MAKE AMERICA STRESSED AGAIN
Field Experiment

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1 - Introduction

In November 2016, the political landscape of the United States drastically changed when Donald Trump was elected as the 45th president. It is no secret that the country is very divided in regards to the reception of President Trump, which has come hand in hand with substantial media coverage both supporting and criticizing the president. However, what is not yet revealed is how the drastic influx of contentious media coverage about the president affects the day to day life of U.S. citizens.

The American Psychological Association (APA) revealed that in 2016, stress levels in the U.S. were rising at the fastest rate since they began administering the "Stress in America" survey in 2007 ("Stress in America: Coping With Change."). While some analysts attributed this rise in stress level to Trump's election and early presidential activities, others would contend that the 24-hour news cycle reporting on the transition of power to Trump is to blame (Fox; Osborne). Furthermore, in November 2017, the updated "Stress in America" survey claimed that Americans were at the "lowest point we can remember" in terms of mood ("Stress in America: The State of Our Nation.").

When bombarded by so many Donald Trump related headlines, often paired with strong language and contention between political groups, certain individuals may develop a reflexive bout of increased stress and anxiety. This constant source of stress may lead to physical and psychological problems that deteriorate health and well being. Therefore, it may be of interest to assess the impact of Trump related news on the stress level of the average American. Depending on the findings of the experiment, individuals may choose to regulate their exposure to stress inducing news. With this in mind, our experiment aims to address the question of: do Americans who are exposed to article summaries specifically about Trump have higher perceived stress levels than those who are exposed to news about topics other than Trump?

In addition to the question regarding Trump, it could be possible to envision that any news could increase stress levels. So we ask the second question: do Americans who are exposed to current news summaries in general have higher perceived stress levels than those who did not get exposed to any of our selected news summaries?

We hypothesize that the treatment group exposed to Trump related news will have a higher average perceived level of stress than the placebo group. Additionally, we expect the placebo group exposed to other news stories, will have a higher average perceived stress level than the control group. Furthermore, we expect heterogeneous treatment effects between Republican and Democrat subjects, so we implement blocking by political affiliation. We expect to see republicans to have a smaller treatment effect than Democrats. In the following sections, we address the methodology of the experiment conducted, the resulting changes made after a soft launch, and finally the analysis and conclusions from the data collected.

2 - Experiment Statement

This study intends to understand the impact of news about Trump on American stress levels today through a short survey administered through Qualtrics. The first part of the survey asks participants to answer basic demographic and news consumption questions. Survey participants living outside the USA and without American citizenship will exit out of the survey early on in the process. Blocking on the response to party affiliation (Republican, Democrat, Independent/Other), the Qualtrics software assigns participants to a treatment group: Treatment (40%), Placebo (40%), or Control (20%). The corresponding treatment is administered immediately within the survey, and the survey then concludes with a series of 14 questions from the "Perceived Stress Scale" (Cohen). According to Cohen, these 14 questions aim to measure "the degree to which situations in one's life are appraised as stressful". Since its publication, these questions have become a commonly used tool in assessing stress. The result of the test will be a numeric value between 0 and 56 with higher scores representing higher stress levels. This score is the parameter with which we gauge our participants' perceived stress level. Information regarding the list of questions, the five response options, and the scores can be found in the appendix.

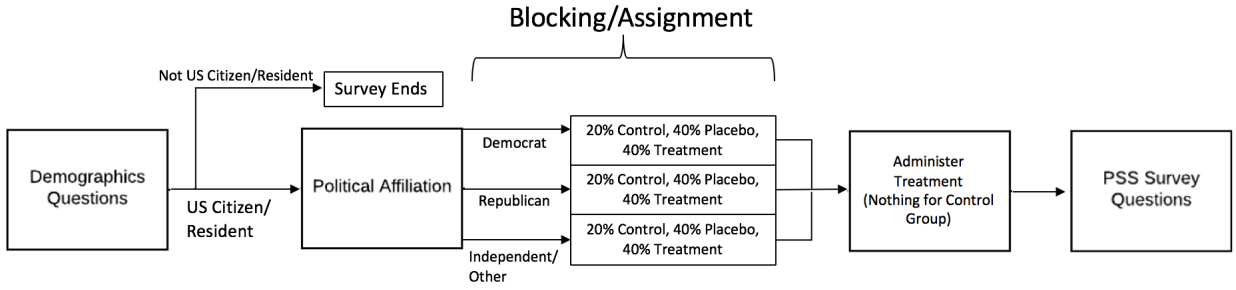

Figure 2.1- High level flow of the survey.

2.1 - Experimental Subjects Description & Randomization Process

As shown in Figure 2.1, our subjects are asked whether they are an American citizen. If the answer is "no", the subject is not asked to continue the survey. If the answer is "yes", the subject proceeds to answer various questions regarding which demographic they belong to. The last of these questions asks the subject for their political affiliation, which is the criteria upon which the experiment is blocked. The subjects in each "political block" are randomly assigned to the Control, Treatment, and Placebo groups. 20% of the subjects are assigned to control while the remaining 80% are evenly assigned to the Placebo and Treatment groups.

Study participants were recruited in a number of ways. First, we paid Fulcrum Academia $465 for the study (1 dollar per completed study). This investment ensured that the study was completed by a large number of people who fit a different demographic than research participants readily available. Second, we tapped into social networks to gather the remaining participants. A list of dates and locations posted is shown in List 2.1, below.

List 2.1 - Participant Recruitment Pitch Locations

1. 11/13 - Facebook- commented on Ivanka Trump's share of the WSJ jobs news article.
2. 11/13 - Facebook- commented on Beto O'Rourke's latest post (edited)
3. 11/13 - Siobhan Harrington's personal Facebook page
4. 11/13 - Siobhan Harrington's extended in law family facebook page
5. 11/13 - Siobhan Harrington's personal facebook page
6. 11/13 - Virginia Moms Running Group
7. 11/13 - Comment on Donald trump's share of a jobs article.
8. 11/13 - MIDS Slack channel
9. 11/14 - Grant's Facebook page
10. 11/14 - NY Article Comment
11. 11/14 - Adam's Facebook page
12. 11/14 - University of Illinois at Urbana Champaign Asian American Social Groups

Study participants accessed the survey via an anonymous link, and proceeded through the flow in Figure 2.1, immediately. After indicating their political affiliation Democratic, Republican, Independent/Other, each participant was randomly assigned to a group: treatment, placebo, or control. The randomization process within Qualtrics blocked on political affiliation to ensure each assignment group was comprised of roughly the same political party distribution, in anticipation of heterogeneous treatment effects by party. Descriptions of the assignment conditions can be found in section 2.2. See the Figure 2.2, below, for a visual depiction of the experimental flow.

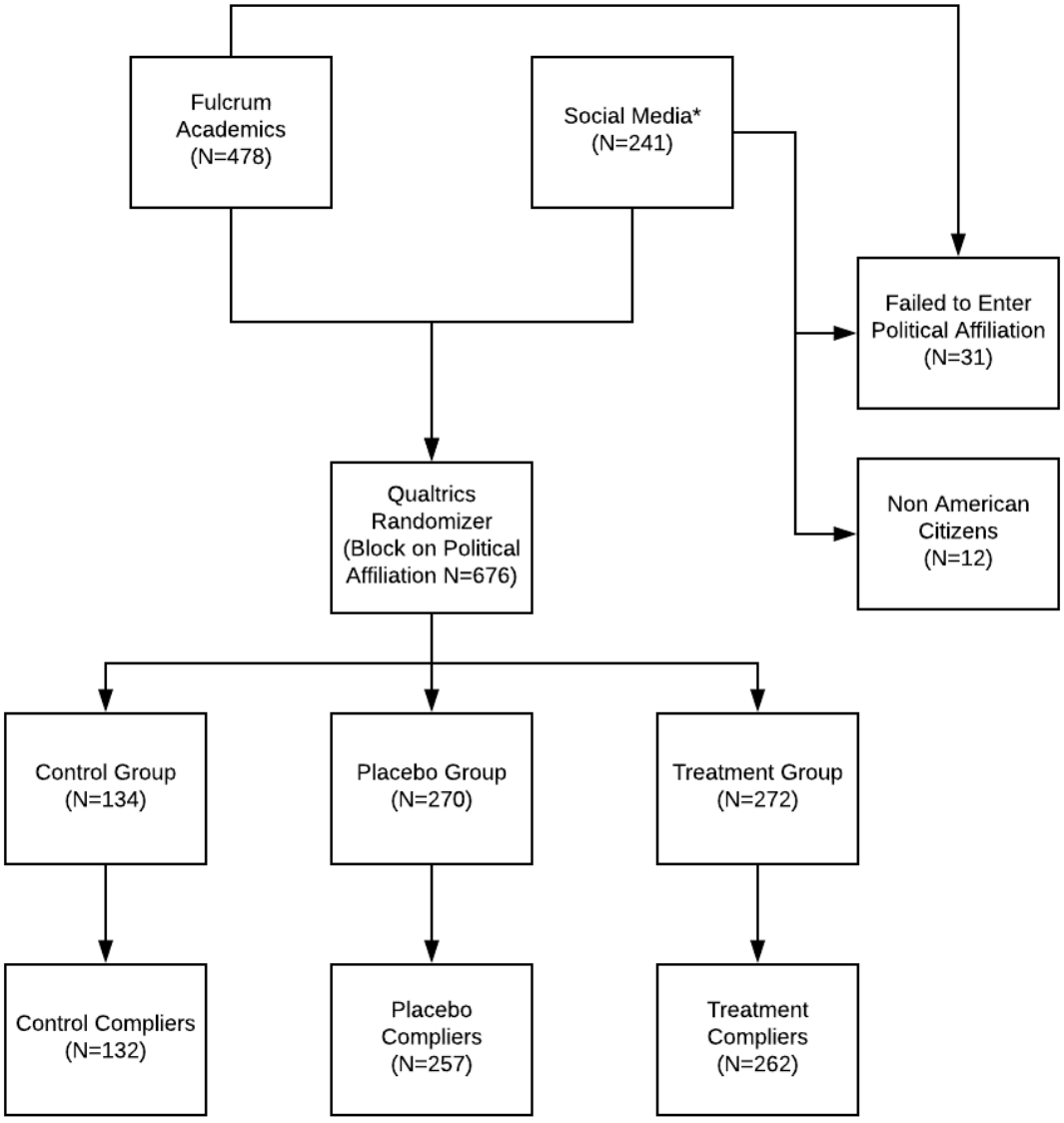

Figure 2.2 - Experiment flow with numbers of participants in each assignment group.

An overall timeline of survey development, validation, and execution is shown below.

Recruitment pitch goes out	October 29th
Complete survey design	October 29th
Test cases, validation of technical functionality	November 5th
Experiment starts	November 13th
Experiment closes	November 20th

2.2 - Treatment

The study included treatment, control, and placebo to convey the effect of both the treatment and the mechanism of the treatment. In an attempt to increase the power of the experiment for the treatment condition, 40 % of participants were assigned to treatment, 40 % to placebo, and 20 % to a pure control. Descriptions of these assignment groups can be found below:

- **Treatment** - Each participant randomly assigned to treatment (40 % of total) will be exposed to 3 current article summaries involving President Donald J. Trump

- **Placebo -** Each participant randomly assigned to placebo (40 % of total) will be exposed to 3 current article summaries that do not involve President Donald J. Trump

- **Control -** Each participant randomly assigned to control (only 20% of total) will not be exposed to any articles in order to represent baselined stress levels of study participants.

