

ABSTRACT

The Beauty Dictator Game: Perception of Generosity on Facial Attractiveness

Weiling (Lydia) Yan

Director: Jason A. Aimone, Ph.D.

While previous research has supported the existence of beauty premium, this paper focuses on the monetary value of perceivers' willingness to interact with targets who have a higher level of facial attractiveness. I aimed to elicit people's belief of generosity based on facial attractiveness. I analyzed such beliefs in a modified dictator game via online surveys. Controlling for gender and facial attractiveness, I found that less-than-average looking women were the only group that people perceived as more generous, and female perceivers were more likely to deem these unattractive females targets generous than male perceivers. Ironically, while male perceivers were no more likely to perceive attractive women as generous compared to female perceivers, male perceivers were willing to spend more money to receive payments from attractive women. These results bring new light to empirical and experimental research in the beauty literature, and they also have practical implications for negotiators.

Keywords: beauty premium, dictator game, lookism, economic experiment

APPROVED BY DIRECTOR OF HONORS THESIS:

Dr. Jason Aimone, Department of Economics

APPROVED BY THE HONORS PROGRAM:

Dr. Andrew Wisely, Interim Director

DATE: _____

THE BEAUTY DICTATOR GAME:
THE PERCEPTION OF GENEROSITY ON FACIAL ATTRACTIVENESS

A Thesis Submitted to the Faculty of
Baylor University
In Partial Fulfillment of the Requirements for the
Honors Program

By
Weiling (Lydia) Yan

Waco, Texas

May 2021

TABLE OF CONTENTS

List of Figures and Tables	iii
Acknowledgements.	iv
Chapter One: Introduction	1
Bounded Rationalities.	3
Beauty Premium and Beauty Penalty	3
Taste-based Discrimination	4
What-is-beautiful-is-good Effect	4
Research Questions	5
Research Hypotheses	6
Chapter Two: Literature Review	7
Philosophy and Religion.	7
Psychology	9
Biology	13
Finance	15
Economics	16
Chapter Three: Methodology	19
Experimental Design	19
Sample Description	23
Chapter Four: Data Analysis	27
Chapter Five: Conclusions	36
Appendices	38
Appendix A: Distributed Survey	39
Appendix B: Questions for Hypothesis 3	43
Appendix C: Stata Do-file	44
Bibliography.	48

List of Figures and Tables

Figures:

Figure 1- Participants' Age Distribution

Figure 2- Participants' Economic Status Distribution in the Percentage Descending Order

Figure 3- Perception on the Attractive Men Group

Figure 4- Perception on the Unattractive Men Group

Figure 5- Perception on the Attractive Women Group

Figure 6- Perception on the Unattractive Women Group

Figure 7- Female Perceivers' Willingness to Pay

Figure 8- Male Perceivers' Willingness to Pay

Figure 9- Difference between Female and Males' Willingness to Pay

Tables:

Table 1- Overall Gender Difference for Willingness to Pay

Acknowledgements

First and foremost, I want to send my deepest gratitude to Dr. Jason Aimone for encouraging me to explore my research interests and for providing constructive feedbacks on my experimental designs. He never discouraged my research incentives, and he allowed me to learn to conduct research through making mistakes. His invaluable guidance made this project possible.

My special thanks go to Dr. Lucas Rentschler for generously sharing his funding and Dr. Billur Aksoy, Dr. Catherine Eckel, and Dr. Rick Wilson for kindly sharing their dataset.

I thank my friends Yurong Chen for keeping me company when I was brainstorming, Jinni Tang for helping me organize my research ideas, Pamela Dahl for taking care of me like an older sister, Joanna Ling for inspiring me to work on my literature review during the winter break, Beatrice Chen for showing me how to break down large tasks, Treasure Ramirez for letting me use the PhD workroom to study, Irina Grigoryeva for peer reviewing my writing, and Terry Tsai for doing my mock thesis defense. This list could go on and on, and I sincerely appreciate all who expressed their interest in this project.

I express my best regards to my oral defense committee members Dr. Jason Aimone, Dr. Van Pham, and Dr. Chris Pullig for trusting my research abilities and accepting these positions without hesitation. Their thorough reviews highlighted the academic essence of this paper.

My heart is warmed that my parents are now supporting my major endeavor to acquire a Ph.D. in behavioral economics. I shout out to my mother for answering my phone calls when I desperately needed someone to talk to.

I also want to take a moment to celebrate my past self. You did it. Thank you for taking this project seriously and grinding hard when you did not feel like doing so. I praise God for carrying me through this research project, building my characters with this experience, and blessing me with these amazing people. His grace is sufficient.

After all, if humans were not biased to judge others on their appearance, they would not need to remind their children not to judge books by their covers.

-Langlois, *Maxims or Myths of Beauty*

Chapter 1:

Introduction

“What is considered beautiful?” I never had to explore this topic in China as the mainstream media gave me the standard grading rubric of what I ought to perceive as beautiful. Coming to the U.S. initially challenged my Chinese beauty benchmarks as westerners glorified a different set of skin tones, body shapes, and physical strength. However, as time went by, I started to observe the commonalities in the eastern and western’s beauty activities. As Socrates proclaimed that an unexamined life was not worth living, this preference transformation not only motivated me to think beyond the latest international beauty trends but also to examine my own set of beauty understandings. In this paper, I aim to address the effect of appearance on people’s behaviors through the lens of behavioral economics.

In the era of social media consumption, digital marketers’ messaging on what is good, true, and beautiful influences ideologies among online users. Such influence expands the facial plastic surgeons’ patient pool as patients look to social media to “identify trends, frame their personal idea of beauty, and interact with aesthetic surgeons” (Eggerstedt et al. 2020). As people familiarize themselves with selfie posts, the recent Covid-19 outbreak further pushes the social media prevalence from online communicating to online conferencing, extending the prominence of facial appearance from social to professional networking. As the videotelephony limits attendees to the shoulder-up presence, the first impression of one’s facial appearance has significant social implications on the peer-to-peer software platforms, making facial attractiveness a salient factor during virtual interactions. Accordingly, I am interested in learning

if people have systematic biases that correlate with facial attractiveness. Specifically, this thesis will analyze how these biases shape perceivers' judgment in generosity.

The primary purpose of this study is to investigate the conditions under which perceivers are subjected to their beauty bias and to which degree are their decisions influenced. Secondary purposes include how people's own beauty activities affect their economic decisions with attractive and unattractive individuals, how much are perceivers willing to pay extra to foster social interaction with attractive targets, and whether people can recognize their taste-based discrimination when they return the psychological rewards of registering the aesthetics of one's facial attractiveness and treat that person favorably.

The significance of this study is paramount as it contributes the first experiment that captures the difference between people's willingness to pay in return of engaging with attractive and unattractive targets. The randomization of treatments makes appearance the sole causation of participants' decisions. Since perceived attractiveness and generosity both significantly influence prosocial interactions, this study intends to create awareness on people's biologically born biases and the corresponding consequences.

An article from the *Behavioral and Brain Sciences* exposed me to the moral implications of the unattractiveness discrimination. In this article, Minerva (2017) states that 12%-16% of workers believe that they have been subject to beauty stereotypes, that an unattractive man experiences cumulative monetary loss of \$230,000 in his lifetime, and that discriminated victims feel less happy. These financial and psychological damages are substantiable. The results of this study may be utilized to advocate a policy-making structure that protects the victims for their looks. For example, the Office of Equal Employment Opportunity (OEEEO) prohibits the

discrimination against an Asian individual because of facial features (“Types of Discrimination”).

To eliminate confusion, this study provides definitions to help readers understand the listed theoretical concepts. These definitions additionally build groundwork for behavioral and experimental economics. Finally, they introduce keywords from the beauty literature.

Bounded Rationalities

While the classic economic studies assume that decision makers are all rational, behavioral economic studies challenge this conventional view. In Mullainathan and Nobel laureate Richard Thaler’s (2000) paper, they associate humans’ economics behaviors with bounded rationality, bounded willpower, and bounded selfishness. They differentiate the concept of bounded rationality from irrationality by asserting that since people always face limited brainpower and time, the optimal and rational approach to solve difficult problems is to adopt rules of thumb. People’s bounded rationality takes in form of loss aversion, overconfidence, mental accounting, etc.

Beauty Premium and Beauty Penalty

After controlling demographic and labor-market qualifications, Hamermesh and Jeff E. Biddle (1993) found that the plain-featured workers face wage penalties of 5 to 10 percent. In 1993 when the study was conducted, the size of this beauty penalty was comparable to the disadvantages within the U.S. labor market experienced by workers due to race and gender. The biased effect earned good-looking workers wage premiums similar to those white employees had

over black employees and that male employees had over female employees (Hamermesh and Biddle, 1993).

Lookism

Lookism, also known as the attractiveness stereotype, is the “construction of a standard of beauty/attractiveness” ((Hamermesh and Biddle, 1993). Lookism becomes discrimination when people use it against the physically unattractive.

Taste-based Discrimination:

Gary Becker’s theory on the taste-based discrimination explained the phenomenon of the beauty premium in the workplace (Rosenblat, 2008). Employers are motivated to offer a higher wage because they derive pleasure from the social interaction with the physically attractive employees. Their physical attractive stereotype is most evident when the employer can reasonably foresee future interactions with the employee.

What-is-beautiful-is-good Effect:

Researchers have found a consistent tendency that beautiful targets are perceived as interpersonally good people (Lemay, Clark, and Greenberg, 2009). These desirable characteristics are kindness, warmth, self-attraction, extraversion, and generosity. This effect heightens people’s desires to bond with beautiful individuals, and it prompts people to initiate conversations with attractive others.

With more research conducted on the topic of face signals, Aksoy, Eckel, and Wilson's paper (2018), *Can I Rely on You*, captured recipients' judgments from reading facial images to deciding on the generosity level of dictators. They took pictures of dictators in their behavioral research laboratory, and twenty-two dictators were paired up based upon gender, ethnicity, and fairness. Instead of passively receiving the remaining shares, in their experiment, the recipients could evaluate the pair's photographs and strategically choose one dictator from whom they would receive the corresponding allocation. Aksoy, Eckel, and Wilson suggest that recipients significantly prefer dictators with a higher level of the reliability perception, and their study finds no significant correlation between dictators' facial attractiveness and recipients' decisions.

