Targeting Self-regulatory Deficits Through Cognitive Remediation Intervention
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Statistical power, data management and analysis
Data will be collected, managed and analyzed through the standard procedures of the PDC as described in detail in the parent grant. Regarding statistical power, Dr. Baskin-Sommers' previous study using a similar cognitive remediation battery (1) with 55 participants revealed an effect size of d =.42 for the malleability of performance on the training, with 92% power. A sample size of 100 will allow us to evaluate the effect of ongoing substance use as a moderator of treatment response at 80% power. We have established that we can recruit and treat a sample of this size in the one-year time allotment of the SOBC supplement. Our rates of end of treatment assessment and follow-up in Center trials is 90% or above, enabling us to conduct true intention to treat analyses with minimal statistical imputation (48, 49, 83).

General Linear Modeling will be used to examine change in performance on these tasks over time. Using General Linear Modeling as we have in previous Center-supported studies (10, 37, 49, 57, 84), we will evaluate the extent to which participants who receive cognitive remediation show significantly greater improvement across time in the cognitive-affective assessment battery than those who receive the control training. Additionally, structural equation modeling (SEM) and latent profile analysis (LPA) will be used to examine variable-centered (correlation between measures) versus person-centered (profiles of individuals) alternatives. SEM with maximum-likelihood estimation will be used to test the association between pre-post measures and SUD-related behaviors. LPA, whereby each individual is assigned to a mutually exclusive assay class (i.e. profile) based on a data-driven analytic strategy, will be used to test the association between each individual's pre-post profile and treatment response. Moreover, we will use regression discontinuity analyses compare observations clustered closely on either side of a process-level threshold around a particular intervention. This analysis would allow us to examine the local average treatment effects on pre-post measures in a non-parametric data-driven manner.