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Attitude Formation and Malleability in Response to Visual Cues and Counterattitudinal Information

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ATTITUDE FORMATION AND MALLEABILITY IN RESPONSE TO VISUAL CUES AND

COUNTERATTITUDINAL INFORMATION

by

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(Under the Direction of Dorthie Cross)

ABSTRACT

BACKGROUND: The purpose of this research is to investigate how individuals form attitudes based on the appearance of another person and how malleable those attitudes are when the individual is presented with new information about the other person. The predicted effect from this study was that participants would form attitudes about another person's agreeableness based on visual information and that when presented counterattitudinal information would be more likely to change attitudes than information that matches their initial attitude. It was also expected that negative first impressions would be harder to change. METHOD: Participants ($N = 109$) were presented one of two versions of an image of a face (one version modified to enhance participants' impressions of the target's agreeableness, the other version modified to reduce impressions of the target's agreeableness) and asked to rate the target on the Big Five personality traits. Participants were then given a vignette in which the target was described as performing either a positive or a negative behavior and then asked to rate the target's personality again. Participants also completed a questionnaire about their own personality. RESULTS: Study hypotheses were partially supported. Participants did form impressions of the target's agreeableness based only on briefly presented visual information, and those impressions did change more in response to counterattitudinal than to consistent information but, contrary to hypotheses, only when the target was initially perceived as low in agreeableness. There were also findings related to participant personality and gender. These findings showed male participants formed more positive first impressions than women upon first viewing of the images. CONCLUSION: The attitudes and impressions from individuals about others can be manipulated by the appearance of that other person, however, the context in which the attitude is formed is also highly important.

INDEX WORDS: Attitude formation, Attitude change, Counterattitudinal information, Personality, Agreeableness, Gender

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CHAPTER 1

INTRODUCTION

Purpose

Impressions begin with the formation of attitudes, which, generally defined, are an individual's overall evaluations, including of themselves, others, and issues, and studying impression formation and attitudes can provide valuable information because of their potential to influence people's behaviors (see Petty & Briñol, 2010). For example, one study looked at the effects of interviewer first impressions of job applicants and found that interviewers engaged in confirmatory behavior during the interview in that the decisions made after the interview were influenced by evaluations of job applicants before the interview (Dougherty, Turban, & Callender, 1994). Clearly, the attitudes we form can have real-world consequences. The purpose of the current study is to look closer at how attitudes form and change when people are presented with information that does not match their initial impression.

Background

Attitude Formation. Attitudes can be categorized in two ways: implicit attitudes and explicit attitudes. Implicit attitudes are non-conscious, cannot be voluntarily activated, and are typically more gut-feeling judgements, whereas explicit attitudes are deliberate evaluations, are consciously available, and can be voluntarily activated by the individual (Petty & Briñol, 2010; Rydell, McConnel, Mackie, & Strain, 2006). Research has been conducted to investigate the amount of time it takes for a person to form an attitude about another individual, and findings show that those attitudes form quickly and implicitly. For example, Willis and Todorov (2006) presented participants with faces in the absence of time constraints or with time constraints ranging from 100 to 1000 milliseconds (ms) and then asked them to rate the pictured persons'

personality. Participants who viewed faces in the 100 ms condition formed impressions that were highly correlated with impressions formed by participants who viewed the faces without a time constraint. These findings show that impressions form quickly and implicitly, perhaps especially so in response to visual information.

Jay (1993) postulated individuals place a higher price on and are more likely to trust visual information than other kinds of sensory information, a theory he called *ocularcentrism*. This theory suggests that attitude formation is an implicit process that is disproportionately sensitive to visual information. If people put a higher price on visual information, it follows that people form judgements quickly and implicitly after only seeing a stimulus for a brief time. In addition, once established, that implicit attitude may be slow to change in response to new information.

Attitude Change. The process of changing attitudes is facilitated by methods of persuasion, which is defined as an individual receiving a message from a source with the goal of trying to change their attitude about a subject. The success of the persuasion attempt is determined by whether the individual's attitudes are altered desirably or not (Petty & Briñol, 2010). Several contemporary models have been developed to explain how persuasion functions.

For example, the Elaboration Likelihood Model (ELM) of persuasion theorizes that attitudes can be changed through two different routes; the *central route*, which requires more deep and thoughtful processing of information to make a judgement, and the *peripheral route*, which is a less thoughtful method of judgement making. When following the central route and thinking carefully about information provided, people are more likely to be persuaded by their own thoughts, rather than by heuristic cues; however, when not motivated to think about

information provided to them, people are more likely to be persuaded by heuristic cues (Petty & Briñol, 2010).

The Heuristic-Systematic Model of persuasion approaches attitude change from a similar perspective. It describes judgement from either a *systematic perspective* or a *heuristic perspective*. The systematic perspective is described as needing more cognitive effort to process information and make an effective judgement. This is like the central route component of the ELM described earlier. As such, the systematic approach requires people to be motivated to process information presented to them (Chaiken, Liberman, & Eagly, 1989). The heuristic perspective describes judgement and information processing as a less thoughtful approach in which people are more encouraged to rely on schemas and prior knowledge to help them form judgements. This relates to the peripheral route described in the ELM (Chaiken et al., 1989).

Both models focus on the processing of information and change of attitudes from both an explicit (central route and systematic approach) and an implicit (peripheral route and heuristic approach) standpoint. These models demonstrate that outside information can have a meaningful effect on people's attitudes and decision making. More specifically, information can be effective in changing both explicit and implicit attitudes (Rydell et al., 2006), but the processes underlying change may differ.

Counterattitudinal Information. According to Rydell et al. (2006), attitudes can be changed through the presentation of counterattitudinal information, or information that challenges an established attitude, but there is a difference in the rates of how explicit attitudes versus implicit attitudes are changed. Rydell et al. found that after the presentation of counterattitudinal information over the course of 100 test trials following 100 control trials, explicit attitudes changed more rapidly and non-linearly than implicit attitudes. Explicit attitudes

were high in the first condition, which did not present any counter attitudinal information, but showed a dramatic decrease in the following condition, which presented participants with 20 trials of counterattitudinal information. Implicit attitudes, however, changed more gradually and linearly, which reflected that at the conscious level, attitudes change more easily, and at the unconscious level, attitudes take more time and effort to change. Importantly, Rydell et al.'s study examined the impact of textual counterattitudinal information on attitudes formed based on earlier textual information. Whether implicit attitudes based on visual information can be changed with counterattitudinal information is less clear. Jay's (1993) theory could suggest that people prize visual information so highly that other types of information are not able to influence their attitudes and impressions.

