



# Beauty Premium or Penalty Revisited: Gender Differences in Social Perception of Female Cosmetic Surgery Recipients

## Citation

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Beauty Premium or Penalty Revisited:  
Gender Differences in Social Perception of Female Cosmetic Surgery Recipients

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A Thesis in the Field of Psychology  
for the Degree of Master of Liberal Arts in Extension Studies

Harvard University

March 2021



## Abstract

This thesis examines gender differences in how people evaluate female cosmetic surgery recipients. It was proposed that men perceive women whom they know have had cosmetic surgery more negatively compared to women who have not had cosmetic surgery because the beauty premium that men place on women stems from the reproductive value of innate beauty. In contrast, women's perception of female cosmetic surgery recipients depends on whether cosmetic surgery is regarded as a legitimate self-improvement method or a dishonest way to get ahead in intrasexual competition. To test these hypotheses, a between-subjects lab experiment with 341 participants was conducted on Amazon Mechanical Turk. As previous literature on cosmetic surgery focuses on people's motivation for undergoing cosmetic surgery (Thorpe, Ahmed, & Steer, 2004), this thesis is one of the first attempts to investigate people's perceptions of female cosmetic surgery recipients. It helps prospective cosmetic surgery recipients understand the social consequence of cosmetic surgery and make more informed decisions.

## Dedication

I dedicate this thesis to my grandparents, Fancheng Meng (孟凡成) and Ping Wu (吴萍) for their unconditional love and unwavering support.

## Acknowledgments

I would like to express the sincerest gratitude to my thesis advisor Dr. Max Kransow and my research advisor Dr. Dante Spetter for their wonderful mentorship. I would also like to thank Dr. Yajin Wang for guiding me with theory development and providing valuable feedback on this project.

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## Chapter I

### Introduction

In the past two decades, medical advances, celebrity worship, and media exposure have contributed to the increasing popularity of cosmetic surgery—a voluntary surgical procedure with the sole purpose of improving a person’s appearance or removing signs of aging (Morgan, 2009). Data released by the American Society of Plastic Surgeons (2019) show that there were more than 17.7 million surgical and minimally invasive cosmetic procedures performed in the United States in 2018, representing a 163 percent increase from 2000. A recent report by the American Society of Plastic Surgeons (2020) further suggests that the demand for cosmetic surgeries is booming despite an ongoing coronavirus pandemic.

The rise of cosmetic surgery procedures highlights the need for understanding other people’s perceptions of cosmetic surgery recipients. As women comprise 92% of cosmetic surgery recipients (American Society of Plastic Surgeons, 2019), this paper aims to provide a better understanding of how female cosmetic surgery recipients are perceived depending on observers’ gender.

In this thesis, the theoretical basis for predictions about how men versus women evaluate women who have received cosmetic surgeries derives from evolutionary psychology literature. Research has shown men are more likely to affiliate with conventionally attractive women (Buss, 2015; Buss & Schmitt, 1993). In contrast, when it comes to women’s perceptions and evaluations of other women, the effects may be more critical or more negative. The conventionally attractive women are more likely to

be the target of envy, interpersonal derogation, and social avoidance than their average-looking counterparts when being evaluated by other women (Arnocky, Sunderani, Miller, & Vaillancourt, 2012; Försterling, Preikschas, & Agthe, 2007; Schmitt & Buss, 1996). Most of this research investigated innate beauty. However, artificially enhanced beauty is often judged differently from innate beauty. Additionally, due to cosmetic surgeries' invasive and risky nature, people's perceptions of female cosmetic surgery recipients could differ from their perceptions of women who engage in other types of appearance enhancement efforts, such as make-up. This thesis is one of the first attempts to examine people's perceptions of women who use cosmetic surgeries to enhance their physical attractiveness.

### Physical Attractiveness

Attractive women enjoy a variety of benefits relative to their less attractive peers (Buss & Shackelford, 2008). Multiple studies demonstrate that people rate attractive individuals as being more outgoing, socially dominant, confident, sexually responsive and receptive, honest, and mentally stable than less attractive individuals (Etkoff, 2011; Feingold, 1992; Lucker, Beane, & Helmreich, 1981).

Studies consistently suggest that attractive women are in the most advantageous position when it comes to attracting a romantic partner and are preferentially selected by the most conventionally desirable men as mates (Buss, 2015; Buss & Schmitt, 1993; Li, Bailey, Kenrick, & Linsenmeier, 2002). Specifically, in thirty-seven samples collected from thirty-three countries located on six continents and five islands, 10,047 participants were asked to rate characteristics, such as “good financial prospect”, “good looks”, and “intelligence”, on how important it would be in choosing a mate. The results indicate that

men across a wide variety of cultures value physical attractiveness more in their potential romantic partners and long-term mates than women do. Furthermore, Li and colleagues (2002) solicited 78 participants, aged 23 to 55 with diversified ethnic backgrounds at Chicago O'Hare International Airport. Participants were asked to make trade-offs between ten characteristics in their ideal marriage partner. The results demonstrate that women viewed intelligence and yearly income as the most desirable characteristics in their potential marriage partners, whereas men prioritized physical attractiveness over nine other characteristics, such as intelligence, kindness, and creativity, during mate selection.

Given these competitive advantages of physical attractiveness, females' beauty often evokes envy and resentment among same-sex competitors. For example, Arnocky and colleagues (2012) recruited 558 females who were in heterosexual romantic relationships from a university student center. The participants were asked to report their tendency to compare their physical attractiveness by completing items, such as "I feel happier about my figure when I am with someone who is larger than myself". Their frequency of indirect aggression in peer relations was assessed using the Indirect Aggression Scale–Aggressor and Victimization versions (IAS–A, IAS–V). Results suggested that women who reported a greater tendency to compare their physical attractiveness are significantly more likely to use indirect aggression, such as criticizing a competitor's appearance, spreading rumors about a person's sexual behavior, and excluding a person from social groups, towards same-sex peers than women who reported less comparison. This study was limited by its correlational nature and self-

reported measure of physical attractiveness comparison and indirect aggression frequency in peer relations.

Research suggests men and women differ in their preference towards attractive women outside the mating domain. Two experiments assessing evaluations of potential job candidates demonstrated positive biases toward highly attractive other-sex targets but negative biases toward highly attractive same-sex targets (Agthe, Spörrle, & Maner, 2011). Specifically, 223 female and 162 male Caucasian students at a German university were instructed to evaluate job application profiles with four target photos (one attractive man and woman; one relatively less attractive man and woman) as if they were a member of the selection committee. The results showed that better looking other-sex applicants were favored over less attractive candidates, whereas attractive same-sex applicants were rated less favorably relative to less attractive targets. In another experiment, Luxen and van de Vijver (2006) created a booklet with photos representing mock job applicants. Then, 52 female undergraduate students were told to imagine that they were on a candidate selection committee and were asked to rate the likelihood of hiring each applicant. Female undergraduate students rated themselves as more likely to hire an unattractive (vs. an attractive) undergraduate female for a student-assistant job when told they would be working closely with her. One limitation to these investigations is that they relied on undergraduate students asked to rate hypothetical candidates with photos, they were not human resources management professionals actually hiring people for a specific job.

In summary, previous literature suggests that women's physical attractiveness and appearance-enhancement efforts are often rewarded by men but penalized by women.

The current research aims to examine whether those effects hold when physical attractiveness is achieved through an extreme form of appearance-enhancement effort -- cosmetic surgery.

### Artificially Enhanced Beauty

Most people are aware of the benefits conveyed by physical attractiveness, and cosmetic surgeries are often used to look younger, healthier, and more attractive (Etkoff, Stock, Haley, Vickery, & House, 2011; Russell, 2009; Stephen & McKeegan, 2010). The goal of cosmetic surgery is to enhance a person's appearance, boost self-esteem, and increase chances of acquiring or retaining desirable mates (Atari, Barbaro, Sela, Shackelford, & Chegeni, 2017; Davis & Vernon, 2002). While efforts to make oneself look attractive are normative in most cultures, having cosmetic surgery might be interpreted differently from interpretations of either innate beauty or beauty achieved through other appearance-enhancement efforts, such as applying makeup and wearing shapewear.

Changes achieved using cosmetic surgery may be more transformative and more permanent than other ways to enhance physical appearance (Askegaard, Gertsen, & Langer, 2002). Secondly, while many beauty treatments are either painful or unpleasant (e.g., waxing, piercing, or tattoos), cosmetic surgery as an invasive procedure just as any other surgery has a higher level of risk involved in many of the procedures (Gimlin, 2000). And, third, whereas people often can tell when someone is wearing makeup or dressing to enhance specific body characteristics, cosmetic surgery is less likely to be obvious to most observers.

## Reproduce Value in Intersexual Selection

Men's preference for physically attractive mates originates from the adaptive problem of identifying and accessing women with high reproductive value and good genes (Barber, 1995; Symons, 1979). Providing support for this perspective, the facial characteristics men find attractive (e.g., clear facial complexion, symmetry, lustrous hair) are shown to be reliable indicators of women's fertility and health (Cloud & Perilloux, 2014; Fink & Neave, 2005). Further, large and firm breasts and a low waist-hip ratio are signs of sexual maturity and high reproductive value (Barber, 1995; Lassek & Gaulin, 2019). Furthermore, such traits advertise the possession of genes that are beneficial to offspring inheriting them in terms of survival (Buss & Shackelford, 2008). As physical attractiveness is a proxy for reproductive success, cosmetic surgery enhances appearance without changing the biological traits physical attractiveness historically conveyed. Thus, cosmetic surgery serves as a disguise that interferes with a potential mate's ability to form a true impression of a woman's reproductive potential.

It is hypothesized that the more effort one believes a person expended to attain beauty, the poorer one will rate that person's traits associated with innate beauty because visible traits in unaltered people are presumed to reflect underlying characteristics and when those visible traits have been altered, one cannot "trust your eyes" to make such judgments. Thus, women who have engaged in cosmetic surgeries may be perceived as having lower reproductive value than those who have not. As a result, male observers may form more negative perceptions of and experience a diminished desire to affiliate with female targets who have received cosmetic surgeries compared to those who have not.

## Sociosexual Orientation and Mate Preference

Sociosexual orientation describes an individual's attitudinal, behavioral, and cognitive inclinations toward commitment-free sex (Penke & Asendorpf, 2008; Simpson & Gangestad, 1991). An unrestricted orientation is characterized by an inclination toward sex without emotional commitment, whereas a restricted orientation is characterized by a preference for greater love, commitment, and emotional closeness before having sex with romantic partners (Penke & Asendorpf, 2008).

Research has shown that sexually restricted individuals, in comparison to sexually unrestricted individuals, tend to invest more in their offspring. Valentova and colleagues (2020) recruited 1,110 heterosexual Middle European (Czech) and Latin American (Brazilian) men and women participating in an online study. The participants completed Sociosexual Orientation Inventory-Revised (SOI-R; Penke & Asendorpf, 2008), which measures the propensity toward uncommitted sexual variety, and the Life-History Scale (Kruger, 2017), which measures the parenting efforts. Regression models were conducted with parenting effort as dependent variables and sociosexuality as independent variables. The results indicate that an unrestricted sociosexual orientation is negatively correlated with caring for their offspring.