Articles from Reuters, CNN, and Fox News were selected to represent the breadth of the current news landscape. These news sources were chosen because the authors feel they are representative of the two extremes and the center of the political poles in the current news landscape, as shown in Figure 2.3. On November 12, we selected two top news stories from each website. One article from each news source featured President Trump and the other article did not feature President Trump. The topics of these news articles were not tightly controlled, other than for the inclusion of Trump's name. A complete listing of the selected articles may be found in Table 2.1, below. Upon reflection after the experiment was already completed, we realized that there may be a myriad of reasons why each article in the treatment and placebo group would induce varying amounts of stress, based on their topic. Therefore, our experiment does not fulfill the exclusion restriction. We address this in section 6.1.

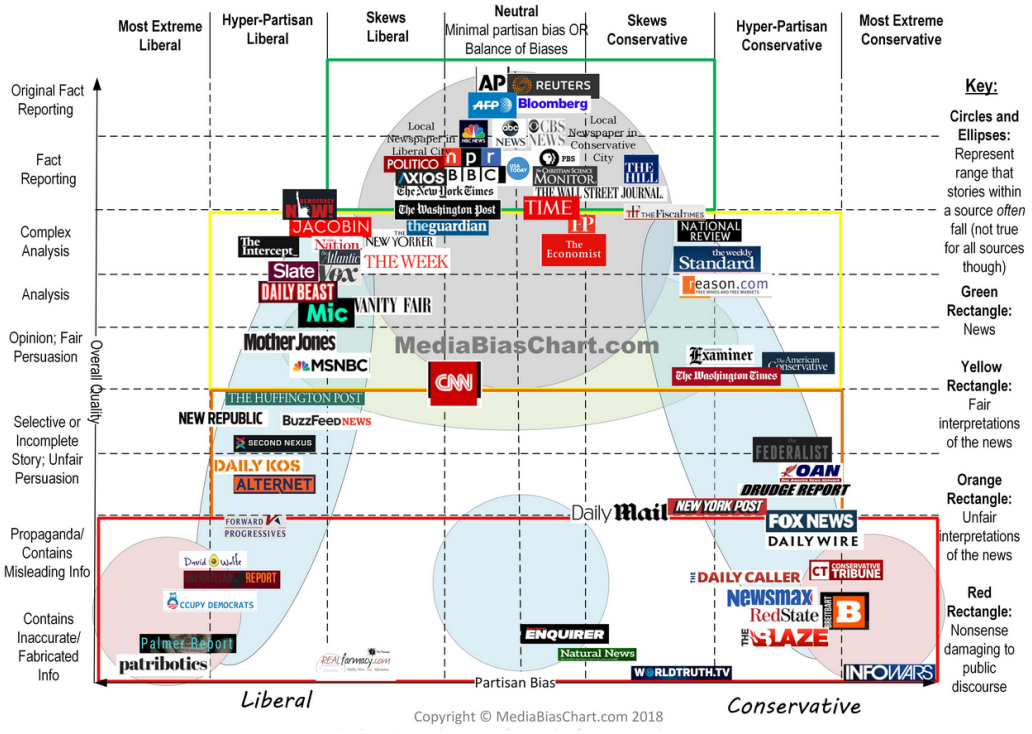

Figure 2.3- Media Bias Chart (Otero)

Table 2.1 - Listing of News Articles Included in the Study			
Media Company	**Assignment Group**	**Article Headline**	**Link**
Fox News	Placebo	Dem-leaning Palm Beach County says it likely won't make recount deadline in Florida governor, Senate races	Link
Fox News	Treatment	Michelle Obama says she stopped 'trying to smile' during 'misogynist' Trump's inauguration	Link
CNN	Placebo	China's stealth fighters show off missile payload	Link
CNN	Treatment	Trump's tweet on California wildfires angers firefighters, celebrities	Link
Reuters	Placebo	Ferocious winds whip California fires as death toll rises to 31	Link
Reuters	Treatment	Democrats to probe Trump actions on AT&T, Amazon: aide	Link

2.3 - Excludability and Non Interference Assumption

Originally, we made our design decisions in order to gauge the stress results of our participants on the top news of a random day. Because of this, we did not think to fabricate any news articles in either the placebo or treatment groups. In retrospect, we realize that the excludability assumption was not fulfilled by the articles we chose so we are not directly answering our research question of whether the word “Trump” in the news was inducing stress on Americans (see Section 6.1). However, our experiment did strive to minimize any interference or prior knowledge on the purpose of the survey.

The survey was designed to be short and simple to complete. On average, participants spent a little over five minutes taking the survey. Although we did not measure the baseline perceived stress level, by administering treatment and assessing the participants stress level in quick succession, the study design avoided allowing temporal factors to influence the outcome. Of course, a study participant has many elements contributing to the overall perceived stress scale, but the central limit theorem and the random assignment to treatment ensure that placebo, control, and treatment should have roughly the same baseline level of stress.

Additionally, the quick nature of the survey and the systematic assignment of treatment make it difficult to violate the non-interference assumption. No feedback about the survey was posted on social media and participants were blind to the research questions and that their articles were any different from other participant’s articles.

We particularly wanted to avoid demand effect, a bias introduced to the study because people are aware they are being studied and behave unusually. Therefore, we referenced our study in general terms when soliciting others to join:

> ”*We are a group of graduate students interested in studying certain aspects of the current news landscape. We would greatly appreciate if you would take approximately 10 minutes to complete this survey. The responses are anonymous so please answer the questions as honestly as possible. To help make it worth your while we will be offering a raffle at the end for a $25 Amazon gift card. Your response is completely anonymous, unless you choose to provide your email address for redeeming the Amazon gift card.* https://tinyurl.com/yal9rfx9 ()”.

We avoided asking baseline questions about perceived stress in the beginning of the survey. While this information would have been informative, we did not want to risk a bias because savvy participants would potentially discern what we were studying and behave differently. Finally, we included some general media questions around the participant’s news consumption habits in an effort to hide the purpose of the survey. These questions may be found in the survey screenshots, located in the appendix.

2.4 - Survey Validation

We validated the experiment design through a pilot and a soft launch. On November 7, we launched a pilot survey with 10 requested Fulcrum Academia participants. A small group of friends were also included to help validate the survey was working as expected. Several modifications were made to the experiment design.

First, the study results included only American residents or American citizens. The question as stated in the pilot survey confused, and perhaps intimidated, participants by asking about American citizenship. Therefore, we modified the question to first ask about American Residency. If a participant answered “No” to the question about living in the USA, then they were asked an additional question about American Citizenship. In this way, this study defined an “American” to be someone who is either currently living in America or is an American citizen residing anywhere. A detailed visual representation of this method may be found in the appendix.

Second, the PSS questions were originally in a matrix format, enabling participants to answer a question with the same response for every question. In fact, three of the 10 responses in the pilot demonstrated this type of response. These three participants also spent less than 3 minutes total on the survey, indicating that they likely did not take the time to answer appropriately. We modified this structure to the current survey, where each PSS question has a separate set of 5 answer choices displayed below the question text. In the full study, no participants answered the same exact number for all 14 questions, so this was an important learning. The full text of these questions may be found in the appendix.

Lastly, the 10 Fulcrum pilot participants skewed towards lower education levels and salaries, so we recruited additional study participants at other ranges of the education and salary scales via means other than Fulcrum. For a full list of recruitment strategies, see List 2.1, above.

Once the survey design was complete, we conducted a soft launch of 30 participants with Fulcrum Academia to ensure that the experiment was working as designed. We evaluated the performance of the survey rigorously before pursuing a full launch of the study.

First, we examined the completion rate of the surveys in the soft launch. The surveys were, indeed, completed at a 100 % completion rate. To check if respondents were answering survey questions thoughtfully, we validated that answers varied and were logical. Lastly, we checked that the self-reported answers in the demographic block matched the demographics that Fulcrum Academia tracks and reports. Household income and gender matched perfectly between participant response data and the metadata provided by Fulcrum Academia. There were three discrepancies in the education levels, but these differences were likely due to data latency on the Fulcrum metadata (ie: Fulcrum indicated some college completion and survey responses indicated college was completed).

Based on this criteria, the experiment seemed to be working as designed. On November, 12, at 9:15pm PT, the Make America Stressed Experiment was launched. It is important to note for context that this was exactly one week after the contentious 2018 midterm elections. The rhetoric was heated leading up to the election with talk of an “invasion” at the southern border from a migrant caravan and a powerful deployment of roughly 5000 troops to the southern border. The week after election day was much quieter with the president celebrating Armistice day overseas.

2.5 - Survey Participant Selection

Since we are comparing the control (20%), placebo (40%), and treatment groups (40%), it is important to ensure that there is a balance of survey participants among these groups. If the groups are unbalanced, then the experiment results could be biased. For example, if the treatment group contained significantly more young people as compared with another group, the baseline stress levels might be different before the study even began, biasing the overall PSS rating for that group higher than reality. The balance of survey participants is graphically depicted in Figures 2.5-2.7, below.

Political Affiliation -The survey design blocked on this field, so the qualtrics survey assigned each participant to a group based on how the participant answered the political affiliation question. Therefore,it makes sense that the political affiliation is evenly distributed among the control (only 20%), placebo, and treatment groups

Education - The study relied on randomization for the education field. The survey participants represented a pretty evenly distributed high level educational diversity that were spread evenly among the treatment groups.

Age - our study recruited a wide range of ages and it is fairly balanced across the age groups and treatment groups with a dip in the 51-60 age group. The placebo group for age 21-30 looks higher than the treatment by about 14%. To ensure this slight imbalance did not have a significant impact on treatment, we ran an F test comparing the impact age and treatment had on outcomes vs the impact age, treatment, and the interaction variable between the age and treatment. We failed to reject that the impact was different between these two models with a p-value of 0.413.

Gender - The survey data skewed towards the Female population. However, the females were fairly evenly represented between Placebo and Treatment. Therefore, our assignment groups were still balanced as compared with each other.