It is worth mentioning the studies conducted by Rydell et. al. (2006) only presented participants with positive information initially and presented either consistent or inconsistent counterattitudinal information afterward. A separate study found negative first impressions are more resistant to change than positive first impressions (Muthukrisnan & Chattopadhyay, 2007), and the authors posited that the most effective way to change negative first impressions is to present "challenge" information that is positive and focuses on new information about the target rather than comparing the target to something else. This is because comparative information leads to a greater recall of specific information which people did not like about the target initially (Muthukrisnan & Chattopadhyay, 2007). Interestingly, using a longitudinal field study of first-year college students and a laboratory experiment, Kammrath, Ames, and Scholer (2007) found that different personality traits on the Big Five Inventory were differently vulnerable to contrary information over time. Whereas, positive impressions of high agreeableness, high conscientiousness, and low neuroticism changed in response to small amounts of contrary

negative information, impressions of high extraversion and low openness were highly resistant to the effects of contrary information. Considering the theories and findings of Jay (1993), Rydell et al. (2006), and Muthukrisnan and Chattopadhyay (2007) together, it remains unclear whether and under what conditions counterattitudinal information can change a negative implicit attitude based on visual information.

  Perceiver Effects. Much research has been conducted on the effects of the perceived individual or object (i.e., target) on the perceiver's impression; however, there is also a body of literature on the effects of the perceiver themselves on their own first impressions. Gender and personality affect the impressions formed by the perceiver. Mattarozzi, Todorov, Marzocchi, Vicari, and Russo (2015) tested the effects of gender and personality on perceiver impressions by showing trustworthy-rated and neutral-rated faces to both men and women. They found that women were more likely to rate the faces pre-rated as trustworthy as more trustworthy than men did, and women also rated faces that looked unfamiliar with less confidence than men. They also found that people with low agreeableness as well as high trait aggression rated unfamiliar faces as less trustworthy.

  Srivastava, Guglielmo, and Beer (2010) investigated different models of why perceiver effects occur, and their findings might help to explain why, compared to more agreeable and less aggressive people, less agreeable and more aggressive people would be more likely to form an initial impression of someone as less trustworthy. The models Srivastava et al. investigated were partially derived from the *social relations model* (Kenny, 1994; Kenny & La Voie, 1984), which represents how much a perceiver sees a trait in a target in a given interpersonal interaction as an equation with four variables: (1) how much people perceive that trait in others on average, (2) how much that particular perceiver is likely to see that trait in any target, (3) how much that

particular target is likely to be seen as having that trait by others, and (4) the unique relationship between those particular perceiver and target effects. These variables are summed to form a score of the perception of a target by a perceiver.

Srivastava et al. (2010) broke the *social relations model* down further and tried to home in on perceiver effects (the second variable in the equation). They present three possible models that could explain perceiver effects: the *five-factor model of personality* (Digman, 1990), the *agency and communion model* (Bakan, 1966), and the *global evaluation model* (Nisbett & Wilson, 1977). According to Srivastava et al., the *five-factor model of personality* (the Big Five) shapes how people form judgements about others based on a concept known as assumed similarity, or peoples' tendency to assume other people are like themselves with respect to the big five traits (i.e., extraversion, openness, agreeableness, consciousness, and neuroticism).The *agency and communion model* is similar to the previous model but tries to simplify the way we look at personality traits by focusing on just two factors that encompass the Big Five factors. The agency factor encompasses extraversion and openness, and the communion factor encompasses agreeableness, conscientiousness, and neuroticism.

Unlike the first two models, however, the *global evaluation model* does not focus on personality and instead suggests that people judge a target first on a grand scale of good to bad general character, which contributes to a halo effect that then affects the judgment of the target's specific attributes. Srivastava et al. (2010) conducted two studies to test all these models. Both studies involved introductory psychology students who were being tested for perceiver effects using each of the different models. The second of the two was a longitudinal study to test for longevity of perceiver effects. The first study found the *five-factor model of personality* was a better fit for describing perceiver effects than the *agency and communion model* or the *global*

evaluation model. The second study was a longitudinal study which examined not only the best model of perceiver effects, but also how stable perceiver effects become over time. Introductory psychology students were recruited and asked to participate in several group activities over several weeks. At the conclusion of the study, it was found the results from study one were replicated in that the most preferred model for perceiver effects was the five-factor model. In addition to this finding, correlations of perceiver effects between weeks began to shrink over time indicating these perceiver effects do become more stable over time as a group interacts. It is possible that the reason participants low in agreeableness and high in trait aggression rated unfamiliar faces as less trustworthy in Mattarozzi et al.'s (2015) study is because they assumed the target was similar to themselves.

Current Study

  Aims. The proposed study focused on how malleable impressions are once they have first been formed. I examined whether people form "snap judgements" of another person's personality based only on visual information, whether and how much people's initial judgements change in response to learning new information about the other person, and difference in malleability of negative versus positive first impressions. In addition, I examined the role of a person's gender and personality on their first impressions of others.

  The study involved participants viewing an image a of face. One face will have a positive valence (i.e., pre-rated as high in agreeableness) and one face will have a negative valence (i.e., pre-rated as low in agreeableness). Once participants have viewed the image, they will answer questions about the target's overall personality, including agreeableness. Then, new information (either consistent or counterattitudinal) will be presented to the participants in the form of a short

vignette. After reading the vignette, participants will be asked to rate the target again on the same traits.

     Hypotheses. Based on my review of the literature, I developed and tested the following hypotheses:

- First, based on Willis and Todorov (2006), I hypothesized that after only a brief exposure to images of faces, participants would rate faces pre-rated as high in agreeableness as more positive than faces pre-rated as low in agreeableness.

- Second, based on Rydell et al. (2006), I hypothesized that information that did not match participants' initial judgement would influence their impression more than information that matched their initial judgement. I expected that participants' impressions would be more likely to change once they learned something new and different about the individual they were viewing, whereas participants who received information which confirmed their initial judgement would be more likely to maintain their initial judgements about the individual.

- Third, based on Kammrath et al. (2008) and Muthukrisnan and Chattopadhyay (2007), I hypothesized that ratings of agreeableness would change in response to counterattitudinal information, but that there would be more resistance to change in the negatively valenced image condition (low agreeableness) compared to the positively valenced image condition (high agreeableness).

- Finally, based on Mattarozzi et al. (2015) and Srivastava et al. (2010), I hypothesized that women participants and participants high in agreeableness would be more likely to form more positive first impressions than men participants and participants low in agreeableness (i.e., rate the target as more agreeable).

