ANALYSIS PLAN for ICE-ACT 7/3/2017 as registered on OSF site:

Type: Statistical Analysis Plan
URL: https://osf.io/kq8yz/register/565fb3678c5e4a66b5582f67
Identifier: https://osf.io/dp8n5/
Open Science Foundation registration of Data Analysis Plan

EVALUATION OF RANDOM ASSIGNMENT

1.   We plan to compare the 4 arms at baseline on the variables of age, education level, and gender and on the primary and secondary outcome variables (MANOVA across variables) to assess if random assignment resulted in equivalence across groups. If it did not, then we plan to use ANCOVAs in the next stage rather than ANOVAs, controlling for baseline differences on these variables.

EVALUATION OF DISTRIBUTIONS OF OUTCOME VARIABLES.

1.   Variables will be examined for normality and Blom-transformed (percentiles to z-scores) for cases where violations compromise the interpretation of inferential statistics. Analyses will be conducted with and without these adjustments to assess whether such adjustments alter conclusions.

EFFICACY ANALYSES FOR PRIMARY & SECONDARY OUTCOME VARIABLES

Analyses Immediately following training

1.   We plan 4 arms (Brain HQ, Rise of Nations, Driving and Fraud Avoidance Training, Puzzle Solving) x 2 times of measurement (baseline, post-training) ANOVAs (or ANCOVAs) for the following primary variables: fraud detection accuracy score, Driving Hazard Perception Test (safety and accuracy of navigation), Self-reported IADL task, Speed of Processing.

2.   We plan 4 arms (Brain HQ, Rise of Nations, Driving and Fraud Avoidance Training, Puzzle Solving) x 2 times of measurement (baseline, post-training) ANOVAs (or ANCOVAs) for the following secondary variables: Technology Proficiency (CPQ & MDPQ average z-scored variables), Numeracy (accuracy on Berlin Numeracy Test), Reasoning Ability (average z-scored variables for Letter Sets & Ravens), Memory Ability (Average z-scored variables for Hopkins Verbal Learning Test and Rey Auditory Verbal Learning Test), Miami IADL task.

Analyses following one-year follow-up

3.　　　We plan 4 arms (Brain HQ, Rise of Nations, Driving and Fraud Avoidance Training, Puzzle Solving) x 2 times of measurement (baseline, 1-year follow-up) ANOVAs (or ANCOVAs) for the following primary variables: fraud detection accuracy score, Driving Hazard Perception Test (safety and accuracy of navigation), Self-reported IADL task, Speed of Processing, Knowledge about Driving (accuracy), Knowledge about Finances and Fraud (accuracy).

4.　　　We plan 4 arms (Brain HQ, Rise of Nations, Driving and Fraud Avoidance Training, Puzzle Solving) x 2 times of measurement (baseline, 1-year follow-up) ANOVAs (or ANCOVAs) for the following secondary variables: Technology Proficiency (CPQ & MDPQ average z-scored variables), Numeracy (accuracy on Berlin Numeracy Test), Reasoning Ability (average z-scored variables for Letter Sets & Ravens), Memory Ability (Average z-scored variables for Hopkins Verbal Learning and Rey Auditory Verbal Learning Test) , Miami IADL task.

COMPARATIVE EFFECTIVENESS ANALYSES

Analyses immediately following training

1.　　　Immediate gain scores (post-training - baseline)/hours of reported training, for above primary and secondary variables will be compared across Arms.

Analyses following one-year follow-up

2.　　　Long-term gain scores (1-year follow-up - baseline)/hours of reported training, for above primary and secondary variables will be compared across Arms.

EXPLORATORY ANALYSES OF INDIVIDUAL DIFFERENCE PREDICTORS OF GAIN

We will use multiple regression analyses to predict the above post-test and 1 year gain scores on primary and secondary variables from age, education, gender, occupation, expectation for improvement, and study arm.