AVANCE-Houston Building Futures Program Evaluation

Statistical Analysis Plan

3/9/2023

Clinicaltrials.gov ID: NCT05293145

IV. Data Analysis

A. Data analysis

To examine the research questions, a repeated measures design will be used. The within-subjects factor will be the time of measurement (pre-survey and 12-month follow-up survey), and the between-subjects factor will be the format of the SSHF curriculum (standard or compressed) and support services.

Descriptive statistics will be computed to summarize the demographic variables and the variables of interest. Shapiro-Wilk tests will be conducted to assess the normality of the data. If the data are not normally distributed, appropriate transformations will be applied, or nonparametric tests will be used. To examine the first research question, a repeated measures analysis of variance (ANOVA) will be conducted with partner relationship attitudes as the dependent variable. The between-subjects factor will be the format of the SSHF curriculum, and the within-subjects factor will be time of measurement. If significant main effects or interactions are found, post hoc tests (e.g., Bonferroni) will be conducted to examine the pairwise comparisons.

The same approach will be used for the remaining research questions, with sexual attitudes, partner relationship behavior, financial attitudes, and employment attitudes as dependent variables. The level of statistical significance will be set at $p < 0.05$. Effect sizes will be reported using partial eta-squared (ηp^2), which provides an estimate of the proportion of variance in the dependent variable accounted for by each factor in the ANOVA.

To examine the reliability of the scales, Cronbach's alpha will be computed for each construct. A value of 0.70 or higher will indicate acceptable reliability. To examine the validity of the scales, confirmatory factor analysis (CFA) will be conducted to test the hypothesized factor structure of each construct. If the hypothesized factor structure does not fit the data well, exploratory factor analysis (EFA) will be conducted to identify the underlying factor structure. Missing data will be handled using multiple imputation techniques to minimize bias and increase power. Overall, this study will use a repeated measures design with ANOVA to examine the effects of the SSHF curriculum on various domains of relationship and personal functioning and will use reliability and validity analyses to ensure the psychometric properties of the measures.

To measure the impact of dosage in hours on change in pre to post-survey, a regression analysis will be conducted. Specifically, a multiple regression analysis will be conducted with dosage in hours as the predictor variable and change in the dependent variables (partner relationship attitudes, sexual attitudes, partner relationship behavior, financial attitudes, and employment attitudes) as the outcome variables. The model will control for the format of the SSHF curriculum and support services, as well as any demographic variables that are significantly related to the outcome variables.

Assumptions of linear regression, such as normality of residuals, homoscedasticity, and linearity, will be checked using diagnostic plots and statistical tests, such as the Shapiro-Wilk test for normality and the Breusch-Pagan test for homoscedasticity. If the assumptions are violated, appropriate transformations or non-parametric tests will be used. Additionally, the potential for multicollinearity among the predictor variables will be assessed using variance inflation factor (VIF) values. A VIF value greater than 10 indicates problematic multicollinearity, and steps will

be taken to address this issue, such as excluding highly correlated predictor variables. Overall, this study will use regression analysis to examine the relationship between dosage in hours and change in the dependent variables, while controlling for relevant covariates

Model Specification to Predict Outcomes With Dosage

Construct by Outcome	Dependent Variables (follow-up)	Response Codes for Dependent Variables	Dependent Variable Type	Independent Variables
Primary outcome:				
Partner Relationship Behavior: 6 scaled items	DISAG_BE_FU	1 = none of the time to 5 = all of the time	Continuous	Dosage of curriculum; co-variates (using pre-survey scores)
5 scaled items	REL_BE_FU	1 = I am extremely good at this to 4 = I am extremely bad at this		
Secondary outcomes:				
Partner Relationship Attitudes: 9 scaled items	PARTREL_ATT_FU	1 = strongly agree to 4 = strongly disagree	Continuous	Dosage of curriculum; co-variates (using pre-survey scores)
3 scaled items	PARTREL_FUT_ATT_FU	1 = almost no chance to 5 = almost certain		
Sexual Attitudes: 7 scaled items	SEX_ATT_FU	1 = strongly agree to 4 = strongly disagree		
Financial Attitudes: 4 scaled items	FIN_ATT_FU	1 = strongly disagree to 7 = strongly agree		
Employment Attitudes 4 scaled items	EMP_ATT_FU	1 = strongly disagree to 7 = strongly agree		

Step 4 – run the linear regression model: Procedures to run the linear regression model are influenced by dependent variable types. Standard regression is necessary to model the influence of curriculum dosage on continuous dependent variables, such as when participants respond to

multiple items in a scaled construct by indicating levels of agreement with statements about key partner relationship attitudes.

Step 5 – interpret model results: Model results demonstrate the benefits of A-HBF participation whenever dosage variables predict more positive primary and secondary outcomes for a construct. For primary outcomes, benefits of receiving *SSHF* curriculum confirm hypotheses when respondents with higher levels of participation more frequently report ($p < .05$):

1. Healthy partner relationship behavior

For secondary outcomes, benefits of receiving *SSHF* curriculum confirm hypotheses when respondents with higher levels of participation more frequently report ($p < .05$):

2. More positive attitudes about partner relationships
3. More positive attitudes about sexual relationships
4. More positive attitudes about financial readiness
5. More positive attitudes about job readiness