Interestingly, as the economic behaviors in this game reveal that recipients use the perceived reliability to evaluate dictators' generosity, their judgement on perceived generosity is inaccurate as their face evaluations fail to lead them to a larger payoff than random selections. Their results made me question if those recipients had allowed their intuitive judgments on facial attractiveness to guide their decisions, would they end up with larger payoffs? What did people associate facial attractiveness to? Hence, I became interested in learning whether perceivers' judgement on generosity differs between attractive and unattractive targets. Following are the three research questions and the more precisely stated hypotheses.

Research Questions:

1. Is there a systematic identification between people's perception of facial attractiveness and the perception of generosity?
2. Is the what-is-beautiful-is-good effect more salient on female targets than male targets?
3. Is there a relationship between perceivers' beauty activities and their beauty biases?

Research Hypotheses:

1. The above-average-looking dictators are more likely to be perceived as generous than below-average-looking dictators.
2. Male recipients are willing to spend more money to interact with beautiful female dictators than female recipients.
3. Female perceivers who spend more time and money on their beauty activities are willing to spend more to interact with attractive dictators.

This paper is presented in five chapters. Chapter 1 includes the background of this study, statement of the problem, and the purposes. Chapter 2 incorporates a comprehensive review of the beauty literature and justification of the hypotheses. Chapter 3 describes the reason behind the experimental design and the methodology used for this thesis project. Chapter 4 studies the gender difference in the generosity perception and in the willingness-to-pay amounts. Chapter 5 summarizes the study and recommends the implications and the further research.

Chapter 2:

Literature Review

While people may be aware that their treatment towards beautiful individuals is more favorable, they may not comprehend the full effect of their favoritism. The aim of this chapter is to elaborate on the specific approaches regarding why and where people behave differently around attractive people. The following interdisciplinary studies that cover the topic of beauty range from philosophy to religion, psychology, biology, marketing, finance, and economics.

2.1. Philosophy and Religion

Back to the Classical period, the Greek philosophers had already started associating beauty with positive qualities. The most prominent advocates are Socrates, Plato, and Aristotle as all three recognize personal beauty as a strength. The most remarkable association originates from Platonic ideals— connecting the Good, the True, and the Beautiful. In the modern society, these three elements are referred to as ethics, logic, and aesthetics (Baldwin, 1920). In his book *Republic* written in 380 BC, Plato recorded the narrative of his mentor Socrates on the nature of education through the allegory of the cave (Bloom, 1968). In this allegory, Socrates describes a group of prisoners who are chained to an underground cave wall since birth. As these prisoners only see the projected shadows of human artifacts as they were at a puppet show, they name these shadows and regard them as the reality. When one prisoner is freed from chains and looks for the source of the light beam, he is dazzled and unable to make sense of those things whose shadows he saw before. However, before he runs back to the darkness, someone drags him out

by force into the sunlight. The radiance from the sun blinds him completely, and he tightly shuts his eyes until they adjust to the new light setting. He only sees the shadows in the beginning; then, phantoms. Later, the things themselves. From there, he looks at the lights of the stars and the moon until finally he can look straight at the sun and credit it as the source of all the things he is seeing (Bloom, 1968, 514a-516c).

Hickman, a Platonism researcher who received her Ph.D. degree at the University of Cambridge, put this allegory in a new light. The Platonic search for the True indicates that prisoners must come out of their cave to see beyond the shadow of their “reality,” and the sight of the Good brings liberated prisoners to witness the fullness of humanity and to experience a world infused with value (Hickman, 2018). Attending to the Beautiful sways prisoners’ attention to engage the outer world and away from the self-seeking fulfillment. As the attendants turn their attention towards the physical world, they see it independently with clarity and vision. Among the three ideals, aesthetic responses represent the most accessible form.

As images of physical beauty create an escape from the physical world and connect the physical and intelligible cosmos, beauty is coined as “the catalyst of moral change” (Hickman, 2018). Therefore, while the desire for truth and goodness also transforms people, Hickman suggests that it is best to be transformed through the aesthetic contemplation—making beauty a more imminent desirability than truth and goodness. In addition to ancient Greeks adoring the fine arts of human beauty, they also defined ideal proportions with mathematical rules, such as the golden ratios. These principles also applied arts to architecture, music, sculpture, painting (Bovet, 2018), and the list goes on.

In addition to the Greeks appreciating arts across different areas, Christian thinkers extend their appreciation towards beauty from the lowest form to the highest form. St. Augustine

praised beauty from a worm to the Creation, and he praised the charm of man in his body (Chapman, 1941). Even in the very first book of the Old Testament, four important figures were specifically highlighted with their alluring features— Sarah, Rebekah, Rachel, and Joseph (Genesis 12:11-15, 24:26, 29:11, 39:6). The Bible included more figures who were described as fine-looking, such as Moses, David, Bathsheba, Esther, etc. This physical attraction to beauty is deeply embedded in the western civilization, and it illuminates people's beliefs and their decisions towards visual appeals. People under these philosophical and religious impressions are cultured to generate their communal adoration for attractive individuals.

2.2 Psychology

Langlois and his coauthors' within-culture and cross-cultural meta-analyses elaborated the cultural bond for human beauty to a universal phenomenon (Langlois et al., 2000). Under the robust effects of attractiveness attributed from photographs, the high correlation between adult raters' decisions on beauty indicates that people across cultures and regions indeed share consensus in attractiveness. To say that beauty is in the eye of the beholder is perceived as to advocate the democratic culture (Scruton, 2018).

Facial attractiveness is thought to be based upon reproductive fitness (Langlois et al., 2000; Bovet, 2018). As westerners ascribe most work to the idealized female beauty, Bovet (2018) discovers that people share certain common preferences over women's physical features, and this preference set is originated from people's sexual selection. Tracing times back Before the Common Era (BCE), individuals prefer choosing a mate among those whom they may unintentionally qualify as candidates for reproductive successes. So, while women watch for their partners' resources, men emphasize their partners' fertility.

According to this theory, men detect women's reproductive fitness through reading physical cues; thus, they care more about women's physical states (Bovet, 2018). Men pick physical signals from their dating pool with youth and health as the filter to optimize their fertility success, and they base their selection decisions on facial features and body shapes. Additionally, Bovet discovers that people's preference over the body mass index (BMI) and waist-to-hip ratio (WHR) varies across regions and times. For example, while the world mainstream favors a low WHR for a more feminine look, some traditional and rural societies where food is a scarcity prefer a high WHR (Bovet, 2018).

On the contrary, after perusing the ideal female figures from paintings and magazine covers, Bovet asserts that unlike the preference for a variety of body shapes, people hold a consistent preference for women possessing facial attractiveness over women without it. Some ERP data provides additional evidence that men devote more attention to facial beauty as shown by their increased late slow wave activities (Ma, 2015). These two papers both suggest that females' facial attractiveness is more emphasized than male facial attractiveness in the society.

It is a universal phenomenon that women all around the world experience the loss of feminine hormones after their fertility peak— causing their faces to show aging cues faster than men. Because women's skin becomes dull with age, and their face symmetry suffers from weak immune systems and genetic anomalies, men prefer their mates to have an unblemished skin condition and a symmetrical face to ensure their reproductive values.

Social stereotypes motivate people to associate beautiful people with positive qualities. The socialization theory and the social expectancy theory further explain this group preference (Langlois 2000). In the stranger attraction literature, these two theories predict the process of social stereotypes being transformed into the reality. Aroused by others' facial attractiveness,

perceivers act upon their social expectations that beauty speaks for youth and health, and they treat them more favorably. In return, as perceivers offer more encouraging notes, targets internalize the social difference and develop compatible traits that match perceivers' complimentary words (Langlois et al., 2000).

Wittingly or unwittingly, as perceivers act upon their beliefs, attractive targets experience more career successes, greater popularity, more sexual activities, and better physical health. The differential treatment is coined by the social theory. After measuring the data reliability from 909 effect sizes, Langlois (2000) surprisingly observes that attractiveness in social environments is so robust in social judgments that its weight surpasses people's academic and work competency judgments. He reports that while attractive targets behave differently, the social theory may be incorrect in predicting the treatment internalization as the relatively small effect on self-perceptions only weakly supports the causation between differential treatments and internalized behaviors. Langlois (2000) does not find a gender effect in his meta-analyses, and he concludes that attractiveness is equally important for men and women.

Langlois (2000) further discovers that the attractiveness effect is not only limited to the first impressions, but it also affects informed decisions among people who are very familiar with each other. Willis and Todorov's (2006) paper addressing first impressions backs up Langlois's claim on the duration of the attractiveness effect. The two experimenters randomly allocate 128 participants into the control group which experiences no time constraints and 117 participants into three between-subject time treatments—100 ms, 500 ms, and 1,000 ms exposure to a face. After collecting participants' responses on their judgements on facial appearance and their confidence levels, they discover that participants' decisions after the 100-Ms are already highly correlated with the control group's final judgements, and manipulation beyond this threshold of

the exposure time does not significantly enhance the correlations (Willis, Todorov, 2006). Willis and Todorov observe that the additional time will only boost participants' confidence in their decisions. In other words, this experiment suggests that people can generate first impressions based on other's facial appearance in one tenth of a second using their System 1 processes, and their gut feelings in such short of a time span are pervasive and lasting in their future relationships. Their experiment resonates the value of physiognomy in studying people's behaviors.

To understand mechanisms of the attractiveness stereotypes, Lemay Jr., Clark, and Greenberg (2009) propose that people's heightened desire to bond with beautiful people and perceivers' projection of interpersonal goals. In their surveys, they ask the participants to respond with the degree of their anticipated treatment, acquaintanceship, and liking towards the targets after seeing their photographs. After collecting participants' self-reported answers on their affiliation motivation, these researchers find that people associate more attributes that link to relationship formation, such as friendliness, kindness, generosity, and warmth. They conclude that people are more prone to develop romantic relationships, befriend, work with, initiate conversations, and interact with physically attractive people (Lemay, Clark, & Greenberg, 2009).

