Official Title: Revolutionizing Normative Re-education: Delivering Enhanced PNF Within a Social Media Inspired Game About College Life

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Statistical Analyses.

Primary analyses will utilize a latent growth approach for evaluating group differences in individual changes over time. (See Figure for example Mplus code). Two-part semicontinuous latent growth models will be applied to the alcohol consumption outcomes and to alcohol-related problems. Two-part models are also referred to as hurdle models and are especially appropriate for variables in which there are a large number of zeros, typically followed by a positively skewed distribution of counts. This is particularly common for alcohol and other substance use outcomes. One part of the model will distinguish non-drinkers from drinkers. Parameters for this portion of the model will be logit or probit linked, representing the probability of being a drinker versus a non-drinker. The second part of the model will evaluate the amount, frequency, or the number of problems among those who report any amount. Condition will be operationalized with two dummy coded variables representing 33% and 67% dosage, respectively, with 0% as the reference group. The models will use Bayesian estimation with non-informative priors to handle missing data and to obtain parameter estimates, posterior distributions, and confidence intervals. In testing H1 we will evaluate changes in primary outcomes as a function of whether participants received any dosage of alcohol feedback or not, controlling for campus site. We expect better outcomes for both conditions in which participants receive alcohol feedback (33% & 67%) relative to the control condition, which includes no alcohol feedback (0%). In evaluating H2 we will use the same approach to evaluate changes in drinking as a function level of feedback dosage; drinker type (non-drinker, light/moderate, and heavy drinker); and their interaction. We expect non-drinkers and light/moderate drinkers to be less likely to report any drinking and to report lower amounts of drinking in the 33% alcohol feedback dosage condition relative to the 67% dosage condition. In contrast, we expect heavy drinkers to report less drinking in the 67% alcohol feedback dosage conditions relative to the 33% dosage condition. H3 will follow the same approach but will examine individual differences in sex, impulsivity, sensation-seeking, and social media motives as moderators of H1 and H2. Thus, we will test whether these individual differences moderate the effects of receiving any alcohol feedback and different dosages of feedback. For H4, we will evaluate sexual identity, mental health, and other drug use as potential moderators of H1 (any alcohol feedback versus none) but not H2 (different dosages) because we are unlikely to have sufficient cell sizes for all categories. Tests of H4 will be parallel to tests of H3. Analyses for Aim 4 will be descriptive (e.g., churn rate, viral coefficient, etc.) and will provide a basis for evaluating the feasibility of CampusGANDR as a self-sustaining program.

Power Analysis.

Power analyses were conducted using the powerlog and powersim routines in Stata 15.0. Based on our previous studies we expect a maximum of 20% attrition over the follow-up period. Modern approaches to handling missing data (e.g., FIML, Mulitiple Imputation, and Bayesian estimation) utilize data from all participants in analyses and mostly recover power that would otherwise be lost to attrition. We thus evaluate power for a sample size of 1440, midway between maximum expected attrition (12800) and the full sample (1600). We anticipate power to be roughly equal for both parts of the two-part models, as there is no basis to expect stronger effects in the binary or continuous parts of the two-part models. Binary parts of the two-part models will evaluate zero versus non-zero values and will be most relevant in testing whether abstainers are more likely remain abstainers over follow-up in the feedback relative to control conditions. Given that, each condition will begin with 1/3 abstainers assuming baseline

outcomes account for 25% of the variance in any drinking at follow-up and that the average abstinence rate is approximately 30% in the control group, a sample of 1440 will yield .89 power to detect abstinence rates as small as 5% lower than control. The continuous part of the model will be sufficiently powered (.87) to detect predicted differences among conditions with rate ratios of 1.2 (i.e., 20% differences or higher between contrast groups).