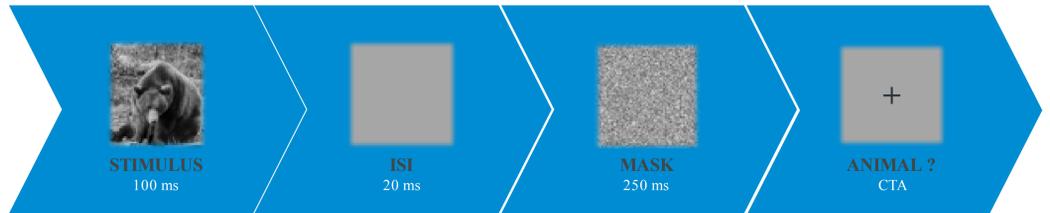


Abstract

- Over 25 Years of research has not yielded a treatment for Alzheimer's disease
- This is, in part, due to the lack of effective early detection tools.
- Prior research focused on macroscopic changes associated with the disease, or on individual genes or molecular pathways.
- Current neuropsychological tests fail to capture the subtleties of cognitive deficits at early stages of the disease.
- We developed the ICA test that is more sensitive to less severe brain deteriorations.

ICA Outline Process

Background science: predicting the reaction time of healthy human subjects in a rapid categorization task, using natural image statistics (Mirzaei et al., 2012)



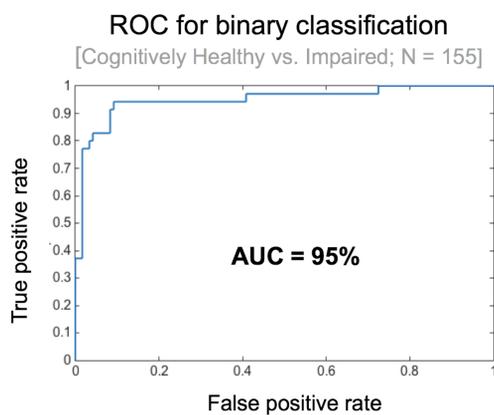
Subjects are exposed to a succession of short exposure visual stimuli and asked to react to a simple question - whether or not they saw an animal. The images used vary in their properties, and the speed and accuracy of response to these vary according to the cognitive ability of the subject



The test takes advantage of millions of years of human evolution – the human brain's strong reaction to animal stimuli



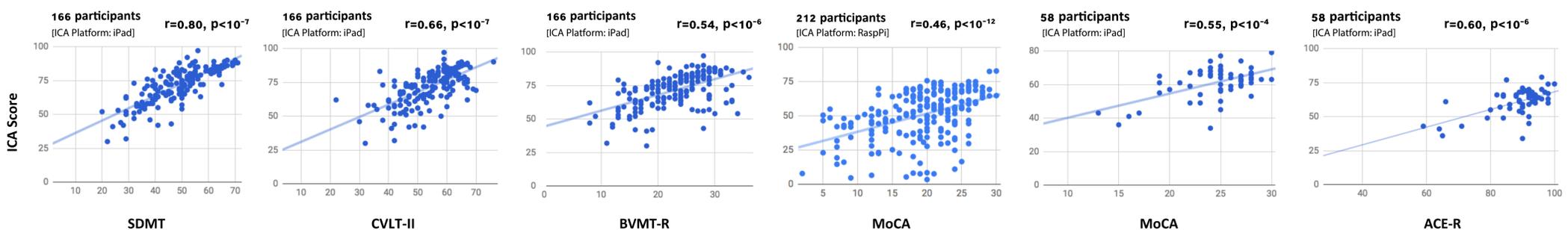
Training and Testing the Artificial Intelligence (AI) engine



Results

- ICA is correlated with a wide range of the standard-of-care cognitive tests.
- ICA shows excellent test-retest reliability ($r=0.96^*$).
- ICA does not have a learning bias, and is largely independent of education.
- The AI engine can discriminate between cognitively impaired and non-impaired subjects with AUC of 95%.
- As opposed to conventional cognitive tests, because of the AI engine, the categorization performance of the test can be further improved with more data.

ICA correlation with standard paper-based cognitive tests [448 Participants in total]



Conclusion

ICA has advantages over the conventional standard-of-care cognitive tests. Because of its efficient administration, shorter duration, and automatic scoring, it allows for remote cognitive assessment and online home monitoring. Furthermore, the ICA test does not suffer from a learning bias, therefore it can be administered frequently to track changes in individuals' cognitive performance over time.

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- LANGUAGE INDEPENDENT
- SELF ADMINISTERED
- EDUCATION INDEPENDENT
- NO LEARNING BIAS
- SENSITIVITY THROUGH AI
- TIME EFFECTIVE (5 MIN)