It is hypothesized that individual differences in sociosexuality predict different traits men prioritize when evaluating women. Men with a long-term mating strategy tend to seek durable, high-investment relationships. They value the extent to which a woman possesses adaptive traits that could be passed on to offspring. In this case, the need for cosmetic surgery served as an indicator of poor reproductive potential and genetic traits, which leads to men's diminished desire to affiliate with female cosmetic surgery

recipients. By contrast, men with a short-term mating strategy tend to pursue temporary sexual relationships and acquire sexual pleasure without the commitment of reproducing and raising the offspring. While women's physical beauty is aesthetically pleasing, sexually unrestricted men tend to show less sensitivity towards whether the beauty is innate or achieved through cosmetic surgeries.

Furthermore, research has shown that people use appearance enhance effort as a cue of women's interest in promiscuity. In a recent study by Batres and colleagues (2018), photographs were taken of 69 women of European descent, once with no makeup on and a second time after they had applied their 'everyday' makeup. Then, 182 male and female raters were asked to assess the perceived sociosexuality of women who had been photographed with and without makeup. The results found that female faces with makeup are rated as more sexually unrestricted than the same faces without makeup. The authors suspect that this is because appearance-enhancement effort signals more "overt interest in the opposite sex" (Batres et al., 2018).

Unrestricted men tend to look for women who are willing to engage in short-term mating, while restricted men desire long-term partners who demonstrated sexual exclusivity to the relationship (Simpson & Gangestad, 1992). As extensive appearance-enhancement effort makes women appear more sexually unrestricted and less faithful (Batres et al., 2018), it is predicted that sexually restricted men may further downregulate interest in female cosmetic surgery recipients.

In summary, although both sexually restricted and unrestricted men infer female cosmetic surgery recipients to have lower reproductive value and higher interest in promiscuity, restricted men place a higher value on the quality of their offspring and the



loyalty in relationships. Thus, sexually restricted men may form a more pronounced negative perception of and experience a diminished desire to affiliate with female targets who have received cosmetic surgeries compared to those who have not. This effect may attenuate when male observers are sexually unrestricted.

### Fairness in Intrasexual Competition

Research has shown women often criticize other women for using artificial attractiveness-enhancing procedures to compete unfairly in intrasexual competition. For example, Vaillancourt and Sharma (2011) recruited 86 heterosexual women ranging in age from 19 to 23 years with diverse ethnic backgrounds from a mid-sized university located in Ontario, Canada. Participants were randomly assigned to see a female confederate dressed in either a sexually provocative manner (e.g., tight V-neck pink T-shirt and short skirt) or a conservative manner (e.g., loose grey T-shirt and jeans). Each trial was run in a laboratory in a group setting, and participants' individual reactions to their exposure to the confederate were unknowingly video recorded. Video clips of the participants' initial reactions were coded by 13 independent raters who are blind to the condition. The results showed more women reacted negatively (e.g., rolling their eyes and laughing at the confederate when she left the room) when she was dressed in a sexually provocative manner compared to a conservative manner. However, the group setting of this study may have made the participants vulnerable to peer pressure or social contagion, and it is unknown how many would have reacted this way if they were not seated with someone having such a reaction.

DelPriore, Bradshaw, and Hill (2018) demonstrate women's predisposition to exhibit negative perceptions when same-sex others using artificial attractiveness-

enhancing procedures is so ingrained in the human mind that it generalizes also to social situations that have no bearing on mating. They find that women made more negative attributions about female targets wearing (vs. not wearing) cosmetics in the professional context. Specifically, 117 heterosexual female undergraduates were randomly assigned to view the description of a student named Melissa. All descriptions about Melissa's major, hobbies, and personalities were identical except for varying her cosmetic use in preparation for a full-time job interview. Participants either saw "she decides to take some time to apply foundation, blush, eye makeup, and lipstick" or "she decides to not wear any makeup." Then, participants were asked to rate the degree to which the target was deceptive, fake, manipulative, and trustworthy. The results provide evidence that college-aged women perceive same-sex others who use cosmetic products to enhance their appearance and gain advantages in the professional competition as being dishonest or manipulative.

While those studies used the traditional undergraduate subject pool that is significantly younger and more educated than the US population, the current study will have a subject pool with a broader age range. More importantly, as an extreme form of appearance enhancement, in terms of risk, expense, and permanence, cosmetic surgery may suggest something about women's characteristics that using makeup does not. It is predicted that some women may view cosmetic surgery as a legitimate way for self-improvement, while others believe it is a dishonest way to get ahead in the intrasexual competition.

## Benign versus Malicious Envy

People experience envy when they perceive themselves to lack another person's quality, achievement, or possession and either desire that characteristic or wish that the other person lacked it (Parrott & Smith, 1993). In a daily diary study, 87 female undergraduate students recorded whether they had compared themselves and other women and the emotions associated with these comparisons three times a day for seven days. Participants reported 1156 total comparisons, and the comparisons included physical appearance, academic skills, intelligence, social status, possessions, and so forth. This research showed that physical appearance comparisons were qualitatively different from other comparisons; they were more likely to be associated with more envy (McKee et al., 2013).

Other people's competence can elicit both benign envy and malicious envy (Van de Ven, 2017). Benign envy has been theoretically linked to how upward social comparison motivates self-improvement and facilitates social learning within groups (Onu, Kessler, & Smith, 2016). It is predicted that female observers with high benign envy tendencies may regard cosmetic surgeries as a legitimate and even admirable way of self-improvement. As cosmetic surgeries democratize physical attractiveness and make the artificially enhanced beauty attainable for themselves, they may form positive perceptions of the female targets who take risks and effort to improve physical appearance through cosmetic surgeries.

In contrast, malicious envy is characterized by the unpleasant experience of hostility, inferiority, and resentment toward those who possess something desirable (Smith & Kim, 2007). In this case, upward social comparison induces a motivation to

criticize and try to undermine the envied others but no motivation for self-improvement (Van de Ven, 2017). Thus, female observers with high malicious envy tendencies may perceive cosmetic surgery as a way of cheating to get ahead in the intrasexual competition, which leads to a negative perception of and a diminished desire to affiliate with female cosmetic surgery recipients.

## Chapter II

### Method

The study was conducted using an online study format administered via Qualtrics. The target sample was 346 participants, with an equal representation of males and females. This sample size was determined using G\*Power 3.1.9.7, assuming an ANOVA test of six groups with an effect size of 0.22, an alpha of 0.05, and a power of 0.9. Participants were recruited through Amazon Mechanical Turk, by specifically targeting individuals with heterosexual orientation.

### Study Hypotheses

Male observers form more negative perceptions of and experience a diminished desire to affiliate with the female targets who have received cosmetic surgeries compared to those who have not. This is because women who have engaged in cosmetic surgeries are perceived to have lower reproductive value than those who have not.

Sexually restricted male observers place a higher value on the extent to which a woman possesses adaptive traits that could be passed on to offspring than sexually unrestricted male observers when evaluating women. Thus, the negative perception of female cosmetic surgery recipients is more pronounced when the male observers are sexually restricted than sexually unrestricted.

Female observers with high benign envy tendencies regard cosmetic surgeries as a legitimate and even admirable way of self-improvement. Thus, they form more positive

perceptions of and experience an increased desire to affiliate with the female targets who have received cosmetic surgeries compared to those who have not.

Female observers with high malicious envy tendencies perceive cosmetic surgery as a way of cheating to get ahead in the intrasexual competition. Thus, they form more negative perceptions of and experience a diminished desire to affiliate with the female targets who have received cosmetic surgeries compared to those who have not.

### Procedure

All the study protocols were approved by the Harvard Committee on the Use of Human Subjects, which serves as Harvard University's Internal Review Board.

### Pilot Testing

Prior to testing the main study hypotheses, a pilot study was conducted to see how potential study subjects respond to the vignettes created for this investigation.

Ten participants were recruited through Amazon Mechanical Turk after approval from the Harvard Committee on the Use of Human Subjects. To protect participants' privacy, all responses were identified by the anonymous response ID generated by Qualtrics, and data will be stored in a password-protected computer. All participants were informed that participation in this research is completely voluntary, and they were that they may stop participating at any time. The study was launched and completed on June 30<sup>th</sup>, 2020. Participation time took approximately 8 minutes, and participants who completed the study were paid \$1 (USD) via Mturk for their participation.

Participants were asked to read the description of a hypothetical character. The hypothetical vignettes were adapted from DelPriore, Bradshaw, and Hill's (2018)

investigation of women's cosmetic products usage. The first part of the vignette read: "You met a girl named Melissa at a friend's party. Melissa is very attractive, confident, and outgoing, who easily draws a lot of attention. You had a conversation with Melissa and learned that she works as a consultant. In her spare time, Melissa enjoys watching movies, baking, and hiking. After the conversation, you added Melissa as a Facebook friend."

Then, each participant read three versions of the vignette. The first version was "The other day, a mutual friend who grew up with Melissa mentioned that Melissa does not put a lot of effort into appearance enhancement, but she has always been the most good-looking and the most popular girl in middle school. When browsing Melissa's Facebook profile, you noticed that she shared her dessert recipes and provided some tips on choosing baking ingredients." The second version was "The other day, a mutual friend who grew up with Melissa mentioned that back in middle school, Melissa was average-looking and not so popular. She put a lot of effort into make-up, skincare, and dieting to enhance her appearance over the years. When browsing Melissa's Facebook profile, you noticed that she shared her make-up and skin-care routine and provided some tips on choosing cosmetic products." The third version was "The other day, a mutual friend who grew up with Melissa mentioned that back in middle school, Melissa was average-looking and not so popular. She got a nose job and breast implants to enhance her appearance over the years. When browsing Melissa's Facebook page, you noticed that she shared her cosmetic surgery experience and provided some tips on choosing cosmetic surgeons."

Participants were asked to respond to four questions, including “Whether the vignette is believable?” “Whether the vignette is easy to understand?” “Whether the vignette provides greater realism?” “Whether the vignette is free from grammatical errors”, on a 1(Not at all) to 7(Very much) Likert Scale. There were two open-ended questions: “What do you think the vignette is trying to manipulate?” and “Did you find anything that stood out to you in this vignette?”

Based on one-sample t-test with test value of 4, participants rated the vignette to be believable (Mean=5.6,  $t(9)=5.237$ ,  $p=.001$ ), easy to understand (Mean=6.4,  $t(9)=9.000$ ,  $p<0.001$ ), real (Mean=4.7,  $t(9)=3.280$ ,  $p=0.010$ ) and free from grammatical errors (Mean=6,  $t(9)=9.487$ ,  $p<.001$ ). Several grammatical errors or awkward phrasing were fixed based on participants’ open-ended responses.

#### Data Collection

Data were collected from the online user population on Amazon Mechanical Turk (Mturk) — an online crowdsourcing platform that allows registered online workers to complete short computerized tasks and surveys in return for small sums of money. “Requesters” looking to hire Mturk workers can post a short description that includes the duration, payment amount, eligibility requirements, and other details about the task. Along with being a low cost and time-efficient platform for conducting research, Mturk provides researchers with access to a large participant pool.

The study was launched and completed on July 2<sup>nd</sup>, 2020. Participation time took approximately 8 minutes, and participants who passed attention checks and completed the study were paid \$1 (USD) via Mturk for their participation.



## Study Protocol

All participants were voluntarily enrolled, and only individuals who met the inclusion criteria were included in the study. Screen-out management was enforced through the validation questions on the Mturk recruitment page. To be included in the study, participants had to be U.S. residents that are heterosexual, 18 years of age or older, and fluent in English. Individuals who do not meet inclusion criteria received a message thanking them for their consideration.

