Measuring Intent to Purchase across Relationship Levels, Product Types, Recommendation Valence, Trust and Susceptibility to Influence

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Executive Summary

For this study, we whether the relationship strength between the reviewer and the participant affects his or her intent to purchase across different product types and review valence. Additionally, we considered whether the participant's average trust and susceptibility to influence affected the participants' intent to purchase. Five hypothesis pairs were constructed based on five independent variables: relationship strength, review valence, product type, trust, and susceptibility to influence. The dependent variable was intent to purchase. Within each independent variable, we had multiple subcategories. We tested three different relationship strengths, four product types, trust on of post and of reviewer, and both positive and negative valenced reviews. We also included manipulation checks to ensure that our perception of relationships matched with the perceptions of our respondents.

Before we could collect and analyze data, we had to make multiple decisions on how to construct the study. Some decisions include determining the target sample, length and design of the survey that was used, and the alpha level or level of significance to serve as the threshold for our data analysis. We decided to focus on millennials, created a survey that provided a strong balance between length and depth of questions, and decided on an alpha level of 0.1. The survey created was also vetted by Professor Hausman multiple times to ensure reliability and validity. We also conducted a pretest with a small sample of target respondents beforehand to ensure clarity of questions.

The final survey was distributed on our respective social media accounts and we accumulated a total of 295 respondents, with some diversity in terms of occupation, education, race, age, and income. However, not all survey responses were complete, and this small sample size is a key weakness of this study. A higher alpha level of 0.1 was also chosen to mitigate any type II error.

All null hypotheses except recommendation valence were rejected, meaning that the strength of relationship, product type, trust and susceptibility to influence were all significant in explaining purchase intentions. In analyzing the data collected, the first step was to ensure that our manipulation check was valid. Once this was confirmed, we then ensured content validity for the two constructs in our study: susceptibility to influence and trust. When running descriptive statistics, we noticed that our target market had a high propensity to trust and relied heavily on reviews when purchasing a product. Thus, a majority of our respondents demonstrated high susceptibility to influence.

When evaluating the meaning of the various regression models, we noticed that the average trust was almost twice as sensitive as the participants' susceptibility to influence when it comes to influencing purchase intent. Moreover, the regression model had six variables and explained 54% of the total variation in the data. The final step was to run a factor analysis on both the trust and susceptibility to influence scales. Judging by the Cronbach's alpha, we rejected the null and concluded that there is a relationship. The analysis also revealed no evidence of cross loading between the two factors.

Background

The overall goal of this study was to test if the strength of a relationship and trust between two people affected the intent to purchase across different product types and review valences. In our study, we looked at four independent variables: relationship strength, recommendation valence, product type, trust and susceptibility to influence. Our dependent variable is the person's intent to purchase the product. We had five null hypotheses: the relationship strength, product type, valence, trust and susceptibility to influence do not affect a person's intent to purchase.

In order to find this information, we first needed to make decisions regarding specifics of the study. One of the main decisions was determining who our sample would be and where we were getting our sample from. We decided to focus on millennials and used current college students as our target sample. The survey link was posted on the different social media accounts, such as Facebook and Twitter, of students in our own marketing research class. People randomly and voluntarily chose to take the survey through the links on the postings. A majority of our sample were white, female college students.

Given that this was a survey posted on the web, it would be difficult to tell how many people saw the survey and chose to ignore it instead of respond. Thus, it's hard to tell if nonresponse bias was present in our sample. If we had a list of the people who saw the survey, we would reach out to them with a follow-up survey to determine if the nonrespondents were statistically different from the respondents. If they were not statistically different, there would be no nonresponse bias.

Another important decision we had to make was the length and design of our survey. We did not want it to be too long and tedious, but we wanted to collect a range of in depth information. The length came to around 10-15 minutes, and we used questions that kept the participants engaged and thinking thoroughly about their answers. We included a couple of negatively worded questions to make sure that the respondents were reading the questions instead of simply going down the line and answering the questions. We analyzed whether we got honest results below.

We also included a manipulation check to ensure the participant's understanding of the relationship classification matched with how we intended them to be perceived. By creating scenarios, the participant felt as though they were relating with real friends and people on social media. By placing the respondents directly in the situation, we had a higher chance of getting honest results that had a good chance of being exhibited in the real world.

Before we made the survey live, we did trial rounds of our survey to receive feedback from friends on what they thought of the survey. Their comments ranged from the ease of use to the wording of the questions. The survey was then edited in order to fix any errors and taking into consideration the feedback we received (See Appendix 1). Finally, we analyzed the results using an alpha of 0.1.

One weakness in our sample is that our small sample size. Since we used Facebook, we could not control who was taking our survey. We received 295 total responses, of which 30 responses were not filled in completely. This suggests that participants may have gotten distracted or bored. To mitigate this, a shorter survey could have been created or we could have added a gift card

raffle at the end. Another weakness is that our sample was not representative of millennial social media users. We received a majority of responses from a majority of white, female, college students (Appendix 2). To fix this, we could include a screening question at the beginning of the survey and use quotas in order to receive a more diverse and representative sample.

Methodology

Research Question: Does a person's relationship strength with someone reviewing a product affect his or her intent to purchase across different product types and review valence?

H_0^1: Relationship strength does not affect a person's intent to purchase
H_a^1: Relationship strength does affect a person's intent to purchase

H_0^2: Product type does not affect a person's intent to purchase
H_a^2: Product type does affect a person's intent to purchase

H_0^3: Review valence does not affect a person's intent to purchase
H_a^3: Review valence does affect a person's intent to purchase

H_0^4: Trust does not affect a person's intent to purchase
H_a^4: Trust does affect a person's intent to purchase

H_0^5: Susceptibility to influence does not affect a person's intent to purchase
H_a^5: Susceptibility to influence does affect a person's intent to purchase

To answer this research question, we first decided how many levels of relationship strength we would test and which product types to look at. We chose to test three relationship strengths: strong, weak, and none. To test product type, we chose to look at hedonic, fashion, convenience, and service goods. After deciding on what variables to test, we drafted a survey. The survey included a manipulation check to make sure the participant agreed with the classification of the relationship presented in the scenario. It also included scales to measure trust and the participant's susceptibility to influence. At the very end, we included demographic questions. Our first draft of the survey used fake Facebook posts (different valences and products) with a scenario describing the subject's relationship to the author of the post. We self-coded the questions to make results easier to interpret.

We submitted our survey to the professor and received feedback with areas for improvement. Some comments Professor Hausman made include omitting the third "other" option for gender/sex and adjusting our income brackets to be more equally distributed. Our team edited the survey and made changes based on our professor's feedback. After each team submitted a final survey, our professor created a master survey on Qualtrics using the best questions from each group's survey. We then sat down with a few friends to do a pretest and receive feedback about questions that were confusing and areas for clarification. Our professor made changes to the

survey based on the suggestions we submitted and the final survey was ready for distribution. These changes included grammar mistakes, improving scales, clarifying instructions, and changing the appearance of the Facebook post.

Students in the class posted the link to the survey on their social media accounts to collect the sample. We posted the link at various times of the day over the span of a few days to reach different people checking social media throughout the day. After a few days, our professor collected the results.

Our survey produced a sample of 295 responses. 83.5% of respondents who specified their gender were female while only 16.5% were male. With regard to age, a majority of respondents were between the ages of 18-22. Accordingly, the highest level of education completed by respondents was 58.6% some college and 27.3% college graduate. A majority of respondents identified as caucasian (67.2%) followed by asian (13.3%) and mixed race (6.3%).

