**Title:**

IOWA gambling task: Comparison of the classical scoring and cognitive modeling technique. Their convergent validity to other clinical tasks

**Abstract:**

The aim of this study is to compare Bayesian cognitive modeling of response style in IOWA gambling task (especially PLV-Delta model; Ahn et al., 2008) and the classical approaches to IOWA scoring in a non-clinical population.

We used an exploratory design to analyze convergent validity between different types of IOWA scoring and other clinical tasks in a sample aged 18–30 years. Test battery consisted particularly from IOWA gambling task, SST (stop signal task), go/no-go task, N-back and DDT (delay discounting task). These tests were computer-administered as a part of wider test battery, sample size ranged between 100 and 200 for each pair-wise comparison. Bayesian cognitive model was estimated using STAN and R environment.

Results showed convergent validity between some of parameters of cognitive model and the traditional IOWA test scores; however, cognitive model has an incremental validity compared to the traditional scoring techniques. We also estimated reliability of IOWA gambling task using different approaches. These results are discussed bearing in mind an exploratory design of the study.

Using point estimate of parameters from Bayesian models could limit results of this study. In addition, our reliability estimates are slightly biased due to non-normal distribution of all parameters.

This study can help us to understand which cognitive processes underlie decision-making in IOWA in a non-clinical population. Moreover, we revealed some advantages of Bayesian cognitive modeling to the classical IOWA task scoring, which can improve using IOWA gambling task in clinical practice.