CHAPTER 2

METHOD

Participants

Recruitment. A total of 128 participants were recruited from a pool of undergraduate students enrolled in introductory psychology courses at Georgia Southern University. All participants were at least eighteen years old, reviewed an informed consent document and indicated their consent prior to beginning the study. There were no other inclusions or exclusions for participation. Recruitment was through the SONA online research program. Students viewed a brief study description and, if interested, clicked on a link to the actual study, beginning with the informed consent page. The study was conducted through Qualtrics and was anonymous (i.e., no identifying information or IP addresses collected). Upon completion of the study, participants received a code that they then emailed to the research team to receive course credit for research participation.

Sample description. For the total sample ($N = 128$), the average age was 21.35 (6.37) and ranged from 18 to 66 years. Ninety-four (73.4%) of the participants identified as female, 23 (18.0%) as male, and two (1.6%) as transgender or non-binary. One participant elected to self-describe. In terms of race and ethnic background, 65 (50.8%) participants identified as white, 32 (25.0%) as Black/African American, six (4.7%) as Hispanic/Latinx, 10 (7.8%) as bi- or multi-racial, and two as Asian (1.6%). Two (1.6%) participants selected the 'Other' category, one participant indicated they preferred not to respond, and two (1.6%) participants skipped the item. Eight (6.3%) participants who enrolled in the study discontinued early and did not provide demographic data.

Of this sample, data from 19 participants were excluded from further analyses for failure to meet data quality criteria. Four participants were excluded for missing a manipulation check, three participants were excluded because they indicated that they did not pay close attention and that their data should not be included in the study, two participants were excluded from the study because they missed both attention checks, eight participants were excluded because they provided incomplete data, and two participants were excluded because they missed multiple different checks. See Table 1 for demographic characteristics of the retained sample.

Table 1. Retained Sample Demographics ($N = 109$)

Demographic Characteristic	Value
Age—M (SD)	21.13 (5.89)
Gender—N (%)	
Women	87 (79.8%)
Men	20 (18.2%)
Transgender/Non-binary	1 (.9%)
Prefer to self-describe	1 (.9%)
Race/ethnicity—N (%)	
White	57 (52.3%)
Black/African American	29 (26.6%)
Hispanic/Latinx	6 (5.5%)
Bi-/Multi-Racial/Ethnic	10 (9.2%)
Asian	2 (1.8%)
Other	1 (.9%)
Declined	2 (1.8%)
No Response	2 (1.8%)

Materials

Stimuli. Participants were presented an image of a face and rated their impressions of the target's personality based on the face. Then, participants read a short vignette about the target and again rated their impressions of the target's personality.

Images. Each participant viewed one of four images of a Caucasian man's face drawn from the Basel Face Database, which provides images of faces and participant ratings on each of the Big Five Personality traits (Walker, Schönborn, Greifeneder, & Vetter, 2018). Walker et al.

(2018) altered images to elicit differences in impressions of high and low scores on each trait and then collected personality ratings of the original and altered versions from 481 participants. For the purposes of this study, I selected four images based on altered versions of two individuals' faces. The individuals' images had been altered to elicit high and low impressions of agreeableness (see Appendix A for a copy of both images and their pre-rated agreeableness scores). Each participant viewed only one face, and the face was presented for 1 second. Based on the research by Willis and Todorov (2006), 1 second should be adequate time for participants to form a confident impression of the individual in the picture.

Vignettes. After viewing an image of a face and rating their impression of the person's personality, participants read a short vignette that described behaviors performed by the individual in the picture (see Appendix B). The vignette described a man named Will shopping at the grocery store, and before he checks out, he is asked if he would like to donate canned goods to a local food bank. In the positive behavior condition, Will happily donates some of his canned goods before leaving the store. In the negative behavior condition, Will complains about how annoying it was being asked to donate, quickly pays, and storms out of the store without donating any canned goods. The two versions of the vignette were the same word length, and there were no time constraints placed on reading the vignettes. Participants read at their own pace.

Measures. Participants completed impression ratings of the target's personality after viewing the face and then again after reading the vignette. In addition to the personality impression ratings, they completed questions regarding their rating of other impressions (e.g., attractiveness). After both sets of impression ratings were complete, participants responded to

two self-report questionnaires about their own personality and their attitudes about gender and a

demographics form.

Impression ratings. The impression ratings were measured using a 22-item questionnaire

created for this study (see Appendix C). The questionnaire included 14 items about general

personality characteristics, including six agreeableness items and two items each for openness,

conscientiousness, extraversion, and neuroticism. Additional items measuring perceived

attractiveness, masculinity, and friendship potential were included. Only the six agreeableness

items were used in data analysis for this study. Participants completed this rating form at two

points. Once prior to reading a vignette and then again afterward.

The six agreeableness items showed high internal consistency. The internal consistency

of initial ratings of agreeableness (after viewing the face) ranged from .79 to .91 across the four

faces. The internal consistency of the second ratings of agreeableness (after reading the vignette)

ranged from .71 to .92 across all eight (2 faces x 4 vignettes) conditions. See Table 2 for the

internal consistency of agreeableness impression ratings across all study conditions.

Table 2. Internal Consistency of Impressions of Agreeableness Across Conditions

	Picture Condition	**Time 1 α**	**Vignette Condition**	**Time 2 α**
Face 1	High Agreeable	.79	Good Behavior (CONSIST)	.85
			Bad Behavior (COUNTER)	.71
	Low Agreeable	.91	Good Behavior (COUNTER)	.88
			Bad Behavior (CONSIST)	.87
Face 2	High Agreeable	.87	Good Behavior (CONSIST)	.91
			Bad Behavior (COUNTER)	.86
	Low Agreeable	.86	Good Behavior (COUNTER)	.92
			Bad Behavior (CONSIST)	.89

Note: CONSIST = Information in the vignette matches participants' presumed initial impressions based on the picture condition; COUNTER = information in the vignette does not match (is counterattitudinal to) participants' presumed initial impressions based on the picture condition

To make sure the match between picture condition and vignette condition was effectively

randomized and that manipulations were strong enough, a 4 (vignette condition) × 2 (picture

condition) MANOVA was conducted. The dependent variables in this analysis were the mean

agreeableness ratings at Time 1 and Time 2. If effectively randomized and manipulations were

strong enough, Time 1 ratings of agreeableness would vary by picture condition but not by

vignette condition, and Time 2 ratings would vary by vignette condition. As expected, when

measuring for first time agreeableness ratings, there was a significant difference in picture

condition, F (3, 101) = 5.46, MSE = .92, p =.002, partial η^2 =.14 (i.e., impression ratings were

different based on the picture participants viewed), but no significant difference in vignette

condition, F (1, 101) = .17, MSE = .03, p =.68, partial η^2 =.002 (i.e., initial impression ratings

were not different based on the vignette because the participants had not yet read the vignette).

