

EFFECTS OF OPERATIONAL SEX RATIO ON SEXUAL MISPERCEPTION

A Master's Thesis

by

DİLARA EKİN DEMİRCİ

Department of Psychology
İhsan Dörümacı Bilkent University
Ankara
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DİLARA EKİN DEMİRCİ EFFECTS OF OPERATIONAL SEX RATIO ON SEXUAL MISPERCEPTION Bilkent University 2017

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DİLARA EKİN DEMİRCİ

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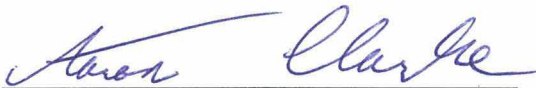
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Supervisor

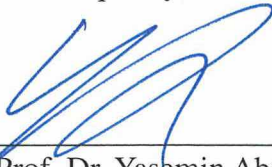
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Examining Committee Member

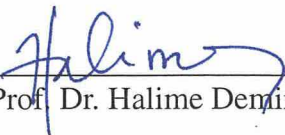
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Asst. Prof. Dr. Yasemin Abayhan

Examining Committee Member

Approval of the Graduate School of Economics and Social Sciences



Prof. Dr. Halime Demirkan

Director

ABSTRACT

EFFECTS OF OPERATIONAL SEX RATIO ON SEXUAL MISPERCEPTION

Demirci, Dilara Ekin

M.A., Department of Psychology

Supervisor: Asst. Prof. Dr. Laith Al-Shawaf

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The current thesis investigates the operational sex ratio of the environment and its effects on people's accuracy in evaluating the sex and commitment intent of others. We conducted a speed meeting experiment in Ihsan Doğramacı Bilkent University's Psychology Laboratory ($N=260$), where both men and women evaluated their partner's sexual intent towards them. Results showed a difference between sexes in the error types they made when they evaluated sexual intent. We did not observe any effect of operational sex ratio between experimental groups. We discuss possible reasons for the absence of this effect and directions for future research.

Keywords: Operational Sex Ratio, Sexual Misperception

ÖZET

TOPLUMDAKİ CİNSEL YÖNDEN AKTİF ERKEK SAYISININ CİNSELLİĞE AÇIK KADIN SAYISINA ORANI VE BUNUN CİNSEL İLGİYİ YANLIŞ YORUMLAMAYA OLAN ETKİSİ

Demirci Dilara Ekin

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Bu çalışmada toplumdaki cinsel yönden aktif erkek sayısının cinselliğe açık kadın sayısına oranı ve bunun cinsel ilgi ve bağlılık niyetini yanlış yorumlamaya olan etkisi araştırılmıştır. İhsan Doğramacı Bilkent Üniversitesi Psikoloji Laboratuvarında, hızlı randevu tekniği (speed meeting) ile yürüttüğümüz deneyde hem erkek hem kadın katılımcılar (N=260) eşleştirildikleri her partnerin kendilerine gösterdikleri cinsel ilgiyi değerlendirmişlerdir. Sonuçlar, kadın ve erkeklerin kendilerine yöneltilen cinsel ilgiyi yorumlamada farklı türlerde hatalar yaptıkları göstermiştir. Ancak, cinsel yönden aktif olan erkek sayısının cinselliğe açık kadın sayısına oranı deney grupları arasında anlamlı bir fark göstermemiştir. Elde edilen sonuçların muhtemel kaynakları ve ileride bu konuda yapılabilecek çalışmalar tartışılmıştır

Anahtar Kelimeler: Nufus Oranı, Cinsel İlgi.

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CHAPTER 1

INTRODUCTION

1.1 Signal Detection Theory

Signal detection theory is concerned with analyzing decision-making processes in conditions where some level of ambiguity is present. In psychology experiments, this theory is useful in describing how people sense and differentiate stimuli in the presence of noise (Green & Swets, 1966).

An example from real life would be a situation where a person decides whether a food is poisonous or not. There are two possibilities for the real condition of the food, it can be either poisonous or nonpoisonous. Also there are four possible inferences about the food condition and two of those inferences would be wrong inferences. For example, in the condition where certain food is nonpoisonous, the perceiver either can decide the condition of the food is good and decide to eat it (Hit) or can make a wrong assumption, thus a decision error, and choose not to eat it. This means missing a chance of consuming a nutritious food (Miss). In the condition where the food is actually poisonous, a person has two options to choose from, either deciding to avoid that food (Correct Rejection) or making a decision error by eating it (False Alarm). In this example, costs of two errors (False Alarm and Miss) are asymmetrical. This interpretation can be made when the severity of outcomes are compared. Overcoming the cost of missing a nutritious food is much easier than

getting over the cost of being poisoned.

1.2 Error Management Theory

Error management theory deals with uncertain situations in which the magnitude of costs of the two possible inferential errors is not equal. This condition would have created selection pressures for the evolution of psychological mechanisms designed to commit the less costly error more often compared to the other. This overarching idea serves as the foundation for Error Management Theory (Haselton & Buss, 2000; Haselton & Nettle, 2004). Based on the previous example, human psychological mechanisms became more likely to make the inferential error of getting rid of the dated food compared to eating the dated food and taking a risk of getting poisoned, unless the organism is experiencing extreme hunger and facing the risk of starvation (Rozin, 1976). This is because the cost of food poisoning and the energy needed to recover is greater than the (relatively small) cost of missing an opportunity for nourishment.