See Appendix 2 to see a further breakdown of respondent demographics using the valid percent from SPSS output (all values are expressed as percentages).

Findings

For analyzing the data, we chose an alpha of 0.1 because this study of purchase intent is not as life or death as if we were testing whether someone had a disease and needed treatment and thus does not have to have a super small alpha. Moreover, because we have a relatively small sample size given the multitude of things we are trying to test, keeping the alpha at 0.1 instead of at 0.05 will mitigate some of the possibility for type II error while keeping the possibility of a type I error at a reasonable level. The rationale behind this is that alpha, beta and sample size are related. To decrease a type II error, you could increase sample size or increase alpha. Because increasing sample size to over 300 proved to be difficult under the time constraint, we chose to increase the alpha to 0.1. Additionally, given the small sample, we excluded values pairwise in order to use the most amount of the data provided.

To start, we first made sure that our manipulation check yielded the expected results. We computed three variables (rel_strong, rel_med and rel_weak) in order to have the values of the respective relationships under one variable for each category. We then ran descriptive statistics to check whether there is a normal distribution around the expected mean for each of the scenarios. This did in fact yield normal distributions around our expected means. This suggests that the scenarios were interpreted by the participants in the manner that we were expecting (See Appendix 3). Thus, there is evidence that the study was testing what we were planning to test and could go on to analyze the results.

We had two constructs in our study: susceptibility to influence and trust. For susceptibility to influence, we asked various question to determine whether they sought outside opinion before making a purchase. If they were likely to seek outside opinions, we proposed that there is a high susceptibility to influence. This looked good to us and therefore passed face validity. For trust, we asked whether the participant thought that the reviewer and their post was trustworthy based on the scenario given. To us, this looked good and thus passed face validity. Moreover, these two

constructs are existing constructs created by experts which suggests that they fulfill content validity.

Running descriptive statistics on the trust scale, we noticed a more or less normal distribution around a mean of four, or *somewhat trustworthy* (See Appendix 4). This suggests that our target market had a high propensity to trust. It should be noted that the third question of the trust scale was negatively worded. When it was recoded to give the data as if the question was asked in the positive sense, it also showed a relatively normal distribution around *somewhat trustworthy*. However, it had a higher emphasis on neither trustworthy or untrustworthy. This may suggest that the participants were either confused by the wording or simply had no preference between the answers. Regardless, given that most of the responses were positive or neutral, the histogram suggests that respondents were paying attention when answering the questions instead of picking answers at random.

Afterwards, we analyzed the respondents' susceptibility to influence (See Appendix 5). The normal distributions around a mean of 4, or *somewhat agree,* suggested that respondents relied heavily on reviews when they purchased a product. Moreover, whether they are shopping for an unknown product or in general, respondents ask and rely on a family or friend's opinion to a moderate extent. The negatively worded question in this study was the last one which provided less obvious results. When flipped to be positive, it resulted in more *neither agree nor disagree* answers than the other positively worded questions. Regardless, this question was still a normal distribution with a left skew just like the others. This again suggests that a majority of the respondents were paying attention to the questions and have a high susceptibility to influence.

Finally, we ran a regression analysis using the stepwise method and an alpha of 0.1. The independent variables that we proposed for the regression were the trust scale, the susceptibility scale, the sum of relationship strengths, the valence of the post, the product type and demographics. SPSS provided six different regression models, each with an extra variable. By increasing the number of significant variables, the adjusted R square increases. This means that by the sixth regression model with the six variables, 54% of the variance in the data is explained by this regression model (See Appendix 6). The six variables that were deemed significant by the model are trust, relationship strength, susceptibility, hedonic products, boots and gender, in that order. It's also interesting to note that average trust is almost twice as sensitive in the model as average susceptibility (See Appendix 7). Because both of the variables are on the same scale, their betas can be compared to view their importance relative to one another.

Purchase Intent = (-.237) + (.407)(average trust) + .253(relationship strength) + .276(average susceptibility) + .132(1 if hedonic) + .143(1 if boots) + (-.144)(gender)

Finally, we ran a factor analysis on both of the scales: trust and susceptibility to influence. Because we knew that we had two scales, we specified that we were looking for two factors. Yet, even if we had left it as using factors with an eigenvalue greater than one, the analysis would have nonetheless returned two factors. This suggests that both factors play a large role. From the analysis, we see that 72% of the variance loads on the first variable and around 13% loads on the second variable (See Appendix 8). Looking at the goodness of fit, we notice that the chi-square significance of 0.000 exceeds the alpha of 0.1. As a result, we reject the null, meaning that there

is a relationship. Then, looking at the pattern matrix (See Appendix 9), we see that the susceptibility to influence loads on the second factor while the trust scale loads on the first factor. Moreover, there is no cross-loading between the factors as the highest value is less than 0.3.

Appendices

Appendix 1: Survey

Q1 Do you use Facebook or other social media?
Yes (1)
Occasionally (2)
No (3)

Q11 You and Sondra met in the 8th grade and have kept in touch since then, even went to the same college. You often do things together and see each other as much as you can with your hectic schedules. You know you can count on her if you ever need anything and would be happy to help her out.

Q26 How would you describe your relationship with Sondra?
(Scale from 1 to 7)

FASHION GOOD, POSITIVE VALENCE FACEBOOK POST

Q28 How likely are you to buy these boots next time you're in the market for new boots?
Extremely likely (1)
Somewhat likely (2)
Neither likely nor unlikely (3)
Somewhat unlikely (4)
Extremely unlikely (5)

Q77 To what extent do you agree with the following statements:
I can trust Sondra's Facebook post.
I can trust Sondra's perspective.
Sondra would make an untruthful post on Facebook.
Sondra's post contains trustworthy information.
(Scale from 1 to 5)

SAME SCENARIO, FASHION GOOD, NEGATIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

SAME SCENARIO, HEDONIC GOOD, POSITIVE VALENCE FACEBOOK POST

7

(Likelihood to purchase good question, what extent do you agree with the following statements question)

SAME SCENARIO, CONVENIENCE GOOD, POSITIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

SAME SCENARIO, SERVICE GOOD, POSITIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

Q55 You and Sondra are in the same group. You don't run into her much outside of the meetings, but you say "Hi" when you see each other at meetings or run into each other at events.

Q56 How would you describe your relationship with Sondra?
(Scale 1 to 7)

Q57 FASHION GOOD, POSITIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

SAME SCENARIO, FASHION GOOD, NEGATIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

Q64 You and Sondra are friends but have never met or talked to each other. She's a Facebook friend and you think she shares interesting content sometimes.