When these researchers analyze the response times, they discover people judge their own affiliation desires before they judge their counterparts' desires. So as people look for reciprocation of their interpersonal desires, their social goals bias how they perceive others' interpersonal motivation. In other words, while they take more efforts to establish and maintain close social bonds with attractive targets, they see the targets returning their favors and sending efforts back to them independently of targets' true effort level. Such projection strengthens relationships and promotes trust in reciprocation. Lemay, Clark, and Greenberg's (2009) paper

replicates the beautiful-is-good effect, and it suggests that judgements of attractiveness are positively related to the perceptions of targets' positive traits.

2.3 Biology

While the common maxims promote to not read a book by its cover, Yarosh's (2019) study in biology regards the impact of beauty from mating to people's inbred design, and he suggests that people's brains are genetically wired to assess beauty. Human brains recognize facial features systematically by engaging the cortex and going through three modules during an automatic system. First is the identification stage which differentiates people based on their attractiveness level using the fusiform face area (FFA). Then, the interpretation stage analyzes subjects' facial movements using the interior occipital gyri (IOG). In the valuing stage, the brain formulates its final beauty judgment using the orbitofrontal cortex (OFC). OFC is the brain region where rewarding stimuli is produced from food, monetary gain, pleasant music, etc. (Lemay, Clark, Greenberg, 2009), and it produces neuro rewards after recognizing attractive faces. To put the neural process in a concrete example, this automatic system on beauty shares a similar concept as how human brains read words before registering colors as in a Stroop task. This neuro system adds substantial explanation to Lemay's finding on why attractive faces prime positive emotions.

While brains are activated once they register the rewarding stimuli from appearance, men and women's brains are activated differently because of their different sexual orientation. Both heterosexual men and heterosexual women prefer good-looking faces, but men are willing to put in more effort to view a beautiful person of the opposite-sex than women are. This behavior echoes the salience of female attractiveness in the previous psychology studies, as males attempt

to maximize their reproductive success. I planned to build my study on the past work by exploring how gender and facial attractiveness affect willingness to pay for strategic interaction.

In addition to the neuro actions activated from beauty assessments, Yarosh's (2019) evolutionary biology paper agrees with Langlois's (2000) meta-analyses that people share a universal beauty standard. While Langlois addresses the universality across cultures in his 2000's study, his later paper with Ramsey identifies the attractiveness stereotype among babies as the 6-month-old infants already possess the categorization ability to differentiate attractive and unattractive faces (Ramsey et al, 2004).

Yarosh (2019) defines evolutionary biology as a "genetic variation within a population of a characteristic that improves the individual's chance of survival and reproduction, that characteristic with the best improvement will be naturally selected over other forms and becomes more common within the population". According to this standard, the ability to accurately detect attractiveness is under the evolutionary selective pressure. To understand the evolutionary biology in the context of beauty, one can think that as beautiful people are preferred during the mating process, they pass down their beauty genes to the succeeding generations, and their beauty then becomes a universal phenotype. The beauty universality as a priorly fixed genetic variant in human's evolution explains the overlapping beauty preference in the world and across ages.

Beauty influences people's internal and external perception. People are more objectively accurate in evaluating others' attractiveness level than their own. Empirically, Langlois's (2000) meta-analysis finds the high reliability coefficients of attractiveness judgments, and it explains a high level of agreement among adult raters as seventy-nine percent of people agree on the definition of attractiveness. Yarosh (2019) identifies features of attractiveness and beauty that are

hard to fake for reproductive fitness as costly signals. Some examples of costly signals include eye shapes, face proportions, and nostril axis.

On the other hand, people send artificially inflated scores to their brains and lie about their own social status. In addition, women have tools to deceive their viewers and themselves. For example, color cosmetics which increase women's perceived estrogen level increase the perception of their attractiveness. Surgical procedures can also alter the costly signals. Enticingly, as the modern social media raises the need for plastic surgeries, the pursued cephalometric proportions stay consistent with the historical ideals of beauty (Eggerstedt et al. 2020).

2.4. Finance

The genetic system influences inexperienced borrowers' financial decisions in the credit markets (Ravina, 2008). In a national Bureau of Economic Research (NBER) study, Ravina (2008) analyzes the field data from Prosper.com, a U.S. online lending platform with 440,000 members and more than \$115 million in loans. She acknowledges that while rational lenders use statistical inferences from their previous experiences to qualify credible borrowers, inexperienced lenders use their own preferences and perceptions as the benchmark.

In other words, while the skilled lenders utilize statistical discrimination models, the unskilled lenders use taste-based discrimination models as the criteria to base their loans where they are willing to take a monetary loss to avoid a disutility from interacting with the ugly borrowers. These unskilled lenders filter out easily observable personal characteristics, and they allow their positive association with the beautiful borrowers to convince themselves that their perception is related to the borrower's ex-post performance. She narrows the inexperienced

lenders to young, non-Asian lenders with lower bidding skills and lower income as these lenders are 1.41% more likely to grant funding to the beautiful borrowers than to ugly borrowers, and they ask for 81 basis points less from a beautiful borrower compared with an average-looking borrower with the same credit score, credit history, income, employment status, and homeownership (Ravina, 2008). Noteworthy, although beautiful borrowers are perceived as more competent, they have three times the delinquency rate.

2.5 Economics

During social exchanges, people utilize relationships, esteem, and affection to optimize their economic activities. People's beauty preference affects both males' and females' responses in the ultimatum games (Ma, 2015). In his behavioral economic experiment that studies the influence of females' attractiveness on males' fairness, Qingguo Ma (2015) adds neuro measurements to understand people's motivations in social exchanges. Feedback-related negativity (FRN) in the frontal brain regions rises when the brain detects unfavorable outcomes and violated social norms of equality, and FRN effect is only significant when subjects interact with human agents and not computers. Previous studies also find that FRN measurements have a positive correlation with self-reported empathy, suggesting that FRN reflects social-emotional state.

Ma (2015) inserts a powerless third party in his ultimatum game for recipients to compare the dictators' allocations between the three parties, and his goal is to study whether male subjects adjust their consideration of fairness due to the presence of a female third player. Building upon the world norm that recipients accept fair offers, his experimental results additionally suggest that male recipients accept fair offers more rapidly in the attractive-face condition than in the

unattractive-face condition. Male recipients are less likely to reject unfair offers when an attractive female receives a fair offer (“unfair/fair” condition) than when an unattractive female receives a fair offer with a 99% confidence interval. Additionally, male recipients are also more likely to accept an equally unfair offer under the “unfair/unfair” condition with attractive females.

Unsurprisingly, the neuroscan detects the fewest waveforms of FRN in the “fair/fair” offer, and Ma (2015) finds that the interaction effect with face and offer is significant. Furthermore, compared to the unattractive-face condition, the FRN is more negative with the “fair/unfair” offer and more positive with the “unfair/fair” offer in the attractive-face condition. As the acceptance ratio is higher with the “unfair/fair” offer in the attractive-face condition than in the unattractive condition, Ma’s paper reinforces men’s implicit preference for attractive females, and it supports the theory of the beauty premium.

While facial attractiveness is so salient that it alters people’s perception of fairness, Ma proposes that the facial attractiveness of the female third party elicits altruistic behaviors in the male recipients because of men’s emotional compensation and enjoyment from perceiving an attractive mate. The provocation of prosocial behaviors explains that the recipients accept the low offers from the attractive dictators because their brains create neuro utility from interacting with these attractive players, thus compensating their monetary loss.

While the salience of facial beauty is evident in people’s strategic decisions, another collection of economics research imposes conditions on the beauty premium. For example, when the participants could not reasonably foresee future interactions with the other players, Mobius and Rosenblat (2006) found no evidence for taste-based discrimination. In Rosenblat’s (2008)

paper, he further studied the correlation between the physical and the vocal attractiveness in the negotiation channel.

Aksoy, Eckel, and Wilson's (2018) study in another modified dictator game also indicates different results. Although the previous literature propounds the ideology that perceivers act upon targets' facial attractiveness, their recipients do not pick their preferred dictators based on look, and instead, studying the correlation between independent raters' evaluations on dictators' photographs and the recipients' strategic decisions, these three researchers discover that recipients base their generosity perception based on the dictators' perceived reliability.

Chapter 3:

Methodology

Experimental Design

To study the effects of facial attractiveness on people's perception of generosity and their willingness to interact with attractive individuals, I modified the standard dictator game. A standard dictator game includes two parties to share a fixed amount of money given by the experimenters—one party as the dictator and the other party as the recipient. Dictators have the first mover advantage in term of independently allocating the total amount. On the other hand, the recipients have no direct influence on the monetary division, and they can only passively receive the remaining amount after dictators take their shares. Contrary to game theories which predict rational decision-makers to allocate zero share to the recipients, studies find that the typical allocation is 40 percent (Cherry et al., 2013). Dictator games indicate player one's generosity level.

I changed the game rules so that participants in my study must match their perception of generosity to the real dictator behaviors in Aksoy, Eckel, and Wilson's experiment (2018) to receive their corresponding shares. The rationale for their decisions then was to report what they perceived to be true of dictator's allocations so that they could optimize their opportunity of earnings and maximize their shares of payoffs. If the sample pool did not utilize their beauty stereotype as the basis of their judgment, I anticipated to see a distribution with close to half of the sample size selecting "generous" and half of the sample size selecting "selfish."

I used secondary data from Aksoy, Eckel, and Wilson's dataset to parameterize my experiment. In their experiment, these researchers conducted a three-stage dictator game. In the first stage, they took headshots of the dictators, and they endowed the dictators with \$15 to split between themselves and the recipients. After the dictators made their decisions, they pocketed some to themselves, and they left the remaining amount in the envelopes for the recipients. In the second stage, the researchers generated 18 pairs from the 22 dictators, and they put these dictators' headshots on the envelopes. The recipients were invited to pick one envelope from their pair and endow themselves with the amount left in that selected envelope. In the third stage, the researchers recruited 22 independent raters to evaluate the dictators' headshots, and they requested raters to evaluate the dictators' attractiveness. All the data was made by real laboratory participants.

