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**CALL FOR SUBMISSION OF PAPERS**

## THE RELATIONSHIP OF THE COGNOMETER WITH MORE TRADITIONAL MEASURES OF COGNITIVE FUNCTIONING

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Cognometer is a computer software program which employs Neuro-Cognitive Chronometric Assessment Technology (NCAT). It is designed to analyse different cognitive functions by measuring brain processing speed while performing various tasks. The present research is an attempt to identify some of primary psychometric relationships between Cognometer and two traditional measures often used for evaluating cognitive impairment (The Mini Mental Status Exam and the Neurobehavioral Cognitive Status Exam). This comparison will be undertaken in a sample of 25 patients, aged 60 to 80, with various levels of cognitive impairment. Their degree of impairment, as assessed by the Mini Mental Status Exam (MMSE), ranged from mild to moderate. We compared the MMSE and the Cognometer results to modified versions of the Short Term Memory Test (part of the Cognometer). By doing this we were able to acquire information regarding short term memory for letters, shapes, pictures, numbers, words and objects. With the help of the Cognometer we were able to look at all these parameters independent of each other. Results will be presented at a poster session.

## Neuroimaging

### THE DESIGN AND ANALYSIS OF LONGITUDINAL STUDIES USING MRI SCANS

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**Objective:** To develop statistical models for the analysis of longitudinal studies involving repeated use of minimum interval resonance imaging (MRI).

**Methods:** Increasingly imaging is being considered as a surrogate marker of disease progression in studies in Alzheimer's Disease. In conventional studies imaging is performed only at the start and end of follow-up. The statistical power of such studies can be improved by carrying out MRI scans at repeated intervals (see reference). However the analysis of such studies requires methods that can deal with complexities such as the non-independence of measurements made on the same individual and the negative correlation between two consecutive differences in brain volume in the same individual.

**Results:** We present a family of hierarchical linear mixed models (see reference) that can be used to analyse variables such as repeated measurements of changes in brain volume and illustrate our models with simulated data from the planned MIRIAD study.

**Conclusions:** Repeated measures designs, coupled with appropriate statistical analysis, can potentially substantially increase the power of studies using imaging.