Q65 How would you describe your relationship with Sondra?
(Scale from 1 to 7)

FASHION GOOD, NEGATIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

SAME SCENARIO, FASHION GOOD, POSITIVE VALENCE FACEBOOK POST
(Likelihood to purchase good question, what extent do you agree with the following statements question)

Q69 We're almost done. Can you please answer the following questions about your buying habits?
IF I have a little knowledge of a product, I ask my friends about the product.
I often ask friends and family members about a product before I buy it.
I frequently check reviews on a product before making a decisions to purchase.
I don't like to know what products other people like.
(Scale 1 to 5)

Q75 Can you estimate how many hours you spend on Facebook or other social media per week?
0-2 hours (1)
2+ to 5 hours (2)
5+ to 9 hours (3)
9+ to 14 hours (4)
More than 14 hours (5)

Q76 What other social media do you use on a regular basis?
Twitter (1)
Snapchat (2)
Instagram (3)
Linkedin (4)
Pinterest (5)
other (6)

Q4 Are you:
Male (1)
Female (2)

Q5 How old are you?
less than 18 (1)
18-22 (2)
23-30 (3)
31-45 (4)
older than 45 (5)

Q6 What is your highest level of education?
high school or less (1)
high school graduate (2)
some college (3)
Associates Degree (4)
college graduate (5)
graduate education (6)
graduate degree (7)

Q10 Are you currently employed?
Full time (1)
Part time (2)
no (3)
retired (4)

Q8 Estimate your annual household income?
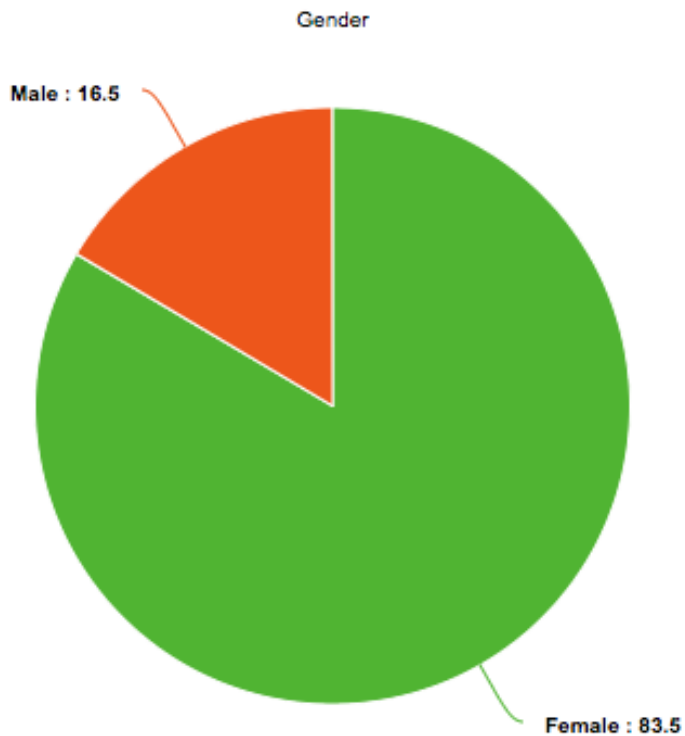less than $500 (1)
$501-$5000 (2)
$5001-$15,000 (3)

$15,001-$50,000 (4)
$50,001-$150,000 (5)
more than $150,000 (6)
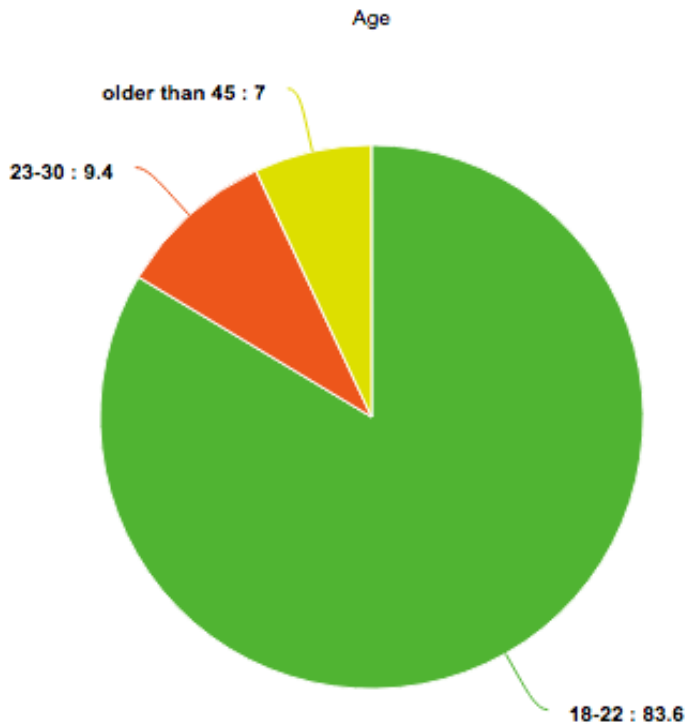
Q9 Which of the following best describes your race?
Caucasian, not hispanic (1)
Hispanic, caucasian (2)
Black (3)
Asian (4)
Middle Eastern (5)
African (6)
Indian (7)
Mixed race (8)
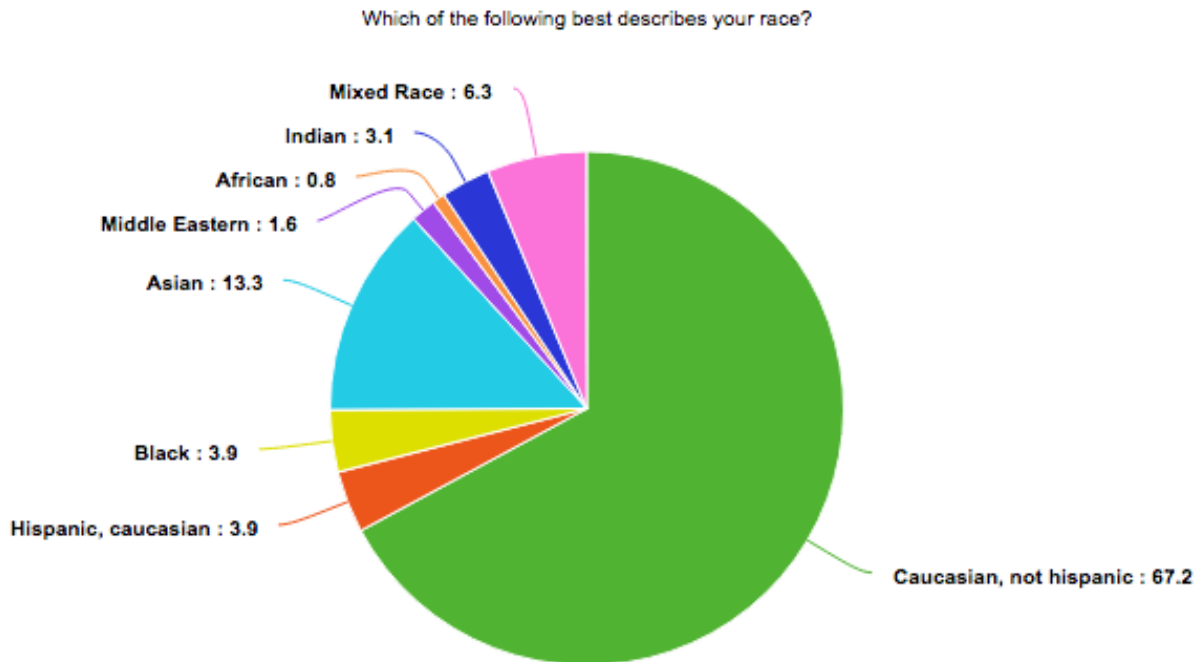American Indian/Alaska Native American/ Native Hawaiian (9)
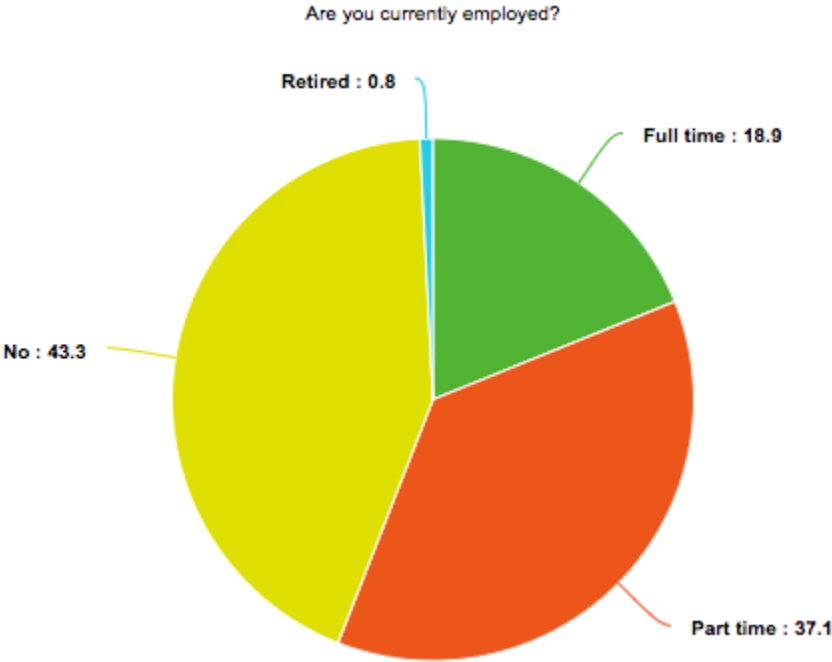
Appendix 2: Demographics