Finally, there was an expected significant difference in vignette condition when measuring for

the second set of agreeableness ratings, F (1, 101) = 477.13, MSE = 79.96, p < .001, partial η^2

=.83 (i.e., the second set of impression ratings were different based on the vignettes participant

read).

   Participant personality self-ratings. Participants were also asked to complete the *Big*

Five Inventory (BFI) measuring the Big Five personality factors (John & Srivastava, 1999). The

BFI is a 44-item self-report questionnaire of the five-factor model of personality. It includes an

agreeableness scale with nine items. Only that subscale was used in study analyses.

Agreeableness impression ratings showed good internal consistency (α = .72) in the current

sample. For the current study, BFI agreeableness scores were split at the 50th percentile to create

a dichotomous high-low agreeableness variable.

   Demographics. Demographic information was collected using an edited version of a

demographics form used in previous studies. The form included questions concerning age,

gender, ethnicity, religion, and political affiliation (see Appendix D).

Attention and manipulation checks. To ensure that only quality data were included in the study analyses, a few additional items were added to the study (see Appendix E). First, to confirm that participants read the vignette, they answered two questions about the vignette after they completed all impression ratings. One of the items was included to ensure that manipulation of the vignette was strong enough. Participants who did not answer the manipulation check correctly were excluded from further data analysis ($n = 11$). Second, two simple attention check items were embedded within the survey. Participants who failed both attention check items were excluded from further data analysis ($n = 7$). Third, at the very end of the survey, participants were asked to indicate whether they attended to the survey and whether their data should be retained. Participants who indicated they did not pay attention were excluded from further data analysis ($n = 11$).

Supplemental measure. In addition to the measures described above, participants completed the *Gender Attitude Inventory* (GAI; Ashmore, Bilder & Del Boca, 1995), but those data were not analyzed in the current study.

Procedure

After completing the informed consent, participants were randomly presented with one of the four faces, and they viewed the face for 1 second. Once participants viewed the face, they were asked to rate their impression of the individual's personality and other traits (e.g., attractiveness, masculinity). They were then randomly presented one of two versions of a short vignette describing a behavior (either positive or negative) performed by the individual. Once participants read the vignette describing the individual they just saw, they were asked to give their impression of the individual again using the same impression rating items. See Table 3 for the number of participants randomly assigned to each condition. (Numbers reflect only the final

retained sample.) After completing both sets of impression ratings, participants then answered

manipulation check questions about the situation described in the vignette to ensure they paid

attention to the vignette.

Table 3. Number of Participants Randomly Assigned to Each Condition

Picture Condition		*N*	Vignette Condition	*N*
Face 1	High Agreeable	28	Good Behavior (CONSIST)	11
			Bad Behavior (COUNTER)	17
	Low Agreeable	25	Good Behavior (COUNTER)	14
			Bad Behavior (CONSIST)	11
Face 2	High Agreeable	26	Good Behavior (CONSIST)	11
			Bad Behavior (COUNTER)	15
	Low Agreeable	30	Good Behavior (COUNTER)	17
			Bad Behavior (CONSIST)	13

Note: CONSIST = Information in the vignette matches participants' presumed initial impressions based on the picture condition; COUNTER = information in the vignette does not match (is counterattitudinal to) participants' presumed initial impressions based on the picture condition

After completing all impression ratings, participants completed the BFI and the GAI. The

order of those two questionnaires was randomized, and an attention check item was embedded

within each questionnaire. Finally, participants completed the demographics form, followed by

the item asking them to rate their own attention level. At the end of the study, participants were

debriefed and given a code to receive course credit. All study procedures were approved by the

Institutional Review Board at Georgia Southern University.

Upon completion of data collection, it was noted the mean study completion time for the

retained sample was 5554.02 seconds (92.56 minutes), *SD* = 28610.52 seconds (476.84 minutes),

which was unexpected. The mean duration included nine extreme outliers who took 1743

seconds (29.05 minutes) or longer to complete the study. It is likely these individuals started the

study, took a break, and returned later to finish.

Missing data. For the two sets of ratings of target agreeableness (six items) and the

participant self-report of their own agreeableness (nine items), scores were only included in

analyses if no more than one item was missing, but this cutoff did not affect any cases not

already excluded for other reasons. Only two cases in the retained sample had missing items, and the items were replaced with the series mean. For one participant, one agreeableness impression rating item was replaced, and for another participant, one BFI agreeableness item was replaced.

CHAPTER 3

RESULTS

Hypothesis 1

Participants will form impressions based only on brief (1 second) visual information and will rate faces pre-rated as high in agreeableness as more positive than faces pre-rated as low in agreeableness. To test this first hypothesis, a one-way between-subjects ANOVA was used to analyze the data. The independent variable was picture condition, and the dependent variable was the mean of the six agreeableness impression items completed at Time 1, just after participants saw the face (see Table 4 for Time 1 ratings across picture conditions). There was a significant difference in agreeableness impressions across picture conditions, F (3, 105) = 5.58, MSE = .16, p = .001, partial η^2 = .14. Post-hoc Bonferroni comparisons showed that for Face 1, participants' impressions of agreeableness were higher in the enhanced agreeableness image than the reduced agreeableness image, p = .03, but no difference was found for Face 2. There was also a significant difference between Face 1 with reduced agreeableness and Face 2 with enhanced agreeableness, p = .001. Except for ratings of the Low Agreeable Face 2, results supported the hypothesis. Overall, it seems the Low Agreeable Face 2 was seen as somewhat more agreeable than expected in the current sample despite its low pre-rating in Basel Face Database.

Table 4. Mean Impressions of Agreeableness Across Conditions

Picture Condition		Time 1 Rating *M* (*SD*)	Vignette Condition	Time 2 Rating *M* (*SD*)
Face 1	High Agreeable	2.29 (.07)	Good Behavior (CONSIST)	3.18 (.35)
			Bad Behavior (COUNTER)	1.32 (.30)
	Low Agreeable	1.97 (.07)	Good Behavior (COUNTER)	3.32 (.38)
			Bad Behavior (CONSIST)	1.70 (.39)
Face 2	High Agreeable	2.42 (.09)	Good Behavior (CONSIST)	3.20 (.34)
			Bad Behavior (COUNTER)	1.52 (.43)
	Low Agreeable	2.21 (.08)	Good Behavior (COUNTER)	3.27 (.47)
			Bad Behavior (CONSIST)	1.47 (.54)

Note: CONSIST = vignette matches participants' initial impressions based on the picture condition; COUNTER = vignette does not match (is counterattitudinal to) participants' initial impressions based on the picture condition

Table 4 also includes Time 2 agreeableness impression ratings, completed after the participants read the vignette. Overall, participants' ratings of agreeableness impressions were higher when the target (Will) showed good behavior (was friendly, donated) than when he showed bad behavior (complained, did not donate). A one-way between-subjects ANOVA was conducted, and the difference in agreeableness impressions between vignette conditions was significant, $F (1, 107) = 503.67$, $MSE = 84.97$, $p < .001$, $\eta^2 = .83$. Participants who read the version of the vignette in which Will showed good behavior rated him as more agreeable than did participants who read the version in which he showed bad behavior.

