

### Sample size justification:

The primary outcome is the BRIEF-A General Executive Composite (GEC) score. In a recent study (Marceau et al, 2017, <http://dx.doi.org/10.1016/j.drugalcdep.2017.04.023>) of cognitive remediation in residents of a substance use disorder therapeutic community, the baseline mean (SD) GEC was 59.44 (11.19) and the covariate-adjusted, post-intervention mean was 53.07 (6.94). The sample size in our pilot trial is pragmatically determined (2 sites or settings, 4 sequential groups at each site and a maximum of 6 participants in each group). As a consequence, and assuming a similar post-intervention effect and 4 to 6 participants (or subjects) in each of the 8 groups, the pilot trial has 80% power to detect treatment differences in the following scenarios:

Number of subjects per group	Pre-expo mean (all groups)	Post-expo mean Brain Health Workshop (A)	Post-expo mean GMT+ (B)	SD Sites	SD Groups	SD Subjects	SD Obs	SD Total	ICC Groups	ICC Subjects	Effect Size
6	59.5	57.5	53.43	2.23	2.45	11.00	3.47	12.00	0.453	0.047	-0.339
4	59.5	57.5	52.44	2.23	2.45	11.00	3.47	12.00	0.453	0.047	-0.422
4	59.5	57.5	53.43	2.23	2.45	9.25	2.80	10.22	0.453	0.066	-0.398

#### Table Notes:

SD Total = the square root of the sum of the squared SDs for sites, groups within sites, subjects within groups and observations within subjects.

ICC groups = Variance of Sites / (Variance of Sites + Variance of Groups)

ICC subjects = Variance of Groups / (Variance of Groups + Variance of Subjects)

Effect Size = Difference in post-exposure means / (SD Total)

Power calculations for each scenario are based on 5000 simulations, a REML analysis of each simulated trial and calculation of the t-test for the treatment by time interaction contrast.

The target effect sizes are considered to be reasonable for a pilot study which aims to get a preliminary estimate of the effect of GMT<sup>+</sup> on BRIEF-A GEC as well as information on the components of variation associated with this therapist-guided, group-based intervention.