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Thibault Mura, Cécile Proust-Lima, Hélène Jacqmin-Gadaa, Tasnime Akbaraly, Jacques Touchon, Bruno Dubois, Claudine Berr

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Measuring cognitive change in subjects with prodromal Alzheimer’s disease

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

1 INSERM, U1061, Neuropsychiatrie : Recherche Epidémiologique et Clinique, 34093 Montpellier, Cedex 5, France
2 Université Montpellier I, 34095 Montpellier, Cedex 5, France
3 Département d’Information Médicale & Centre d’Investigation Clinique, CHRU Montpellier, 34093 Montpellier, France
4 INSERM, CIC 1001, Montpellier, France
5 INSERM U897, Equipe de Biostatistique, Centre de Recherche en Epidémiologie et Biostatistique, F-33076 Bordeaux, France
6 Université Bordeaux Segalen, ISPED, F-33076 Bordeaux, France
7 Department of Epidemiology and Public Health, University College London, London, United Kingdom.
8 CMRR Languedoc Roussillon, service de Neurologie, CHRU Montpellier, 34093 Montpellier, France
9 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

e-mail: 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*