Hypothesis 2

Counterattitudinal information presented in the vignettes will lead to greater changes in impressions of agreeableness than information that matches participants' initial judgement. To test this second hypothesis, Time 2 ratings were subtracted from Time 1 ratings to create a variable reflecting relative impression change. Then, a one-way between-subjects ANOVA was conducted. The dependent variable was mean change in impression ratings from Time 1 to Time 2, and the independent variable had four levels: (1) High Agreeable Face with Consistent Vignette, (2) High Agreeable Face with Counterattitudinal Vignette, (3) Low Agreeable Face with Consistent Vignette, and (4) Low Agreeable Face with Counterattitudinal Vignette (see Table 5 for descriptives for these four levels.)

Table 5. Mean Relative Change in Agreeableness Ratings from Time 1 to Time 2

Picture Condition (Faces 1 and 2 Collapsed)	Vignette Condition	Change M (SD)
High Agreeable	Good Behavior (CONSIST)	+.83 (.54)
	Bad Behavior (COUNTER)	-.93 (.46)
Low Agreeable	Good Behavior (COUNTER)	+1.17 (.59)
	Bad Behavior (CONSIST)	-.49 (.51)

Note: CONSIST = vignette matches participants' initial impressions based on the picture condition; COUNTER = vignette does not match (is counterattitudinal to) participants' initial impressions based on the picture condition

The ANOVA results showed that there were significant differences in how much impression ratings changed, $F(3, 105) = 7.07$, $MSE = 1.88$, $p < .001$, $\eta^2 = .17$ (see Figure 1). Specifically, participants who saw either a high agreeable face and read about bad behavior or saw a low agreeable face and read about good behavior (counterattitudinal information) reported greater changes in their impressions of the target's agreeableness than did participants who saw a low agreeable face and read about bad behavior (consistent information). The high agreeable face/good behavior condition was not significantly different than any of the other conditions. These results partially support the hypothesis. The counterattitudinal information led to more change in impressions than did consistent information, but only for consistent negatively valenced face and vignette. No difference was found between counterattitudinal information and consistent positively valenced face and vignette.

Figure 1. Absolute Change in Impressions in Response to Consistent or Counterattitudinal Information
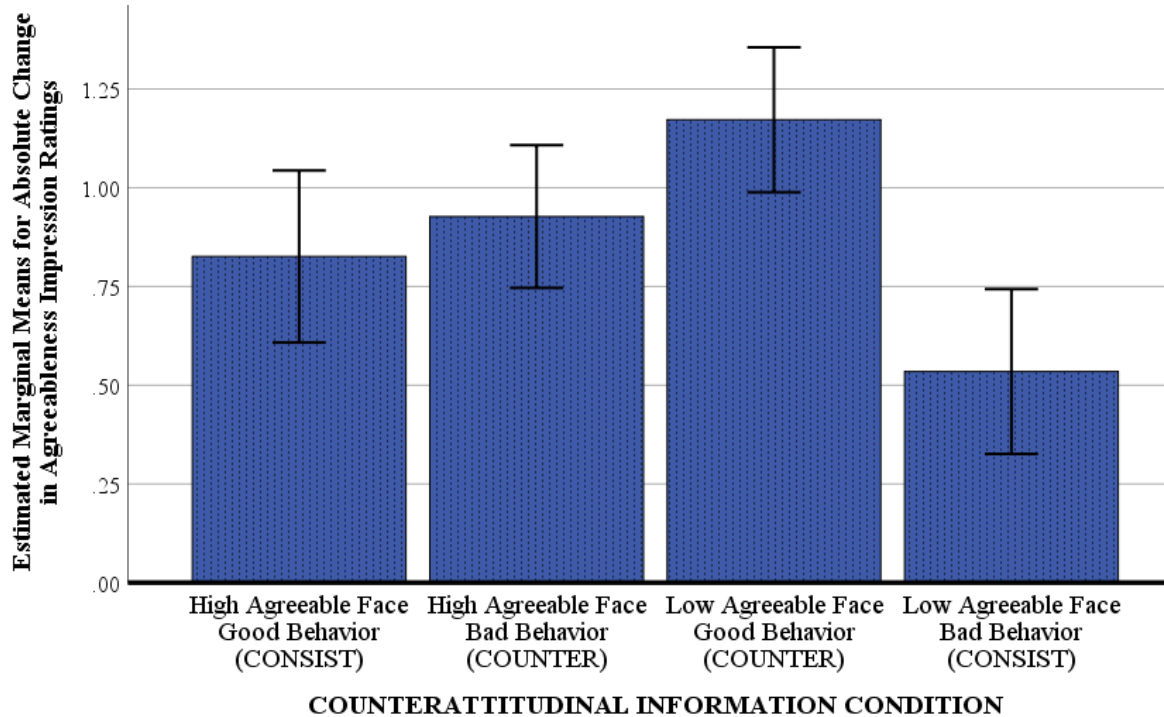
Note: Error bars represent 95% confidence intervals; CONSIST = vignette matches participants' presumed impressions based on picture condition; COUNTER = vignette does not match (is counterattitudinal to) participants' presumed impressions based on picture condition

Hypothesis 3

There will be more resistance to counterattitudinal information presented in the vignettes for participants who first view the negatively valenced image (pre-rated low agreeableness) compared to participants who first view the positively valenced image (pre-rated high agreeableness). The analysis conducted to test the second hypothesis also addresses this third hypothesis, and results do not support the hypothesis. Ratings of agreeableness were *less* resistant to counterattitudinal information (i.e., were more likely to change) when initial impressions were negative (see Figure 1).

Hypothesis 4

Women participants and participants high in agreeableness will report more positive first impressions than men participants and participants low in agreeableness. An additional 4 (picture condition) $\times$ 2 (participant agreeableness) $\times$ 2 (participant gender) between-subjects ANOVA was conducted. The dependent variable was mean agreeableness item ratings at time 1 (immediately after seeing the picture). Participant agreeableness was based on participant self-report of their own agreeableness on the BFI, and scores were dichotomized at the 50th percentile for high and low agreeableness categories.