1.3 Parental Investment Theory

Across species, it is possible to observe important differences between the two sexes in the amount of investment that is dedicated to offspring. Genders differ in terms of investment devoted to offspring due to differences in their reproductive biologies. Examples of such asymmetric investment include internal fertilization, ovulation, energy, time and resources that are spent on formation and development of the offspring. Parental Investment Theory (Trivers, 1972) suggests that depending on the amount of investment parents are obligated to provide, differences in behavior can be observed such as aggression and behavior linked to mate discrimination (Alexander & Noonan, 1979). The gender that invests less tends to have a high willingness to mate between short periods of time with various partners (Bateson,

1983; Clutton-Brock & Parker, 1992). On the other hand, the sex that has to invest more in their offspring is more cautious when it comes to mate selection, accepts mating request after a longer time, and is choosier about the opposite sex (Alexander & Noonan, 1979).

For the lower-investing sex, mating with multiple partners in a higher frequency carries greater reproductive benefits compared to the higher-investing sex. Due to the lower obligatory parental investment, the more frequently the lower investing sex mates, the greater their likelihood of out-reproducing their same-sex counterparts. On the other hand, the sex that has more obligatory parental investment benefits less from frequent short-term mating with different partners (Buss, 1994; Symons, 1979; Trivers, 1972).

For mammal species, females are the more investing sex, and females are comparatively less likely to exhibit an increased willingness to mate with different partners, and demand more time before mating (Alcock, 2001). Even stronger support for parental investment theory comes from species that have reversed sex roles – species in which paternal investment is higher than maternal investment. In species like seahorses, males are the ones that have more obligatory parental investment than females do. Research studies show that, as the theory predicts, in species that have reversed sex roles, females are the ones that are prone to short-term mating with different partners and demand less from the opposite sex before accepting the mating opportunity (Alcock & Gwynne, 1991). Males in such species are choosier and more selective in their mate choice. Trivers (1972) suggests that asymmetry in parental investment is the leading cause for different sexes to adopt different policies in mate selection. Considering Trivers' suggestion, sex is not the primary factor in adopted mating strategies - the leading cause of the difference in

adopted mating strategies is the differences in reproductive biology.

Among humans, males are the ones that have less obligatory parental investment compared to females. When compared to similar sex-role species where females invest more, although male humans invest heavily, obligatory biological requirement for men in offspring formation is considerably less than it is for females (Buss, 1994; Lovejoy 1981). In pregnancy, women's experiences like gestation and lactation require a lot of time, energy, and metabolic resources. Women also have to devote a great amount of time and resources to raising their offspring and providing for their survival needs. Also they require a longer time interval between a delivery and the next pregnancy (Jones, 1986). This asymmetry in minimum obligatory parental investment mentioned above make is clear for us that males would reproductively benefit more from short-term and frequent mating with different partners, compared to females (Symons, 1979).

1.4 Sexual Over-Perception Bias

Error Management Theory enables us to generate new hypotheses about human behavior in the context of mate selection. The reproductive cost of a male over-perceiving a woman's sexual intent is smaller than the cost of him under-estimating it. Possible losses that could result from over-perceiving a woman's sexual intent would be time and reputation for men – relatively small costs. On the other hand, under-perceiving women's sexual intent brings the cost of losing a direct reproductive opportunity with a fertile partner (Clutton-Brock & Vincent, 1991).

This asymmetry in the costs of two different inferences would lead human psychological mechanisms to become biased to avoid committing the inferential error that has greater costs. In this case, the reproductive cost of missing a chance for mating is greater. Therefore, men are more likely to commit the inferential error of

over-perceiving rather than under-perceiving women's sexual intent towards them (Haselton, 2003). This phenomenon is called the Sexual Overperception Bias, which suggests that in real life communications where ambiguity is present, men are likely to over perceive women's sexual intent towards them (Haselton, 2003).

1.5 Commitment Skepticism Bias

In real life situation, a man could be willing to be committed to a woman or not. Again, there are four different possible decision-making outcomes here and two of these outcomes are inferential errors. A woman can correctly detect the existence (Hit) or absence (Correct Rejection) of the man's willingness to commit. A woman also can make decision making errors by falsely interpreting an existing commitment willingness of a man as absent (Miss) or an absent commitment willingness as present (False Alarm). When the costs and benefits of both situations are compared, the reproductive cost of interpreting the absence of a man's willingness to commit as present can be considered as greater than the cost of interpreting the present commitment willingness of the man as absent because this misinterpretation of commitment intent has a possible consequence of being abandoned by the male partner, which can lower the offspring's likelihood of survival (Hurtado & Hill, 1992). Application of Error Management Theory in this situation proposes that women would commit the error "False Alarm" more frequently in order to avoid the greater costs of "Miss" errors, which leads us to conclude that women tend to underestimate men's long term commitment potential towards themselves (Haselton & Buss, 2000).

These two different cognitive biases (the sexual over-perception bias and the commitment skepticism bias) are considered sex-specific due to the fact that humans are a sexually dimorphic species (Dimijian, 2005). Because of the lower amount of

obligatory parental investment that male ancestors had, it is considered that the reproductive cost of missing mating opportunities with different and fertile females is greater than the cost of over-perceiving the sexual intent of the opposite sex partner. This is the key reasoning underlying Sexual Over-perception Bias and the reason this cognitive bias is thought of as a male-specific bias (Haselton & Buss, 2000). The reasoning behind the Commitment Skepticism Bias also lies on a foundation of Signal Detection Theory and Error Management Theory. Under-estimating the commitment in ancestral times would have had minor drawbacks for women like delayed reproduction. However, considering the high amount of obligatory parental investment those ancestral women had, the overall cost of over-estimating commitment intent would have consequences with bigger costs (Haselton & Buss, 2000).

