Statistical Analysis Plan

Personalized Booster Feedback After Alcohol Health Education

NCT03440476

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Prior to hypothesis testing, the data will be examined for normality and outliers. Histograms and values for skewness and kurtosis will be examined. Positively skewed variables will be natural log transformed, unless paired with an excessive number of zeroes. If there are an excess of zeroes but other values are well represented, appropriate modeling techniques will be used (e.g., hurdle models). If other values are not well represented, the variable will be dichotomized. Boxplots will be used to check the data for extreme values (outliers). Extreme values will be winsorized (i.e., cases retained in the sample, but values made less extreme). Cases with missing data will be compared to complete cases across major study variables (condition, alcohol consumption and related problems, demographic information) to identify if there are systematic differences in missingess. If significant associations are identified, these variables will be used as covariates in later analyses.

To address the two major aims of the study, the data will be analyzed using latent growth models within a structural equation modeling framework. Separate models will be conducted for each alcohol outcome: alcohol consumption (e.g., quantity), and alcohol-related problems. Piecewise slopes will be used to capture initial reductions to month 1 (i.e., does the booster strengthen intervention effects; slope 1) and maintenance to month 3 (i.e., does the booster extend the effects of the intervention; slope 2). Study condition (3 groups) will serve as a predictor of each latent variable (latent intercept, slope 1, and slope 2), and will be dummy coded across two variables to directly address the aims of the project. To examine the utility of the emailed boosters after completing the evidence-based computer-delivered intervention, eCHECKUP TO GO (Aim 1), groups will be coded as either receiving a booster (1) or not (0). Thus, the *booster* variable serves to compare the two booster conditions to the intervention-only condition. To examine the added value of personal contact (i.e., the email is sent from an individual) as compared to an automatically-generated appearance of the same information (Aim 2), condition will also be dummy coded to reflect personal contact (1) or not (0), directly testing Aim 2. Thus, with regard to the variables *booster* and *personal contact*, the intervention-only control condition will be coded as (0, 0), the auto-generated booster condition will be coded as (1, 0), and the personal contact booster condition will be coded as (1, 1). All models will be conducted using maximum likelihood estimation, and will control for gender. The model for alcohol-related problems will also control for alcohol quantity.

Given prior findings that emailed booster feedback containing personalized normative feedback and protective behavioral strategies (PBS) was significantly more effective for select groups (i.e., those lower in PBS use [Braitman & Henson, 2016], legal age drinkers [Braitman & Lau-Barraco, 2018]), we will examine potential moderators of booster efficacy as a supplementary exploratory analysis. Legal drinking status by age (coded as 1 = *age 21-24* [legal], 0 = *age 18-20* [underage]) and baseline PBS use (in its original continuous metric) will be explored as potential moderators. For each outcome, two additional models will be conducted (one for each moderator). The moderator will be added as a predictor of each latent factor (latent intercept, slope 1, and slope 2). Two interactions terms will be created to capture the interaction with condition, dummy coded across two variables: the interaction between the moderator and *booster*, and the interaction between moderator and *personal contact*. These interaction terms will also be included as predictors of each latent factor. Thus, the outcome at baseline and change over time will be predicted by condition, the moderator, and the interaction between the two, controlling for relevant covariates.

References:

Braitman, A. L., & Henson, J. M. (2016). Personalized boosters for a computerized intervention targeting college drinking: The influence of protective behavioral strategies. *Journal of American College Health*, *64*(7), 509-519. http://doi.org/10.1080/07448481.2016.1185725

Braitman, A. L., & Lau-Barraco, C. (2018). Personalized boosters after a computerized intervention targeting college drinking: A randomized controlled trial. *Alcoholism: Clinical and Experimental Research*, *42*(9), 1735-1747. http://doi.org/10.1111/acer.13815