Due to the IRB protection on participants' privacy, I was unable to access the dictators' photographs from Aksoy, Eckel, and Wilson's experiment (2018). Since people share a strong consensus in registering facial attractiveness and are objectively evaluating others' appearance (Langlois, et al, 2000; Andreoi, 2005), I assumed in this study that the ratings on attractiveness from the independent group was representative of the population. So instead, I identified the dictators' appearance by using the independent ratings from the three researchers' experiment. In fact, these ratings worked better than the photographs because my participants could rely on my identification of the dictators' appearance, and the numbers completely eliminated the remaining variety of subjective beauty preferences in this study.

I divided Aksoy, Eckel, and Wilson's 22 dictators into four groups based on the dictators' gender and the attractiveness evaluations they received from the independent raters. So, the four groups were the attractive men group, the unattractive men group, the attractive women group,

and the unattractive women group. For attractiveness, since the sample size of these dictators was not very large, I did not use quantiles of the distribution of attractiveness. I aggregated the dictators' attractiveness scores, and I used the average attractiveness score of each gender to assign dictators into the groups. A dictator whose attractive perception score was higher than the gender average would be assigned to the attractive group, and one whose score was lower would be assigned to be unattractive group. Because I used the mean and not the median of the attractive scores, the number of dictators varied across the four groups.

I treated the group envelope content in the same manner. I aggregated the dictator's allocation amounts in each group, and I used the group average to represent how much the dictator members were willing to give to the recipients. I had no interest in learning whether the dictators' behaviors reflected them as a generous giver or a selfish giver, so I did not study whether the recipients' responses were reflective of the dictators' behaviors in the previous research. I used the group average allocation though classifying the real data to determine the payment basis for my participants. With the fixed pie being \$15, I classified the envelope with a group average exceeding \$6 as a generous envelope and group average less than \$6 as a selfish envelope.

While I designed the distinctive survey questions for this study, I also included the instructions from in the previous research on the first page. The rest of the survey consisted of four this-or-that questions related to perceived generosity, one willingness-to-pay question about switching the envelopes, five questions regarding to participants' self-reports on their beauty activities, and five demographic questions about participants' gender, age, income, ethnicity, and occupation. I attached the survey layout to Appendix A.

The four primary, this-or-that questions referred to whether participants perceived the group envelopes as “generous” or “selfish.” Participants faced four choices between envelopes from the attractive men group, unattractive men group, attractive women group, and unattractive women group, and they must select their answers for all four groups in order to proceed to the next page of the survey. The secondary question asked about their maximum willingness to switch to another group envelope. I designed the system so that participants would be randomly assigned to one of the four envelopes, and they would need to give me their maximum dollar amount to switch to the envelope from the same gender but different attractiveness level group. For example, if one participant was randomly assigned to the attractive men group, this individual needed to provide me with his/her maximum amount of money to switch to the unattractive men group.

Funding for this experiment came from Utah State University’s funding in Dr. Jason Aimone and Dr. Lucas Rentschler’s risk experiment. Since their in-person experiment moved online, they could conduct their experiment at a much lower cost, hence my experiment could piggy bank on their project. Unfortunately, due to the remote work condition and the distance between the programmer and the primary researchers, the beauty activity questions were caught missing on the survey only after we had completed the survey distribution. Thus, I could not study if people’s beauty activities are correlated to the degree of their beauty perception. A probit model was then not included in this paper.

The original questions on beauty activities included a Likert scaled question where I asked the participants how much they agreed with the “Beauty is only skin-deep” maxim. I intended this question to capture the degree of participants self-identifying their systematic preference for good-looking people. It would be interesting to see a skewed distribution of data

indicating the preference of beautiful groups, yet participants reported themselves as disagreeing to this common maxim.

I also asked the participants about the frequency of their makeup usage, the time span of their daily beauty routines, the amount of money they spent on cosmetics, and whether they were more of a Twitter, Instagram, or neither user. I intended these questions for the exploratory research because beauty questions on time and money would be good indicator of people's value system on facial appearance. Therefore, it would be a good idea to first compare the opportunity costs and the returns on participants' beauty investments, and then to determine if people indeed were making the optimal allocation mix with their scarce resources. I added the social media app question to test whether participants' preferred app had any relationship to their beauty beliefs. Since Twitter is more emphasized on the messages, and Instagram is more emphasized on the aesthetics, participants' association with their dominant online communication channel may convey their taste-based preference on visual appeals for the tech-savvy generation.

Sample Description

The aim was to recruit a big enough sample to study the causal relation between the two interested variables—facial attractiveness and perceived generosity. Although this experiment was not conducted directly with participants in the laboratory environment, it still required human subjects, and I successfully received the IRB approval to engage the participants. Ethical considerations were all evaluated before the distribution of the online surveys.

This online survey was distributed through the Prolific platform. Prolific recruited participants through digital banners. Abiding by the boundaries of our IRB protocol, we only selected adults who were living in the U.S. during the data collection time to see the recruitment

advertisements. The data collection took 2 days in March 2021, and participants on average took 5 minutes to answer the experimental questions.

Excluding the few participants who chose not to give consents to the experiment and who dropped off during the sessions, I had a sample size of 399 respondents. Among these 399 respondents, 189 were males and 210 were females. 29.07% of respondents were in the age range of 18-24, 39.10% in the age range of 25-34, 18.30% in the age range of 35-44, 8.77% in the age range of 45-54, and 4.01% in the age range of 55-64.

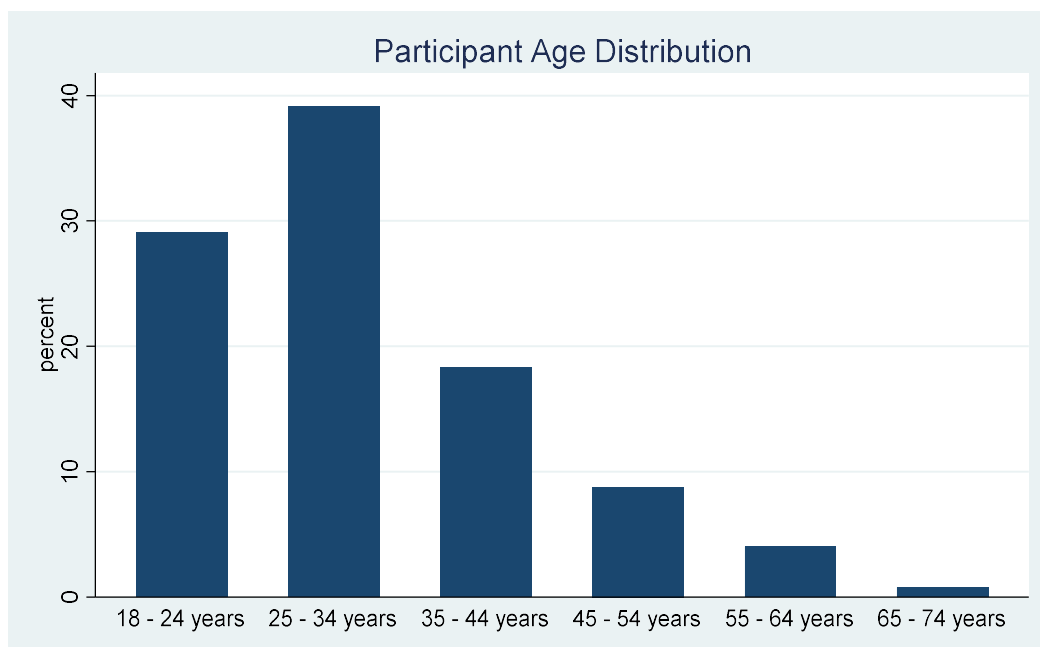


Figure 1- Participants' Age Distribution

Employed workers made up 56.40% of the sample size, and full-time students made up 17.79% of the sample size. 65.91% of respondents reported themselves as white, 13.53% as Asians, 9.73% as black, 7.77% as Hispanics, and 4.51% as other minorities. Among all the demographic variables, the income level was the closest variable to depict a normally distributed graph with 14.54% making between \$50k and \$75k per year. However, the mode was people who made less than \$14k, and they made up 21.30% of the sample size. Contrary to the typical

experimental data which is collected from college students who have not started generating much cash inflows, 68 respondents who make more than \$100k participated in the experiment. This diverse sample group enabled the researcher to think that this sample could capture the inclusive ideologies of population more than the previous studies.

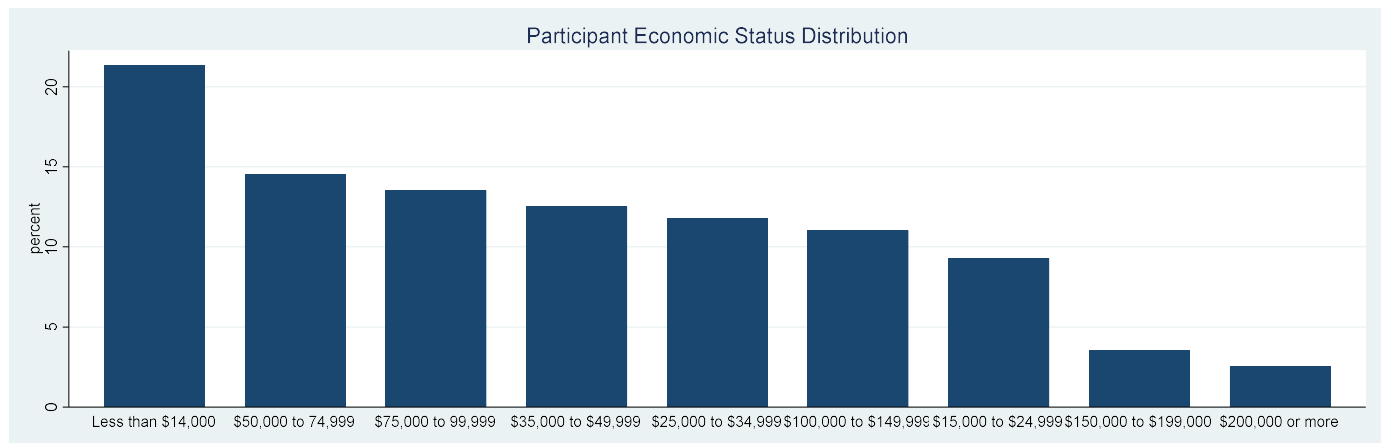


Figure 2 – Participants’ Economic Status Distribution in the Percentage Descending Order

I randomized the order of the four primary decisions to avoid a systematic bias in my data collection. I set the program to randomly generate the cost to switch on the interval from \$0 to \$5 with 25 ¢ increments. When the programmer uploaded my survey to the server, he adjusted the dollar system to point system with each point equivalent to 10 ¢ for participants’ final payoff.