1.6 Sexual Misperception in Women

When we look at the literature, we find dozens of research studies investigating the sexual misperceptions experienced by men, like the Sexual Over Perception Bias. Contrary to that, women's misperceptions towards the opposite sex's sexual intent are not a central focus of research.

Women's sexual under-perception is a phenomenon that is less explored by researchers. Buss (2003b) contemplated the idea of women's sexual under-perception, arguing that under-perceiving men's sexual intent might actually aid women in reproductive terms and by emphasizing the importance of avoiding the costs of errors that the opposite action, over-perception, might bring. Given the concepts of Error Management Theory and Parental Investment theory, Buss (2003b) states that under-estimating men's sexual intent may help women to generate beneficial reproductive consequences, such as fending off undesired sexual attempts,

increasing the likelihood of men offering more resources and decreasing the possibility of being perceived as promiscuous. Failing to avoid these situations might bring consequences with a bigger cost (Buss, 2003b). A speed-meeting experiment revealed powerful empirical evidence for sexual under-perception in women (Perilloux, Easton, Buss, 2012). Another study showed that in opposite-sex friendships too, when the male did not arouse the female, women under-perceived the men's sexual interest towards themselves (Koenning, Kirkpatrick, Ketelaar, 2007). Also a meta-analysis (La France, Henningsen, Oates, Shaw, 2009) showed some level of sexual under-perception in women.

In addition to investigations of this phenomenon's existence between two people, there are also studies that are done where they made women to make judgments of the sexual intent of a third party, for both males and females. Research shows that when women observe and evaluate the sexual intentions of females who are interacting with other males and vice versa, observer women perceived a lower sexual interest that is expressed by the corresponding third party compared to observer men (Kowalski, 1993).

The reason behind this phenomenon observed in women may be explained in various ways. When people flirt, usually their attitude towards the other person is ambiguous (Grammar, Kruck, Juetten, & Fink, 2000). In order to avoid heartbreak or situations that could be considered awkward, people might try to imply their sexual interest rather than explicitly express it, which might build misunderstandings between people (Fichten, Tagalakakis, Judd, Wright, Amsel, 1992; Henningsen, 2004; Metts & Spitzberg, 1996; Perper & Weis, 1987). Abbey explained this by suggesting that men are exposed to a socialization process that makes them become more sexual over time, compared to women (Abbey, 1982; 1991). Another explanation is the

threshold difference between two sexes in the perception of sexual intent (Kowalski, 1993). In other words, there is no consensus over this issue yet but we hope that this phenomenon will be illuminated as research studies continue to be conducted on this topic.

1.7 Effect of the Environment on Mating Strategies

One of the hypotheses that evolutionists have produced about adaptations of human mating is that the selective pressure led the human brain to evolve as a complex formation of systems that enable humans to detect and solve mating problems (Buss, 2005). Differences in living conditions and characteristics of an environment lead living things to experience different mating problems.

As Pedersen (1991) argues, the gender distribution in an environment can lead to differences in human's mating strategies. Pedersen bases his argument on two theories which are Parental Investment Theory (Trivers, 1972) and Sexual Selection Theory (Darwin, 1871). Darwin's theory suggests that particular traits that men desire in women cause women to get into a competition with other fellow women for having and presenting those traits. Differences in the sex ratio in an environment would change the magnitude and intensity of this competition. In an environment where women outnumber men, female competition would become more intense (Guttentag & Secord, 1983). Similar to that, when men outnumber women, male competition would become more fierce compared to the former.

1.8 Specific Aims

Considering the suggestion about human males' higher preference towards short-term and frequent mating that Parental Investment Theory provides, in an environment where men are scarce, men would reach the desired traits and be able to apply desired and more suitable short-term mating strategies more easily (Buss &

Schmitt, 1993; Symons, 1979; Trivers, 1972). The same logic could be applied to environments with the reversed sex ratio described above, that is, an environment where women are scarce, with the suggestions of Parental Investment Theory and Sexual Selection Theory, the population that lives in that environment would adopt the related mating strategy, which would be long-term (Guttentag & Secord, 1983).

Hypothesis 1: I hypothesize that the imbalance in the ratio of men and women in the environment would cause a difference in the number of men's erroneous evaluations of women's sexual intent towards them.

Men can become more accurate in evaluating sexual intent in environments where there are more men than women. This might be the case because the competition that is caused by the small amount of women in the mating market. This might lead men to become more cautious and make them avoid losing time and resources for women that they do not have a chance to mate with. Considering the suggestions that Parental Investment theory provides (Trivers, 1972), we also know that long-term monogamous relationships are reproductively more beneficial for women. Pedersen (1991) argues that the mating strategy of a culture would be formed depending on the choices that the minority sex makes, which in this case, is women. If we also look from this perspective, we can also figure that the cost of a man's reputation loss might have a substantial impact on finding a suitable partner especially under this environmental setting.

Prediction 1: I predict that, in a competitive environment for men (an environment where men outnumber women) the number of sexual over-perceptions that men engage in would be lower.

Prediction 2: I predict that, when there are more women in the environment than men, the number of sexual over-perceptions that men engage in will be higher.