Eligible participants were provided with an online link to the Qualtrics survey through Mturk. Participants first gave consent through an online consent form, which informed the individuals about the general purpose of the study, the tasks they would complete in the survey, the total duration of the survey, and the confidentiality of their responses. Following consent, participants were forwarded to the survey. After completing the survey, participants completed a demographic background questionnaire, assessing age, gender, ethnicity, educational level, household income, and relationship status. Participants were directed to a debriefing page that provided information about the study objectives.

All assessments and tasks were completed via Qualtrics, which were accessible online at individuals' convenience outside of the laboratory setting. Each participant was assigned a unique numerical identifier (ID) to track survey responses. Participants' unique IDs were not linked to their email addresses, and to keep the individual responses anonymous, personal information was not recorded in the survey results, and IP addresses were not collected. The numerical identifiers were used to verify the completion of the study and to determine which participant would receive the payment. Participants were

not asked to provide any unnecessary information or information that might allow for precise individual identification, other than in awarding study incentives to the appropriate individuals.

All survey responses were exported manually from the password-protected Qualtrics account to the principal investigator's personal password-protected laptop for analysis. Copies of the raw data were encrypted and backed up to a password-protected external hard drive External Storage Encrypted USB as well as a Harvard Managed Google web-based Cloud backup system to ensure the data was accessible remotely. SPSS syntax files were created to streamline the data analysis process and were used to repeat the analyses in order to verify the accuracy of the results.

### Study Design

The study used a 2 (male vs female) X 3 (control-low effort vs control-high effort vs treatment-cosmetic surgery) between-subjects design. At the beginning of the survey, participants were asked to indicate the gender they identified with. Then, they read a hypothetical vignette: "You met a girl named Melissa at a friend's party. Melissa is very attractive, confident, and outgoing, who easily draws a lot of attention. You had a conversation with Melissa and learned that she works as a consultant. In her spare time, Melissa enjoys watching movies, baking, and hiking. After the conversation, you and Melissa friended each other on Facebook."

Participants were randomly assigned to three conditions. In the control-low effort condition, participants read, "The other day, a mutual friend who grew up with Melissa mentioned that Melissa does not put a lot of effort into appearance enhancement, but she has always been the most good-looking and the most popular girl since middle school.

When browsing Melissa's Facebook profile, you noticed that she shared her dessert recipes and provided some tips on choosing baking ingredients.” In the control-high effort condition, participants read, “The other day, a mutual friend who grew up with Melissa mentioned that back in middle school, Melissa was average-looking and not so popular. She put a lot of effort into make-up, skincare, and dieting to enhance her appearance over the years. When browsing Melissa's Facebook profile, you noticed that she shared her make-up and skin-care routine and provided some tips on choosing cosmetic products.” In the treatment - cosmetic surgery condition, participants read “The other day, a mutual friend who grew up with Melissa mentioned that back in middle school, Melissa was average-looking and not so popular. She got a nose job and breast implants to enhance her appearance over the years. When browsing Melissa's Facebook page, you noticed that she shared her cosmetic surgery experience and provided some tips on choosing cosmetic surgeons.”

#### Data Cleaning

To ensure the quality of the data and prevent random clicking, two attention checks questions were embedded in the survey. The first attention check was “Please select strongly disagree”. The second attention check was “Please keep this question blank and skip to the next question.” The participants who failed to select “strongly disagree” for the first question or skip the two questions were directed to the end right after they submit the answer. Since those participants were not allowed to continue and complete the entire survey, their partial responses were excluded from the data analysis.

## Measures

After reading the hypothetical vignette, participants were asked to rate their perception of Melissa, the hypothetical character described in the vignette. Social perception of the target was measured in two dimensions: the desire to affiliate with the target and the perceived likeability of the target.

Then, participants were redirected to different survey questions based on the gender they identified with. Male participants were asked to evaluate the perceived reproductive value of Melissa. Then, male participants completed a self-report measure of the individual differences in sociosexual orientation. Meanwhile, female participants were asked to evaluate the likelihood of Melissa playing fair in intrasexual competition. Then, female participants completed a self-report measure of the individual difference in benign and malicious envy tendencies. Last, all participants were asked about their demographic's information.

### Perception

After reading the scenario, participants rated their desire to affiliate with the target person by answering the question “How willing are you to get to know her on the personal level?” on a 1 (strongly unwilling) to 7 (strongly willing) Likert scale.

Then, participants completed the 11-item Reysen Likability Scale (Reysen, 2005), aimed at measuring the perception of the target. Examples of items include “This person is likable,” and “This person is approachable”. Responses were made using a Likert scale format, from 1 (very strongly disagree) to 7 (very strongly agree). All 11 items were positively scored, with higher scores representing higher likability of the target

individual. The Reysen Likability Scale exhibited excellent reliability ( $\alpha=.895$ ). Please see Appendix 1 for the complete Reysen Likeability Scale.

#### Inferred Reproductive Value – Male Participants

To investigate the mediating role of the inferred reproductive value of Melissa, male participants were asked to rate Melissa on a proxy of reproductive values. Specifically, participants rated “How likely do you feel Melissa will have children?” on a 1(extremely unlikely) to 7(extremely likely) Likert scale.

#### Sociosexual Orientation – Male Participants

The moderating role of individual differences in sociosexual orientation was assessed by The Revised Sociosexual Orientation Inventory (SOI-R; Penke & Asendorpf, 2008). The SOI-R consists of nine items, three for each of the three facets: past sociosexual behavior (e.g., “With how many different partners have you had sex within the past 12 months?”), attitudes toward uncommitted sex (e.g., “Sex without love is ok”); and desires (e.g., “How often do you have fantasies about having sex with someone you are not in a committed romantic relationship with?”) (Penke & Asendorpf, 2008). Responses were scored on a 9-point scale and aggregated to a total SOI-R score. A low score represents a restricted sociosexual orientation and a high score represents an unrestricted sociosexual orientation. The SOI-R exhibited reasonable internal consistency ( $\alpha=.871$ ). Please see Appendix 2 for the complete Revised Sociosexual Orientation Inventory.

### Perceived Fairness of Intrasexual Competition – Female Participants

To investigate the mediating role of perceived fairness of intrasexual competition, female participants were asked to rate “If we were competing for something, I would expect Melissa to play fair” on a 1 (strongly disagree) to 7 (strongly agree) Likert scale.

### Benign and Malicious Envy – Female Participants

To assess the moderating role of the individual differences in benign and malicious envy tendencies, female participants completed the Benign and Malicious Envy Scale (BeMaS; Lange & Crusius, 2015). The BeMaS consists of 5 items measuring dispositional forms of benign envy (e.g., “When I envy others, I focus on how I can become equally successful in the future”) and 5 items measuring dispositional forms of malicious envy (e.g., “I wish that superior people lose their advantage”) on a scale from 1 (strongly disagree) to 6 (strongly agree). The items on the Dispositional Benign Envy subscale and the items on the Dispositional Malicious Envy subscale were mixed with each other and appeared in a randomized order. Finally, responses on the Dispositional Benign Envy subscale and the Dispositional Malicious Envy subscale were aggregated separately to create two scores representing an individual’s benign and malicious envy tendencies. Both subscales of BeMaS exhibited excellent internal consistency (benign envy subscale  $\alpha = .914$ ; malicious envy subscale  $\alpha = .927$ ). Please see Appendix 3 for the complete Benign and Malicious Envy Scale.

## Demographics Information

At the end of the survey, all participants completed a brief self-report demographic form and related information questionnaire, which included the participants' age, ethnicity, level of education, household income, and relationship status.

## Chapter III

### Results

All statistical analysis procedures were conducted in SPSS v. 26, with all primary analyses and reliability analyses being completed first, followed by the secondary analyses and any exploratory analyses.

#### Sample Demographics

A total of 341 participants completed the study (48.4 % Female). Among the participants who completed the study, 176 were male and 165 were female. The age of participants ranged from 18 to 70. The mean participant age was 37.636 with a standard deviation of 10.703. The ethnic makeup of the sample was mostly White/Caucasian (N=237, 69.6%), followed by Black/African American (N=60, 17.6%), Asian (N=21, 6.2%), Hispanic (N=15, 4.4%), and Native American (N=8, 2.3%). 74.5% of the participants had received a bachelor's or higher degree (N=254). 61% of the participants were currently married (N=208). The median household before tax income fell in the \$50,000 to \$59,000 range. Please see Table 1 for more detailed demographic information.

#### Primary Analyses

Before starting to examine people's perception of female cosmetic surgery recipients, the difference between the two control conditions was tested to examine the



Table 1: Demographic Characteristics of the Sample

Characteristic	Male	Female	Total
Mean Age (SD)	36.744 (10.389)	38.587 (10.979)	37.636 (10.703)
Ethnicity (able to select multiple)			
Asian	8 (4.5%)	13(7.9%)	21(6.2%)
Black/African American	38 (21.6%)	22 (13.3%)	60 (17.6%)
White/Caucasian	110 (62.5%)	124 (75.1%)	234 (68.7%)
Hispanic/Latino	15 (8.5%)	3 (1.8%)	18 (5.3%)
Native American	5 (2.8%)	3 (1.8%)	8 (2.3%)
Pacific Islander	0	0	0
Other	0	0	0
Education			
Less than High School	0	0	0
High School Graduate	7 (4%)	17 (10.3%)	24 (7%)
Some College	14 (8%)	20 (12.1%)	34 (10%)
Two-Year Degree	13 (7.4%)	16 (9.7%)	29 (8.5%)
Four-Year Degree	102 (58%)	88 (53.3%)	190 (55.7%)
Professional Degree	39 (22.2%)	23 (13.9%)	62 (18.2%)
Doctorate	1 (0.6%)	1 (0.6%)	2 (0.6%)
Income			
Less than \$10,000	10 (5.7%)	8 (4.8%)	18 (5.3%)
\$10,000 -\$19,000	13 (7.4%)	14 (8.5%)	27 (7.9%)

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\$20,000 -\$29,000	15 (8.5%)	16 (9.7%)	31 (9.1%)
\$30,000 -\$39,000	16 (9.1%)	15 (9.1%)	31 (9.1%)
\$40,000 -\$49,000	26 (14.8%)	23 (13.9%)	49 (14.4%)
\$50,000 -\$59,000	26 (14.8%)	21 (12.7%)	47 (13.8%)
\$60,000 -\$69,000	17 (9.7%)	14 (8.5%)	31 (9.1%)
\$70,000 -\$79,000	15 (8.5%)	16 (9.7%)	31 (9.1%)
\$80,000 -\$89,000	11 (6.3%)	8 (4.8%)	19 (5.6%)
\$90,000 -\$99,000	11 (6.3%)	11 (6.7%)	22 (6.5%)
\$100,000 -\$149,000	10 (5.7%)	15 (9.1%)	25 (7.3%)
More than \$150,000	6 (3.4%)	1 (0.6%)	7 (2.1%)

Relationship Status

Married	110 (62.5%)	98 (59.4%)	208 (61%)
Single but in a committed relationship	24 (13.6%)	23 (13.9%)	47(13.8%)
Single and dating	18 (10.2%)	8 (4.8%)	26(7.6%)
Single and not currently dating	23 (13.1%)	35 (21.2%)	58 (17%)
Other	1 (0.6%)	1 (0.6%)	2 (0.6%)

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difference in people's perception of low appearance-enhancement effort and high appearance-enhancement effort other than cosmetic surgery.