After my data collection, I planned to use the Wilcoxon Matched-pairs Signed-ranked Test to analyze it. In this study, the two values refer to either “selfish” or “generous.” Because the distribution is clustered at “0” or “1,” it does not follow a normal distribution. Contrary to the t-tests, paired difference tests are not restrained to the normally distributed data. So, the signed-rank test is designed for binomial data which carries the value of only “0” or “1.”

The study has the following limitations. Due to the COVID-19, we thought that it was not worth-while to conduct in-person experiments anymore with the strict restrictions in the lab. So, this project was launched with online survey questions and not a laboratory experiment.

Experimenters could not monitor human participants' activities and could not guarantee that all participants answered the questions with care. The experimenters could also not be ensured about participants' complete understanding of the tasks. However, participants' attention and efforts could be reasonably assumed under the monetary incentives strictly tied to their strategies. Given that the participants have no other basis by which to decide on the generosity of the group, we reasonably assumed that the facial attractiveness level and gender are the basis of their choices.

Chapter 4

Data Analysis

Hypothesis 1: The above-average-looking dictators are more likely to be perceived as generous than below-average-looking dictators.

To my knowledge, my experimental design was the first one that made the perception of facial attractiveness salient in a modified dictator game. With the nature of experimental economics, my study was not limited to correlation between the two perceptions but to the causal inference of facial appearance on the formation of generosity perception. Suggested by the distribution of data, I discovered that participants indeed had a systematic difference between the two variables.

For the following four figures, the red slice referred to the percentage of participants who identified targets as generous, and the blue slice referred to the percentage of participants who identified targets as selfish. Figure 1 represented the proportion of participants who perceived the generosity of the attractive men group. According to this figure, 64.16% of participants perceived the attractive men group as selfish while 35.84% of them perceived the group as generous. Ironically, these weights were flipped for the unattractive women group. According to Figure 4, 34.83% of participants perceived the unattractive women group as selfish, and 67.17% of them perceived them as generous. Participants held similar views between the unattractive

men group and the attractive women group only with 2.76% difference. These diagrams were not expected to be so interrelated.

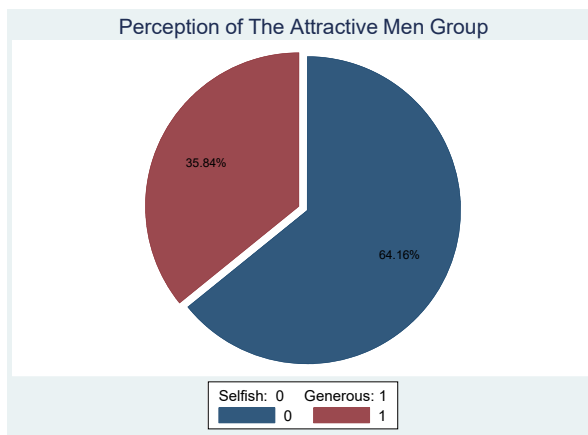


Figure 3- Perception on the Attractive Men Group

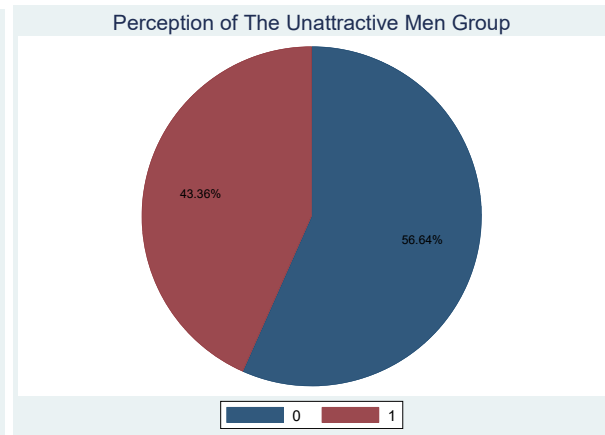


Figure 4- Perception on the Unattractive Men Group

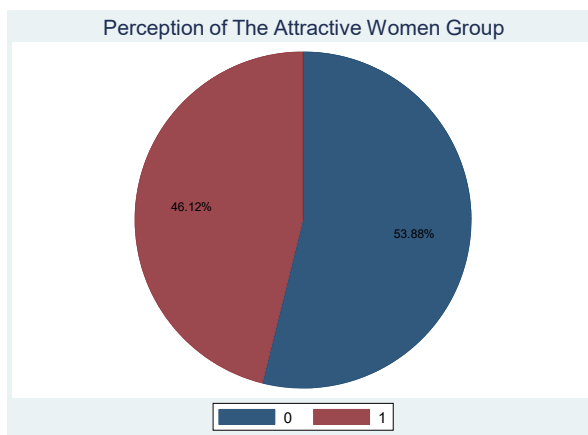


Figure 5- Perception on the Attractive Women Grp

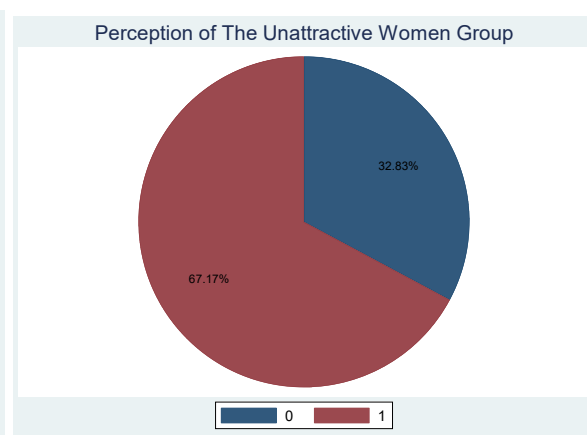


Figure 6- Perception on the Unattractive Women Grp

To test the significance of these gender group differences, I ran the Wilcoxon matched-pairs signed-ranked test in Stata. The exact p-value for the male difference is 0.0431. Therefore, I could reject my hypothesis 1 and conclude that the group difference between the attractive and the unattractive men groups was statistically significant but in the opposite direction than the prediction. I used the same test for females, and I got the exact p-value of .00001. I concluded that there was a perception difference between the attractive and the unattractive women groups with greater confidence.

Suggested by what-is-beautiful-is-good effect, I hypothesized that attractive people would be more associated with generosity. Although I successfully predicted the existence of beauty stereotypes from participants, the data suggested the opposite direction as attractive people were more likely to be perceived as selfish. This could be explained by the taste-discrimination bias. Instead of seeing dictators' pictures, they were only given the general category. Participants did not receive psychological benefits from registering pretty faces, so people did not experience a heightened desire to foster a social bond with the beautiful dictators (Lemay, Clark, and Greenberg, 2009). In this study, participants did not receive any utility payoff from social interactions, and their only incentive was to maximize their monetary payoff. Since participants understood that they were unlikely to foster a social bond with the four hypothetical groups, they were not interested in attributing the relationship formation qualities to the attractive male or female targets, causing the what-is-beautiful-is-good effect to disappear. This condition could describe a competitive industry where workers were so focused on their monetary payoffs that they were not bothered to let go of their income for utility returns.

Another remark about these diagrams was that the unattractive women group was the only group that more people perceived as generous than selfish. So why did people perceive plain-looking women as more self-giving? The perception difference could suggest that people expect these women to be less self-focused because of their facial disadvantage. This finding led me to reflect on the beauty penalty paper which found that less-than-average looking women were less likely to enter the workforce and were more likely to be settled with marrying men with unexpectedly low human capital (Hamermesh, Biddle, 1993). The plain women's behavior can be explained by the evolutionary psychology—plain women are deemed with less reproductive value compared with beautiful women thus they are paired up with men with less

resources. With controls on age and experience, the less-than-average looking women group watching their more beautiful female co-workers getting wage raises could potentially make them uninterested in positioning themselves in the job market.

Additionally, this tendency could describe a competitive industry where plain women are less likely to receive the beauty premium because people are not bothered to foster relationship desires to beautiful women. As more people attach the perceived generosity to the plain women, they expect these female targets to be more generous. Then people take plain women's self-sacrificial services for granted as their behaviors are expected while vice versa for attractive women as busy perceivers expect them to be selfish, and they have a lower expectation for team contributions. So, when the attractive women produce the same level of outcome, these perceivers are more impressed with their work and are more likely to give them wage premium.

This is contrary to the results from Andreoni and Petrie's (2005) laboratory experiments. In their public goods experiment, beautiful people received a beauty premium when the group contribution was revealed. However, this premium disappeared when the information on individual contribution was given to the players (Andreoni, Petrie, 2005). As people expected beautiful people to be more cooperative, the beautiful players did not meet the perceived threshold and appeared more selfish.

Hypothesis 2: Male recipients are willing to spend more money to interact with beautiful female dictators than female recipients.

First, I ran the test using participants' gender to see if there was a significant difference between male and female perceivers' overall willingness to pay to switch their envelopes. Female perceivers on average were willing to pay \$0.79 while male perceivers on average were

willing to pay \$1.06 to switch their envelopes. I observe males on average are willing to pay more to switch their counterparties (Two-sample Mann-Whitney, $p = 0.05$).

I also created two pie charts to study the distribution of male and female perceivers' maximum willingness to pay. Comparing figure 5 and figure 6, I noticed that the percentage of the male perceivers who were not willing to pay any penny to switch their randomly assigned partners was smaller compared to the female perceivers.