Hypothesis 2: I hypothesize that an imbalance in the ratio of men and women in an environment will cause a difference in the number of women's erroneous evaluations of men's commitment intent towards them.

In environments where women outnumber men, the competition among females would cause an increase in frequency of the errors they made in evaluating men's commitment intent towards them. The reason can be addressed by applying the ideas of Error Management Theory and Parental Investment Theory, the costs of over-estimating men's commitment intent would be bigger than under-estimating. Contrary to environments where women are considered scarce, competition in this environment is higher among females. As Petersen (1991) suggests, in places where the members of one sex outnumber the other one, members of the majority sex ought to comply with the intentions of the minority sex. As suggested by Petersen (1991), where women outnumber men, mating strategies transform into short-term mating.

Prediction 3: I predict that, when there are more women in the environment than men, the magnitude of Commitment Skepticism Bias that women exhibit will be higher.

Contrary to that, in environments where women are considered scarce, competition in this environment would be higher among males. As Petersen (1991) suggested, in places where the members of one sex outnumber the other one, members of the majority sex ought to comply with the intentions of the minority sex. As suggested by Pedersen (1991), where men outnumber women, mating strategies transforms into long-term mating because this time women would become the sex that has the role for determining the culture's common mating strategy.

Under these environmental settings, where women have an increased chance

for finding a suitable mate and when they have the luxury to demand long-term relationships from men, I suggest that the contrast between the costs of over-estimating and under-estimating men's commitment intent would become lower compared to environments with the contrary settings.

Prediction 4: I predict that when there are more men in the environment than women, the magnitude of Commitment Skepticism Bias that women exhibit would be lower.

Hypothesis 3: Men's self reported sexual interest in their partner would correlate with the magnitude of their expressed Sexual Overperception Bias.

Prediction 5: Men's self reported interest would correlate positively with the magnitude of their expressed Sexual Overperception Bias.

1.9 Current Study

Life and social relationships are full of uncertainties. Questioning other people's thoughts, intentions, and ways of approaching oneself creates ambiguous situations. In the current study, first we will use a priming technique where the members of each gender will be assigned to either a condition in which they will think that the number of opposite sex's members is lower or vice versa in addition to a control group. This way, it will be possible to create an idea in people's minds about the male to female ratio of the environment the participants are living in. This will enable us to make a conclusion about whether differences in sex ratios in the environment lead to changes in the magnitudes of the Sexual Misperceptions and Commitment Skepticisms of the participants. Using instruments that measure each gender's perception of their partners' intentions would demonstrate a possible contrast between two different environments and studying this would illuminate this part of the literature which now remains unexplored.

CHAPTER 2

SPEED-MEETING EXPERIMENTS: METHODS AND RESULTS

2.1 Participants

Participants were recruited both via the university's experiment announcement services and by face-to-face invitations on the campus.

260 adult university students (130 males and 130 females) participated in this study in Ihsan Doğramacı Bilkent University's Psychology Laboratory. Bilkent University students received a partial credit for their courses.

2.2 Materials

First, each participant encountered a guided visualisation script where they were asked to imagine themselves in a very messy teenager's room. The description included many details about the furniture, personal belongings and the general room environment. During the recruitment, participants were told that the experiment was about memory. The aim of making them read this guided visualisation script was to lead them to think that the next material is used as a distractor.

Second, depending on the experimental condition, participants received a second guided visualisation text that was used as priming material. Due to the resemblance in the aim (priming participants to a mating competition situation), three of the materials were taken from a recently published paper about intra-sexual competition (Russel, Vivian, Lewis, Babcock, Ickes, 2015). In their study they

prepared three different fictitious articles. Two of the articles provided information about gender ratios in the environment (high male-to-female ratio, high female-to-male ratio) and the third one was about sleep and biological rhythm. Articles that were prepared to prime participants to a certain gender ratio either emphasized the decreasing chance of finding a decent man due to increasing numbers of women in the environment or vice versa. These two articles were prepared as parallel to each other by making changes only in gender related words and names. The third article that was used in the control condition had the same appearance and had the same amount of words with the first two. Each article was prepared via Photoshop software in order to make it appear like a screenshot of an actual news website and make it more credible for participants. At the beginning of the experiment, making the participants read the guided visualisation text of a messy teenager's room, hopefully made them think this part of the experiment was a distractor while they were actually being manipulated.

After the reading session, participants received a booklet questionnaire that included five different scales. The first scale was a brief questionnaire, which addressed their demographic information (e.g., age, gender, sexual orientation, relationship status, relationship satisfaction). The following scales were the Ten-Item Personality Inventory (Gosling, Rentfrow, & Swann, 2003) and the revised Socio-sexual Orientation Inventory-R (SOI-R, Penke, & Asendorpf, 2008), which was used in this experiment in order to assess an individual's interest in short-term mating. The two scales were Cross Sex Perception Inventory and Sex and Commitment Contrast Inventory (used to assess SOPB and CSB), which were also used by Haselton and Buss in their paper that was published in 2000.

2.3 Procedure

The experiment consisted of four stages, which are reading, survey completion, speed meeting and memory quiz.

Before the experiment started, all participants arrived at Bilkent University's Psychological Research Area at the experiment time, in groups of five (five men and five women). Depending on the gender and experimental condition, they were separated and placed in previously prepared rooms before the beginning the each experimental session. In every experimental session, five members of one gender gathered in one room whereas the other five member of the opposite sex were placed in separate rooms. Participants were prevented from seeing each other before the speed-meeting part of the experiment started. In order to prevent any possible effects of order, the genders that rotated around rooms were switched in each experimental session.