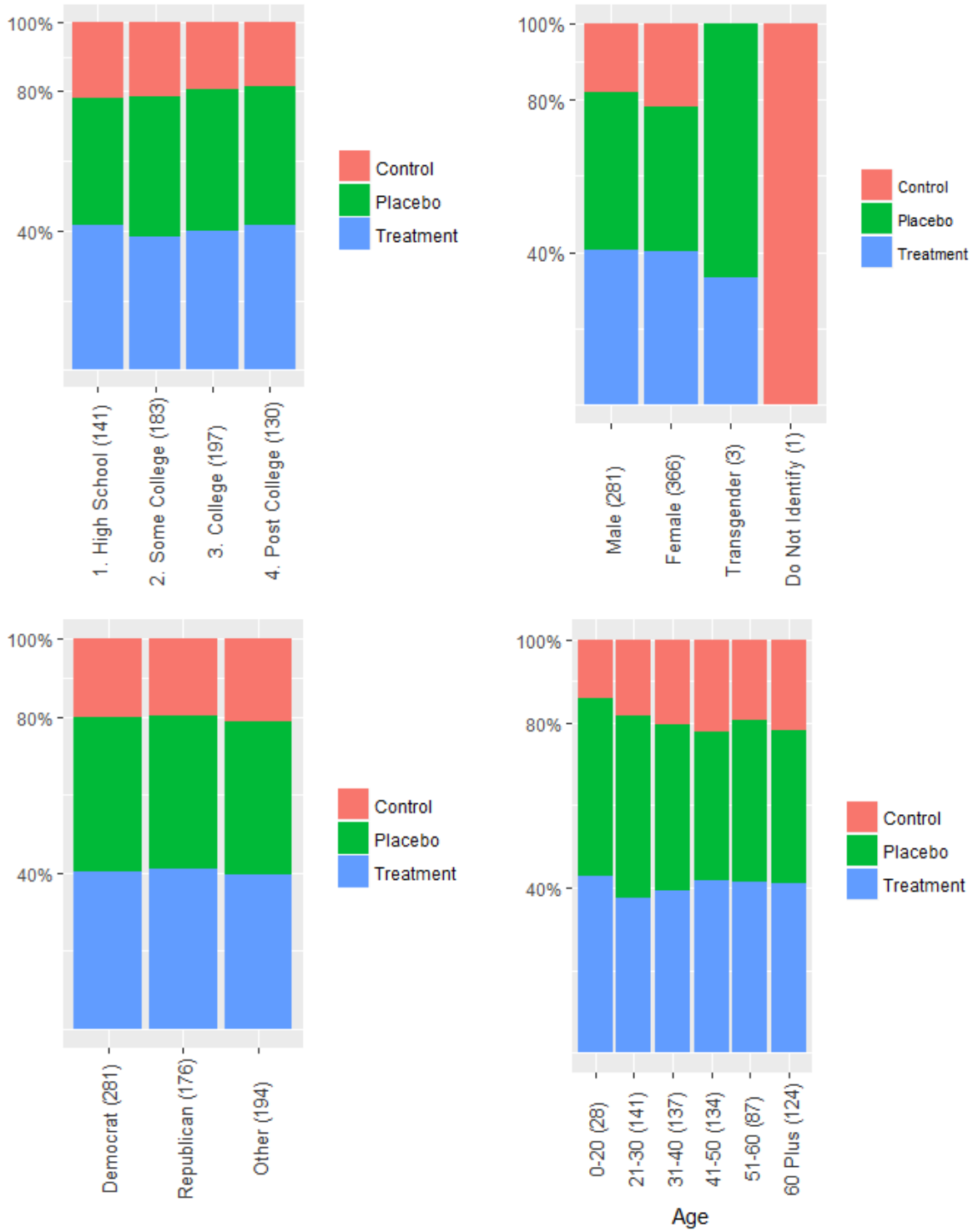

Figure 2.4- Count of treatment assignment groups by political affiliation, education, age, and gender.

Income - This field depicts the bimodal approach to survey participant selection. The Fulcrum Academia participant pool seems to have lower household income and education while the Berkeley community and extension of friends and family tend toward the higher range. Leveraging both these sources gave us a more diverse set of study participants.

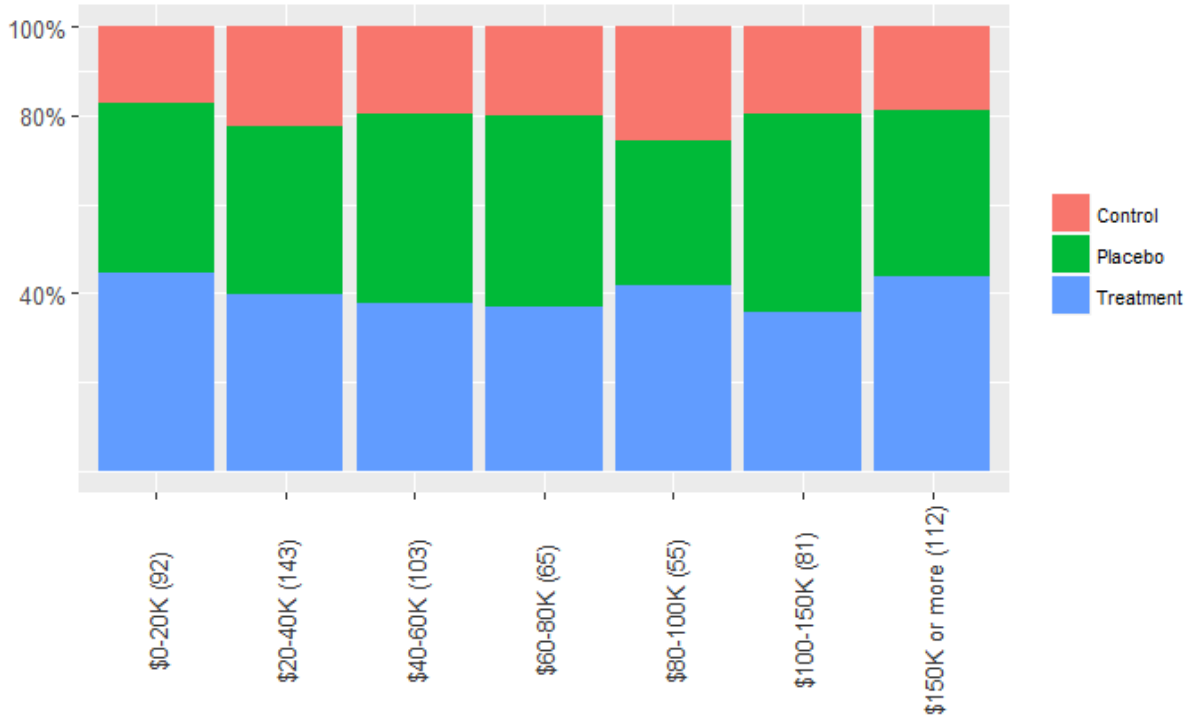

Figure 2.5 - Count of treatment assignment groups by income.

Finally, it is also interesting to look at a combination of the pre-treatment covariates to get a better sense of our survey population distribution.

Gender and political affiliation: The survey participants were comprised of more women than men. It was also comprised of more Democrats than Republicans, so it's not surprising that the biggest block of participants is the Female/Democrats. It is interesting to note that the gender ratios seemed similar in all the political affiliations.

Political leaning and political affiliation: This graph depicts exactly what we would expect to see and gave us confidence that participants were paying attention as they answered the pre-treatment covariates. Most left leaning survey participants identified as Democrat or Independent, while most Right Leaning survey participants identified as Republican. The survey contained a large number of self assessed Central political leanings.

Age: While pundits often comment that people tend to get more conservative with age, we see that the age ratios among the various political party affiliation was fairly similar in our study set. Similarly, in the last graph, there were no clear trends by age.

Figure 2.6 - Count of gender by party, political leaning by party, age by party, and political leaning by age.

2.6 - Variable Explanation

The variables collected in this study fall into three categories, demographic information (such as age, gender), political affiliation, and PSS score. The first two categories are covariates in the design, while the latter is the main outcome of the study. The majority of the covariate data used are treated as factors; unless otherwise noted, all variables are used as factors in the analysis. The major exception to this rule is age. Fulcrum based respondents information include a specific age, in addition to the binned age (by decade) value from the survey. Non-fulcrum respondents age was taken as the median value within its bin, with the exception of the first block which was taken to be 18, and the last block which was taken to be 65.

The PSS score is transformed from the 14 question survey [see appendix] into a single value. To do so, the majority of questions were converted into a numerical value based on the following mapping: “Never” = 0, “Almost Never” = 1, “Sometimes” = 2, “Fairly Often” = 3, and “Very Often” = 4.

Questions 4, 5, 6, 7, 9, 10 and 13 are flipped, where a response of never represents a respondent with higher stress. This intentional flipping is done to mitigate the effects of participants answering questions down the line without reading them. **For this study, no respondents did this.** For these reversed questions, the values were obtained by the following mapping: “Never” = 4, “Almost Never” = 3, “Sometimes” = 2, “Fairly Often” = 1, and “Very Often” = 0.

With each question mapped, the overall PSS score is obtained by summing the result from each question, and has a possible range of 0 to 56. For reference, higher values indicate more stressed individuals.

2.7 - Attrition

Within the survey, respondents are assigned a treatment condition after responding to a question regarding political affiliation. This serves as a blocking mechanism for treatment assignment. Once assigned, if a user does not complete the survey that action is considered attrition. If a user stops the survey before treatment assignment, the respondent is never assigned to a treatment group, and it is not considered attrition. A summary of attrition by assignment group is given below.

Table 2.2 - Attrition by Treatment Assignment

	All	Control	Placebo	Treatment
Attrition	25	2	13	10
Percentage	3.70%	1.49%	4.81%	3.68%
Total Respondants	676	134	270	272

As can be expected, there is a lower rate of attrition for the control groups vs the others; some users may see the treatment and decide not to continue the study. Said another way, the treatment itself (viewing summaries of articles) likely led some users to drop out of the study before completion. This would explain why the attrition rate is over twice as high for the groups receiving treatment/placebo compared to the control group. The overall rates are reasonable, and relatively constant across placebo and treatment. When looking at attrition by political affiliation (Figure 2.7), no special trends emerge. To be sure that attrition was not biasing our data, we check to ensure that participants are attriting from the treatment groups at equal rates. That is, we do not want to see differential attrition. To accomplish this, we ran the chi-squared test. A high p-value of 0.6745 from the attrition counts across party and treatment groups ensured that we can not reject the chi-square null hypothesis of independence. An even higher p-value of 0.9972 resulted from a chi-square test using the number of compliers with this same test. Therefore, we do not see any differential attrition.

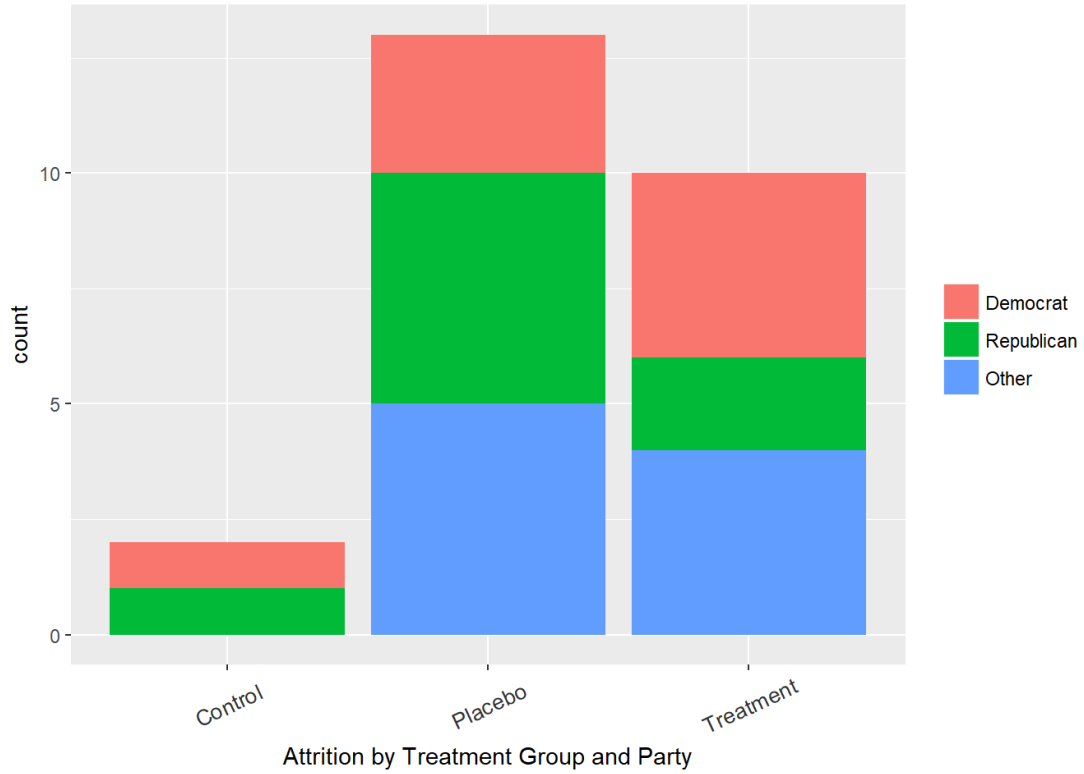

Figure 2.7 - Count of attrition by treatment group and party.