### Comparing the Two Control Conditions

Men rated their desire for affiliation ( $M_{\text{men*low effort}}= 5.868$  vs.  $M_{\text{men*high effort}}=6.036$ ,  $t(121)= -.986$ ,  $p=.326$ ) and Melissa's likeability ( $M_{\text{men*low effort}}=5.424$  vs.  $M_{\text{men*high effort}}=5.545$ ,  $t(121)= -.931$ ,  $p=.354$ ) the same in the control-low effort condition and control-high effort conditions. Women also rated their desire for affiliation ( $M_{\text{women*low effort}}=5.672$  vs.  $M_{\text{women*high effort}}=5.667$ ,  $t(110)=.027$ ,  $p=.978$ ) and Melissa's likeability ( $M_{\text{women*low effort}}=5.284$  vs.  $M_{\text{women*high effort}}=5.325$ ,  $t(110)= -.268$ ,  $p=.789$ ) the same in the control-low effort condition and control-high effort conditions. Thus, in the following analysis, the responses of participants in the control-low effort condition and the control-high effort condition were combined.

### Perception of Female Cosmetic Surgery Recipient

A 2 (male vs female) X 2 (control vs treatment-cosmetic surgery) ANOVA on the desire for affiliation revealed a significant main effect of the cosmetic surgery manipulation ( $F(1, 340)=8.454$ ,  $p=.004$ ) and a significant interaction ( $F(1, 340)=4.404$ ,  $p=.037$ ). No main effect of gender was observed ( $F(1, 340)=.001$ ,  $p=.971$ ). As shown in Figure 1, men rated their desire to affiliate with Melissa to be significantly lower in the cosmetic surgery condition compared to the control condition ( $M_{\text{men*control}}= 5.943$  vs.  $M_{\text{men*cs}}=5.302$ ,  $t(337) =12.717$ ,  $p<.001$ ). Women rated their desire to affiliate with Melissa to be the same in the control condition and cosmetic surgery condition ( $M_{\text{women*control}}=5.670$  vs.  $M_{\text{women*cs}}=5.566$ ,  $t(337) =.322$ ,  $p=.571$ ).

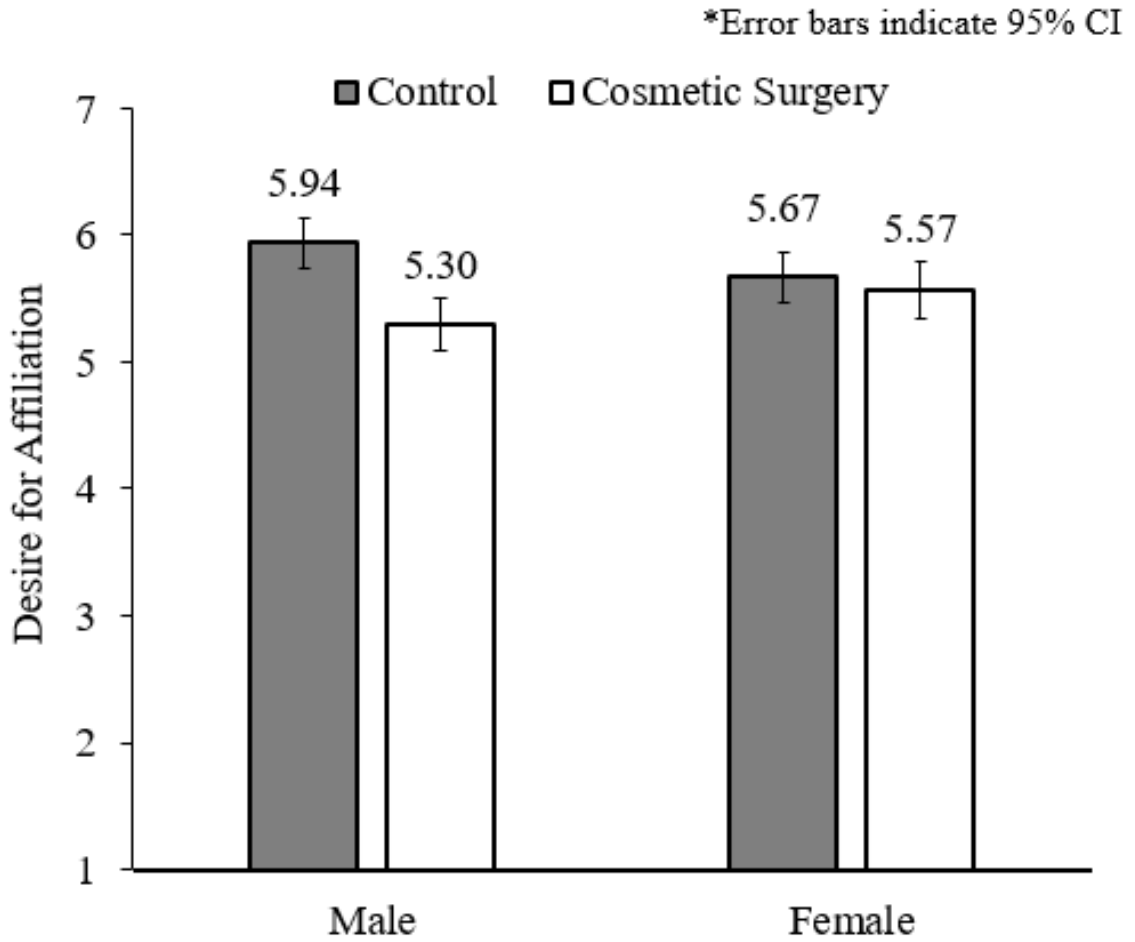


Figure 1. Desire to Affiliate with the Female Target

*The mean differences in desire to affiliate with Melissa based on whether she has cosmetic surgery history and observers' gender.*

A 2 (male vs female) X 2 (control vs treatment-cosmetic surgery) ANOVA on aggregated Reysen Likability Score revealed that the main effect of cosmetic surgery manipulation was not significant ( $F(1, 340)=.542, p=.462$ ), the main effect of observers' gender was not significant ( $F(1, 340)=.691, p=.406$ ), and the interaction between cosmetic surgery manipulation and observers' gender was also nonsignificant ( $F(1, 340)=1.202, p=.274$ ). Please see Figure 2 for more details.

Because several items (e.g., “Melissa is similar to me”, “Melissa is knowledgeable”, and “I would like Melissa as a roommate”) in the Reysen Likability Scale are not relevant in given the scenario, aggregating all items could potentially contribute to the nonsignificant effect. A 2 (male vs female) X 2 (control vs treatment-cosmetic surgery) ANOVA was conducted using the most relevant item “Melissa is likable” as the dependent variable. The analysis revealed that the main effect of the cosmetic surgery manipulation was not significant ( $F(1, 340)=3.234, p=.073$ ), the main effect of observers was not significant ( $F(1, 340)=.350, p=.555$ ), and the interaction between cosmetic surgery manipulation and observers' gender was also not significant ( $F(1, 340)=1.952, p=.163$ ). As shown in Figure 3, men perceived Melissa to be significantly less likable in the cosmetic surgery condition compared to the control condition ( $M_{\text{men*control}}=5.902$  vs.  $M_{\text{men*cs}}=5.528, t(337) =5.181, p=.023$ ). Women perceived Melissa to be equally likable in the cosmetic survey condition and the control condition ( $M_{\text{women*control}}=5.670$  vs.  $M_{\text{women*cs}}=5.623, t(337)=.079, p=.778$ ).

In summary, aligned with the hypothesis, cosmetic surgery enhanced beauty did not bring the beauty premium when observers were male. Men perceived women whom they know have had cosmetic surgery more negatively compared to women who have not

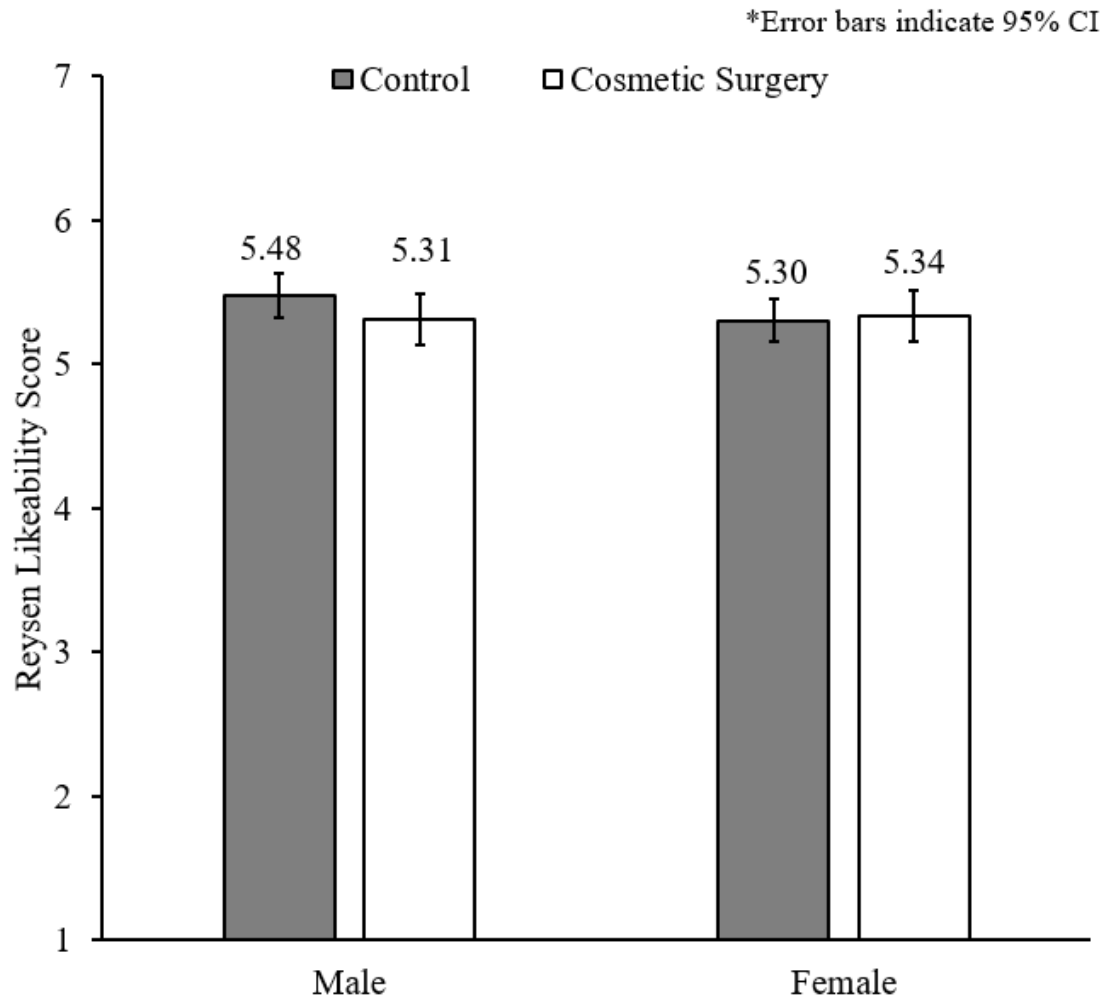


Figure 2. Reysen Likability Score of the Female Target

*The mean differences in Reysen Likability Score of Melissa based on whether she has cosmetic surgery history and observers' gender.*