Respondents' Gender

Gender

Male : 16.5

Female : 83.5

Respondents' Age

Age

older than 45 : 7

23-30 : 9.4

18-22 : 83.6

Respondents' Race

Which of the following best describes your race?

Mixed Race : 6.3

Indian : 3.1

African : 0.8

Middle Eastern : 1.6

Asian : 13.3

Black : 3.9

Hispanic, caucasian : 3.9

Caucasian, not hispanic : 67.2

Respondents' Employment Status

Are you currently employed?

Retired : 0.8

Full time : 18.9

No : 43.3

Part time : 37.1

Respondents' Education

What is your highest level of education?

graduate degree : 3.9

high school or less : 0.8

graduate education : 1.6

high school graduate : 4.7

college graduate : 27.3

associates degree : 3.1

some college : 58.6

Respondents' Income

Estimate your annual household income

less than $500 : 8.3
$501-$5000 : 9.1
more than $150000 : 28.1
$5001-$15000 : 7.4
$15001-$50000 : 9.9
$50001-$150000 : 37.2
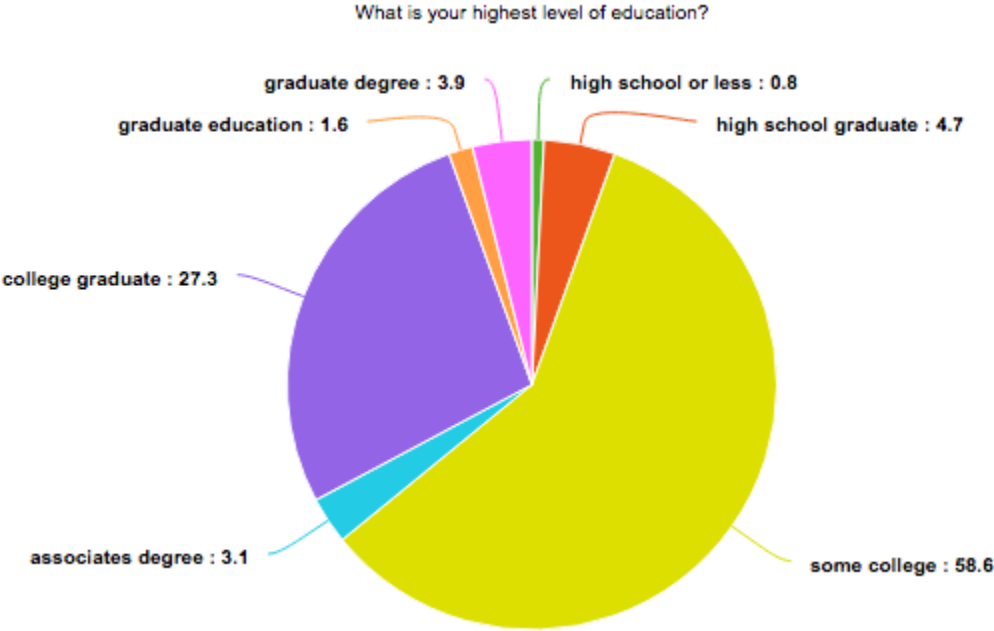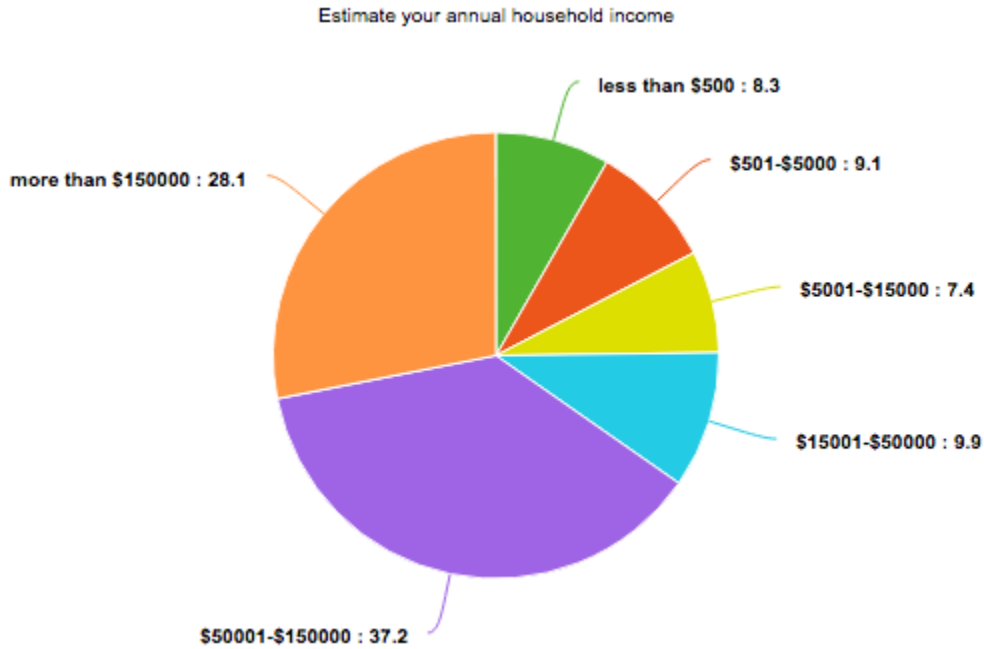
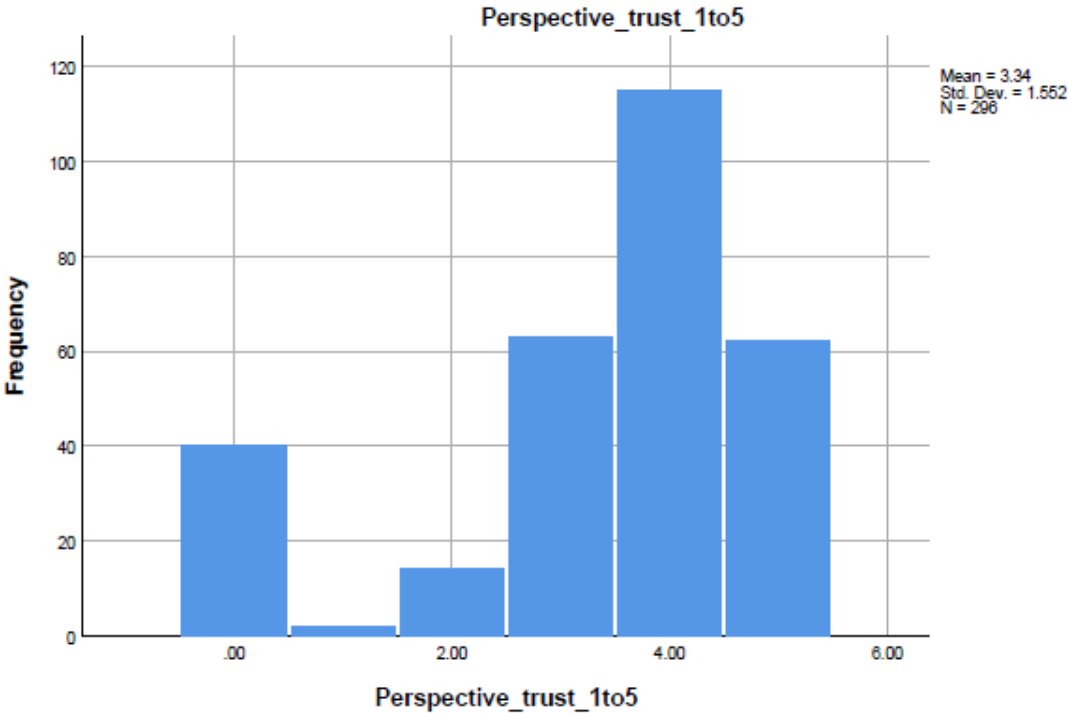## Appendix 3: Manipulation Check