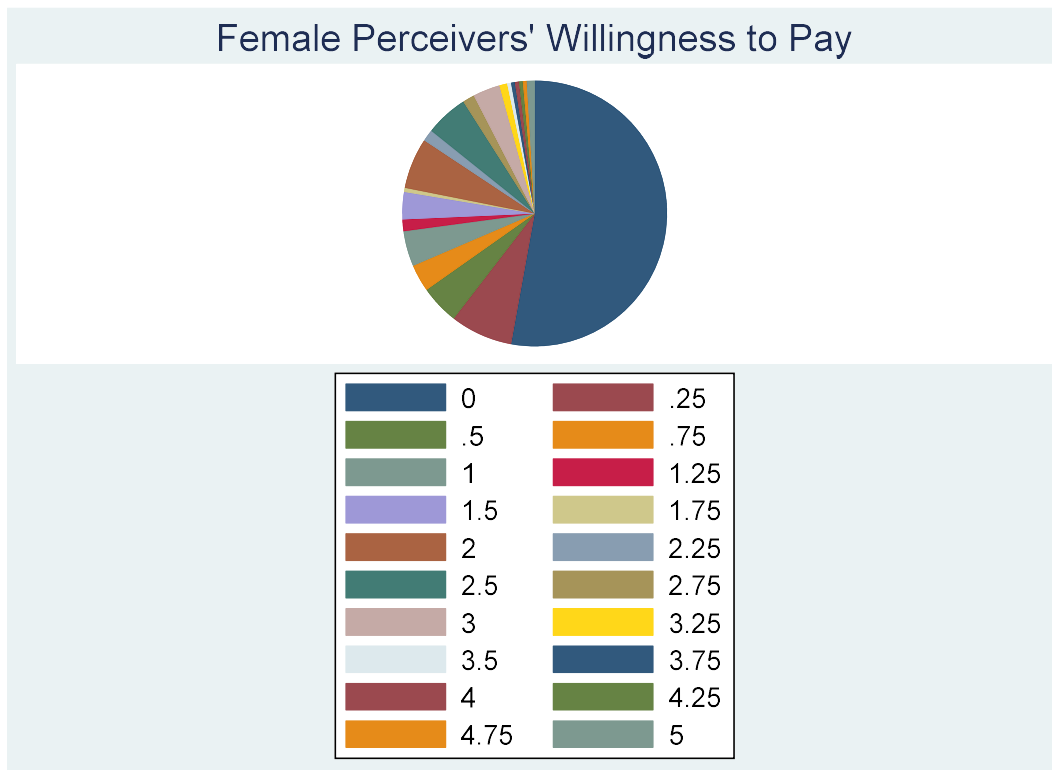


Figure 7- Female Perceivers' Willingness to Pay

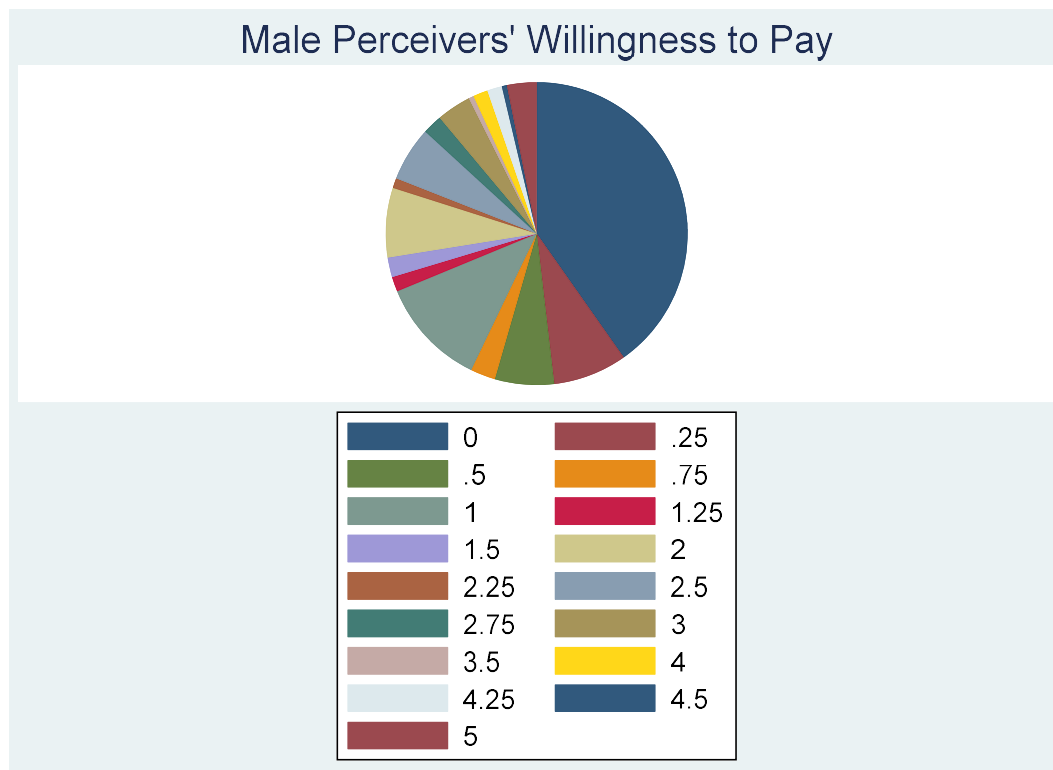


Figure 8- Male Perceivers' Willingness to Pay

Next, I studied the correlation between the treatment groups, participants' gender, and their maximum acceptable amount to switch the envelopes to make sure these variables were randomly assigned during the survey distribution. I ran the two-way frequency test with the previously mentioned variables. The Stata outputs confirmed that that the original envelope and the cost to switch were indeed randomly generated with gender.

Since participants were randomly assigned to one of the four envelopes, if their willingness to pay exceeded the randomly generated cost to switch, they received the amount in the switched envelope minus the cost to switch. As the result of male perceivers being willing to pay more to switch the envelopes, 50 out of 189 of them switched their envelopes while only 41 out of 210 female perceivers switched their envelopes.

Lastly, I narrowed the focus to the treatment groups. When I ran the two-sample Wilcoxon rank-sum test on the unattractive women group, I got a negative z-value, and I could

reject that male and female perceivers' willingness to pay was different at the significant level of 5%. In other words, when people were randomly assigned to the unattractive women group, male recipients would rather pay to switch to the envelopes from the attractive female dictators than receiving their payments from the unattractive female dictators.

Participant Gender/ Envelope Switched From			Mann-Whitney
	Female Recipients	Male Recipients	P-value
Attractive Men Group	0.701923077	1.039215686	0.2477
Unattractive Men Group	0.662037037	0.926829268	0.4135
Attractive Women Group	1.206140351	1.239795918	0.4347
Unattractive Women Group	0.521276596	1.005208333	0.041**

Table 1- Overall Gender Difference for Willingness to Pay

I ran the same test for the other three groups, and none of the other tests suggested that there existed a gender difference for recipients' willingness to switch. This statistical result mirrors my literature review in psychology and biology where the papers state that while women are looking for men with resources, men are looking for women for reproductive value. As women's facial attractiveness level hint to men about their health and youth, men are more willing to mate with attractive women. In my experiment, the male perceivers' willingness to pay supports such statement.

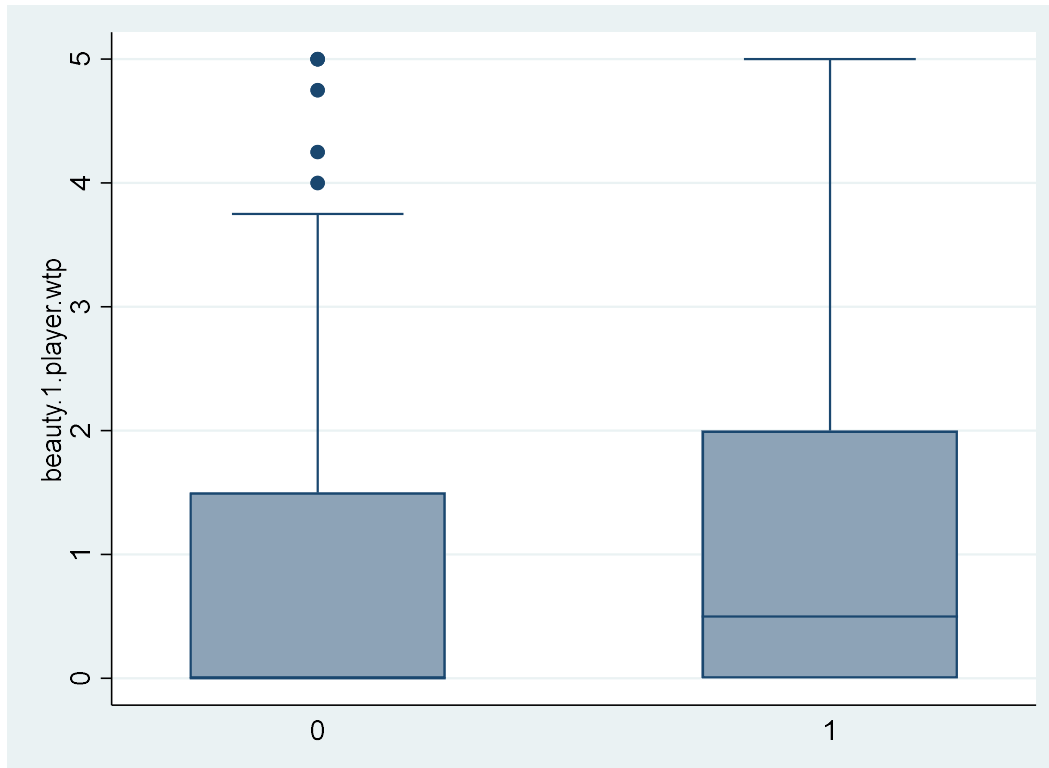


Figure 9 Difference between Female and Males' Willingness to Pay. 0 represents females' WTP, and 1 represents males' WTP.

For robustness, I additionally ran the ANOVA tests. The ANOVA output suggested that the mean between male and female perceivers' willingness to pay was different along with their different variance. When I ran the one-way ANOVA test only on the unattractive women group, the outcome was similar with statistical difference in the mean and in the variance.

This transaction can be explained by the mating motives. Men are willing to extend their generosity to attractive women because such efforts signal willingness to share resources (Maestripieri, Henry, and Nickels, 2017). Through these acts of generosity, men can expect to be perceived with higher social status and with greater resources. In return, they deserve to mate with the more attractive females.

Irrationality took form as male participants saw attractive women as more selfish than unattractive women in the first stage, yet they were still willing to put in the money to switch the

envelope from the unattractive female giver and receive their payments from the attractive female givers in the second stage. The mental shortcut to appeal to their biological needs demonstrated men's bounded rationality as the male participants were likely to receive less money if their perception on generosity based on facial attractive was right.