The speed-meeting phase of the study began after participants completed the reading and survey parts of the experiment. Depending on the experimental condition that the participants were in, each participant received a different guided visualisation text.

In order not to make the purpose of the study overly obvious, participants were told that the experiment was about memory and included speed meeting. They were told that we were currently interested in investigating the relationship between memory and information that did not appear to be relevant to one's social life. Specifically, the presented purpose of the research was to determine whether new experiences were capable of erasing our memory of previous information that was not as close to our actual personal lives. Participants thought that the speed-meeting part was prepared in order to make them have a new experience of meeting people,

which would cause them to forget some parts of the room description and the article's text they read in the reading part of the experiment.

All the participants were told to read the guided visualisation text about the room cluttered with miscellaneous objects, ranging from mountain climbing shoes to empty pizza boxes. Participants were asked to imagine themselves in that room while they read a detailed description of the specific items in the different parts of the room. Next, depending on the experimental condition they were assigned to, participants from one gender received one of the previously prepared fictitious articles that were describing the sex ratio of the environment (high male-to-female ratio, high female-to-male ratio, sleep and biological rhythm).

After this reading part of the experiment, the participants of one gender, rotated through five rooms. Because we are applying the experimental protocol of Perilloux, Easton, & Buss (2012), the duration of each meeting was fixed at 3 minutes. In each room, we left a list of everyday topics that participants might want to use in order to start conversations with their partners. After 3 minutes of interaction, the experimenter knocked on the doors to let the participants know that the conversation was over and the rotating participants should move to the next room to meet the other participants from the opposite sex. Right after each meeting, every participant filled out a 13-question survey where they were free to rate their sexual interest and perception of their partner from their last conversation. This procedure repeated in each experimental session, until each participant from each gender interacted with each member of the opposite sex and made assessments about their partners.

At the end of the speed-meeting part, participants were told that they were placed in their rooms and told that they were going to take a short memory quiz. The

quiz was about the items in the room that were described in the text and after the quiz, they believed that the experiment ended.

2.4 Data Analysis

2.4.1 Sexual Misperception Score

Each male and female participant had a chat with five different opposite sex participants for three minutes each. After each meeting, they gave ratings for how much they thought their opposite sex partner liked them and how much they liked their opposite sex partner. To calculate the Sexual Misperception Score, we followed the calculation protocol of Perilloux, Easton, & Buss (2012). Each participant got a misperception score for each of the opposite sex participants they met. To calculate this score, we took away the score of the opposite sex partner's actual score for how much they liked the participant, from the score of participant's evaluation of how much did they think their partner liked them (Participant A's Evaluation of Sexual Interest of Participant B - Participant B's actual score for Participant A = Participant A's Sexual Misperception Score towards Participant B). Scores that are positive indicated a sexual over-perception whereas negative scores indicated sexual under-perception. When a participant's estimation of his or her opposite sex partner was perfectly accurate, that participant got a zero score for that partner. After calculating five Sexual Misperception Score for each participant, we averaged these five and obtained one Sexual Misperception Score for each individual.

2.5 Results

In order to determine whether there is a significant effect of the sex ratio of the environment on the accuracy of evaluations, a two-way ANOVA of Gender (Male, Female) and Priming Type (Same-Sex Competition, Opposite-Sex Competition, Control) on Sexual Misperception Score was conducted.

A significant main effect of Gender on Sexual Misperception was found, ($F(1,248) = 31.714, p < .001$). Replicating previous research, the Sexual Misperception Score for Men was higher ($M = 0.689$) than for Females ($M = -0.485$). The main effect of Priming Type on Sexual Misperception Score was not significant ($F(2, 248) = 0.310, p = 0.734$). The Gender and Priming Type Interaction was not significant ($F(2, 248) = 0.250, p=0.779$).

We did not observe any significant effect of our manipulation for the environmental sex ratio on how accurately people evaluate their partners' sexual intent for any participant from any gender.

Descriptives Plot

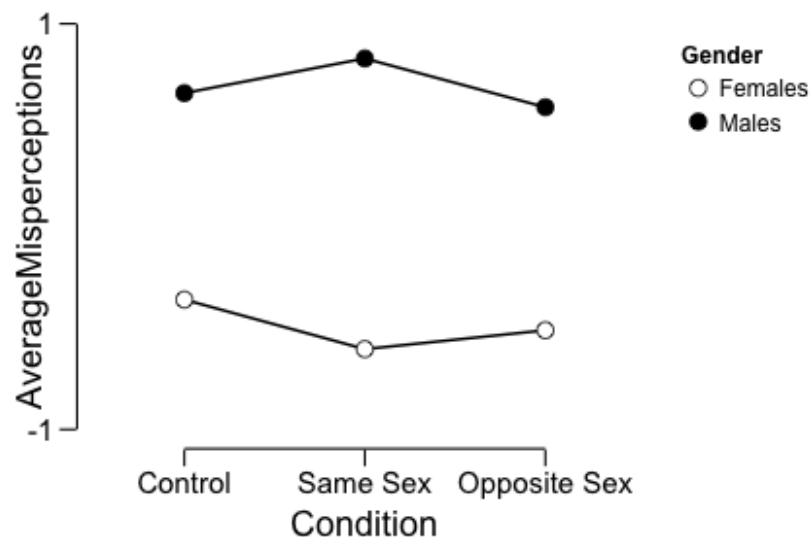


Figure 1. Average Sexual Mis-Perception across Environment and Sex

For each condition, in order to test the relationship between Liking and the magnitude of Sexual Misperception, we looked at the correlations between Sexual Interest score and Sexual Misperception score that males have, for each female partner they have encountered. During the experiment, each male participant, met five females in the experiment, therefore we obtained five different correlational

results for each male, one for each of their corresponding five female partners. We repeated the same correlation calculations for each male, for all of the five conditions. At the end of this calculation period, we obtained five correlational results per condition (one result for each male and their five partner pairings) and twenty-five correlational results in total.