\*Error bars indicate 95% CI

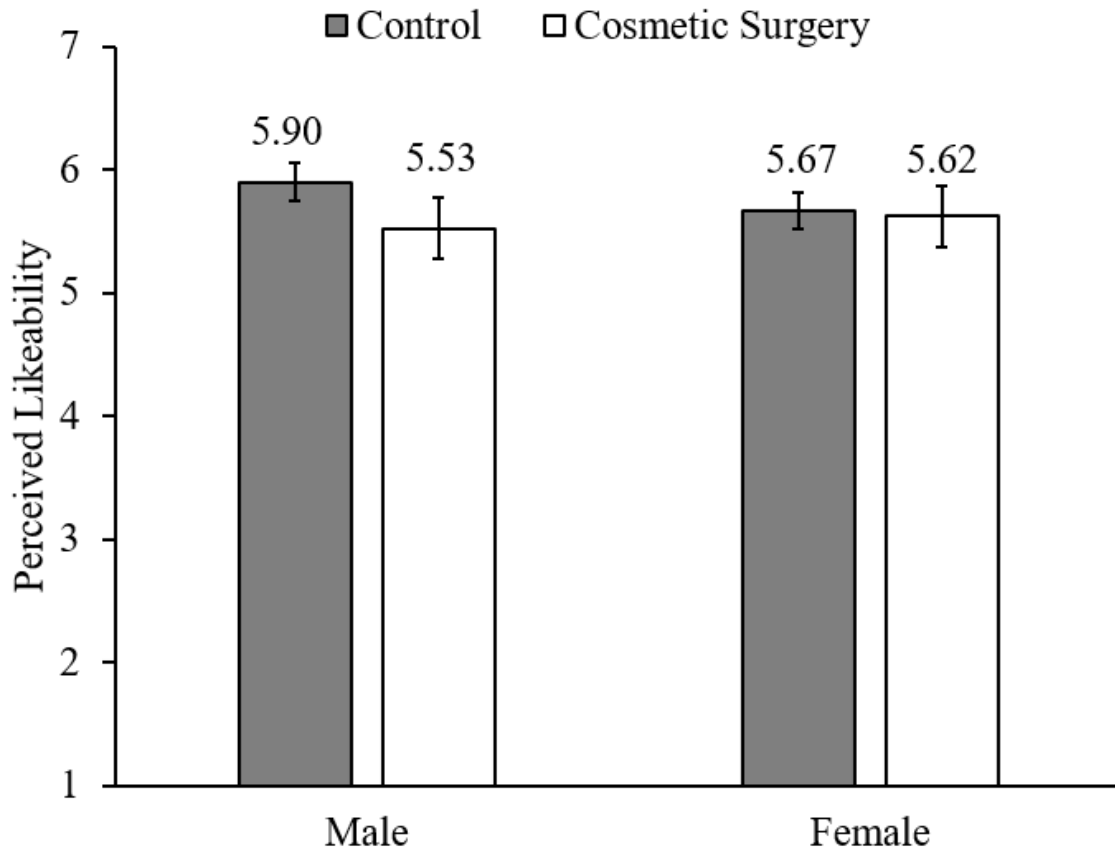


Figure 3. Perceived Likability of the Female Target.

*The mean differences in perceived likeability of Melissa based on whether she has cosmetic surgery history and observers' gender.*

had cosmetic surgery. Unlike previous literature suggesting women impose a beauty penalty on same-sex counterparts, women were more tolerant of other women's cosmetic surgery history than men. Women's perception of another woman does not depend on whether the target has had cosmetic surgery or not. The next session is an attempt to reveal the underlying mechanism of the observed effect.

### Secondary Analyses

This section is an attempt to understand the potential drivers and boundary conditions of the observed effects.

#### Exploring the Underlying Mechanism when Observers are Male

It was proposed that male observers perceive the female cosmetic surgery recipients more negatively compared to women who have not had cosmetic surgery because they infer female cosmetic surgery recipients to have poor reproductive value.

An independent sample t-test was conducted to examine the mediating role of the inferred reproductive value. The results indicated that male participants believe Melissa significantly less likely to have children in the cosmetic surgery condition compared to the control condition ( $M_{\text{men*control}}=4.829$  vs.  $M_{\text{men*cs}}=4.396$ ,  $t(174)=4.542$ ,  $p=.034$ ). As shown in Figure 4, a mediation analysis demonstrated that the decreased desire to affiliate with women who had engaged in cosmetic surgery is partially mediated by inferred reproductive value. Specifically, the independent variable cosmetic surgery history (dummy coded as 1 for cosmetic surgery condition and 0 for control condition) significantly predicted the inferred reproductive value of Melissa ( $b= -.433$ ,  $t(174)= -2.131$ ,  $p=.034$ ). Linear regression was performed using cosmetic surgery history and



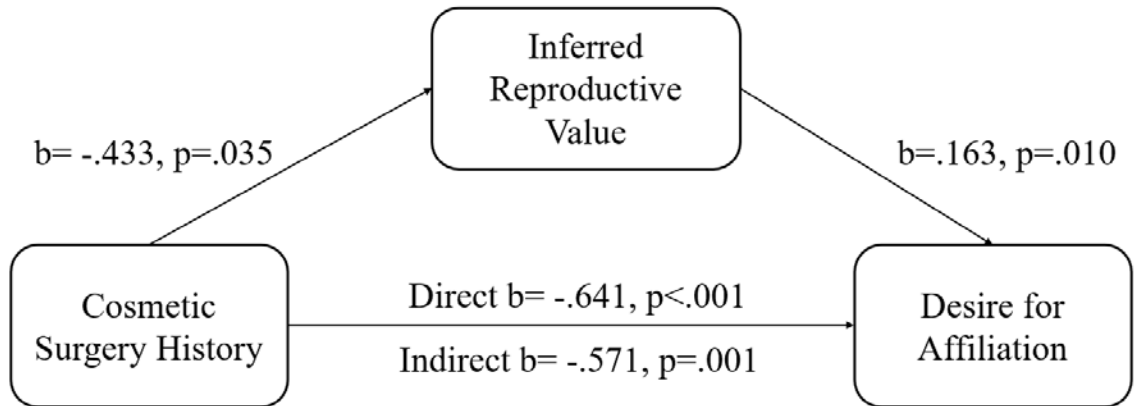


Figure 4. Mediating Role of Inferred Reproductive Value

*Mediation via the inferred reproductive value of Melissa on male observers' desire to affiliate with Melissa. Path coefficients represent standardized regression coefficients.*

inferred reproductive value as predictors of desire to affiliate with Melissa, the inferred reproductive value of Melissa significantly predicted the desire to affiliate with Melissa ( $b=.163$ ,  $t(173)=2.622$ ,  $p=.010$ ). Additionally, this regression revealed that the cosmetic surgery history became a less significant predictor of desire for affiliation (from  $b= -.641$ ,  $t(174)= -3.778$ ,  $p<.001$  to  $b= -.571$ ,  $t(173)= -3.373$ ,  $p=.001$ ). Finally, using the bootstrapping procedure for mediator models (Preacher & Hayes, 2008), the 95% bias-corrected confidence interval for the size of the indirect effect excluded zero (95% CI =  $-.1740$ ,  $-.0016$ ), indicating successful mediation through this path.

The following analysis was done to explore the moderating role of sociosexuality in the observed effect. Men who score low on the sociosexual orientation are more restricted and long-term oriented in sexual relationships. In contrast, men who score high on the sociosexual orientation scale are more likely to engage in short-term and unrestricted sexual relationships. Compared to men with unrestricted sociosexual orientation, men with restricted sociosexual orientation are more likely to have salient reproductive goals. Therefore, when evaluating a woman, the reproductive value should only be an important criterion for men with restricted sociosexual orientation but not for men with unrestricted social sexual orientation.

First, multiple regression was conducted using the inferred reproductive value of Melissa as the dependent measure, and cosmetic surgery history (0=control, 1=cosmetic surgery), sociosexuality ( $M=4.94$ ,  $SD=2.48$ ,  $min=1$ ,  $max=9$ , 8 out of 176 male participants skipped this potentially sensitive measure), and their interaction as the predictors (Spiller, Fitzsimons, Lynch, & McClelland, 2013). The results revealed a significant main effect of sociosexuality ( $b=.101$ ,  $t(164)=2.242$ ,  $p=.026$ ). No main effect

of cosmetic surgery manipulation was observed ( $b = -.491$ ,  $t(164) = -1.049$ ,  $p = .296$ ). And the interaction term was not significant ( $b = .012$ ,  $t(164) = .137$ ,  $p = .892$ ). Please see Figure 5 for more details.

Furthermore, multiple regression was conducted using the desire for affiliation as the dependent measure, and cosmetic surgery history, sociosexuality, and their interaction as the predictors. The results revealed a significant main effect of cosmetic surgery manipulation ( $b = -1.429$ ,  $t(164) = -3.752$ ,  $p < .001$ ) and the predicted significant interaction between cosmetic surgery and sociosexuality ( $b = .1556$ ,  $t(164) = 2.245$ ,  $p = .026$ ). No main effect of sociosexuality was observed ( $b = .0614$ ,  $t(164) = 1.686$ ,  $p = .094$ ). As shown in Figure 6, a median split based on sociosexual orientation score showed that the negative perception of the female cosmetic surgery recipient was attenuated for male participants with unrestricted sociosexual orientation. Men who are sexually restricted rated their desire to affiliate with Melissa to be significantly lower in the cosmetic surgery condition compared to the control condition ( $M_{\text{restricted}*\text{control}} = 5.831$  vs.  $M_{\text{restricted}*cs} = 4.778$ ,  $t(164) = 20.922$ ,  $p < .001$ ). Men who are sexually unrestricted rated their desire to affiliate with Melissa the same in the control condition and cosmetic surgery condition ( $M_{\text{unrestricted}*\text{control}} = 6.089$  vs.  $M_{\text{unrestricted}*cs} = 5.846$ ,  $t(164) = 1.070$ ,  $p = .303$ ).

In summary, both male participants with restricted and unrestricted sociosexual orientation inferred the women with cosmetic surgery history to have lower reproductive value than the women without cosmetic surgery history. However, only for sexually restricted male participants, the lower inferred reproductive value resulted in a decreased desire to affiliate with the female cosmetic surgery recipient.

