Engaging Black Youth in Depression and Suicide Prevention Treatment Within Urban Schools

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Statistical Design and Power

With a sample size of only 30 per condition (total N = 60), power is a challenge. For a traditional single degree of freedom contrast of means, assuming an alpha level of 0.05 for a two tailed test and power of 0.80, the effect size sensitivity corresponds to a population Cohen's d of 0.75, which represents about 12% explained variance. This represents sensitivity to a large effect. For a correlation coefficient, N = 60 and using the same general power parameters as above, the effect size sensitivity corresponds to a population correlation of 0.35, or, again, about 12% explained variance.

Approaches to increasing statistical power generally focus on increasing sample size, but an alternative strategy is to introduce covariates that reduce within-condition error. This approach leads to a more sensitive significance test for the treatment effect. In the proposed R34, we will increase the statistical power by adjusting for relevant covariates measured at baseline. Covariate adjustment for a pretreatment score on each outcome measure will substantially increase statistical power. For example, if pretreatment and post treatment scores correlate r=.65 (which seems reasonable based on our prior research, then the effect size sensitivity for an N of 30 per group and power of 0.80 corresponds to a Cohen's d of about 0,55. Importantly, as we explore power and as a function of baseline and other covariates, we can make more informed sample size decisions for the larger R01. In general, the robust methods of analysis will be as powerful or more powerful than the least squares methods, so the power estimates above apply, conservatively, to the robust methods as well.