Note: the zeros simply mean that that many respondents were not given a scenario with the respective strength

Rel_strong

Mean =3.23
Std. Dev. =3.30
N =296

Rel_med

Mean = .78
Std. Dev. = 1.566
N = 296

Rel_weak

Mean = .46
Std. Dev. = 1.007
N = 296
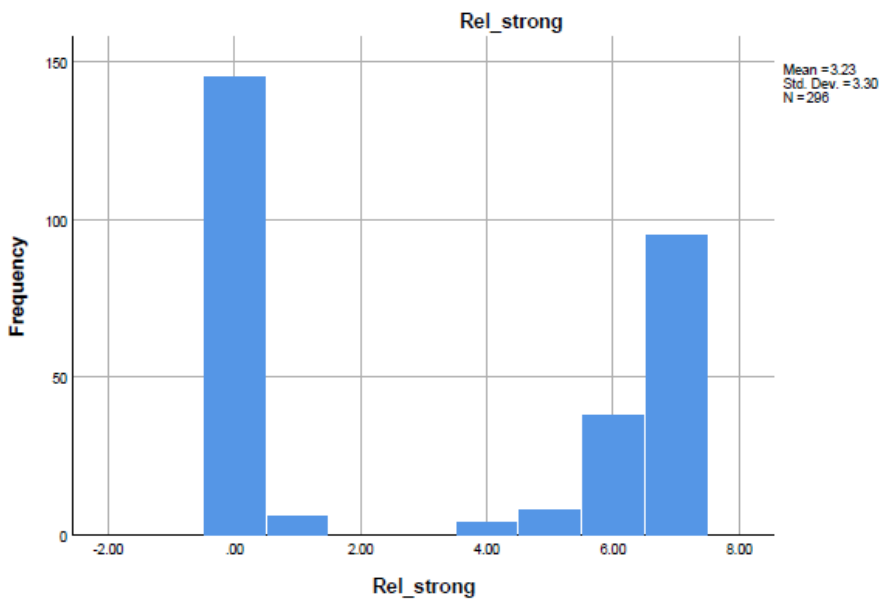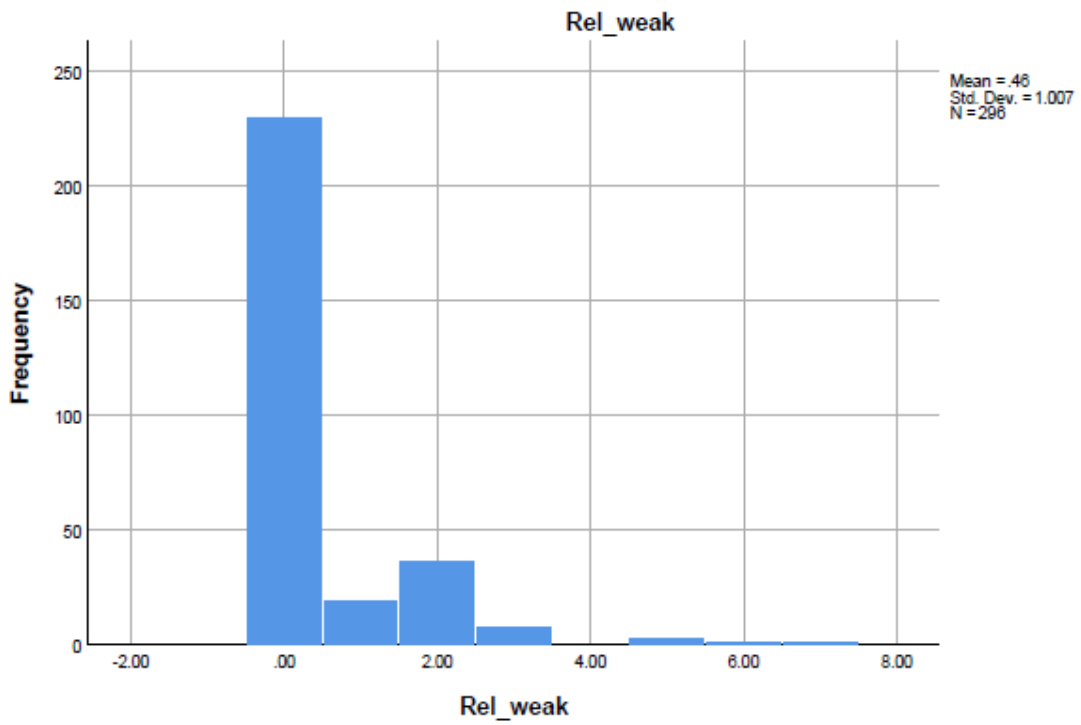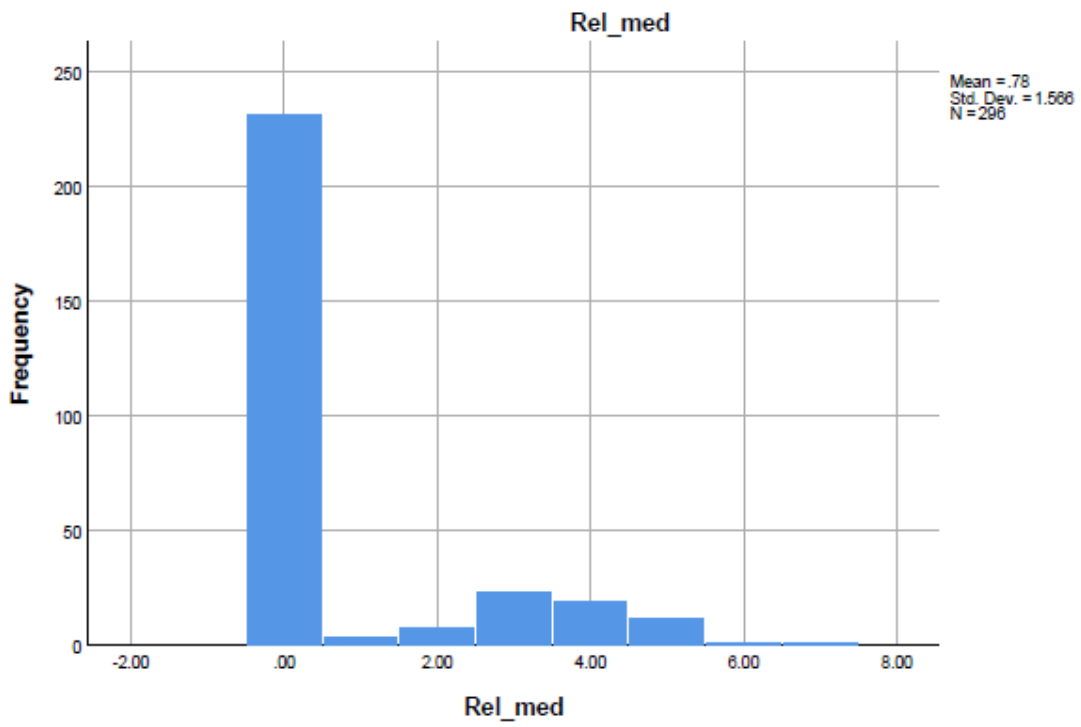
Appendix 4: Propensity to Trust