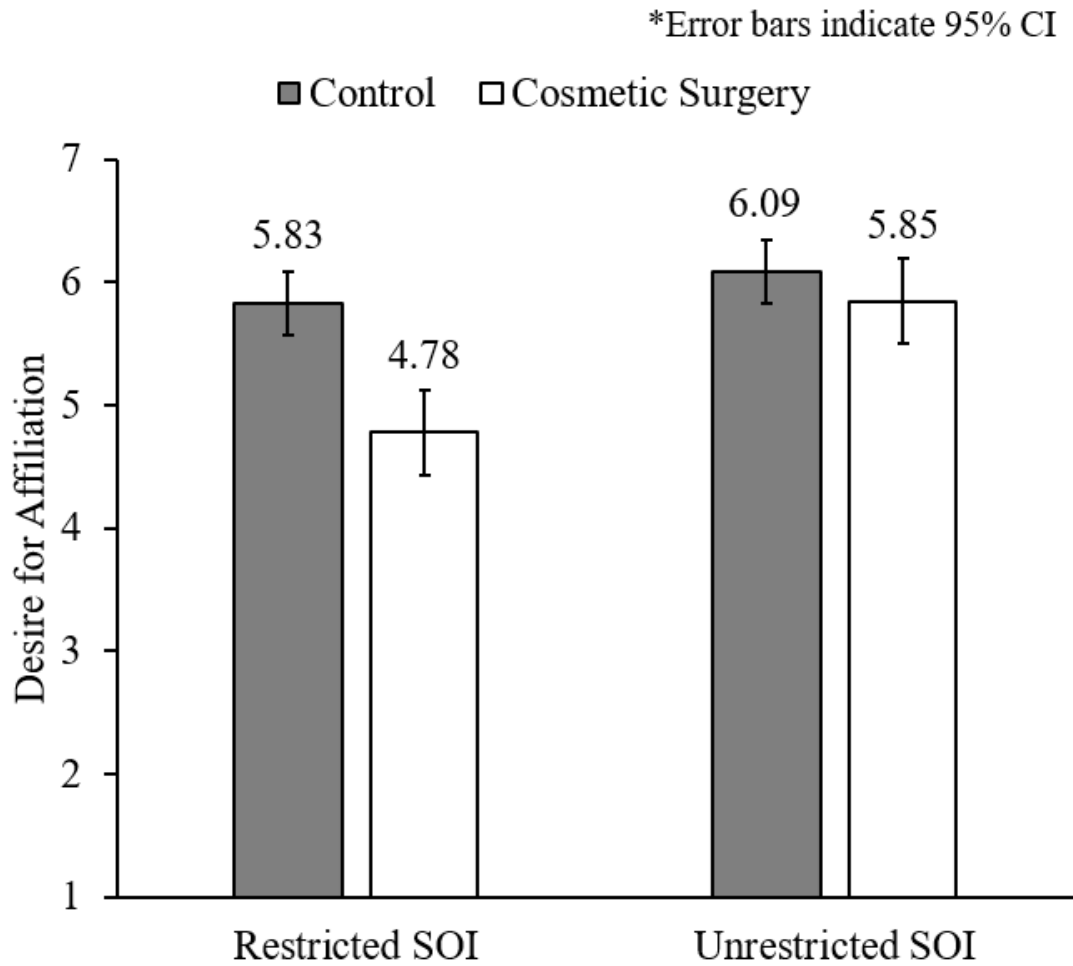


Figure 5. Inferred Reproductive Value of the Female Target and Male Observers'

Sociosexual Orientation

*The mean differences in the inferred reproductive value of Melissa based on whether she has cosmetic surgery history and the median split of male observers' sociosexual orientation.*

\*Error bars indicate 95% CI

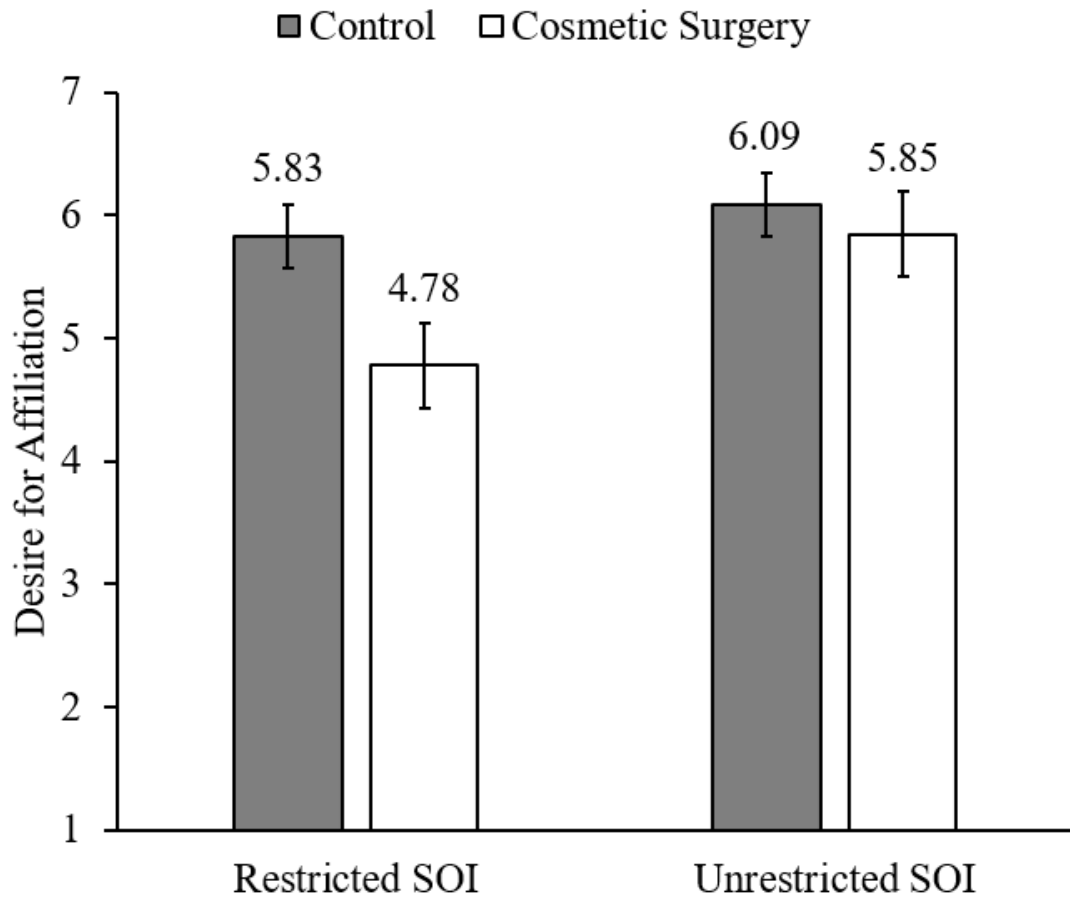


Figure 6. Desire to Affiliate with the Female Target and Male Observers' Sociosexual Orientation

*The mean differences in desire to affiliate with Melissa based on whether she has cosmetic surgery history and the median split of male observers' sociosexual orientation.*

## Exploring the Underlying Mechanism when Observers are Female

It was predicted that female observers with high benign envy tendencies are more likely to regard cosmetic surgery as a legitimate self-improvement opportunity that is available to everyone. Thus, they would be more tolerant of other women using cosmetic surgeries for appearance enhancement than female observers with low benign envy tendencies.

To explore the moderating role of female observers' benign envy tendencies, multiple regression was conducted using the desire for affiliation as the dependent measure, and cosmetic surgery history (0=control, 1=cosmetic surgery), benign envy tendency ( $M=4.213$ ,  $SD=1.161$ ,  $min=1$ ,  $max=6$ ), and their interaction as the predictors (Spiller et al., 2013). The results revealed that female participants with high benign envy tendencies had a significantly higher desire to affiliate with Melissa than female participants with low benign envy tendencies in general ( $b=.228$ ,  $t(161)= 2.602$ ,  $p=.010$ ). Women's desire for affiliation with another woman did not depend on whether the target received cosmetic surgery or not ( $b= -.851$ ,  $t(161)= -1.124$ ,  $p=.263$ ). The interaction between female observers' benign envy tendencies and the target's cosmetic surgery history was not also significant ( $b=.162$ ,  $t(161)= .946$ ,  $p=.346$ ). Please see Figure 7 for more details.

Multiple regression was conducted using the Perceived Fairness of Intrasexual Competition as the dependent measure, and cosmetic surgery history, benign envy tendency, and their interaction as the predictors. The results revealed that women's perception of whether another woman would play fairly in the intrasexual competition did not depend on whether the target has received cosmetic surgery or not ( $b= -1.351$ ,

\*Error bars indicate 95% CI

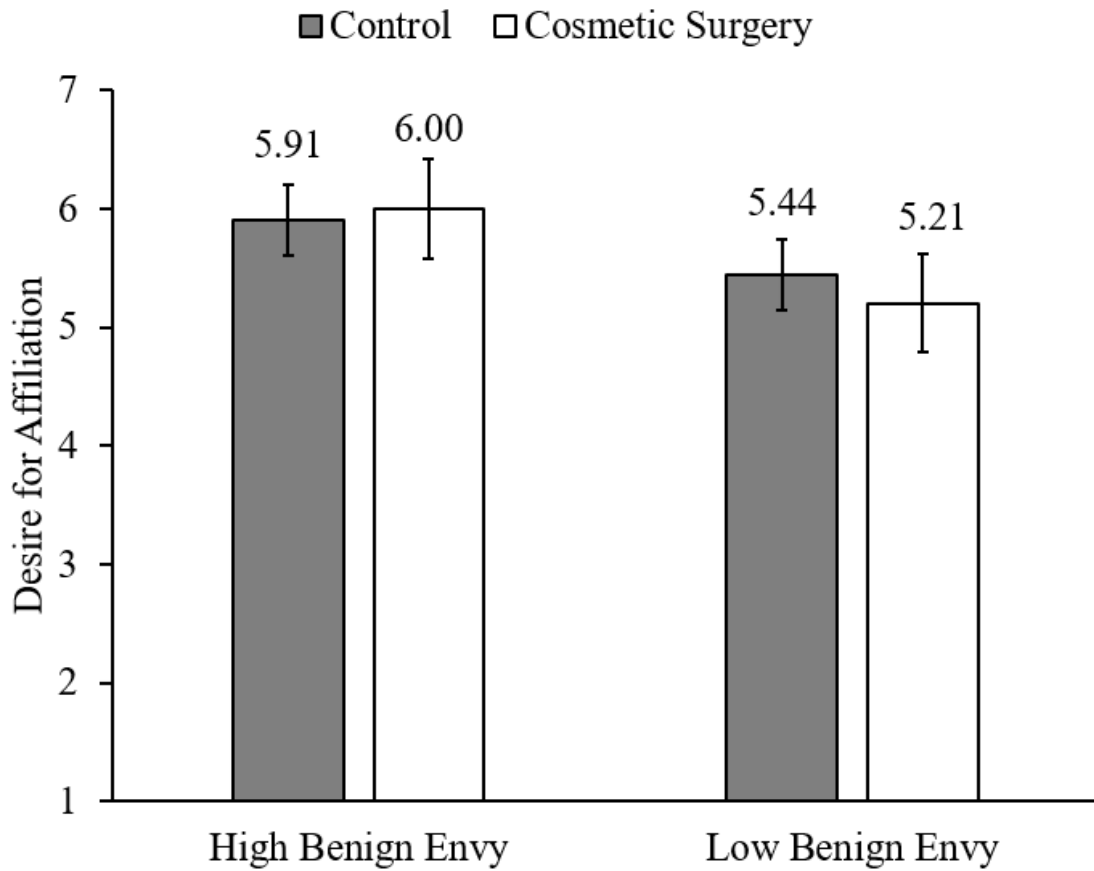


Figure 7. Desire to Affiliate with the Female Target and Female Observers' Benign Envy

#### Tendencies

*The mean differences in desire to affiliate with Melissa based on whether she has cosmetic surgery history and the median split of female observers' benign envy tendencies.*

$t(161) = -1.741, p = .084$ ) or the observers' benign envy tendencies ( $b = .147, t(161) = 1.636, p = .104$ ). Also, the interaction between female observers' benign envy tendencies and the target's cosmetic surgery history was not significant ( $b = .271, t(161) = 1.545, p = .124$ ).