Consistent with previous analyses, there was a significant main effect of picture condition on agreeableness impressions at Time 1 (see Table 6). There were also significant main effects of participant agreeableness and participant gender. Compared to participants who rated their own personalities as low in agreeableness, participants who rated themselves as high in agreeableness also rated the target as more agreeable across conditions, $M = 2.33$ ($SD = .07$) vs. $M = 2.19$ ($SD = .07$). This supports the study hypothesis. Contrary to another study hypothesis, however, men rated faces as more agreeable than women, $M = 2.34$ ($SD = 1.00$) vs. $M = 2.18$ ($SD = .04$).

Table 6. Between-subjects ANOVA results

Source	df	Mean Square	F	p	partial η²
Picture Condition	3	1.06	7.00	<.001	.19
Participant Agreeableness (BFI)	1	.96	6.32	.01	.07
Participant Gender	1	.90	5.94	.02	.06
Picture Condition × BFI	3	.11	.70	.55	.02
Picture Condition × Participant Gender	3	.46	3.02	.03	.09
BFI × Participant Gender	1	1.35	8.88	.004	.09
Picture Condition × BFI × Participant Gender	2	.05	.32	.73	.01
Error	91	.15			
Total	106				

There were also significant two-way interactions. There was a significant interaction of picture condition and participant gender. Men rated the high agreeable Face 2 target significantly higher on agreeableness compared to women (see Figure 2). There was also a significant interaction between participant agreeableness and participant gender. Men and women who rated themselves as low on agreeableness did not differ with each other on their impression of the target, but compared to women who rated themselves as highly agreeable, men who rated themselves as highly agreeable also rated the target as more agreeable (see Figure 3). There were no other significant interactions.
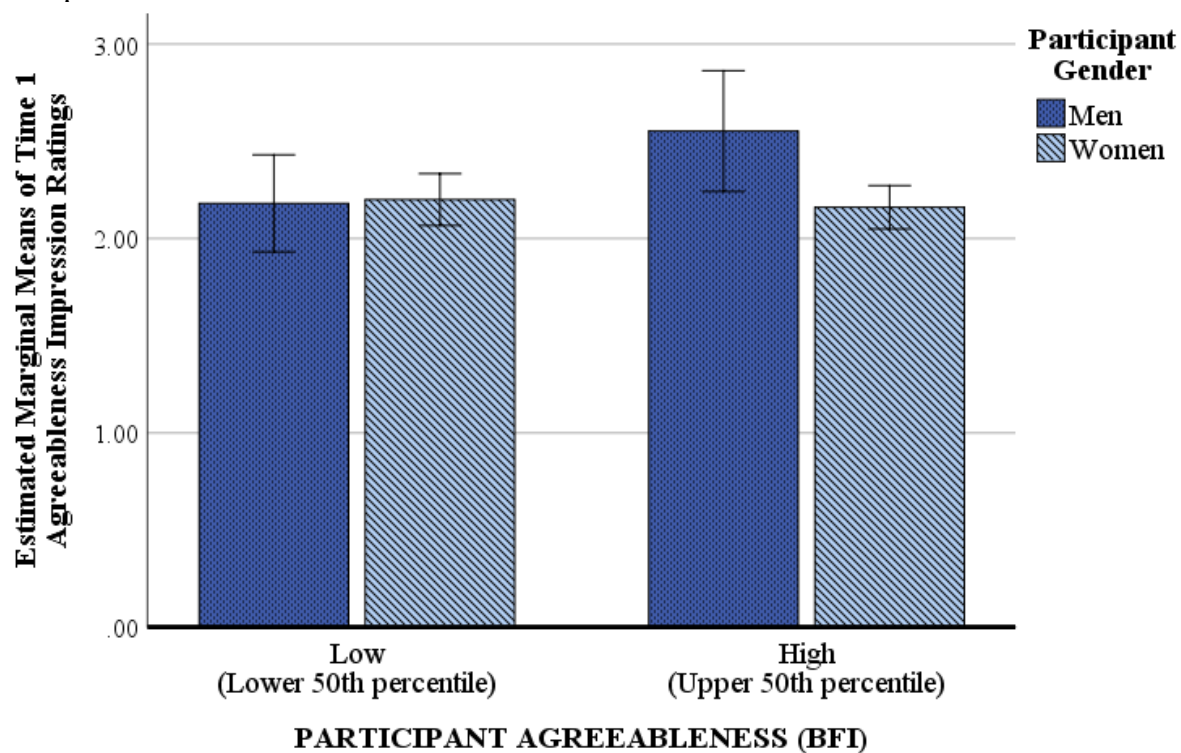
Figure 2. Time 1 Agreeableness Impression Ratings by Picture Condition and Participant Gender
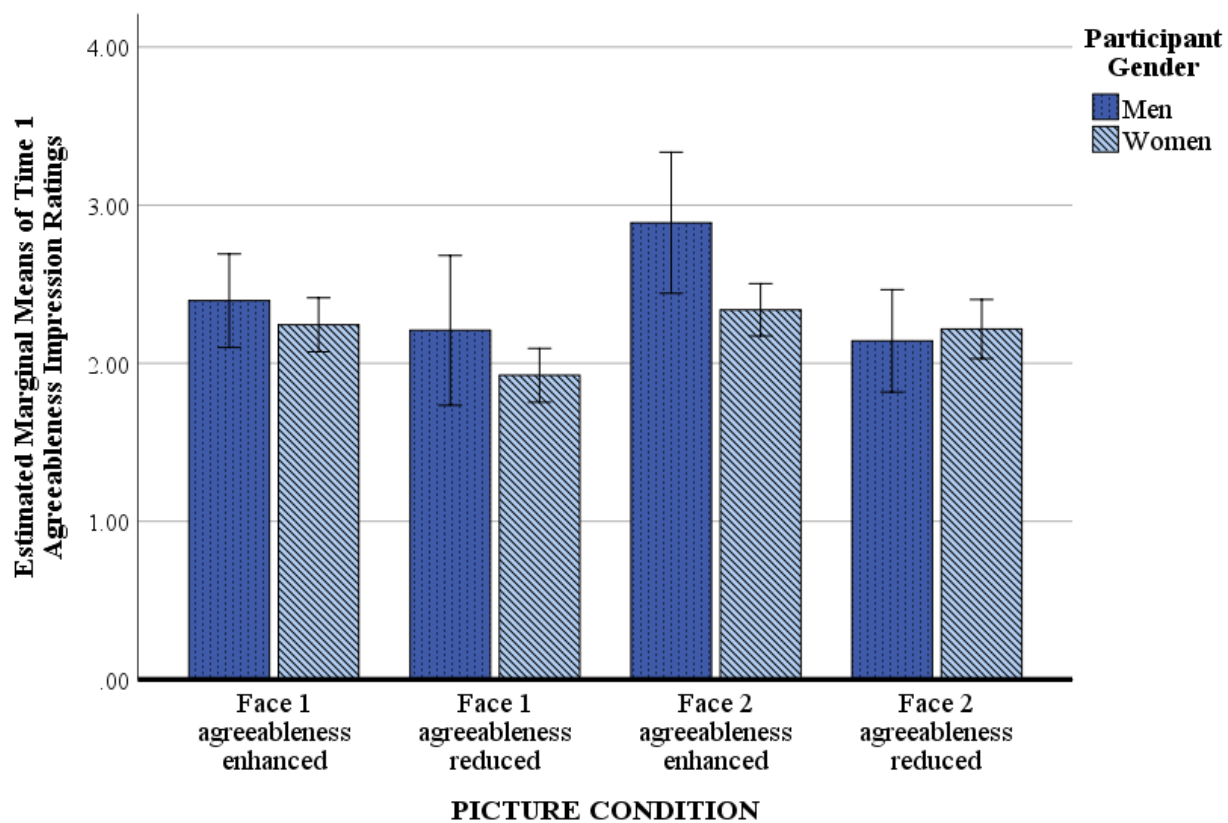
Note: Error bars represent 95% confidence intervals