Post_trust_1to5

Mean = 3.26
Std. Dev. = 1.532
N = 296

Perspective_trust_1to5

Mean = 3.34
Std. Dev. = 1.552
N = 296

Neg_trust_1to5_recode

Mean = 3.22
Std. Dev. = 1.56
N = 296

Info_trust_1to5

Mean = 3.09
Std. Dev. = 1.496
N = 296
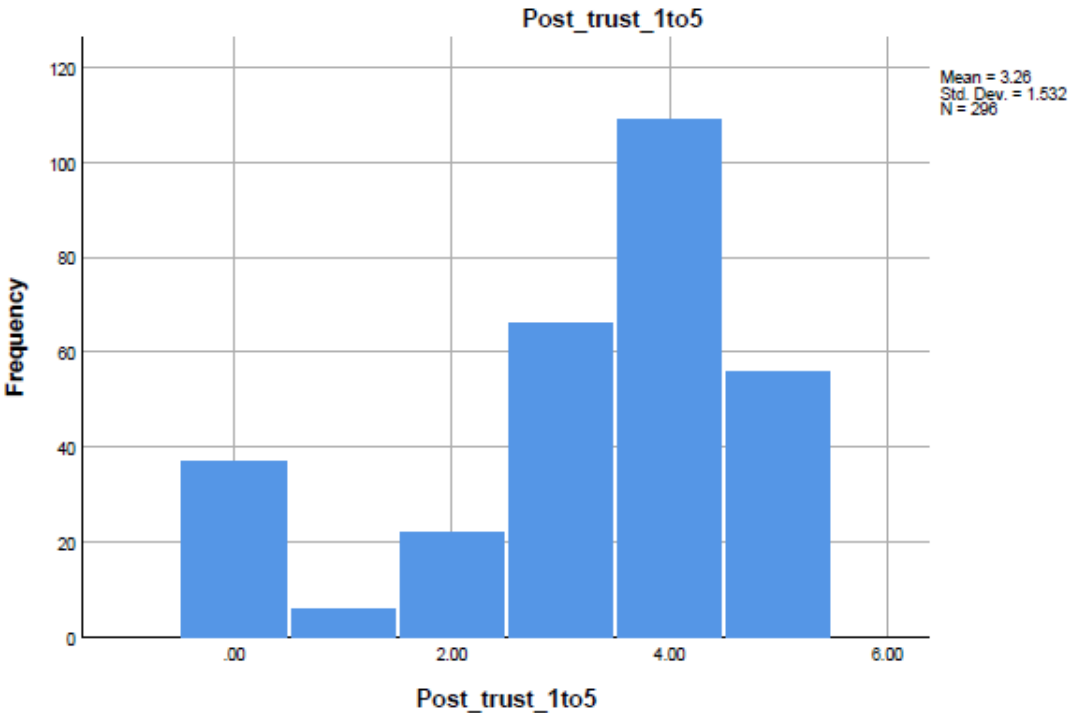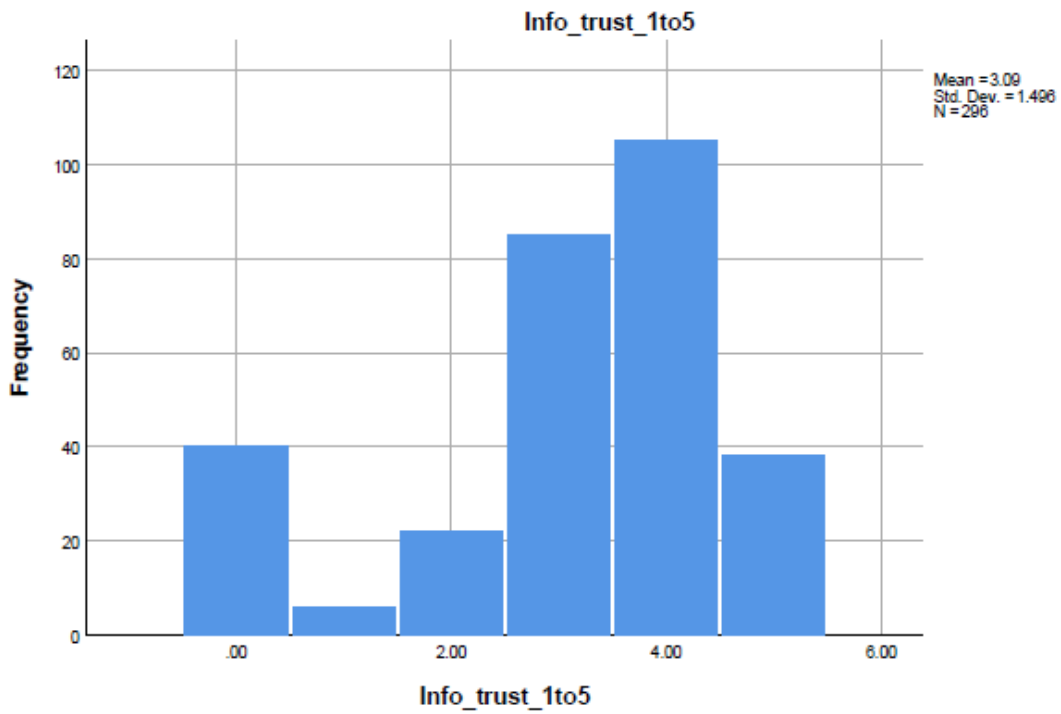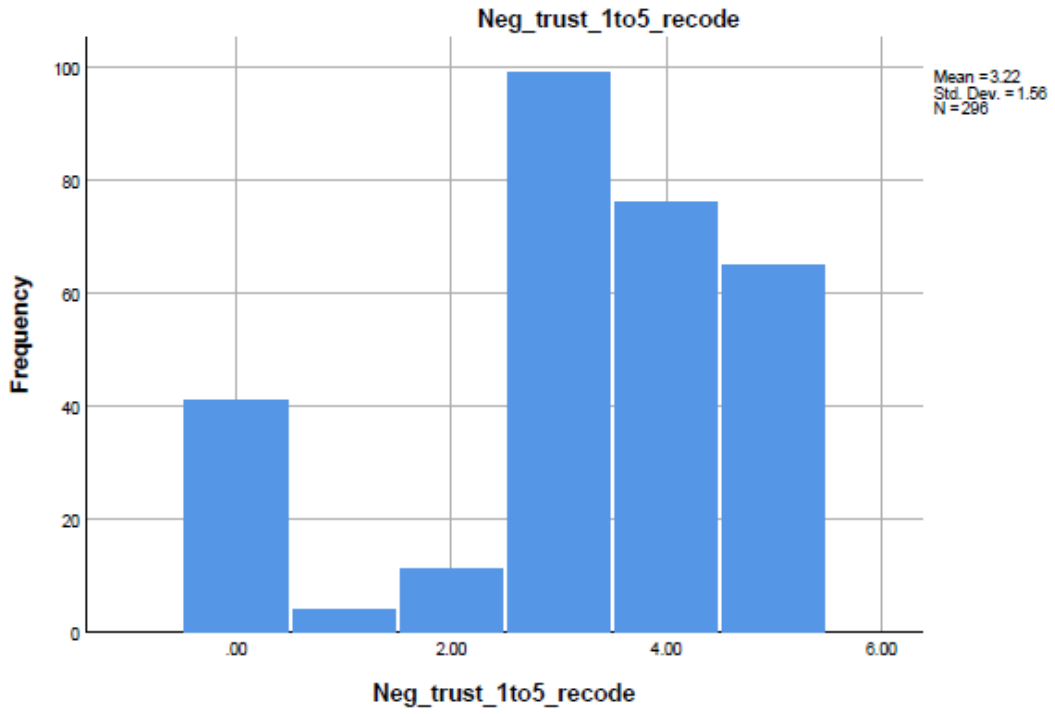
Appendix 5: Susceptibility to Influence

