# Methods

## *Study Design*

This study was designed to determine the effect of explicit health benefits plans on support for UHC using either an active or passive paradigm. Participants engaged in one of three activities representing different exposure to health benefits information. Our participants were students enrolled in a Psychology 1000 course at a large midwestern university. Participants received course credit for participation in the study and were randomly assigned to one of three conditions.

Our first two conditions consisted of a packet of exercises adapted from the Choosing Healthplans All Together (CHAT) paradigm developed by Danis, Biddle & Goold (2002). CHAT is a simulation exercise where participants construct their own HBP by allocating a limited set of resources to benefit types (e.g. dental) and choosing scope of coverage (basic-to-high). Trade-offs are enforced as complete coverage is not possible with the limited resources. The core of the exercise is a simplified version of choosing priorities for a health care system. Our active paradigm, the first condition, had participants creating their own HBP through the CHAT exercise, while the second condition had participants being given a completed CHAT exercise. The HBP in our second condition, the passive paradigm, consisted of the consensus choices for health insurance found by Danis et al., (2002); see Appendix A for Study 1 experimental materials. Our control condition replaces mentions of health care with pizza topping packages instead, resulting in an exercise of similar length and intensity that is intentionally uninformative. Study 1 used a 2(pre-post) x 3(condition) mixed-subjects design, where each participant was only assigned to a single condition but were all asked to provide their support for UHC both before and after the experimental condition.

## *Outcomes*

The primary outcome was the support for UHC scale, adapted from Shen & Labouff (2013), measured both pre and post-test. The scale was comprised of 4 items measuring support for UHC, which were averaged after reverse scoring the third item (‘I support the 2013 Affordable Care Act’, ‘Our government needs health reform because the underprivileged are not getting their basic need met’, ‘Universal health care is just designed to make the hard-working people of America pay for the health care of the lazy people of America’, and ‘Access to medical care and insurance is a basic, inherent right of man’) .Each item was measured on a 7 point Likert scale from 1 (strongly disagree) to 7 (strongly agree). Cronbach’s alpha for the items in this measure was 0.85.

Participants were then asked whether they paid for their own health insurance, if they have been uninsured, and the active intervention condition was asked if they would be happy having the plan they built as their own health insurance. Each of these three items was measured as a ‘yes’ or ‘no’ response. Additionally, there was a free-response question asking about the subjects thoughts about the exercise they just completed. Finally, we also measured demographic information, including gender identity, age, race/ethnicity, and year in schooling.

## *Power and Statistical Analyses*

We planned to recruit 180 participants. Sample size was determined a-priori using G-power with the following parameters: greater than 90% power to determine a significant large-sized effect (Cohen’s *f* =0.10) at an alpha level of .05, for a linear multiple regression. Our support for UHC outcome was treated as a continuous variable. We examined the effects of experimental condition (CHAT exercise, completed CHAT, and uninformative control) and time of intervention (pre vs. post) on our outcome variable by conducting a series of analysis of variance tests. We examined the main effect and the 2-way interaction between our two predictors. Additionally, we also tested models with random and fixed intercepts, with participants being treated as the random effect. Fixed effects comprised of the effect of the experimental condition, and time of intervention (pre vs post). All tests were conducted in R and were considered statistically significant when *P* < .05.

Additionally, we fitted Bayesian linear multivariate multilevel models to our support for UHC outcome variable as a function of dummy-coded factors ‘condition’ (reference level ‘control’), and ‘time’ (reference level ‘pre’) as well as the ‘condition x time’ two way interaction using the Stan modeling language and the R package *brms*. Condition, time, and their interaction were our fixed effects, with a random intercept for subjects as our random effect. Our priors were a normal distribution with a mean of 0 and a standard deviation of 2.5 for the mean of our reference levels for our three fixed effects. We used the *brms* package’s default priors for standard deviations of our random effects (Student’s t-distribution with ν = 3, µ = 0 and σ = 20), as well as for correlation coefficients in interaction models.

*Results*

Descriptive statistics are summarized in [Table here]. Study 1 was analyzed using a linear mixed model fitted to our support for UHC outcome measure. The linear mixed model we constructed had condition, time (pre or post intervention), and the condition x time interaction as our fixed effects. A random intercept for each of the subjects was included to account for within-subject correlation in scores. We observed no statistically significant main effect for our active intervention condition [t(198.5)= 1.22 ,p= .224] or for our passive intervention condition [t(198.5)= 1.04 ,p= .299]. Additionally, we observed no statistically significant main effect of time [t(181)= 1.00 ,p= .317]. Finally, we also saw no significant interaction effect between time and the active condition [t(181)= 1.14 ,p= .258] or the passive condition [t(181)= 1.67 ,p= .0963].

For our Bayesian estimation, we had four sampling chains, each with 2000 iterations and 1000 warmup repetitions. This yielded 4000 estimated samples at convergence. Participants in our uninformative control condition had no significant change in support for UHC post intervention (℮ = 4.78, CI =[4.49, 5.07]) than pre intervention (℮ = 4.84, CI =[4.55, 5.13]). Participants in our ‘active’ experimental condition had no difference in support for UHC post intervention (℮ = 5.03, CI =[4.74, 5.32]) than pre intervention (℮ =5.19, CI =[4.90, 5.48]). Participants in our ‘passive’ experimental condition had no difference in support for UHC post intervention (℮ =4.99, CI =[4.70, 1.34]) versus pre intervention (℮ = 5.21 , CI =[4.92, 5.50]). Participants in both intervention conditions had greater support for UHC compared to the control.

## Qualitative Results

Using frequentist methods, we found no statistically evidence at an of 0.05 confirming our initial hypotheses. Using Bayesian modeling, we found weak evidence supporting our first hypothesis, accounting for uncertainty in our point estimates of support per condition.