Hypothesis 3: Female perceivers who spend more time and money on their beauty activities are willing to spend more to interact with attractive dictators.

Since I was unable to collect the data for beauty beliefs and beauty activities, I could not test my hypothesis 3. However, it would be a great research topic for future studies.

Chapter 5

Conclusions

In this article, I modified the standard dictator game to study people's perception on facial attractiveness. I held the attractiveness evaluations constant by grouping the dictators into the attractive and the unattractive groups, and I explored the generosity evaluations by studying how people treated the separated groups. In my experiment, I found that unattractive women were the only group that was perceived as generous.

Participants' economic behaviors in the experiment also suggest that people interact with others under the influence of lookism. People's bounded rationality came in presence as male perceivers appraised the generosity level of the attractive women no different from the female perceivers, they were yet still willing to give more to foster interaction with the attractive women. While according to the reproductive theory, as male perceivers signal their willingness to share their resources, they are acting in their favor. As men do not need to think about how to optimize their reproductive success in every situation, they need to be aware when this mating mindset is overtaking their rational mindset.

Are men aware that they are only paying for the facial attractiveness? Whether or not, male participants' favored treatment toward the attractive women group may explain the demand for plastic surgeries among female patients. As males are willing to spend money on interacting with the good-looking females, it increases females' return on their beauty investments. While the beauty premium being advantageous is not wrong, we need to tackle financial and prosocial discrimination against unattractive people, particularly the unattractive women group as they

seem to be more discriminated than the unattractive men group. It would be a good idea to replicate Hamermesh and Biddle's 1993 study and see if unappealing women are still less likely to enter the workforce than the appealing women.

Although this data strongly suggests the existence of beauty stereotypes, the reversed generosity perception on the attractive and the unattractive targets is still mind-boggling. I recommend the further research to have groups of participants make their decisions in the laboratory to closely monitor their effort levels.

Appendices

Appendix A: Distributed Survey



Page 1 of 1
Protocol # 11619
IRB Approval Date: March 23, 2021
Consent Document Expires: February 1, 2022

Letter of Information

Random Game

You are invited to participate in a research study conducted by Lucas Rentschler, an Assistant Professor in Department of Economics and Finance at Utah State University. Your participation is entirely voluntary.

The purpose of this research is to study economic decision making. Specifically, we are interested in learning about how information interacts with economic decision making, and if beliefs about the behavior of others is accurate. You are being asked to participate in this research because you are older than 18, live in the United States of America, and have an account on Prolific.

Your participation in this study is voluntary and you may end your participation at any time for any reason.

If you take part in this study, you will be asked to participate in two decision tasks and a demographic survey. The two decision tasks are described below. The tasks will be conducted on your computer, via a web browser. In the first two tasks you will choose a lottery to participate in, out of a list of 6 lotteries. In the second task, you will report your beliefs about the decisions people made in a prior experiment. The survey will consist of a series of questions which include standard demographic questions. You will be given instructions which detail the decisions you will make. It will take no more than 0.5 hours to complete this study.

The possible risks of participating in this study include loss of confidentiality, since online activities always carry a risk of a data breach, but we will use systems and processes that minimize breach opportunities. Although you will not directly benefit from this study, it has been designed to learn more about economic decision making.

We will collect your anonymous information through the information you provide in your web browser. Your decisions, and your survey responses will be securely stored in a restricted-access folder on Box.com, an encrypted, cloud-based storage system. We will make every effort to ensure that the information you provide remains confidential.

For your participation in this research study, you will receive a participation payment of \$2.50, as well as an additional payment which will depend on the decisions you make during the study. Your total payment, including the participation fee, can be up to \$10. On average, it will be \$4.00. You will not receive compensation if you do not complete the experiment.

If you have any questions about this study, you can contact Dr. Lucas Rentschler at lucas.rentschler@usu.edu. Thank you again for your time and consideration. If you have any concerns about this study, please contact Utah State University's Human Research Protection Office at (435) 797-0567 or irb@usu.edu.

By continuing to the experiment, you agree that you are 18 years of age or older and wish to participate. You agree that you understand the risks and benefits of participation, and that you know what you are being asked to do. You also agree that if you have contacted the research team with any questions about your participation, and are clear on how to stop your participation in this study if you choose to do so. Please be sure to retain a copy of this form for your records.

Task 2

Below you will see the details of a **previous** experiment that took place at a physical location before the COVID-19 pandemic. Your payment for Task 2 will be influenced by this past experiment.

1. Upon arrival to the experimental laboratory, a photo of each person was taken.
2. Each subject was given an envelope that contained 15 one-dollar bills and 15 blank slips of paper.
3. Each person privately decided how many dollar bills (if any) and how many slips of paper to leave in the envelope. The only requirement was that the number of dollars bills plus the number of slips of paper were to add up to 15.
4. The person then pocketed the remaining dollar bills and slips of paper. Example: The person might (a) Leave \$5 and ten slips in the envelope, pocket \$10 and five slips; (b) Leave \$7 and eight slips in the envelope, pocket \$8 and seven slips. These were examples only; the actual decision was up to each person.
5. These persons were told that the envelopes would be distributed to subjects at another location, and that the recipient of an envelope would get to keep its contents.
6. This concluded their part of the experiment.

Next

Task 2

Your task is to estimate the contents in the envelopes. An envelope from people who left more than \$6 are classified as "generous," and an envelope from people who left less than \$6 are classified as "self-interested".

1. You will use given information to formulate accurate guesses about the content from the envelopes. You will guess whether the envelope is a "generous" envelope (with more than \$6) or a "self-interested" envelope (with less than \$6.)
2. Your payoff is strictly tied to the accuracy of your guesses. Example (a): The envelope contains \$5. If you selected "generous," you receive 0 points. If you selected "self-interested" you receive 5 points. Example (b): The envelope contains 7 points. If you selected "generous," you receive 7 points. If you selected "self-interested," you receive 0 points.
3. Your final payoff will be determined from your answer to one randomly drawn decision.

22 independent raters have evaluated the pictures of those who allocated the dollar bills and the paper slips in the envelopes in the previous experiment. These participants and their envelopes are put into four groups according to the raters' evaluations of their facial attractiveness and their gender. Participants whose ratings were above the average rating are put in the "attractive group," and participants whose rating ere below the average are put in the "unattractive group." You will be presented with four envelopes whose contents represent the average allocations of each of the four groups.

Recall that each of the envelopes you are evaluating contains the average contents of the envelopes of participants from the past experiment evaluated as having the facial attractiveness and gender indicated.

Raters on average agreed these were attractive men. Do you think that they are "generous" givers (send more than \$6) or "self-interested" givers?

- ☐ Generous givers (send more than \$6)
- ☐ Self-interested (send less than \$6)

Raters on average agreed these were unattractive women. Do you think that they are "generous" givers (send more than \$6) or "self-interested" givers?

- ☐ Generous givers (send more than \$6)
- ☐ Self-interested (send less than \$6)

Raters on average agreed these were unattractive men. Do you think that they are "generous" givers (send more than \$6) or "self-interested givers?

- ☐ Generous givers (send more than \$6)
- ☐ Self-interested (send less than \$6)

Raters on average agreed these were attractive women. Do you think that they are "generous" givers (send more than \$6) or "self-interested" givers?

- ☐ Generous givers (send more than \$6)
- ☐ Self-interested (send less than \$6)

Next

Task 2

You were selected to receive payment from the attractive women's group envelope. Would you like to switch to the envelope coming from the unattractive women's group envelope instead? If so, what is the maximum number of points you are willing to pay to switch to the unattractive women's group envelope.

Before this survey, a fee of X points was RANDOMLY generated from between 0 and 5 points in increments of 0.25 points. If the maximum amount you report is greater than X points, the randomly selected fee of X points will be deducted from your final payment, and you will receive the contents of the other envelope instead of the original envelope. This decision and outcome will only be used, and results occur if you correctly guessed the contents of the original attractive women's group envelope.

What is the maximum amount of points you are willing to pay to switch?

Next

Survey

Please answer the following questions. You will be paid 5 points for completing the survey.

What is your age?

What is your gender?

What is your ethnic group?

What is your occupation?

Economic Status

Next

Appendix B: Questions for Hypothesis 3

Please indicate how much you agree or disagree with the following statement.

Beauty is only skin-deep.

1: Definitely disagree, 2: Generally disagree, 3: Slightly disagree, 4: Slightly agree, 5: Generally agree, 6: Strongly agree

Please choose the answer that best describes your individual situation.

1. How often have you put on makeup in the past six months?
Never, once every six months, once every month, once every week, three times a week, every day
2. What percentage of each paycheck do you allocate to cosmetics? Cosmetic is defined by FDA as “a product (excluding pure soap) intended to be applied to the human body for cleansing, beautifying, promoting attractiveness, or altering the appearance.”
3. How long is your average skincare and beauty routine on a day-to-day basis?
4. Are you more of a twitter or Instagram user?
Twitter, Instagram, neither