2.6 Interpretation of the Correlation Results

We could not observe a strong correlation between each male and their five female partners. This can be due to the many reasons like the content of the conversation. In order to be able to draw a conclusion about the relationship between Liking and Sexual Misperception, we needed to be able to report the meaning of the five correlational results from the five conditions we obtained. In order to do this, we conducted a Dummy Variable Regression Analysis.

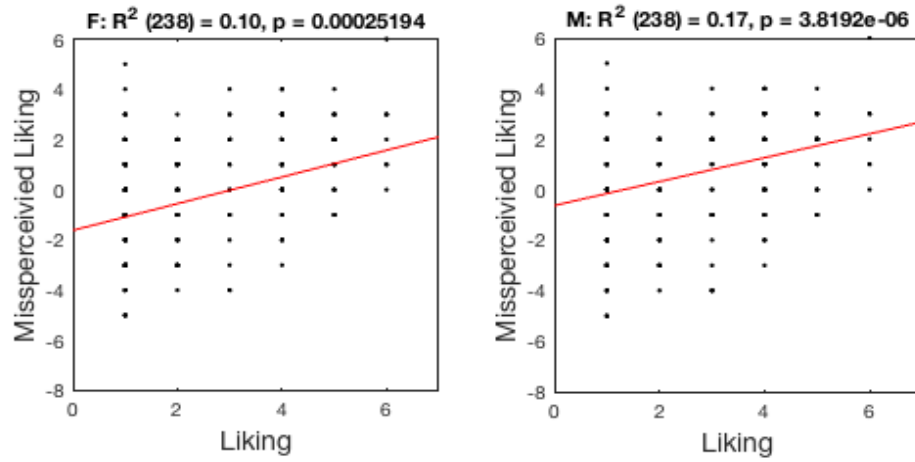


Figure 2. Relationship between Liking and Misperceived Liking in Condition 1 for (A) Females (B) Males.

For condition 1, where men received a male competition prime whereas women did not receive any prime, we found the intercept for females to be significantly different from zero, (Intercept = -1.6199 ± 0.31557 , $t(236) = -5.1334$, $p = 0.00000059473$). The slope for females was significantly different from zero (slope = 0.53159 ± 0.12979 , $t(236) = 4.0959$, $p = 0.000057816$). For males, the intercept was significantly different from the intercept for females (Male intercept = -0.63). Difference between male and female intercepts = 0.98989 ± 0.46968 ($t(236) = 2.1076$, $p = 0.036123$). The slope for males was not significantly different from the slope for females (Male slope = 0.4278). The difference between male and female slopes = -0.058801 ± 0.16917 ($t(236) = -0.34759$, $p = 0.72846$). The R^2 for the entire model was $R^2(236) = 0.199$, $p = 0.0000000000249$.

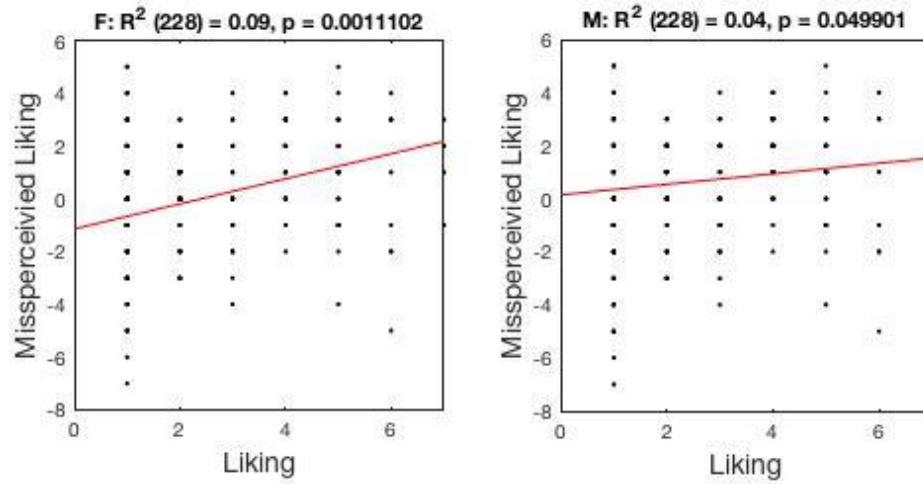


Figure 3. Relationship between Liking and Misperceived Liking in Condition 2 for (A) Females (B) Males.

For condition 2, where men received female competition prime and whereas women did not receive any prime, we found the intercept for females to be significantly different from zero, Intercept = -1.1419 ± 0.33913 ($t(225) = -3.367$, $p = 0.00089358$). The slope for females was significantly different from zero (slope = 0.4742 ± 0.13379 , $t(225) = 3.5443$, $p = 0.00047872$). For males, the intercept was significantly different from the intercept for females (Male intercept = 0.1403). The difference between male and female intercepts = 1.2822 ± 0.50596 ($t(225) = 2.5342$, $p = 0.011952$). The slope was not significantly different from the slope for females (Male slope = 0.1985). The difference between male and female slopes = -0.27574 ± 0.17175 ($t(225) = -1.6055$, $p = 0.10979$).