3 - Results

3.1 - Overview of Results

We have established that the results of our study were fairly well balanced and that we successfully recruited a sufficient number of participants across the spectrum of politics. However, we did not see the effect we had anticipated. As illustrated in Figure 3.1 below, the average PSS Score and confidence interval were very similar across treatment groups. While the distribution patterns are not identical, they all follow an expected curve. Careful observation shows that the Treatment group was less slightly stressed than the Placebo or Control group. In fact, the placebo group had the highest stress levels after viewing the non-Trump summaries. This was a surprising result that we will investigate further in the Treatment Effects section.

Before going into the effects of treatment, a brief summary is given of all respondents who completed the study. Figures 3.1- 3.2, below, show the distribution of all respondents PSS Score by assignment group and political affiliation.

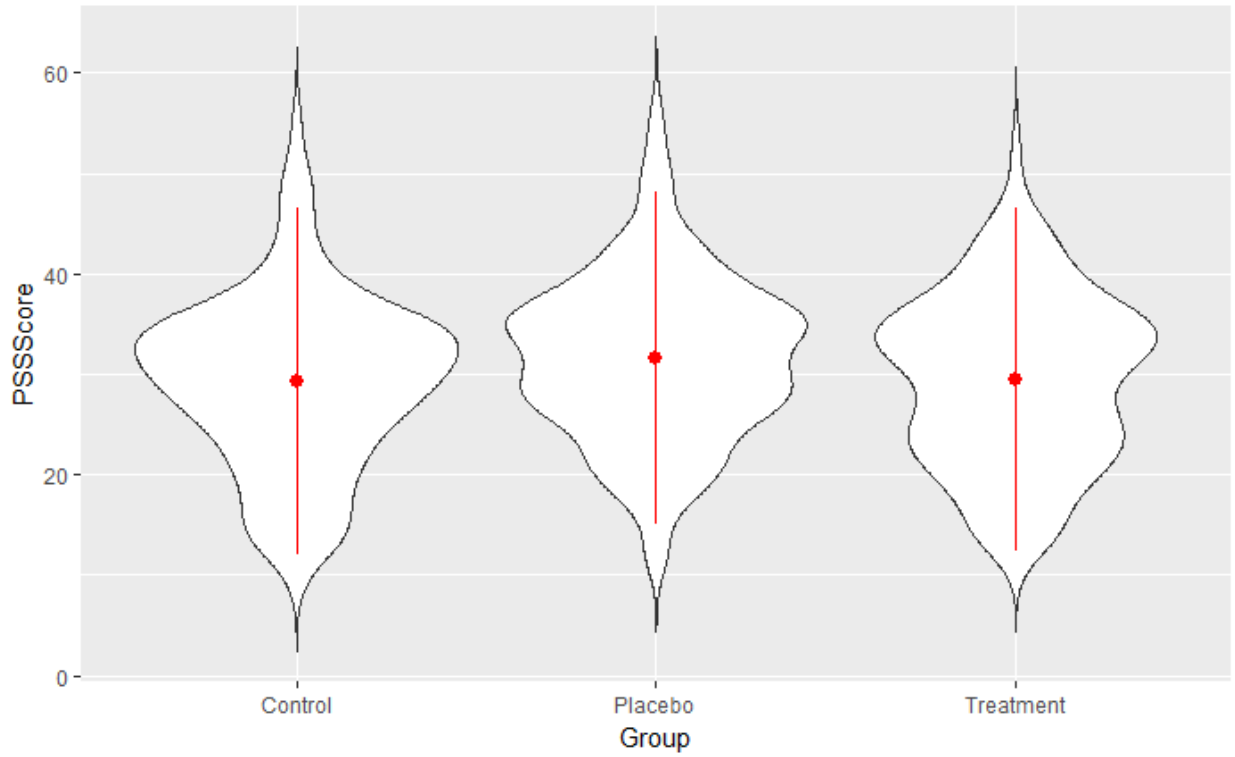

Figure 3.1 - PSS Score for the three treatment groups.

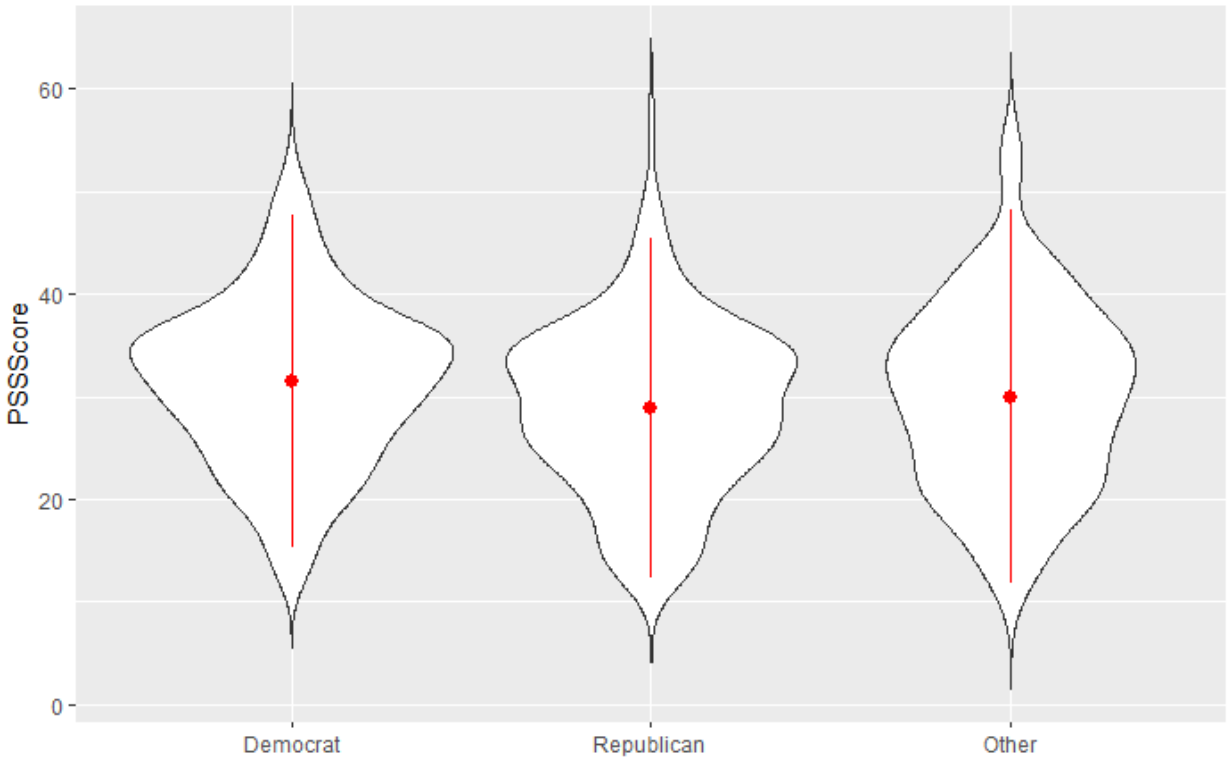

Figure 3.2 - PSS Score for respondents in each of the three political affiliations.

As mentioned above, the control group is about half the size of the placebo and treatment groups (by design). This is shown by the width of the violin plots above. The spread of responses is about even between the three groups, with the majority of scores centered around the mean. There are a handful of outlier cases, which correspond to individuals with very high stress levels. Finally, the average stress level is lowest for the control group, highest for the placebo group, with the treatment slightly higher than control.

Democrats are the most stressed on average, followed by other, then republicans. The relative sizes of the above groups are quite different, with democratic respondents being the most common, followed by other than republican. Finally, the republican distribution is more centered about the mean, with the other group having the largest spread amongst respondents.

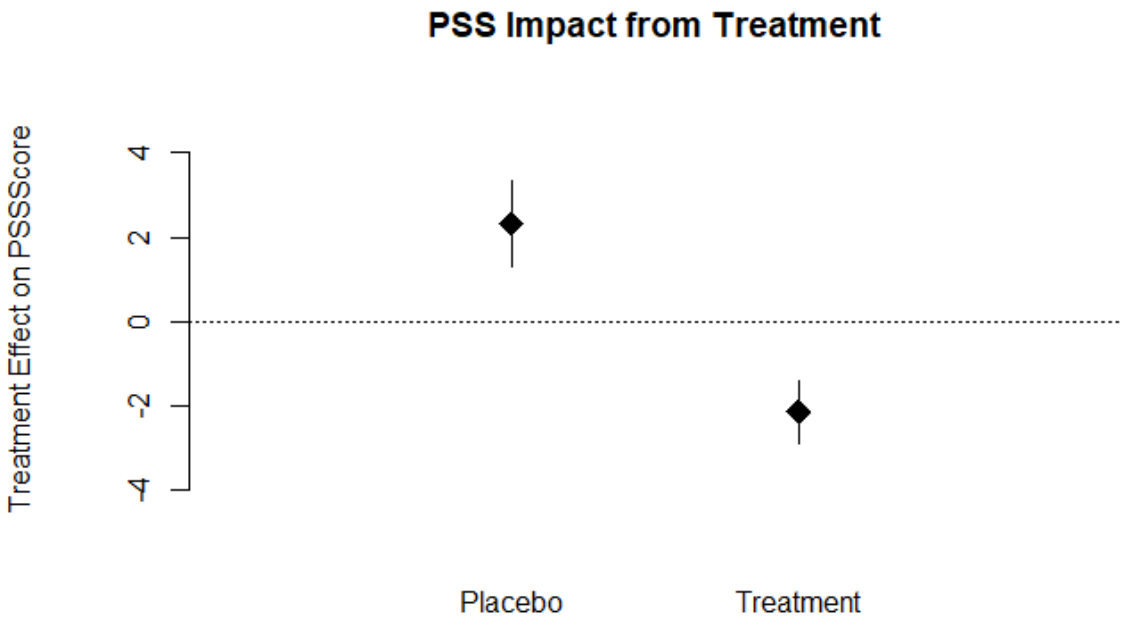

Figure 3.3 - Treatment effect for the two groups. The diamond represents the mean treatment effect, and the lines represent the 95 % confidence intervals for the mean. The placebo vs control group has a positive treatment effect of 2.312 (0.914) points on the PSS score, while the treatment vs placebo group has a negative treatment effect of 2.138 (0.738) points on the PSS score.

3.2 - Treatment Effects

Due to the nature of this study there are three assignment possibilities, making a treatment effect comparison somewhat less clear. As such the following section will be split into two parts, with different definitions of an Average Treatment Effect (ATE). In the first section, the placebo group will be compared directly with the control group, effectively evaluating the effect of viewing news summaries on stress levels. The second section the comparison will be between the treatment group and placebo group, addressing the effect of viewing news summaries including Trump on stress, relative to viewing news summaries not including Trump.

Table 3.1 - Average Treatment Effects by Party Affiliation

	Party.Affiliation	ATE.Placebo.Control	Standard_Error_P.C	ATE.Treatment.Placebo	Standard_Error_T.P
1	All	2.312	0.914	-2.138	0.738
2	Democrat	0.607	1.331	-2.731	1.079
3	Republican	3.724	1.764	-2.458	1.357
4	Independent	3.189	1.871	-0.336	1.619
5	Other	3.597	4.386	-3.327	4.436

The high level takeaway from this data is that the effect of placebo vs control is to increase stress, while the effect of treatment compared to placebo is to decrease stress. This overall effect is true across the various political affiliations, but to varying extents. More detailed analysis is provided in the following sections.