Figure 3. Time 1 Agreeableness Impression Ratings by Participant Agreeableness and Participant Gender

Note: Error bars represent 95% confidence intervals

CHAPTER 4

DISCUSSION

Summary of Findings and Implications

The results indicate mixed support for the study hypotheses. Some hypotheses were supported by the data (Hypotheses 1), while others were not (Hypotheses 3) or were only partially supported (2,4).

For the first hypothesis that participants would, after brief exposure, rate faces pre-rated as agreeable, as more agreeable than faces which are pre-rated as not agreeable, the results partially confirm the initial prediction. This finding is partially consistent with Willis and Todorov (2006). The results showed a difference in how faces were rated across picture condition, but only for face 1. Interestingly, face 2 was rated as more agreeable than expected in the low agreeableness condition. Possible explanations for this mixed finding…

Regarding hypothesis two, information which contradicts a participant's initial judgement of a picture would influence that judgement more than information which confirms it, the analyses show partial support. When participants saw a high agreeable picture and read a negative story and vice versa, they reported a greater change in their impressions. Conversely, when it came to the consistent picture and vignette, there was only a difference found between the counter and negative consistent conditions. No difference was found between the counter and positive consistent conditions. Further investigation would be needed to see why this occurred. However, these results suggest that people are more willing to give people who they have a bad impression about a second chance. The results for this hypothesis are supportive of the research done by Rydell et al. (2006) to an extent. The research done by them only included positive

primes and then counter or consistent information. However, this study found there was only a difference between the negative counter and consistent conditions.

The third hypothesis, which stated negative first impressions would be more resistant to change, was not supported. When impressions were negative, agreeableness ratings appeared to be less resistant to change. These results dare contrary to the research of Kammrath et al. (2008) and Muthukrisnan and Chattopadhyay (2007) on which this assumption was based. Perhaps the sample used in this study had a higher level of empathy for the individual in the vignette and despite their negative impressions, when they saw him do something good it was enough to change their minds even if just a little. In order to further investigate this finding, a potential follow up study would be required in which the negative counter and consistent conditions from this study could be isolated and further studied alone to see from where the effect is coming.

Finally, the fourth hypothesis, which said female participants and participants higher in agreeableness would be more likely to form positive first impressions than male participants (Mattarozzi et al., 2015; Srivastava et al., 2010), was partially supported, but not in the way which was expected. Surprisingly, the opposite was supported by the results. Male participants seemed to form more positive first impressions than women, especially for Face 2. Perhaps male participants found this face as relatable to themselves and that is why they rated them higher.

Limitations

The study offered partial support for my hypotheses and demonstrated several strengths, including its experimental design, the inclusion of attention and manipulation checks, the use of pre-rated face stimuli, highly reliable measures of impressions, and a well-validated measure of self-report personality. Nevertheless, there were important limitations to consider.

In future studies, it seems important to conduct a re-evaluation of the stimuli used. Perhaps, the stimuli used in this study were either not powerful enough or they may not have been the best for this research. For example, one of faces taken from the Basel Face Database (Walker et al., 2018) had been altered to reduce agreeableness impressions and was pre-rated by participants in that sample as significantly lower in agreeableness than the corresponding version of the face that had been altered to enhance agreeableness impressions; however, participants in the current study did not find the two pictures significantly different in terms of initial agreeableness impressions, which could have led to inconsistent study results.

In addition, the faces included were not diverse in terms of gender or race/ethnicity. According to Srivastava et al. (2010), the Big Five personality traits influence how people form judgements about others based on peoples' tendency to assume other people are like themselves, which could have affected how participants in the current study rated the target. Future studies should include more diverse stimuli.

Power for the study could have also been an issue. A power analysis was done prior to beginning the study and it found that about 128 participants would be needed to show an effect. 128 participants in total were able to be collected, however, once careless responders and individuals who did not want their data to be included in the study were removed, there were not nearly as many participants. What could have helped here is if more participants were recruited initially prior to data analysis. This is something to keep in mind for future research.

Future Directions

Regarding future directions for this area of research, the addition of diverse races may be important next steps. In the current study, only pictures of Caucasian men were presented to

participants. In a study conducted by Abreu (1999), a group of therapists were primed with either stereotypes about African Americans or neutral words on a screen and then asked to rate a patient based on a vignette. It was found therapists primed with stereotypes were more likely to rate the patient as less favorable. The results from this study would indicate there may be additional bias if pictures of different races were presented while participants formed a first impression about those images.

Another study, conducted by Paurohit, Dowd, and Cottingham, 1982, had participants rate black and white counselors on four different communication channels (video only, audiovisual, audio only, and transcript). The results showed a couple things. One, the black counselor was rated higher on all measures used, however, post hoc analyses for impressions of expertness and attractiveness were also done. These showed the black counselor was rated higher than the white counselor on expertness in the audio, audiovisual, and transcript conditions. The black counselor was also rated higher in attractiveness than the white counselor on the audio and audiovisual channels. It was also found the white counselor was rated higher on the video only condition than in the other three conditions. These results suggest a potential for visual or nonvisual information which could be mediated by race.