We're almost done. Can you please answer the following questions about your buying habits?-IF I have a little knowledge of a product, I ask my friends about the product.

Mean = 3.3
Std. Dev. = 1.714
N = 296

Frequency

We're almost done. Can you please answer the following questions about your buying habits?-IF I have a little knowledge of a product, I ask my friends about the product.
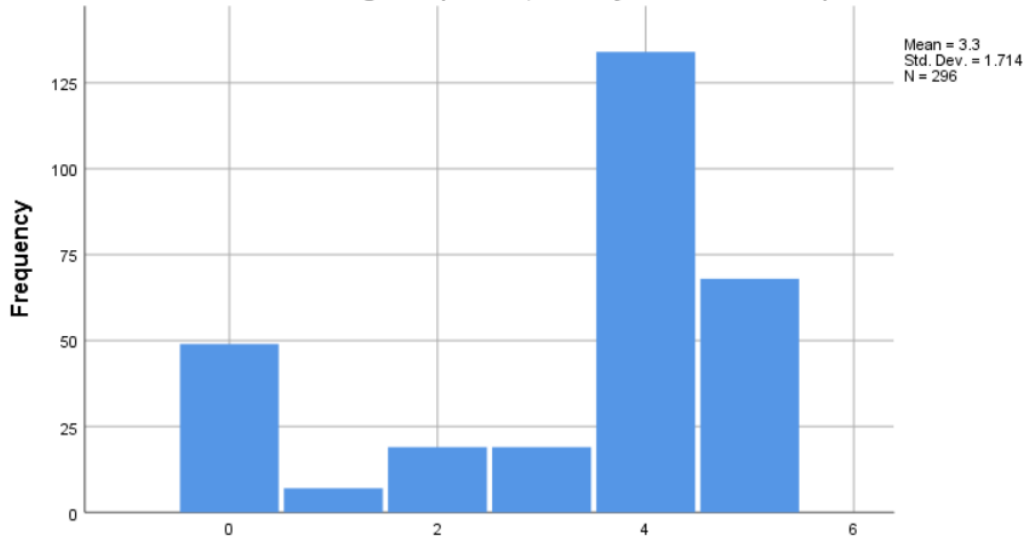
We're almost done. Can you please answer the following questions about your buying habits?-I often ask friends and family members about a product before I buy it.

Mean = 3.08
Std. Dev. = 1.718
N = 296

Frequency
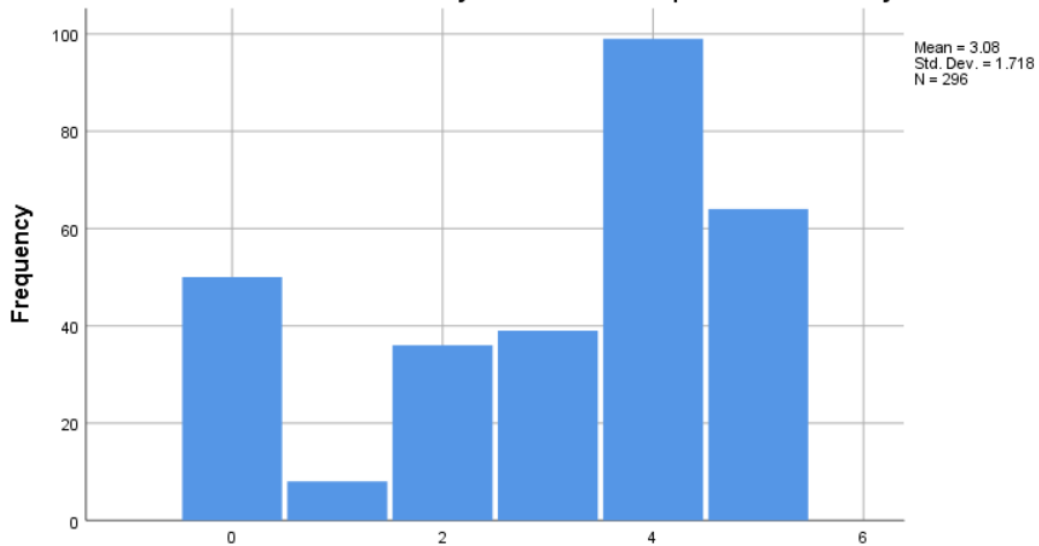
We're almost done. Can you please answer the following questions about your buying habits?-I often ask friends and family members about a product before I buy it.

We're almost done. Can you please answer the following questions about your buying habits?-I frequently check reviews on a product before making a decisions to purchase.