The R^2 for the entire model was $R^2(225) = 0.103$, $p = 0.0000191$.

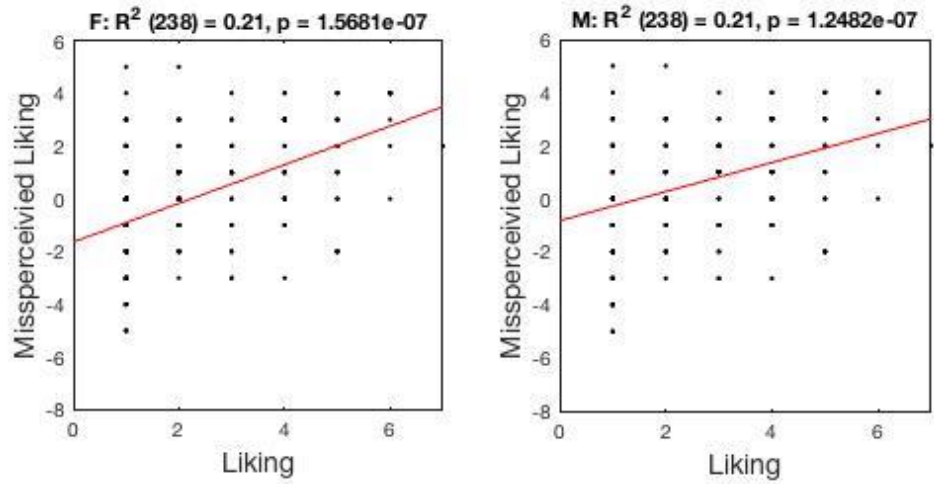


Figure 4. Relationship between Liking and Misperceived Liking in Condition 3 for (A) Females (B) Males.

For condition 3, the control condition, we found the intercept for females to be significantly different from zero (Intercept = -1.6374 ± 0.28407 , $t(235) = -5.7641$, $p = 2.5661 \times 10^{-8}$). The slope for females was significantly different from zero (slope = 0.73191 ± 0.12339 , $t(235) = 5.9317$, $p = 0.00000001065$). For males, the intercept was significantly different from the intercept for females (Male intercept = -0.8325). The difference between male and female intercepts = 0.80491 ± 0.43581 ($t(235) = 1.8469$, $p = 0.066013$). The slope was not significantly different from the slope for females (Male slope = 0.5482). The difference between male and female slopes = -0.18373 ± 0.16168 ($t(235) = -1.1364$, $p = 0.25694$). The R^2 for the entire model was $R^2(235) = 0.249$, $p = 1.43 \times 10^{-14}$.

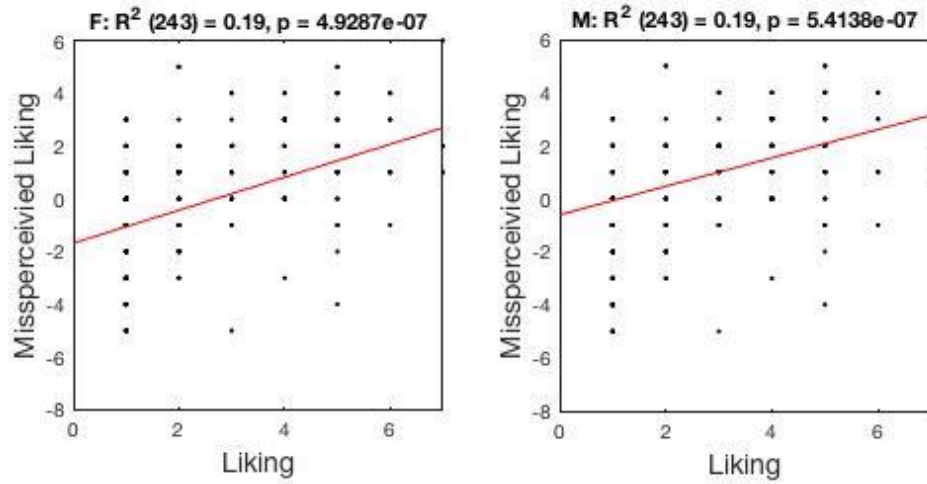


Figure 5. Relationship between Liking and Misperceived Liking in Condition 4 for (A) Females (B) Males.

For condition 4, where women received a female competition prime whereas men did not receive any prime, we found the intercept for females to be significantly different from zero, Intercept = -1.6822 ± 0.27479 ($t(241) = -6.1217$, $p = 3.7274 \times 10^{-9}$). The slope for females was significantly different from zero (slope = 0.62438 ± 0.11993 , $t(241) = 5.2062$, $p = 4.1295 \times 10^{-7}$). For males, the intercept was significantly different from the intercept for females (Male intercept = -0.6103). The difference between male and female intercepts = 1.0719 ± 0.42557 ($t(241) = 2.5186$, $p = 0.012429$). The slope for males was not significantly different from the slope for females (Male slope = 0.5365). The difference between male and female slopes = -0.087929 ± 0.15574 ($t(241) = -0.56457$, $p = 0.57289$). The R^2 for the entire model was $R^2(241) = 0.28$, $p = 4.5 \times 10^{-17}$.