As shown in Figure 8, a median split based on benign envy tendencies showed that female participants with high and low benign envy tendencies did not differ in their belief of how likely Melissa will play fair in the intrasexual competition in the control condition ( $M_{\text{low benign} * \text{control}} = 5.263$  vs.  $M_{\text{high benign} * \text{control}} = 5.600, t(161) = 2.418, p = .122$ ). When Melissa was described as a cosmetic surgery recipient, female participants with high benign envy tendencies were likely to believe Melissa would play fair in intrasexual competition than did females with low benign envy tendencies ( $M_{\text{low benign} * \text{cs}} = 4.897$  vs.  $M_{\text{high benign} * \text{cs}} = 5.75, t(161) = 7.283, p = .008$ ).

It was predicted that female observers with high malicious envy tendencies perceive female cosmetic surgery recipients to be dishonest in intrasexual competition, which leads to a negative perception and a decreased desire to affiliate with female cosmetic surgery recipients.

To explore the moderating role of individual differences in female observers' malicious envy tendencies, multiple regression was conducted using the desire for affiliation as the dependent measure, and cosmetic surgery history (0=control, 1=cosmetic surgery), malicious envy tendency ( $M = 3.050, SD = 1.422, \text{min} = 1, \text{max} = 6$ ), and their interaction as the predictors. The results revealed that women's desire to affiliate with another woman did not depend on whether the target has received cosmetic surgery or not ( $b = .364, t(161) = .779, p = .437$ ), or the observers' malicious envy tendencies ( $b = .013, t(161) = .167, p = .868$ ). Also, the interaction between female observers' malicious



\*Error bars indicate 95% CI

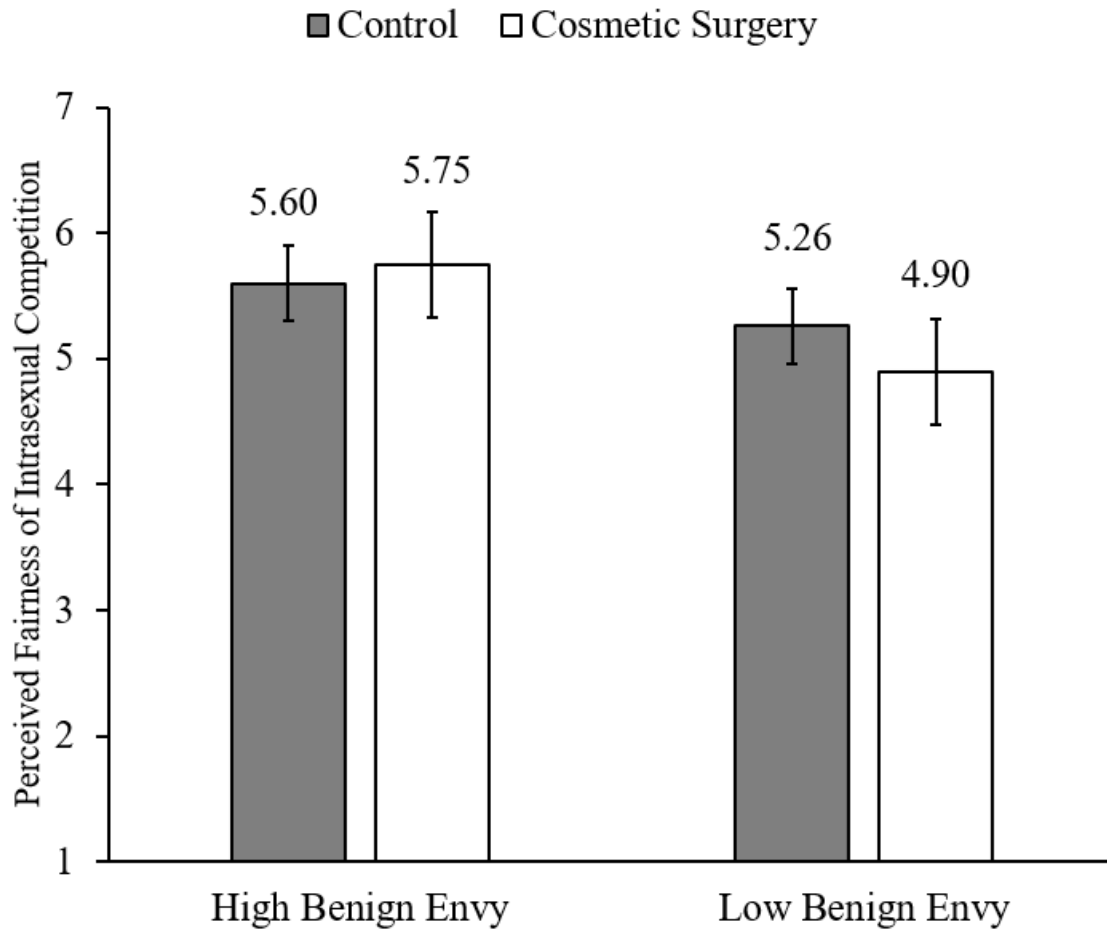


Figure 8. Perceived Fairness of Intrasexual Competition with the Female Target and Female Observers' Benign Envy Tendencies

*The mean differences in perceived fairness of intrasexual competition based on whether Melissa has cosmetic surgery history and the median split of female observers' benign envy tendencies.*

envy tendencies and the target's cosmetic surgery history was not significant ( $b = -.147$ ,  $t(161) = -1.080$ ,  $p = .282$ ).

As shown in Figure 9, the female participants with high versus low malicious envy tendencies do not differ in their desire to affiliate with Melissa in the control condition ( $M_{\text{low malicious} * \text{control}} = 5.650$  vs.  $M_{\text{high malicious} * \text{control}} = 5.692$ ,  $t(1, 161) = .038$ ,  $p = .847$ ). When Melissa was described as a cosmetic surgery recipient, female participants with high malicious envy tendencies have marginally less desire to affiliate with Melissa than the female participants with low malicious envy tendencies ( $M_{\text{low malicious} * \text{cs}} = 5.875$  vs.  $M_{\text{high malicious} * \text{cs}} = 5.310$ ,  $t(1, 161) = 3.157$ ,  $p = .078$ ). While this directional observation was aligned with the hypothesis, the effect was not statistically significant to draw a valid conclusion.

Multiple regression was conducted using the Perceived Fairness of Intrasexual Competition as the dependent measure, and cosmetic surgery history, malicious envy tendency, and their interaction as the predictors. The results revealed that women's perception of whether another woman would play fairly in intrasexual competition did not depend on whether the target has received cosmetic surgery or not ( $b = .085$ ,  $t(161) = .179$ ,  $p = .858$ ) or the observers' malicious envy tendencies ( $b = .042$ ,  $t(161) = .536$ ,  $p = .593$ ). Also, the interaction between female observer's malicious envy tendencies and the target's cosmetic surgery history was not significant ( $b = -.075$ ,  $t(161) = -.542$ ,  $p = .589$ ). Please see Figure 10 for more details.

In brief, compared to female observers with low benign envy tendencies, female observers with high benign envy tendencies were more likely to believe that the female cosmetic surgery recipient is playing fair in intrasexual competition. However, the

\*Error bars indicate 95% CI

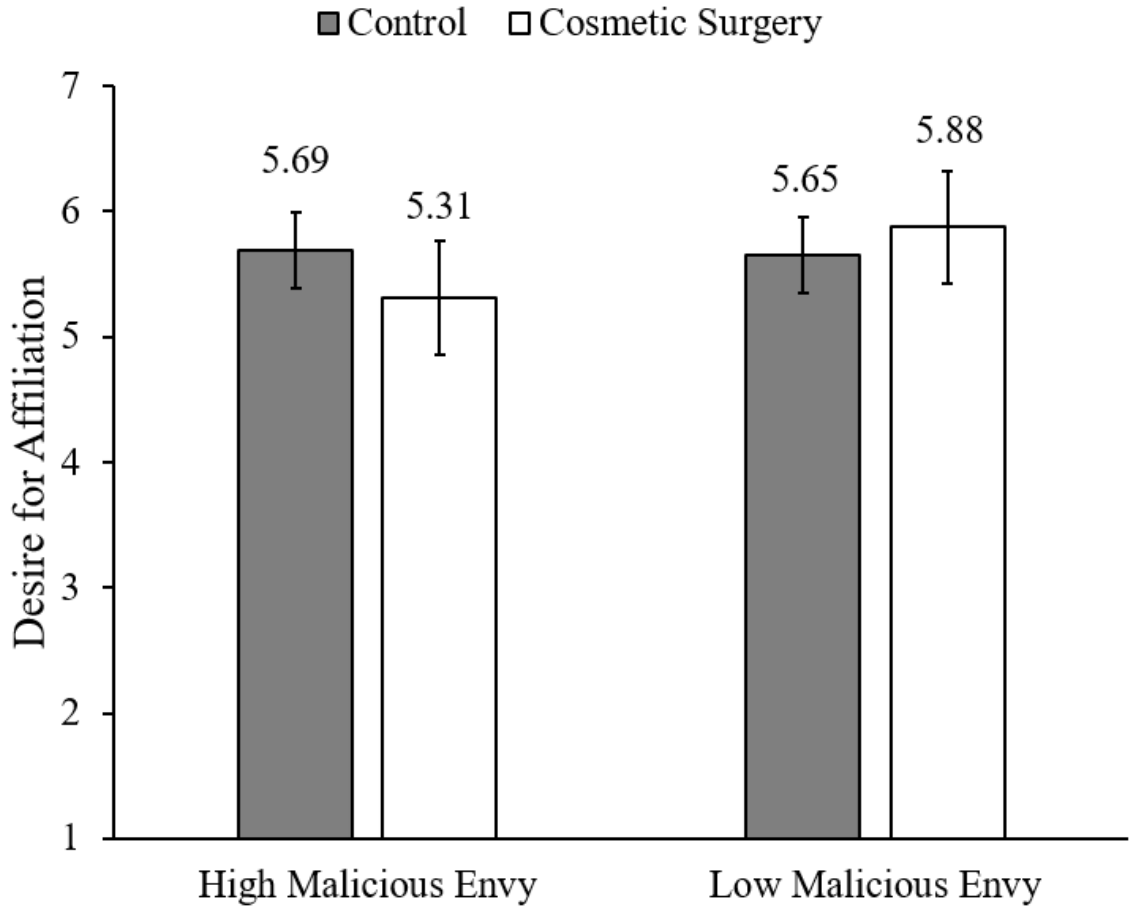


Figure 9. Desire to Affiliate with the Female Target and Female Observers' Malicious Envy Tendencies

*The mean differences in desire to affiliate with Melissa based on whether she has cosmetic surgery history and the median split of female observers' malicious envy tendencies.*