Another interesting aspect that could be added to this study is the possibility of altering the gender of the images presented. Instead of simply seeing men, participants would react to pictures of both men and women. It would be interesting to see if there were any differences in first impressions based on gender of the stimulus picture.

Conclusion

Counterattitudinal information impacts the way we form our judgements about others, even if that judgement is only based on what a person's appearance. We could have a great instinct about someone at first but realizing that we are wrong can affect our opinion. At the same time, we do also seem to have the capacity to give second chances to people about whom we had original negative attributions. Appearances can inform our judgements about people, but it appears the actions of others influences our perceptions beyond just appearance.

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APPENDIX A

Study Images

Faces and Big Five ratings drawn from the Basel Face Database (Walker et al., 2018). Scores represent mean (SD) pre-rated personality impressions.

Face 1, High Agreeable Version:	**Face 1, Low Agreeable Version**:
Basel Face Database Agreeableness Rating: 2.91 (.93)	Basel Face Database Agreeableness Rating: 2.18 (.70)
Face 2, High Agreeable Version:	**Face 2, Low Agreeable Version**:
Basel Face Database Agreeableness Rating: 3.38 (.96)	Basel Face Database Agreeableness Rating: 1.97 (.72)

APPENDIX B

Study Vignettes

Positive Behavior Condition: Will went to the grocery store one morning to do his grocery shopping for the week. He bought plenty of food to last him the week. When he was done, he went to the checkout counter to pay for his groceries. Before he finished checking out, the cashier asked Will if he would be willing to give up a few items from his cart to donate to the local shelter. *Will looked at his cart, figured he had enough food for the week, and gave the cashier a few cans from his cart to donate. He paid for his groceries and wished the cashier a good day as he walked out the store.*

Negative Behavior Condition: Will went to the grocery store one morning to do his grocery shopping for the week. He bought plenty of food to last him the week. When he was done, he went to the checkout counter to pay for his groceries. Before he finished checking out, the cashier asked Will if he would be willing to give up a few items from his cart to donate to the local shelter. *Will scoffed at the request, complained to the cashier about being pestered to donate every time he shopped, and refused to donate any food item. He paid for his groceries and rolled his eyes at the cashier as he stormed out the store.*

APPENDIX C

Impression Rating Form

_____

INSTRUCTIONS: Below is a list of statements that can describe your impression of a person. Based on the picture you just saw, how much do you agree with each statement?

1	2	3	4
Strongly Disagree	*Disagree*	*Agree*	*Strongly Agree*

1. This person seems trusting.   [*Agreeableness*]
2. This person seems sincere.   [*Agreeableness*]
3. This person seems helpful.   [*Agreeableness*]
4. This person seems kind.   [*Agreeableness*]
5. This person seems humble.   [*Agreeableness*]
6. This person seems cooperative.   [*Agreeableness*]
7. This person seems curious.   [*Openness*]
8. This person seems unconventional.   [*Openness*]
9. This person seems hard-working.   [*Conscientious*]
10. This person seems reliable.   [*Conscientious*]
11. This person seems outgoing.   [*Extraversion*]
12. This person seems energetic.   [*Extraversion*]
13. This person seems irritable.   [*Neuroticism*]
14. This person seems nervous.   [*Neuroticism*]
15. Other people would consider this person attractive.   [*Appearance*]
16. I would consider this person attractive.   [*Appearance*]
17. This person looks disheveled.   [*Appearance – R*]
18. I would consider being friends with this person.   [*Interpersonal*]
19. This person would fit in well with my social circle.   [*Interpersonal*]
20. This person seems masculine.   [*Traditional Masculinity*]
21. This person seems chivalrous.   [*Traditional Masculinity*]
22. This person seems traditional.   [*Traditional Masculinity*]

APPENDIX D

Demographics Form

1. How old are you? _____

2. What is your gender?
   ○ Female
   ○ Male
   ○ Non-binary/third gender
   ○ Prefer to self-describe: _____
   ○ Prefer not to say

3. Do you identify as transgender?
   ○ Yes
   ○ No
   ○ Prefer not to say

4. How would you describe your racial/ethnic background? Check all that apply.
   ❑ American Indian or Alaskan Native
   ❑ Asian
   ❑ Black or African American
   ❑ Hispanic, Latino, or Latin Origin
   ❑ Middle Eastern or North African
   ❑ Multi-racial/Ethnic
   ❑ Native Hawaiian or Other Pacific Islander
   ❑ White
   ❑ Other: _____
   ❑ Prefer not to say

5. What is your sexual orientation?
   ○ Straight/heterosexual
   ○ Gay or lesbian
   ○ Bisexual
   ○ Prefer to self-describe: _____
   ○ Prefer not to say

6. What is current your relationship status?
   ○ Not currently in a relationship
   ○ In a relationship, living separately
   ○ In a relationship, living together

7. How would you describe your current religion or faith, if any?
   - ⭕ Christian – Mainline Protestant
   - ⭕ Christian – Evangelical Protestant
   - ⭕ Christian – Historically Black Protestant
   - ⭕ Christian – Roman Catholic
   - ⭕ Christian – Mormon/LDS
   - ⭕ Christian – Orthodox Christian
   - ⭕ Christian – Jehovah's Witness
   - ⭕ Christian – Other
   - ⭕ Muslim
   - ⭕ Hindu
   - ⭕ Buddhist
   - ⭕ Jewish
   - ⭕ Atheist or agnostic
   - ⭕ Nothing in particular
   - ⭕ Something else: _____

8. How would you describe your current political party affiliation, if any?
   - ⭕ Republican
   - ⭕ Democrat
   - ⭕ Independent
   - ⭕ Conservative third party
   - ⭕ Liberal third party
   - ⭕ Nothing in particular
   - ⭕ Something else: _____

APPENDIX E

Attention and Manipulation Checks

1. What kind of store was Will shopping at? [*after all impression ratings are complete*]
   ❍ Furniture store
   ❍ Grocery store
   ❍ Auto parts store
   ❍ Bookstore
   ❍ Not sure

2. Did Will end up donating anything to the local shelter? [*after all impression ratings are complete*]
   ❍ Yes
   ❍ No
   ❍ Not sure

3. Paying attention is important. Leave this item blank. [*during the GAI*]

4. Paying attention is important. Leave this item blank. [*during the BFI*]

5. We appreciate your participation in this study, and we have one more question. No matter how you answer this question, you will still be assigned full SONA credit. Which of the following statements applies to you? [*at the very end*]
   ❍ I paid attention throughout the study. Use my data.
   ❍ I mostly clicked through the study without paying attention. Do not use my data.