Mean = 3.7
Std. Dev. = 1.834
N = 296
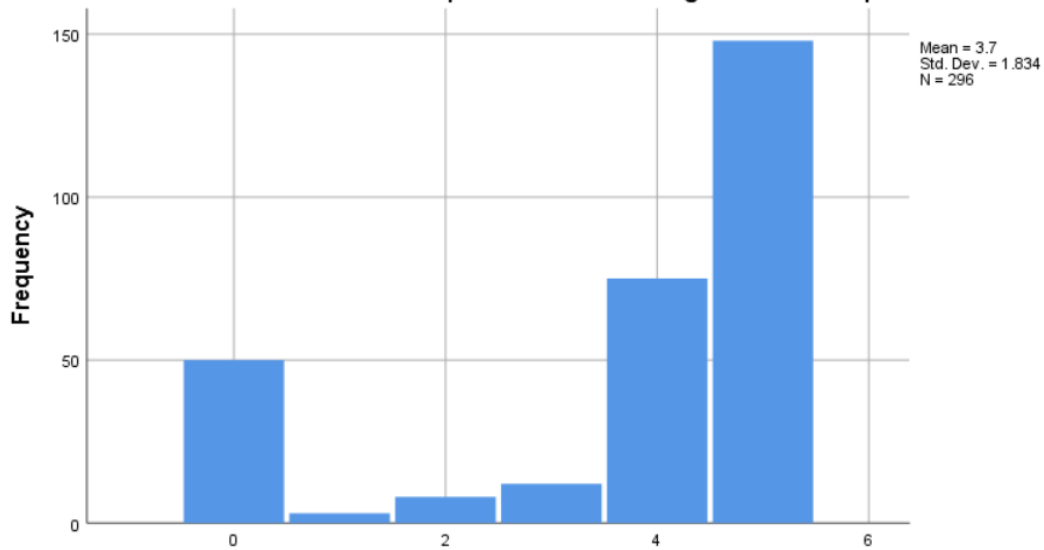
We're almost done. Can you please answer the following questions about your buying habits?-I frequently check reviews on a product before making a decisions to purchase.

We're almost done. Can you please answer the following questions about your buying habits?-I don't like to know what products other people like.

Mean = 1.67
Std. Dev. = 1.147
N = 296
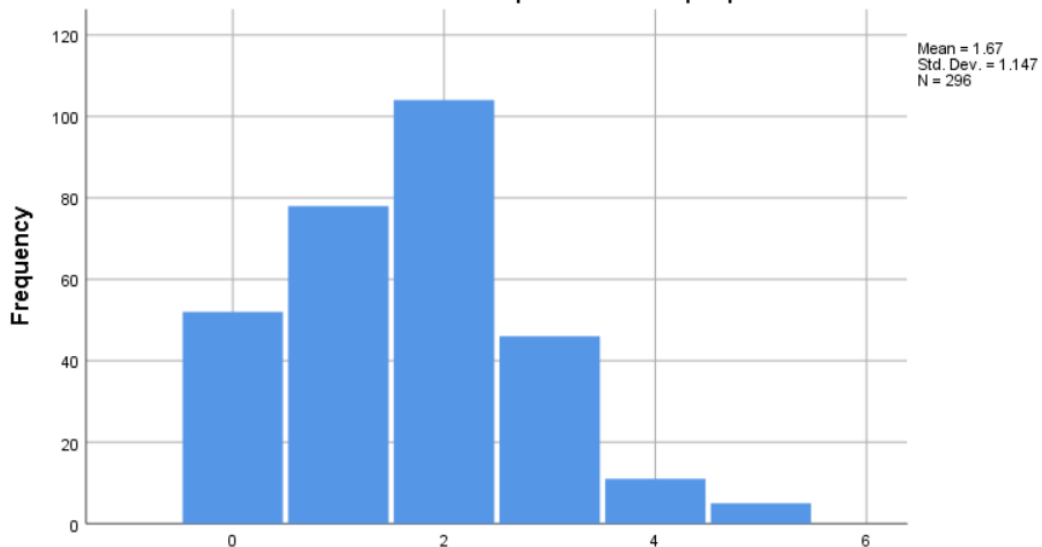
We're almost done. Can you please answer the following questions about your buying habits?-I don't like to know what products other people like.

Note: This last graph is not recoded. It's horizontally flipped (excluding the zero) when recoded.

Appendix 6: Adjusted R Square Increases

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.694[a]	.481	.480	1.06786
2	.710[b]	.505	.501	1.04520
3	.724[c]	.524	.519	1.02605
4	.728[d]	.530	.524	1.02174
5	.736[e]	.542	.534	1.01045
6	.741[f]	.549	.540	1.00435

a. Predictors: (Constant), Avg_trust

b. Predictors: (Constant), Avg_trust, Sum_strength

c. Predictors: (Constant), Avg_trust, Sum_strength, Avg_susceptibility

d. Predictors: (Constant), Avg_trust, Sum_strength, Avg_susceptibility, Pos hedonic

e. Predictors: (Constant), Avg_trust, Sum_strength, Avg_susceptibility, Pos hedonic, Prod_boots

f. Predictors: (Constant), Avg_trust, Sum_strength, Avg_susceptibility, Pos hedonic, Prod_boots, Are you:

Appendix 7: Coefficients of Stepwise Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.297	.153		1.934	.054
	Avg_trust	.718	.043	.694	16.516	.000
2	(Constant)	.115	.158		.727	.468
	Avg_trust	.619	.050	.598	12.336	.000
	Sum_strength	.112	.030	.181	3.726	.000
3	(Constant)	-.071	.164		-.432	.666
	Avg_trust	.464	.066	.449	7.003	.000
	Sum_strength	.130	.030	.209	4.336	.000
	Avg_susceptibility	.180	.052	.195	3.470	.001
4	(Constant)	-.058	.163		-.355	.723
	Avg_trust	.463	.066	.448	7.015	.000
	Sum_strength	.120	.030	.193	3.944	.000
	Avg_susceptibility	.181	.052	.196	3.494	.001
	Pos hedonic	.401	.215	.077	1.863	.063
5	(Constant)	-.237	.174		-1.359	.175
	Avg_trust	.407	.068	.394	5.952	.000
	Sum_strength	.157	.033	.253	4.763	.000
	Avg_susceptibility	.158	.052	.171	3.037	.003
	Pos hedonic	.648	.231	.124	2.805	.005
	Prod_boots	.419	.153	.139	2.745	.006
6	(Constant)	-.214	.173		-1.236	.218
	Avg_trust	.421	.068	.407	6.163	.000
	Sum_strength	.157	.033	.253	4.794	.000
	Avg_susceptibility	.255	.069	.276	3.699	.000
	Pos hedonic	.688	.230	.132	2.988	.003
	Prod_boots	.429	.152	.143	2.825	.005
	Are you:	-.278	.131	-.144	-2.129	.034

a. Dependent Variable: Purchase_intent_all_recode

Appendix 8: Factor Analysis - Eigenvalues

Total Variance Explained

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	5.751	71.893	71.893	5.47	68.385	68.385	4.935
2	1.078	13.474	85.367	.986	12.328	80.713	4.838
3	.347	4.333	89.700				
4	.258	3.227	92.927				
5	.194	2.426	95.353				
6	.163	2.039	97.392				
7	.127	1.593	98.985				
8	.081	1.015	100.000				

Extraction Method: Maximum Likelihood.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Appendix 9: Goodness of fit test and Pattern Matrix

Goodness-of-fit Test

Chi-Square	df	Sig.
50.564	13	.000

Pattern Matrix[a]

	Factor	
	1	2
Post_trust_1to5	1.030	-.090
Perspective_trust_1to5	.939	.015
Neg_trust_1to5_recode	.791	.057
Info_trust_1to5	.844	.068
We're almost done. Can you please answer the following questions about your buying habits?-IF I have a little knowledge of a product, I ask my friends about the product.	-.031	.955
We're almost done. Can you please answer the following questions about your buying habits?-I often ask friends and family members about a product before I buy it.	-.058	.950
We're almost done. Can you please answer the following questions about your buying habits?-I frequently check reviews on a product before making a decisions to purchase.	.071	.805
Q69_4_Recode	.066	.785

Extraction Method: Maximum Likelihood.
Rotation Method: Oblimin with Kaiser Normalization.

a. Rotation converged in 5 iterations.