\*Error bars indicate 95% CI

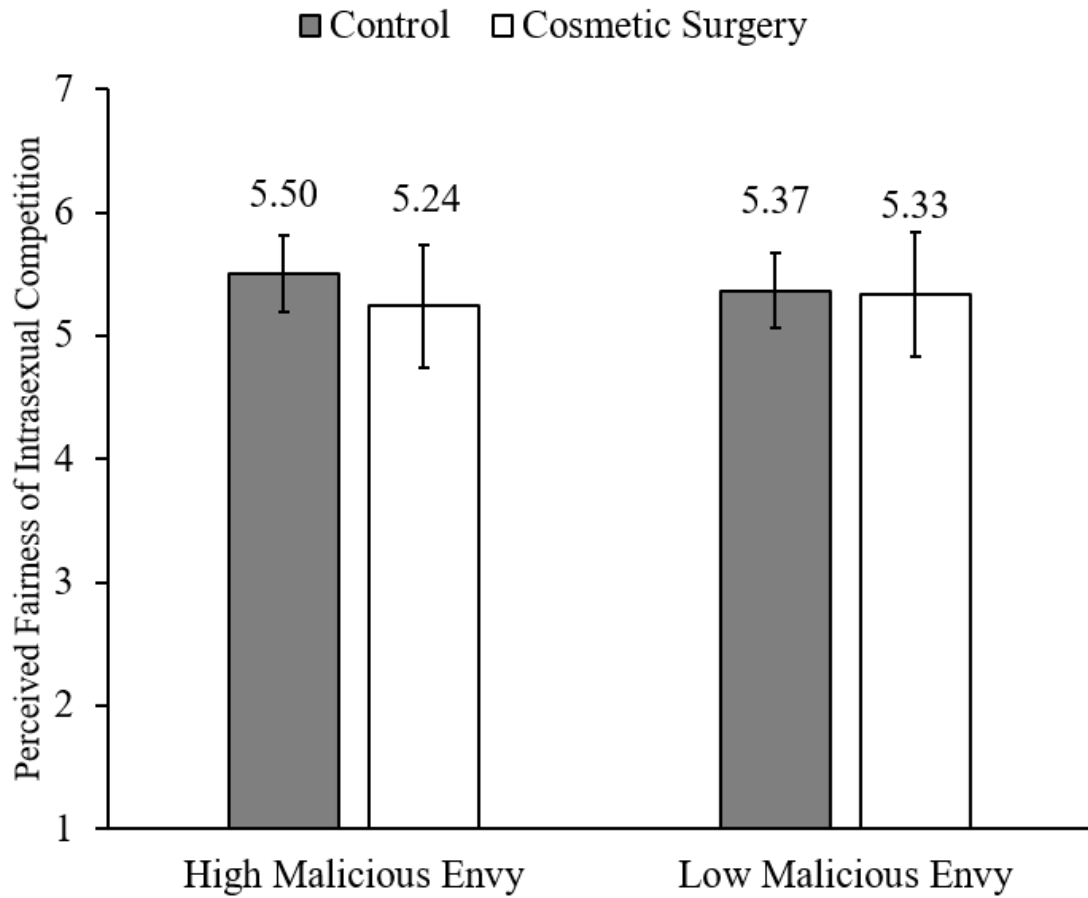


Figure 10. Perceived Fairness of Intrasexual Competition with the Female Target and Female Observers' Malicious Envy Tendencies.

*The mean differences in perceived fairness of intrasexual competition based on whether Melissa has cosmetic surgery history and the median split of female observers' malicious envy tendencies.*

predicted effects were not found when using the desire for affiliation as the dependent measure or when considering female observers' malicious envy tendencies.

## Chapter IV

### Discussion

As an extreme form of beautification effort, cosmetic surgery is becoming increasingly common in contemporary society (American Society of Plastic Surgeons (2019). The present research is one of the first attempts to document the perceptions of cosmetic surgery recipients. Prior literature shows that women's physical attractiveness and appearance enhancement efforts may bolster men's desire to affiliate with women but become harmful when it comes to women's perceptions and evaluations of other women (DeIPriore et al., 2018). The current findings demonstrate that men ascribe negative attributes to female cosmetic surgery recipients. Moreover, this research offers the theoretically and empirically informed explanation that men infer that individuals who pursue cosmetic surgery have lower reproductive value, which offsets the benefits of having an attractive appearance. The findings further suggest that this low inferred reproductive value results in more pronounced negative perceptions of female cosmetic surgery recipients when the male observers are sexually restricted rather than unrestricted.

The present research also enriches the evolutionary psychology literature on intrasexual competition regarding an unstudied group—cosmetic surgery recipients. Unlike previous literature suggesting women impose beauty penalty on same-sex counterparts, this research shows that women are more tolerant of other women's cosmetic surgery history than men are. In general, women's desire to affiliate with another woman was not impacted by whether the target has received cosmetic surgery or

not. This research also attempts to discuss how individual differences in dispositional envy tendencies impact women's perception of female cosmetic surgery recipients. Although some between-group variation was observed in the predicted direction, the effect was not large enough to reach statistical significance. A conceptual replication study with larger sample size is needed to determine whether the hypotheses could be supported by empirical data.

Previous literature has repeatedly shown that women often undergo cosmetic surgery to achieve and maintain the love of significant others (Atari, Barbaro, Sela, Shackelford, & Chegeni, 2017; Davis & Vernon, 2002). Accordingly, when short-term mating goals are activated, women's interest in cosmetic surgery increases (Bradshaw, Leyva, Nicolas, & Hill, 2019). Meanwhile, past research shows that women who are more interested in receiving cosmetic surgery report desiring higher levels of status and attractiveness in a mate (Atari, Chegeni, & Fathi, 2017). The findings of the current study reveal that cosmetic surgeries often fail to provide such benefits, especially when the female cosmetic surgery recipients are looking for long-term mates. Men with restricted sociosexual orientation emphasize not only potential mates' physical attractiveness but also how women achieve their attractive appearance.

Considering the discrepancy between women's motivation of undergoing cosmetic surgery and the potential undesirable consequences faced by cosmetic surgery recipients in the romantic context, prospective cosmetic surgery recipients must set reasonable expectations and consider the potential social cost of cosmetic surgeries before making the decisions.

This research deepens the understanding of the pursuit of beauty and helps improve the mental well-being of cosmetic surgery recipients. Cosmetic surgery recipients often face a dilemma—to disclose or withhold their cosmetic surgery history. This research suggests that cosmetic surgery recipients could disclose the surgery history strategically depending on the gender and personalities of their audiences. As most men are not capable of detecting signs of cosmetic surgery, disclosing cosmetic surgery history to sexually restricted men may trigger undesirable social outcomes. When facing female observers with low malicious envy tendencies, “preventive telling” can be an effective way to gather favorable impressions.

#### Limitations and Future Directions

First, although the Amazon Mechanical Turk subject pool is more inclusive and representative of the US population compared to college students' sample, the MTurk workers are significantly younger, less politically diverse, more educated, less religious, and more likely to be unemployed compared to the US population (Paolacci & Chandler, 2014). Another inherent limitation of this online study is the exclusive reliance on self-reported data. It is possible that participants deliberately constructed their responses in a socially desirable way that deviates from how they would actually behave in the real life. Complementary field studies could be conducted to observe how people evaluate and treat female cosmetic surgery recipients in real-world contexts, such as romantic dating and professional hiring.

Additionally, this research was conducted in the United States. Given that intersexual selection and intrasexual competition have persisted across history and human cultures, the proposed effect is expected to be observed in non-Western cultures.



Meanwhile, it is important to note that Americans may hold different perceptions of cosmetic surgery than do those in countries where cosmetic surgery is more or less considered a social norm. Follow-up studies with a more diversified sample will be helpful to determine the generality of the current research.

Another potential concern is that the coronavirus pandemic overlapped with the data collection period. On the one hand, the widespread health crisis increases the risk and difficulties of engaging in cosmetic surgeries. On the other hand, Work from Home, masks, and stalled social lives make it an opportune time to undergo and recovery from cosmetic surgeries. Moreover, people have been forced to confront their unvarnished, unfiltered reflections on incessant video conferences. Seeing more of their own reflection on video screens made people be more aware of their appearance and facilitated appearance comparisons. According to the American Society of Plastic Surgeons (2020), the demand for cosmetic surgery is surging during the coronavirus pandemic. Thus, the pandemic might have changed how people think of cosmetic surgeries and perceive cosmetic surgery recipients.

Furthermore, because the proposed effect is driven by women's intrasexual competitive processes and men's mating motives, participants were restricted to those who reported a heterosexual orientation. These perceptions may vary among people of different sexual orientations. Future research can examine how cosmetic surgery is viewed by people who do not self-identify as heterosexual.

Finally, in this study cosmetic surgery is considered as a single dimension. It is unclear how the type, number and relative invasiveness of cosmetic surgeries affect these perceptions. Moreover, there are certain career paths (e.g., those of actresses or models)

in which cosmetic surgery is judged as appropriate or even desirable. Future research would benefit from examining perceptions of more specific cosmetic procedures and or specific populations.

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## Appendix 1.

### Reysen Likability Scale

Responses for each item were on a 7-point Likert-type scale (1 = very strongly disagree, 2 = strongly disagree, 3 = disagree, 4 = neutral, 5 = agree, 6 = strongly agree, 7 = very strongly agree).

1. This person is friendly.
2. This person is likeable.
3. This person is warm. This person is approachable.
4. I would ask this person for advice.
5. I would like this person as a coworker.
6. I would like this person as a roommate.
7. I would like to be friends with this person.
8. This person is physically attractive.
9. This person is similar to me.
10. This person is knowledgeable.

Appendix 2.

Revised Sociosexual Orientation Inventory

Please respond honestly to the following questions:

1. With how many different partners have you had sex within the past 12 months?

0 1 2 3 4 5-6 7-9 10-19 20 or more

2. With how many different partners have you had sexual intercourse on one and only one occasion?

0 1 2 3 4 5-6 7-9 10-19 20 or more

3. With how many different partners have you had sexual intercourse without having an interest in a long-term committed relationship with this person?

0 1 2 3 4 5-6 7-9 10-19 20 or more

4. Sex without love is OK.

Strongly disagree Strongly agree

1 2 3 4 5 6 7 8 9

5. I can imagine myself being comfortable and enjoying "casual" sex with different partners.

Strongly disagree Strongly agree

1 2 3 4 5 6 7 8 9

6. I do not want to have sex with a person until I am sure that we will have a long-term, serious relationship.



Strongly disagree

Strongly agree

1      2      3      4      5      6      7      8      9

7. How often do you have fantasies about having sex with someone you are not in a committed romantic relationship with?

1 – never

2 – very seldom

3 – about once every two or three months

4 – about once a month

5 – about once every two weeks

6 – about once a week

7 – several times per week

8 – nearly every day

9 – at least once a day

8. How often do you experience sexual arousal when you are in contact with someone you are not in a committed romantic relationship with?

1 – never

2 – very seldom

3 – about once every two or three months

4 – about once a month

5 – about once every two weeks

6 – about once a week

7 – several times per week

8 – nearly every day

9 – at least once a day

9. In everyday life, how often do you have spontaneous fantasies about having sex with someone you have just met?

1 – never

2 – very seldom

3 – about once every two or three months

4 – about once a month

5 – about once every two weeks

6 – about once a week

7 – several times per week

8 – nearly every day

9 – at least once a day

### Appendix 3.

#### The Benign and Malicious Envy Scale

Responses for each item were on a 6-point Likert-type scale (1 = strongly disagree, 7 = strongly agree). Numbers in parentheses refer to the item's position in the full scale.

##### Benign Envy Items:

1. When I envy others, I focus on how I can become equally successful in the future.
3. If I notice that another person is better than me, I try to improve myself.
4. Envy others motivates me to accomplish my goals.
7. I strive to reach other people's superior achievements.
9. If someone has superior qualities, achievements, or possessions, I try to attain them for myself.

##### Malicious Envy Items:

2. I wish that superior people lose their advantage.
5. If other people have something that I want for myself, I wish to take it away from them.
6. I feel ill will toward people I envy.
8. Envious feelings cause me to dislike the other person.
10. Seeing other people's achievements makes me resent them.