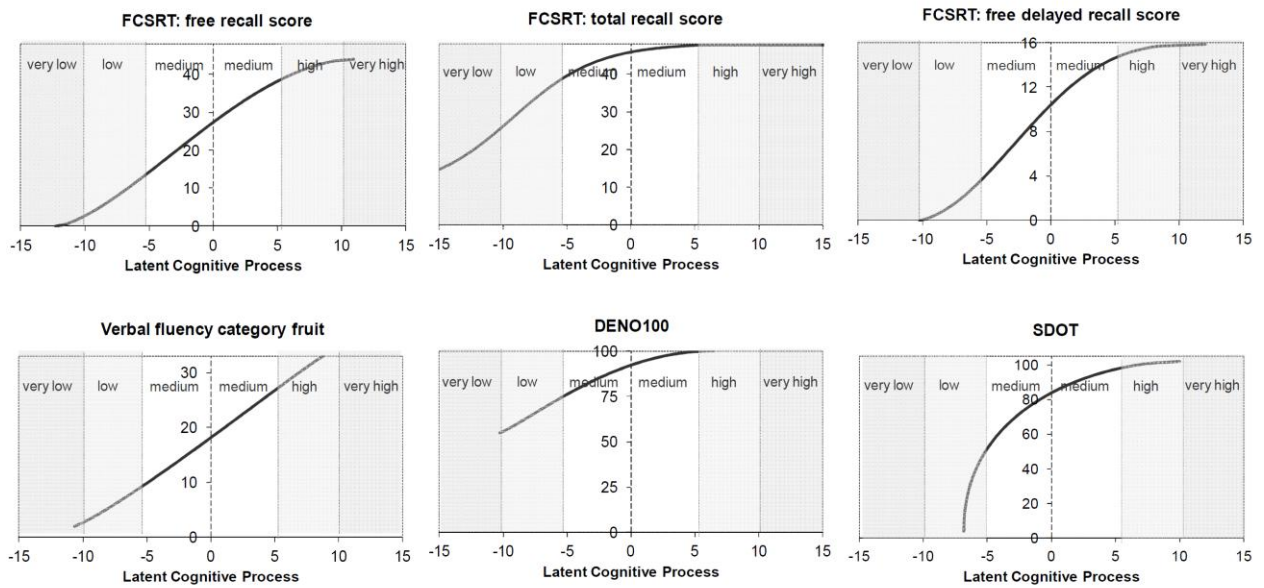
Mean annual change with 95% confidence interval for each neuropsychological test (in latent cognitive process unit) for a 71.8 year-old woman with a low level of education.

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

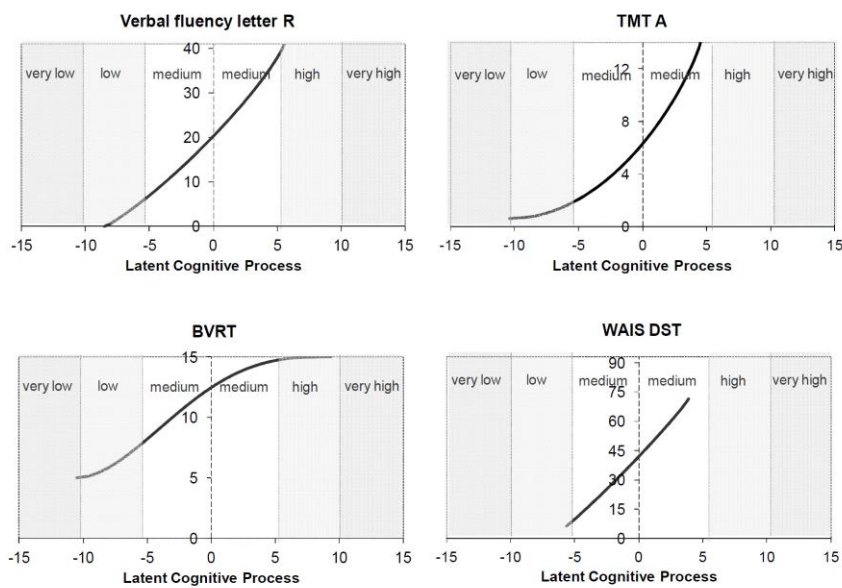
Baddeley Mü was not represented in this figure because of its high level of individual variability; this test did not significantly change over time in any group and was not different between groups.

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

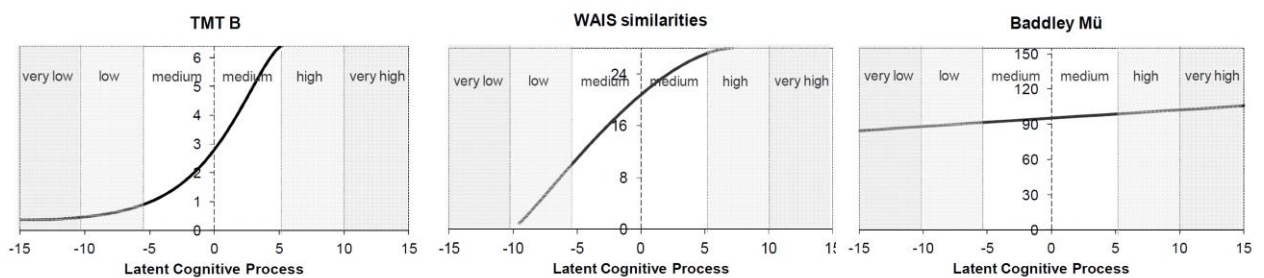
Neuropsychological tests with high sensitivity to changes due to prodromal-AD\*



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