3.2.1 - Placebo vs Control

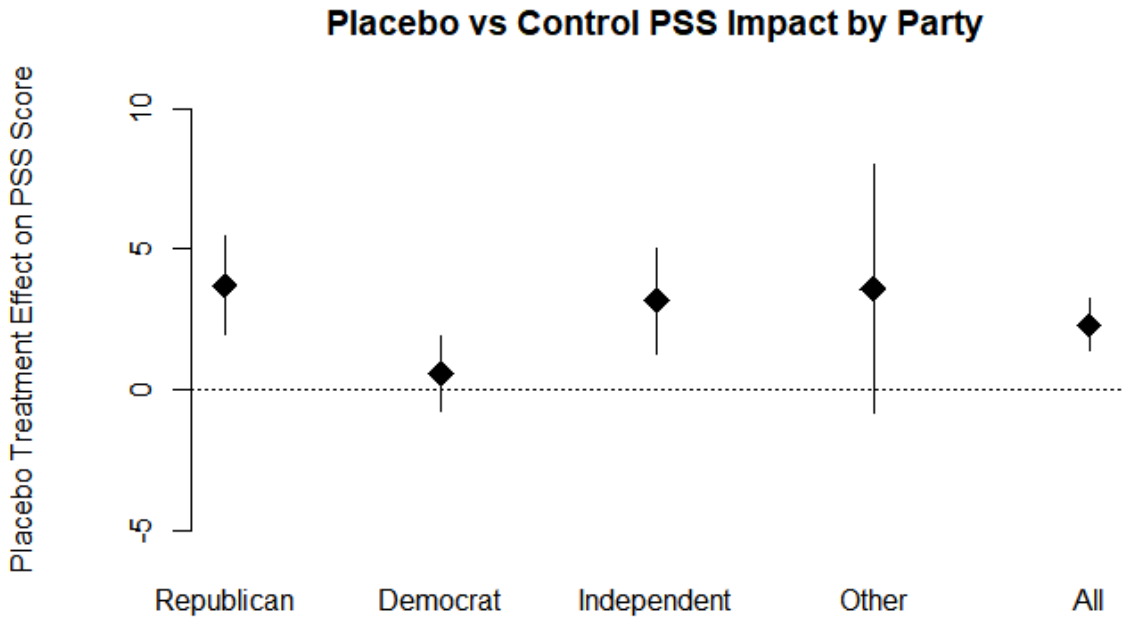

Figure 3.4 - Treatment effect by party. The diamond represents the mean treatment effect, and the lines represent the 95 % confidence intervals for the mean. This plot represents the placebo vs the control. We see significant placebo vs control treatment effects for Republicans, independents and the overall dataset.

Within this grouping three major analysis are conducted: Outcome vs assignment group; outcome vs assignment group and political affiliation and finally outcome vs assignment,

political affiliation and a number of covariates (such as gender, education level, age and ethnicity). Discussion will focus on the first two analysis sets, and interesting points from the final will be mentioned briefly. An overall summary of these results can be seen in Table 3.2.

Table 3.2 - Overall Regression Results for Placebo vs. Control

	Dependent variable:		
	PSSScore		
	(1)	(2)	(3)
GroupPlacebo	2.312 (0.899)**	0.607 (1.358)	−8.638 (3.886)**
Q5Independent		−4.665 (1.804)**	−4.994 (1.841)***
Q5Other		−2.732 (3.327)	−4.616 (3.258)
Q5Republican		−5.075 (1.788)***	−4.110 (1.786)**
Q3Female			−1.007 (11.419)
Q3Male			0.177 (11.307)
Q3Transgender			3.108 (12.683)
Q9Bachelor's degree in college (4-year)			−3.993 (2.806)
Q9Doctoral degree			2.443 (8.494)
Q9High school graduate (high school diploma or equivalent including GED)			−0.313 (2.837)
Q9Less than high school degree			0.953 (6.187)
Q9Master's degree			−3.573 (2.992)
Q9Professional degree (JD, MD)			4.906 (3.392)
Q9Some college but no degree			−1.973 (2.871)
as.numeric(age)			−0.181 (0.047)***
GroupPlacebo:Q5Independent		2.582 (2.244)	3.643 (2.263)
GroupPlacebo:Q5Other		2.989 (3.967)	5.462 (3.878)
GroupPlacebo:Q5Republican		3.117 (2.193)	2.818 (2.183)
GroupPlacebo:Q3Female			1.574 (1.818)
GroupPlacebo:Q3Male			
GroupPlacebo:Q3Transgender			
GroupPlacebo:Q9Bachelor's degree in college (4-year)			7.959 (3.462)**
GroupPlacebo:Q9Doctoral degree			3.219 (9.582)
GroupPlacebo:Q9High school graduate (high school diploma or equivalent including GED)			3.814 (3.571)
GroupPlacebo:Q9Less than high school degree			4.287 (7.253)
GroupPlacebo:Q9Master's degree			6.254 (3.745)*
GroupPlacebo:Q9Professional degree (JD, MD)			
GroupPlacebo:Q9Some college but no degree			8.023 (3.571)**
GroupPlacebo:as.numeric(age)			0.057 (0.057)
Constant	22.326 (0.730)***	25.018 (1.109)***	32.993 (11.673)***
Observations	389	389	389
R^2	0.017	0.053	0.167
Note:			*p<0.1; **p<0.05; ***p<0.01

The effect of placebo vs control is to increase stress by approximately 2.312 (0.899) points on the PSS scale, indicating that general news (that not about Trump) serves to increase stress across the entire study grouping. This effect suggests that viewing the news increases a person's stress level. There are many reasons this could happen: the news is highly partisan and fear based, and viewing it could make people less certain about their future and more stressed; the news is also more visceral and visual now, which can cause stress. Regardless of the mechanism in place, the effect is significant just above a 0.01 level.

3.2.1.1 - Power for Placebo vs. Control

Since we are limited in sample size due to the nature of conducting this experiment within a course, we must take more care to verify the power. Using an ATE of 2.312, standard deviation of 8.452, *n* of 389, and alpha of 0.05, the power for this portion of the study was found to be 0.77. This indicates there is around a three in four chance that the study will find an effect if there is one to be found. Although this is slightly lower than the desired threshold of 0.80, we are confident in the results. We may use these estimates of variation around the PSS score to make more precise power calculations for future work.

3.2.1.2 - Effects by Party Affiliation

The results indicate that within the control group democrats are the most stressed, followed by independents and republicans. This makes intuitive sense as people are likely to be more stressed when their opponent party is in control, as compared to when their own party is in control. More interestingly is the effect of placebo split by party; each group sees an increase in stress levels, but at different levels. Republicans' stress levels increase by the highest amount, followed by independents and democrats. It is important to note that all of these effects are not statistically significant, but perhaps a future study with a larger population within these groups could yield more meaningful results.

3.2.1.3 - Other interesting Notes

In general the covariates to this study do not serve as good predictors of a person's stress level. The only significant heterogeneous effects with the placebo are education related, but only some of the possible set. These indicate that it is possible that the placebo has a stronger or more pronounced effect on individuals with at least some level of college education, but this subset of the participant group is relatively small, and would need to be studied in a more focused experiment.

3.2.2 - Treatment vs Placebo

Next, we evaluate the treatment vs placebo grouping to understand the effect on stress of news summaries about Trump relative to those not about Trump.

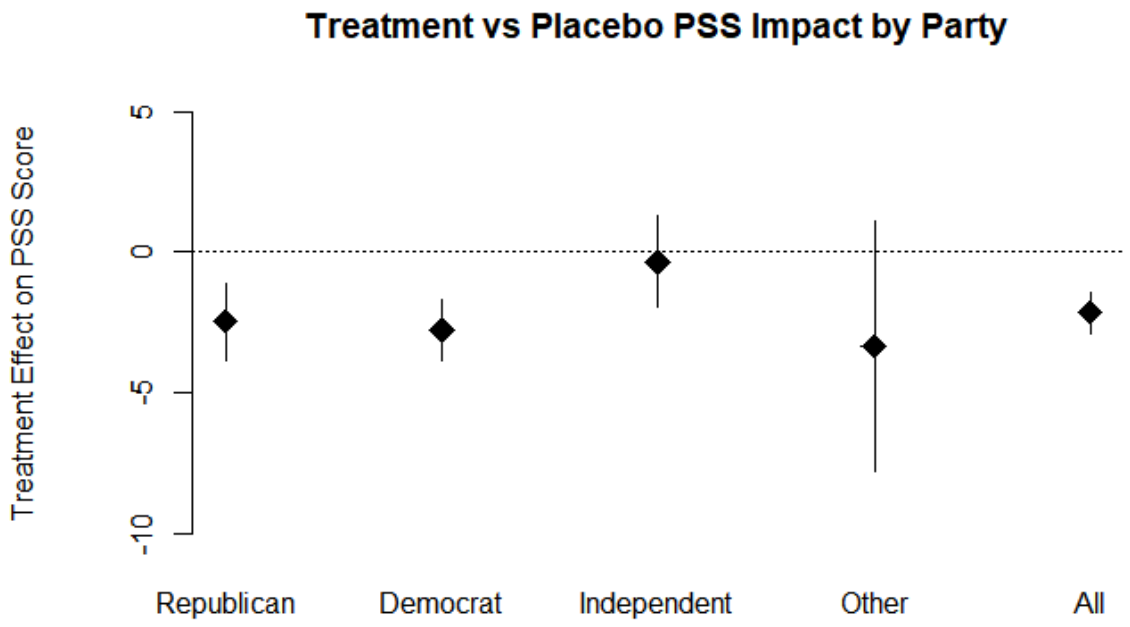

Figure 3.5 - Treatment vs placebo effect by party. The diamond represents the mean treatment effect, and the lines represent the 95 % confidence intervals for the mean. This plot represents the treatment vs the placebo. We see significant placebo vs control treatment effects for Republicans, Democrats, and the overall dataset.

Within the this grouping three major analysis are conducted: outcome vs assignment group; outcome vs assignment group and political affiliation, and finally outcome vs assignment, political affiliation and a number of covariates (such as gender, education level, age and ethnicity). Discussion will focus on the first two analysis sets, and interesting points from the final will be mentioned briefly. An overall summary of these results can be seen below.

Table 3.3 - Overall Regression Results for Treatment vs Placebo

	Dependent variable:		
	PSSScore		
	(1)	(2)	(3)
GroupTreatment	−2.138 (0.737)***	−2.731 (1.119)**	4.468 (3.196)
Q5Independent		−2.088 (1.350)	−1.351 (1.302)
Q5Other		0.257 (2.184)	0.845 (2.080)
Q5Republican		−1.958 (1.284)	−1.292 (1.241)
Q3Male			−0.391 (1.017)
Q3Transgender			2.540 (5.674)
Q9Bachelor's degree in college (4-year)			3.966 (2.006)**
Q9Doctoral degree			5.661 (4.386)
Q9High school graduate (high school diploma or equivalent including GED)			3.502 (2.145)
Q9Less than high school degree			5.240 (3.745)
Q9Master's degree			2.681 (2.228)
Q9Professional degree (JD, MD)			4.906 (3.355)
Q9Some college but no degree			6.050 (2.100)***
as.numeric(age)			−0.124 (0.032)***
GroupTreatment:Q5Independent		2.395 (1.866)	1.576 (1.791)
GroupTreatment:Q5Other		−0.596 (3.636)	−2.684 (3.616)
GroupTreatment:Q5Republican		0.273 (1.803)	−0.035 (1.735)
GroupTreatment:Q3Male			−0.880 (1.433)
GroupTreatment:Q3Transgender			9.947 (10.204)
GroupTreatment:Q9Bachelor's degree in college (4-year)			−3.926 (2.846)
GroupTreatment:Q9Doctoral degree			−6.799 (5.963)
GroupTreatment:Q9High school graduate (high school diploma or equivalent including GED)			−2.354 (3.004)
GroupTreatment:Q9Less than high school degree			−7.287 (5.184)
GroupTreatment:Q9Master's degree			−4.967 (3.076)
GroupTreatment:Q9Professional degree (JD, MD)			−2.634 (5.190)
GroupTreatment:Q9Some college but no degree			−5.259 (2.965)*
GroupTreatment:as.numeric(age)			−0.084 (0.046)*
Constant	24.688 (0.524)***	25.625 (0.798)***	24.922 (2.256)***
Observations	519	519	519
R^2	0.016	0.028	0.173
Note:			*p<0.1; **p<0.05; ***p<0.01

According to Table 3.3, the treatment group on average appeared to score 2.138 (0.737) points PSS points lower than the placebo group. This indicates that general news (those not about Trump) serves to decrease stress across the entire study grouping as compared to news about Trump. This effect is significant at just below a 0.004 level. This result does not align with the initial hypothesis of this study, that Trump himself and therefore reference to him serve as a vehicle to increase the stress levels of individuals. There are a few possible reasons this effect could occur; Trump is highly divisive, but also highly covered and talked about; it is possible many people are simply at "Trump overload" and ignore articles about him. This could also explain why controversies in the Trump presidency have less negative lasting effect compared to previous, more traditional administrations. However in a later section this effect will be broken up by political party to see if the hypothesis holds amongst any single affiliation group.