Appendix C: Stata Do-file

```
import excel "C:\Users\kaway\OneDrive - Baylor University\Honors Program\Data\Experiment
Results.xlsx", sheet("withoutflips") cellrange(AM1:BM400) firstrow
* Reformatting the data
drop beauty1playerrole
drop beauty1playerpayoff
drop survey1playerrole
drop survey1playerpayoff
drop beauty1groupid_in_subsession
drop beauty1subsessionround_number

gen gender =.
replace gender= 0 if survey1playergender == "Female"
replace gender= 1 if survey1playergender == "Male"
gen ethnicity =.
replace ethnicity= 1 if survey1playerethnicity == "White"
replace ethnicity= 2 if survey1playerethnicity == "Black"
replace ethnicity= 3 if survey1playerethnicity == "Native Hawaiian"
replace ethnicity= 4 if survey1playerethnicity == "American Indian"
replace ethnicity= 5 if survey1playerethnicity == "Asian"
replace ethnicity= 6 if survey1playerethnicity == "Hispanic"
replace ethnicity= 7 if survey1playerethnicity == "Other"

gen age =.
replace age= 1 if survey1playerage == "18 - 24 years"
replace age= 2 if survey1playerage == "25 - 34 years"
replace age= 3 if survey1playerage == "35 - 44 years"
replace age= 4 if survey1playerage == "45 - 54 years"
replace age= 5 if survey1playerage == "55 - 64 years"

gen occupation =.
replace occupation = 1 if survey1playeroccupation == "Full-time Student"
replace occupation = 2 if survey1playeroccupation == "House wife/husband"
replace occupation = 3 if survey1playeroccupation == "Unemployed"
replace occupation = 4 if survey1playeroccupation == "Retired"
replace occupation = 5 if survey1playeroccupation == "Employed"
replace occupation = 6 if survey1playeroccupation == "Other"

gen economic_status =.
replace economic_status = 1 if survey1playereconomic_status == "Less than $14,000"
replace economic_status = 2 if survey1playereconomic_status == "$15,000 to $24,999"
replace economic_status = 3 if survey1playereconomic_status == "$25,000 to $34,999"
replace economic_status = 4 if survey1playereconomic_status == "$35,000 to $49,999"
replace economic_status = 5 if survey1playereconomic_status == "$50,000 to 74,999"
replace economic_status = 6 if survey1playereconomic_status == "$75,000 to 99,999"
replace economic_status = 7 if survey1playereconomic_status == "$100,000 to $149,999"
```

```
replace economic_status = 8 if survey1playereconomic_status == "$150,000 to $199,000"
replace economic_status = 9 if survey1playereconomic_status == "$200,000 or more"
```

```
log using "C:\Users\kaway\OneDrive\Desktop\thesis log.smcl"
```

```
// No need to test for data normality
```

```
* 1. The above-average-looking dictators are more likely to be perceived as generous than
below-average-looking dictators.
```

```
tab beauty1playerbeauty1
```

```
tab beauty1playerbeauty2
```

```
tab beauty1playerbeauty3
```

```
tab beauty1playerbeauty4
```

```
graph pie, over(beauty1playerbeauty1) plabel(_all percent) title(Perception of The Attractive
Men Group)
```

```
graph pie, over(beauty1playerbeauty2) plabel(_all percent) title(Perception of The Unattractive
Men Group)
```

```
graph pie, over(beauty1playerbeauty3) plabel(_all percent) title(Perception of The Attractive
Women Group)
```

```
graph pie, over(beauty1playerbeauty4) plabel(_all percent) title(Perception of The Unattractive
Women Group)
```

```
// Generous: 1, Selfish: 0
```

```
*Use Wilcoxon-Mann Whitney test to see if there is any difference between male and female
recipients in the four decisions
```

```
ranksum beauty1playerbeauty1, by(survey1playergender) exact
```

```
ranksum beauty1playerbeauty2, by(survey1playergender) exact
```

```
ranksum beauty1playerbeauty3, by(survey1playergender) exact
```

```
ranksum beauty1playerbeauty4, by(survey1playergender) exact
```

```
// All are statistically insignificant except for the unattractive female group. Perceiver's gender
does not change toward targets with the same gender and the same facial attractiveness level for
the other three groups.
```

```
* Use Wilcoxon matched-pairs signed-rank test to test for a difference in the mean of paired
observations.
```

```
signrank beauty1playerbeauty1 = beauty1playerbeauty2, exact
```

```
signrank beauty1playerbeauty3 = beauty1playerbeauty4, exact
```

```
// People perceive attractive men different from unattractive men, and they perceive attractive
women different from unattractive women.
```

```
* Or use signtest. Same results.
```

```
gen AttrMale_UnattrMale = beauty1playerbeauty1 - beauty1playerbeauty2
```

```
gen AttrFemale_UnattrFemale = beauty1playerbeauty3 - beauty1playerbeauty4
```

```
signtest AttrMale_UnattrMale = 0
```

```
signtest AttrFemale_UnattrFemale = 0
```

```
* Aggregate the attractive and unattractive groups for data variability.
```

```

gen AttrAll = beauty1playerbeauty1 + beauty1playerbeauty3
gen UnattrAll = beauty1playerbeauty2 + beauty1playerbeauty4
signrank AttrAll = UnattrAll, exact
*Unattractive dictators are more likely to be seen as generous.

```

* 2. Male recipients are willing to spend more to interact with beautiful female dictators while male recipients are no different to plain female dictators than to male dictators.

```

ranksum beauty1playerwtp, by(gender) exact
// Men are willing to spend more to switch their work partners!
tab beauty1playerquestion_selecte
tab beauty1playerquestion_selecte gender
tab beauty1playercost_to_switch
tab beauty1playercost_to_switch gender
tab beauty1playerwtp
tab beauty1playerwtp gender
// How to see percentage
tab beauty1playerswitched
tab beauty1playerswitched gender
graph pie if gender==0, over(beauty1playerwtp) title(Female Perceivers' Willingness to Pay)
graph pie if gender==1, over(beauty1playerwtp) title(Male Perceivers' Willingness to Pay)

```

```

* group 4
gen AssignedGroup4 =.
replace AssignedGroup4 = 1 if beauty1playerquestion_selecte == 4
replace AssignedGroup4 = 0 if AssignedGroup4==.
ranksum beauty1playerwtp if AssignedGroup4 == 1, by(gender) exact
// Men are willing to pay more to switch to attractive women than women.

```

```

* group 3
gen AssignedGroup3 =.
replace AssignedGroup3 = 1 if beauty1playerquestion_selecte == 3
replace AssignedGroup3 = 0 if AssignedGroup3==.
ranksum beauty1playerwtp if AssignedGroup3 == 1, by(gender) exact
// No difference

```

```

* group 2
gen AssignedGroup2 =.
replace AssignedGroup2 = 1 if beauty1playerquestion_selecte == 2
replace AssignedGroup2 = 0 if AssignedGroup2==.
ranksum beauty1playerwtp if AssignedGroup2 == 1, by(gender) exact
// No difference

```

```

* group 1
gen AssignedGroup1 =.

```

```
replace AssignedGroup1 = 1 if beauty1playerquestion_selecte == 1
replace AssignedGroup1 = 0 if AssignedGroup1==.
ranksum beauty1playerwtp if AssignedGroup1 == 1, by(gender) exact
// No difference
```

* For robustness, run ANOVA tests.

```
graph box beauty1playerwtp, over(gender)
oneway beauty1playerwtp gender
oneway beauty1playerwtp gender if AssignedGroup4 ==1
```

* Sample Description

* Use bar charts to describe the categorical data

```
graph bar (count), over(survey1playerage) title(Sample Age Distribution)
graph bar (count), over(survey1playerethnicity) title(Sample Ethnicity Distribution)
graph bar (count), over(survey1playeroccupation)
```

Bibliography

- Aksoy, Billur, et al. "Can I Rely on You?" *Games*, vol. 9, no. 4, 4, Multidisciplinary Digital Publishing Institute, Dec. 2018, p. 81.
- Baldwin, James Mark. *Dictionary of philosophy and psychology: including many of the principal conceptions of ethics, logic, aesthetics, philosophy of religion, mental pathology, anthropology, biology, neurology, physiology, economics, political and social philosophy, philology, physical science, and education, and giving a terminology in English, French, German, and Italian*. Vol. 2. Macmillan Company, 1920.
- Bloom, Allan, translator. *Republic of Plato, The*. Basic Books, 1968.
- Bovet, Jeanne. "The Evolution of Feminine Beauty." *Exploring Transdisciplinarity in Art and Sciences*, 2018, pp. 327–57.
- Chapman, Emmanuel. "Some Aspects of St. Augustine's Philosophy of Beauty." *The Journal of Aesthetics and Art Criticism*, vol. 1, no. 1, [Wiley, American Society for Aesthetics], 1941.
- Cherry, Todd L., Peter Frykblom, and Jason F. Shogren. "Hardnose the dictator." *American Economic Review* 92.4 (2002).
- Eggerstedt, Michael, et al. "Beauty Is in the Eye of the Follower: Facial Aesthetics in the Age of Social Media." *American Journal of Otolaryngology*, vol. 41, no. 6, Nov. 2020.
- Hickman, Louise. "The Good, the True and the Beautiful: Imagining an Ethico-Political Future for the Philosophy of Religion." *Palgrave Communications*, vol. 4, no. 1, 1, Palgrave, Oct. 2018.
- Langlois, Judith H., et al. "Maxims or Myths of Beauty? A Meta-Analytic and Theoretical Review." *Psychological Bulletin*, vol. 126, no. 3, 2000, pp. 390–423.
- Lemay, Edward P., et al. "What Is Beautiful Is Good Because What Is Beautiful Is Desired: Physical Attractiveness Stereotyping as Projection of Interpersonal Goals." *Personality and Social Psychology Bulletin*, vol. 36, no. 3, SAGE Publications Inc, Mar. 2010, pp. 339–53.
- Ma, Qingguo, and Yue Hu. "Beauty Matters: Social Preferences in a Three-Person Ultimatum Game." *PLOS ONE*, edited by Cosimo Urgesi, vol. 10, no. 5, May 2015.
- Minerva, Francesca. "How should we Tackle Financial and Prosocial Biases Against Unattractive People?" *Behavioral and Brain Sciences*, vol. 40, 2017, pp. 56.
- Mullainathan, Sendhil, and Richard H. Thaler. *Behavioral Economics*. National Bureau of Economic Research, 2000.

Ravina, Enrichetta. *Love & Loans The Effect of Beauty and Personal Characteristics in Credit Markets*. p. 77.

Scruton, Roger. "Why Beauty Matters." *The Monist*, vol. 101, no. 1, Oxford Academic, Jan. 2018, pp. 9–16. *academic.oup.com*.

Thaler, R.H. and Mullainathan, S.. 2008. "How Behavioral Economics Differs from Traditional Economics." *The Concise Encyclopedia of Economics*.

"Types of Discrimination." *Centers for Disease Control and Prevention*, Centers for Disease Control and Prevention, 16 Nov. 2017.

Willis, Janine, and Alexander Todorov. "First Impressions: Making Up Your Mind After a 100-Ms Exposure to a Face." *Psychological Science*, vol. 17, no. 7, SAGE Publications Inc, July 2006, pp. 592–98.