3.2.2.1 - Power for Treatment vs. Placebo

Again, we are limited in sample size due to the nature of conducting this experiment within a course, so we need to verify the power. Using an ATE of -2.318, a standard deviation of 8.454, an *n* of 519, and an alpha of 0.05, the power for for this portion of the study was found to be 0.82. This indicates there is around a four in five chance that the study will find an effect if there is one to be found. This is an acceptable power level, and we are confident with our slightly larger sample size.

3.2.2.2 - Effects by Party Affiliation

Results split amongst political affiliation are interesting and unexpected when compared to the initial hypothesis of this study. The effects of treatment vs placebo tends to behave almost opposite to what was expected; news summaries about Trump decrease the stress level of all affiliations; this effect is highest amongst democrats, followed by republicans and then independents with the smallest effect.

The mechanism for this result could be a number of things; Trump seems to be investigated at a higher level than any other president in recent memory, and perhaps Trump has become synonymous with investigations, which would explain the flipped result. Perhaps it is due to the polarizing nature of news that Trump is "riling up" his base while those not in his base are essentially ignoring him or becoming numb to the constant onslaught. Further, discussion of the results with several Republican colleagues suggests that they may be stressed because the news induces guilt by reminding them that they felt compelled to vote for a candidate who does not reflect the colleagues' values.

An interesting note from independents is that the effect of placebo and treatment are almost equivalent; indicating this group seems to view news as the news, Trump or not. Further study on this issue is needed to determine the true causal link, as well as obtain more significant results.

3.2.2.3 - Other interesting Notes

For this set of the experiment, age has the highest impact of the covariates included. Not only are older people less stressed in general, they also receive a larger decrease in stress from the treatment as compared to the placebo. The supporter base of Trump is generally skewed toward an older population, so this result makes intuitive sense. Since we did not do a longitudinal study, but instead only captured a single stress measurement, we have no way of discerning the true relationship of age and baseline stress with the current data.

5 - Conclusion

For the first part of the study, we find that overall, participants in all groups experience more stress when exposed to news summaries than when not. The implications of this may be far reaching. In a climate where many complain about the detrimental effects of stress on their health, it may be worthwhile to limit news consumption in general.

For the second part of the study, we find surprisingly that including Trump in news summaries results in lower stress levels on average than news summaries not about Trump. This is contrary to our original hypothesis that exposure to Trump in the headlines would result in higher stress levels than the general news.

However, it is necessary to examine these results in context. This study was conducted one week immediately following an extremely contentious mid-term election, during which the rhetoric was heated, and the tactics extreme. The week of the study, Donald Trump had also left the country, and was making relatively little newsworthy noise. It is important to note that there are numerous other effects bundled within the placebo and treatment which may be impacting the outcome more than merely mentions of Trump vs the absence of them. The news stories including Trump that were selected for this particular study may have appeared mild in comparison to the events of the previous weeks. At the same time, vicious wildfires in Paradise, CA were making the global news, and were included in this study. It is possible that the specific topics, and the related images, shown the treatment and placebo groups may have biased the direction of the average treatment effect. Alternatively, at the point when this study was conducted, the American public had already had two fatiguing years of the Donald Trump presidency. Every newsworthy action taken by Trump has served to shift public perception of normalcy, effectively numbing part of the population to his actions, and forcing the rest to simply tune him out.

6 - Next Steps

6.1 - Lessons Learned

While running this study for W241 in the Berkeley MIDS program, we learned many valuable lessons for future experiments. The first, and perhaps the most useful is to avoid the kitchen sink approach. If we had focused on a single political affiliation, or on a single age grouping, we may have been able to find a clearer average treatment effect. This would have also alleviated some of the power issues we had in the placebo vs control section of our study.

Additionally, we gleaned some interesting survey design insights. Asking about a participant's citizenship status in the second question of the study, however innocently, will scare people away from participating in the study. This sort of differential non-participation has the potential to severely bias the results, if it were to occur in large enough numbers. We noted this in our pilot study, and were able to remove the question for the subsequent full study.

During our pilot study, we also noticed that including multiple choice answers for several questions in a matrix format encouraged participants to simply select the same answer all the way down the line, instead of really thinking about each answer. We were also able to catch this in our pilot study, and modified the questions of the PSS to have 5 choices listed separately for each of the 14 questions.

Our pilot study also allowed us to understand what kind of population was responding to our survey from Fulcrum Academia. We noted that the respondents mostly belonged to lower income and education brackets, even though they were census balanced on age, gender, race, and region. As a result, we gathered additional participants from places where we knew we would get a large proportion of people in higher income brackets.

As a result of all of these things, we learned the value of a pilot study. A pilot study allows researchers to fine tune the study and to make sure that it is working as intended. The value of a pilot study truly cannot be overstated.

We also note that the effects we find are fairly small. It is possible that some participants did not actually receive the treatment as intended. They could have simply glossed over the headlines, not comprehending them, or simply skipped reading them altogether. To discourage this kind of behavior and to catch it if it occurred, our survey could have asked a simple comprehension question following the news summary exposures. When creating the survey, we considered adding such questions, but decided against it to eliminate the chance of violating the excludability assumption. A question after exposure to the news summary for those in treatment and placebo groups could alter stress rates in a way that those in control did not experience. Because we do not have any data on actual comprehension, we cannot determine a clean

compliance rate. We could examine the time taken to complete the survey and call anyone below a certain threshold non-compliant.

Further, we have concerns about the influence of the news summary topics, in addition to the mentions of Trump, on the perceived stress scale score. It is possible that the specific articles chosen for the placebo group were more stressful than those articles chosen for the treatment group, violating the excludability assumption. There are two ways to potentially solve this problem. The first, would be to write identical summaries, with the same images, and simply replace Trump with another public figure. The second, and perhaps easier to implement approach, would be to create a large bank of possible articles, that differ in the headline only, both including and excluding Trump. These articles should otherwise cover the same topics, include the same images, and include the same wording. In a future experiment, it would be possible to randomly pull from this bank of articles, alleviating the influence of topics on the PSS score.

6.2 - Future Work

This study is a stepping stone to future work. Although this study does not show an increase in perceived stress with exposure to news summaries including Trump, it does show a number of interesting other items which are worth further investigation, while incorporating the learnings summarized, above.

First, it would be beneficial to redo the experiment but apply identical articles in the treatment and placebo group with the sole difference of including and excluding the word trump from the articles. This would help us control the exclusion restriction and more directly answer the research question regarding mentions of Trump in news summaries.

It would also be interesting to investigate the contextual effects of exposure to news summaries including Trump. This study likely would not have had the same outcome immediately around Trump's election, and will likely present different results during a time when Trump is pushing just another social norm to the limit.

Additionally, it may be interesting to study the effect of images on the perceived stress level of populations. One may wish to examine if news stories that include images of Trump tend to increase the stress level of those reading them. It may also be interesting to evaluate the effect of the simple presence of images on stress levels.

Then, we may wish to study specific groups in more depth. For example, we may want to understand specifically how young people react to Trump news since we noticed interesting effects in our study. We also noticed some unexpected results when the survey scores were compared across party affiliation. Republicans and Independents feel more stressed by looking

at Trump related news articles compared to articles not about Trump, while Democrats experience the opposite effect when compared to treatment. These results are not statistically significant from the data collected from this study, and will need a more focused design for analysis in future research.

7 - Final Thoughts

The causes of stress, and the resulting health effects, are important to understand. We have designed and executed a solid first study, with low attrition rates and high participation. While our study indicates that news headlines involving Trump do not increase stress, we have shown here that exposure to news headlines in general can increase the stress level as measured by the PSS Surveys. There are certainly additional effects to determine. However, the only way to truly determine the causal effects would be to conduct some of the studies briefly sketched above.

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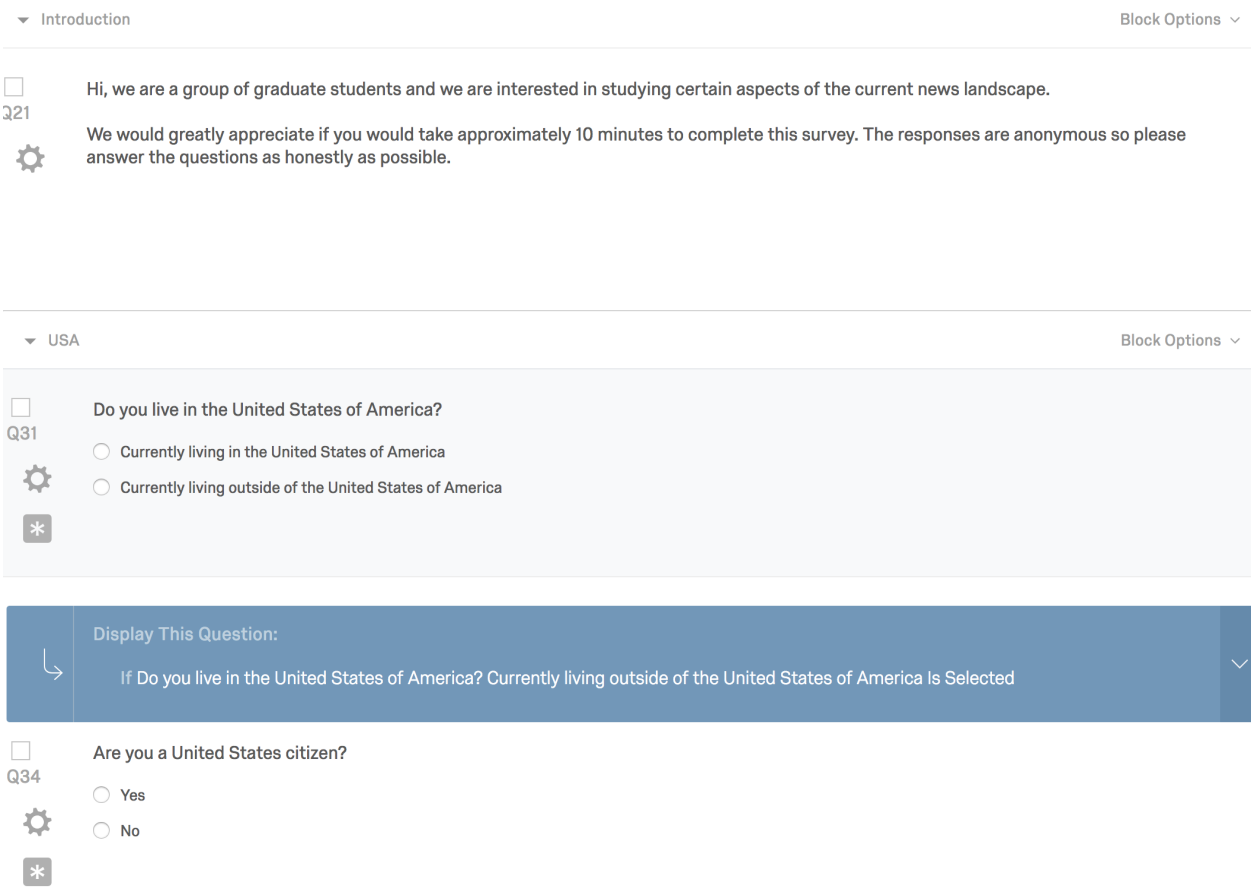
8 - Appendices

8.1 - The Survey

The survey blocks are shown below, followed by the survey flow.



Demographics

Block Options

Q1 What is your age in years? (check one)

- 0-20
- 21-30
- 31-40
- 41-50
- 51-60
- Older than 60

Q3 How do you describe yourself? (check one)

- Male
- Female
- Transgender
- Do not identify as female, male, or transgender

Q9 What is the highest level of education you have completed?

- Less than high school degree
- High school graduate (high school diploma or equivalent including GED)
- Some college but no degree
- Associate degree in college (2-year)
- Bachelor's degree in college (4-year)
- Master's degree
- Doctoral degree
- Professional degree (JD, MD)

Q11 Information about income is very important to understand. Would you please give your best guess? Please indicate the answer that includes your entire household income before taxes.

- Less than $10,000
- $10,000 to $19,999
- $20,000 to $29,999
- $30,000 to $39,999
- $40,000 to $49,999
- $50,000 to $59,999
- $60,000 to $69,999
- $70,000 to $79,999
- $80,000 to $89,999
- $90,000 to $99,999
- $100,000 to $149,999
- $150,000 or more

News Consumption

Block Options

Q6 With what frequency do you currently consume news? (check one)

- Multiple times per day
- Daily
- Weekly
- Monthly
- Less than once per month

Q23 What formats of news do you usually consume? (check all that apply)

- Television broadcast
- Radio broadcast
- Online Media
- Word of Mouth
- None of the above

Display This Question:

If What formats of news do you usually consume? (check all that apply) Online Media Is Selected

Q22 How do you regularly consume online news? (check all that apply)

- Directly from the news source (CNN, Fox News, etc.)
- Through an aggregator (Google News, The Skimm, etc.)
- Through social media (Facebook, LinkedIn, etc.)
- Other

Display This Question:

If What formats of news do you usually consume? (check all that apply) Online Media Is Selected

Q24 When consuming online news content, do you read the comments?

- Never
- Rarely
- Sometimes
- Always

Q7 Which news source do you trust? (check all that apply)

- Fox News
- Reuters
- CNN
- Other

Political Affiliation — Block Options

Q4 What is your political leaning? (check one)

- Left leaning
- Right leaning
- Central

Q5 What is your political affiliation? (check one)

- Democrat
- Republican
- Independent
- Other

Treatment Articles — Block Options

Q12 Please read the following news articles.

CNN

Trump's tweet on California wildfires angers firefighters, celebrities

President Donald Trump's tweet blaming "gross mismanagement" for the devastating California wildfires is sparking backlash from top firefighters' associations, politicians and celebrities. (102 kB)

Fox News

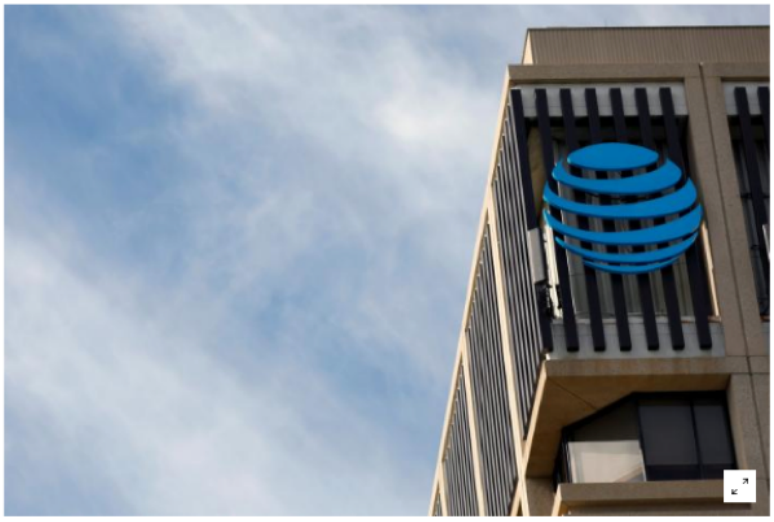
Michelle Obama says she stopped 'trying to smile' during 'misogynist' Trump's inauguration

Michele Obama, the former first lady, said in an interview that aired Sunday that she "stopped even trying to smile" during President Trump inauguration and wondered in her new book why so many women rejected "an exceptionally qualified female candidate and instead choose a misogynist as their president." (57 kB)

Democrats to probe Trump actions on AT&T, Amazon: aide

David Shepardson, Sarah N. Lynch 5 MIN READ

WASHINGTON (Reuters) - When Democrats take control of the U.S. House they plan to investigate the Trump administration's attempt to block AT&T Inc (T.N) from acquiring Time Warner, and whether officials sought to punish Amazon.com Inc (AMZN.O) by prodding the U.S. Post Office to hike shipping prices for the world's largest e-commerce company, a senior Democrat and a congressional aide said on Sunday.



Placebo Articles

Block Options

Q25

Please read the following news articles.

CNN

China's stealth fighters show off missile payload

The Chinese air force saved the big guns for last at its biennial Zhuhai air show, flying its new stealth fighters with full missile loads Sunday for the first time in a public display. (67 kB)

Fox News

Dem-leaning Palm Beach County says it likely won't make recount deadline in Florida governor, Senate races

As Republican Senate candidate Rick Scott openly accused his Democratic opponent, Sen. Bill Nelson, of trying to steal the election, more than half of Florida's 67 counties began recounting votes Sunday in the razor-thin Senate and gubernatorial races. (116 kB)

Ferocious winds whip California fires as death toll rises to 31

Stephen Lam 4 MIN READ

PARADISE, Calif. (Reuters) - The death toll from wildfires raging in California rose to 31 on Sunday after six more people were found killed in what was poised to become the deadliest wildfire in state history.

PSS 1 Block Options

Q35

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during the last week. In each case, you will be asked to indicate your response by selecting the response representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, do not try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

Q36

In the last week, how often have you been upset because of something that happened unexpectedly?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q38

In the last week, how often have you felt that you were unable to control the important things in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q40

In the last week, how often have you felt nervous and "stressed"?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q41

In the last week, how often have you dealt successfully with day to day problems and annoyances?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q42

In the last week, how often have you felt that you were effectively coping with important changes that were occurring in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

PSS 2 Block Options

Q43

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during the last week. In each case, you will be asked to indicate your response by selecting the response representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, do not try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

Q44

In the last week, how often have you felt confident about your ability to handle your personal problems?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q45

In the last week, how often have you felt that things were going your way?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q46

In the last week, how often have you found that you could not cope with all the things that you had to do?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q47

In the last week, how often have you been able to control irritations in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q48

In the last week, how often have you felt that you were on top of things?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

PSS 3 Block Options

Q51

INSTRUCTIONS:

The questions in this scale ask you about your feelings and thoughts during the last week. In each case, you will be asked to indicate your response by selecting the response representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, do not try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

Q52

In the last week, how often have you been angered because of things that happened that were outside of your control?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q53

In the last week, how often have you found yourself thinking about things that you have to accomplish?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q54

In the last week, how often have you been able to control the way you spend your time?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Q55

In the last week, how often have you felt difficulties were piling up so high that you could not overcome them?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

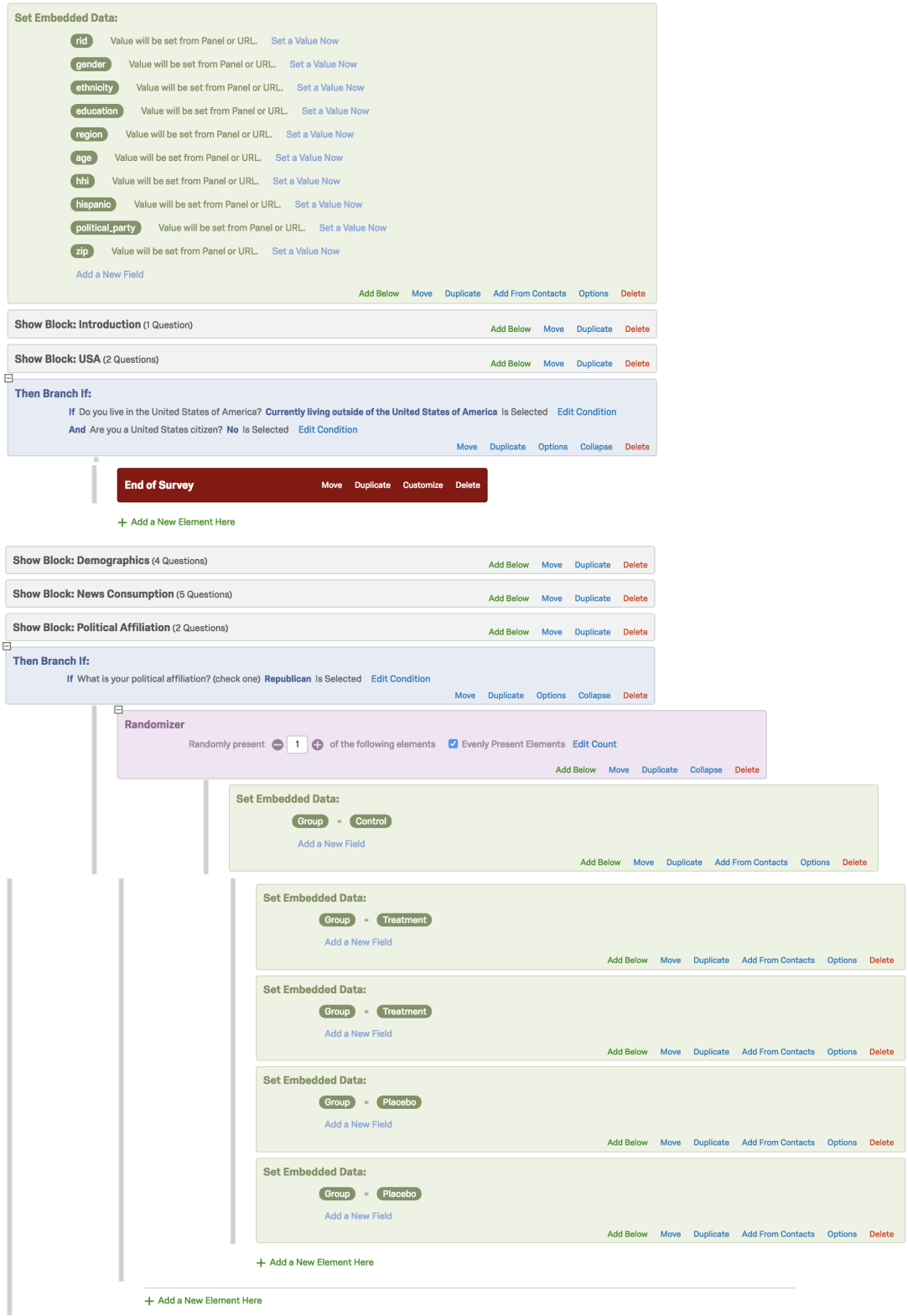
Amazon Gift Card

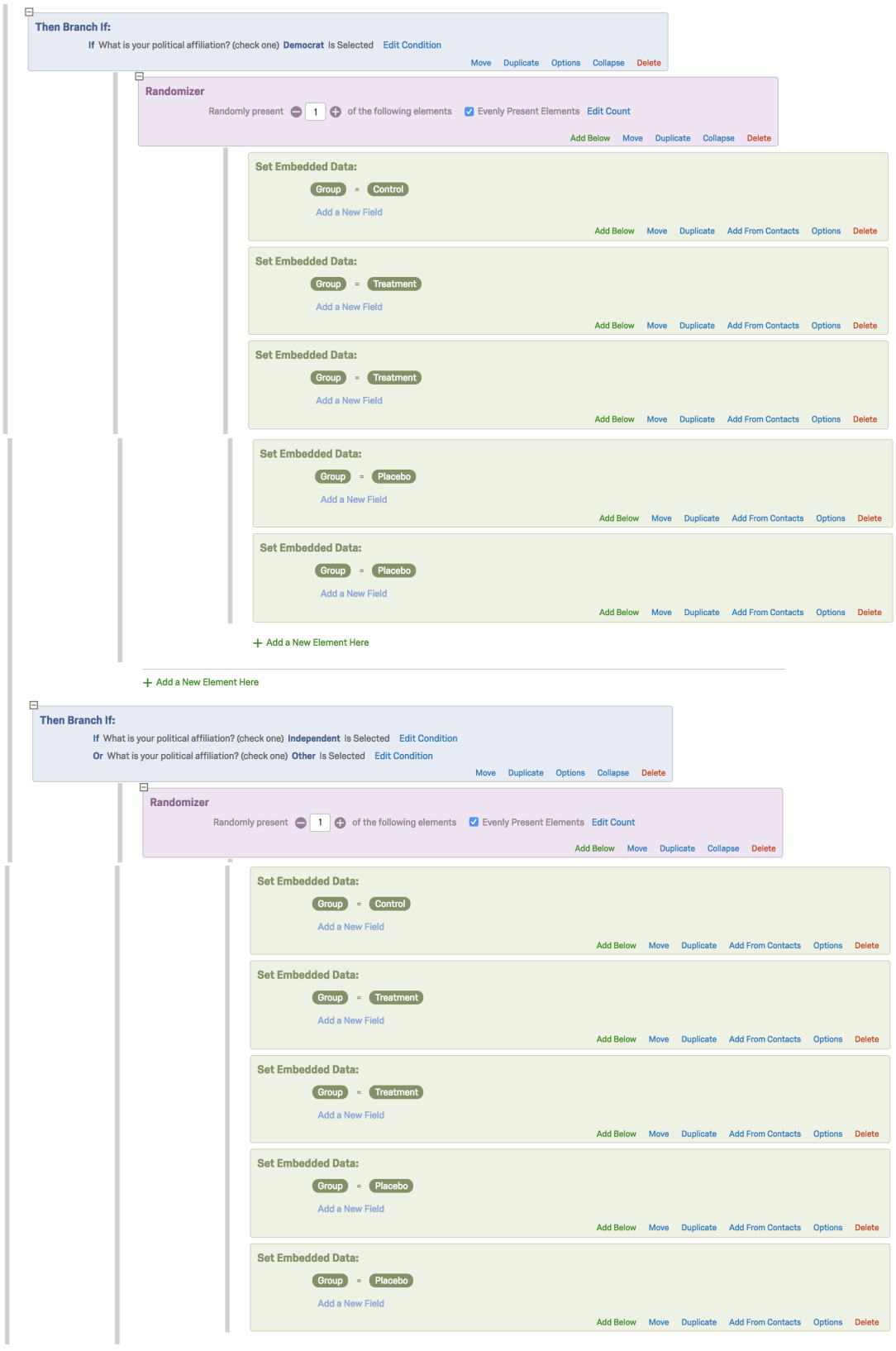
Block Options

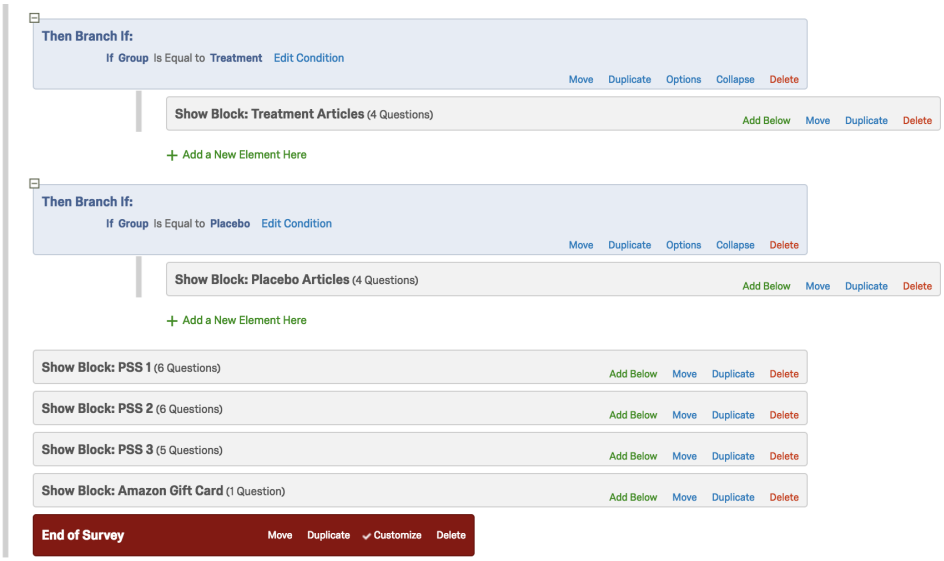
Q61

We thank you for your time spent taking this survey.
Your response has been recorded.

Survey Flow:


Set Embedded Data:
rid Value will be set from Panel or URL. Set a Value Now
gender Value will be set from Panel or URL. Set a Value Now
ethnicity Value will be set from Panel or URL. Set a Value Now
education Value will be set from Panel or URL. Set a Value Now
region Value will be set from Panel or URL. Set a Value Now
age Value will be set from Panel or URL. Set a Value Now
hhi Value will be set from Panel or URL. Set a Value Now
hispanic Value will be set from Panel or URL. Set a Value Now
political_party Value will be set from Panel or URL. Set a Value Now
zip Value will be set from Panel or URL. Set a Value Now
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Show Block: Introduction (1 Question) Add Below Move Duplicate Delete
Show Block: USA (2 Questions) Add Below Move Duplicate Delete
Then Branch If:
If Do you live in the United States of America? Currently living outside of the United States of America Is Selected Edit Condition
And Are you a United States citizen? No Is Selected Edit Condition
Move Duplicate Options Collapse Delete
End of Survey Move Duplicate Customize Delete
Add a New Element Here
Show Block: Demographics (4 Questions) Add Below Move Duplicate Delete
Show Block: News Consumption (5 Questions) Add Below Move Duplicate Delete
Show Block: Political Affiliation (2 Questions) Add Below Move Duplicate Delete
Then Branch If:
If What is your political affiliation? (check one) Republican Is Selected Edit Condition
Move Duplicate Options Collapse Delete
Randomizer
Randomly present 1 of the following elements Evenly Present Elements Edit Count
Add Below Move Duplicate Collapse Delete
Set Embedded Data:
Group = Control
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Add a New Element Here
Add a New Element Here


Then Branch If:
If What is your political affiliation? (check one) Democrat Is Selected Edit Condition
Move Duplicate Options Collapse Delete
Randomizer
Randomly present 1 of the following elements Evenly Present Elements Edit Count
Add Below Move Duplicate Collapse Delete
Set Embedded Data:
Group = Control
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Add a New Element Here
Add a New Element Here
Then Branch If:
If What is your political affiliation? (check one) Independent Is Selected Edit Condition
Or What is your political affiliation? (check one) Other Is Selected Edit Condition
Move Duplicate Options Collapse Delete
Randomizer
Randomly present 1 of the following elements Evenly Present Elements Edit Count
Add Below Move Duplicate Collapse Delete
Set Embedded Data:
Group = Control
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Treatment
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete
Set Embedded Data:
Group = Placebo
Add a New Field
Add Below Move Duplicate Add From Contacts Options Delete


Then Branch If:
If Group Is Equal to Treatment Edit Condition
Move Duplicate Options Collapse Delete
Show Block: Treatment Articles (4 Questions)
Add Below Move Duplicate Delete
Add a New Element Here
Then Branch If:
If Group Is Equal to Placebo Edit Condition
Move Duplicate Options Collapse Delete
Show Block: Placebo Articles (4 Questions)
Add Below Move Duplicate Delete
Add a New Element Here
Show Block: PSS 1 (6 Questions)
Add Below Move Duplicate Delete
Show Block: PSS 2 (6 Questions)
Add Below Move Duplicate Delete
Show Block: PSS 3 (5 Questions)
Add Below Move Duplicate Delete
Show Block: Amazon Gift Card (1 Question)
Add Below Move Duplicate Delete
End of Survey
Move Duplicate Customize Delete

8.2 - RXO diagram

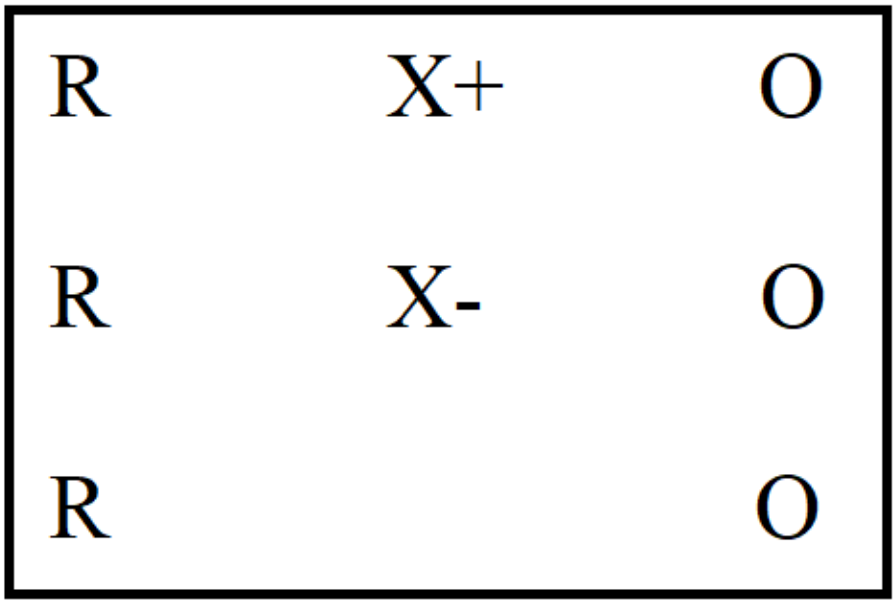


Figure 8.1 - Design notation representation of this study.

In Figure 8.1, “R” indicates groups that are randomly assigned. We have three groups: Control, Treatment, and Placebo. Our control group is set to 20%, with the balance split evenly between treatment and placebo groups, to ensure we have adequate quantities in our treatment groups. The study is blocked on Political Party.

In the second column, “X” indicates the treatment. “X+”, in the first row, indicates treatment. “X-”, in the second row, indicates placebo treatment and the control is noted by a lack of treatment.

Finally, in the third column, “O” indicates the observations and measurements. The PSS Scores serve as this study’s measurable outcome. We observe the PSS score for everyone who was assigned to one of the three treatment groups and completed the survey.