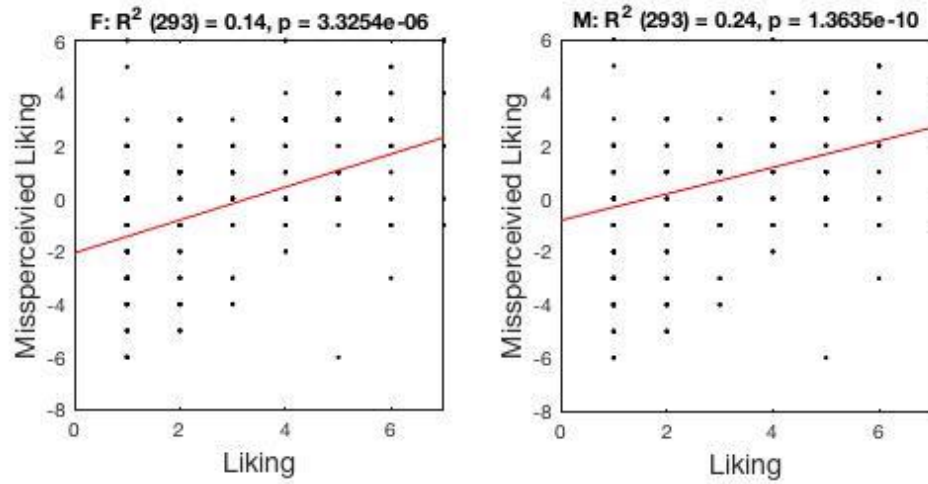


Figure 6. Relationship between Liking and Misperceived Liking in Condition 5 for (A) Females (B) Males.

For condition 5, where women received a male competition prime whereas men did not receive any prime, we found the intercept for females to be significantly different from zero (Intercept = -2.0549 ± 0.28694 , $t(290) = -7.1614$, $p = 6.5971 \times 10^{-12}$). The slope for females was significantly different from zero slope = 0.62512 ± 0.11383 ($t(290) = 5.4916$, $p = 8.7112 \times 10^{-8}$). For males, the intercept was significantly different from the intercept for females (Male intercept = -0.8216). The difference between male and female intercepts = 1.2333 ± 0.41379 ($t(290) = 2.9805$, $p = 0.0031211$). The slope for males was not significantly different from the slope for females (Male slope = 0.4994). The difference between male and female slopes = -0.12572 ± 0.14202 ($t(290) = -0.88521$, $p = 0.37677$).

The R^2 for the entire model was $R^2(290) = 0.1256$, $p = 1.76 \times 10^{-18}$.

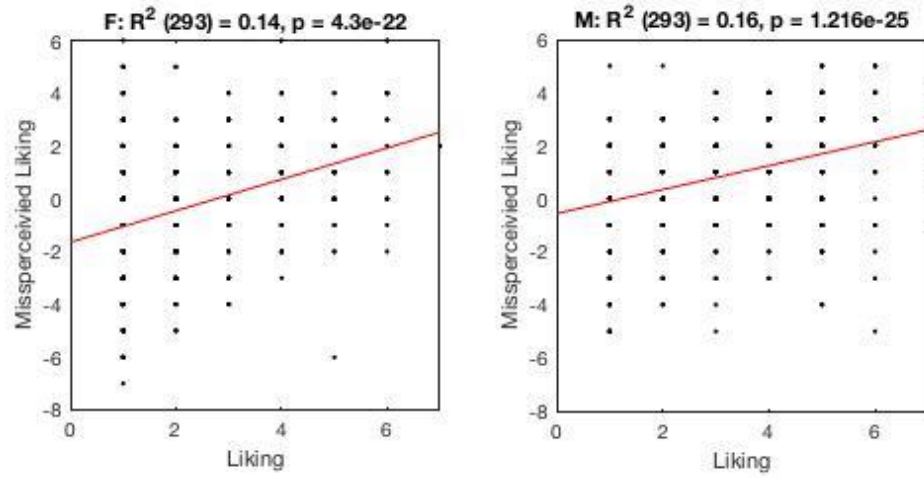


Figure 7. Overall Relationship between Liking and Misperceived Liking for (A) Females (B) Males.

Overall, we found the intercept for females to be significantly different from zero, Intercept = -1.6449 ± 0.134 ($t(1243) = -12.275$, $p = 8.9151 \times 10^{-33}$).

The slope for females was significantly different from zero slope = 0.595 ± 0.055316 ($t(1243) = 10.756$, $p = 7.305 \times 10^{-26}$). For males, the intercept was significantly different from the intercept for females (Male intercept = -0.5596). The difference between male and female intercepts = 1.0853 ± 0.20021 ($t(1243) = 5.4207$, $p = 7.1248 \times 10^{-8}$). The slope for males was not significantly different from the slope for females (Male slope = 0.45). The difference between male and female slopes = -0.14498 ± 0.071038 ($t(1243) = -2.0408$, $p = 0.041478$).

The R^2 for the entire model was $R^2(1243) = 0.21$, $p = 2.77 \times 10^{-63}$.

CHAPTER 3

DISCUSSION

3.1 Summary of Findings

In the current project what we mainly tried to investigate whether there is an effect of an imbalance in the sex ratio of the environment on the magnitude of Sexual Misperception across the two sexes. With the current data that we collected via the speed-meeting experiment, we also tried to address whether there is a relationship between the magnitudes of Sexual Misperception and how much they liked the person they engaged in a conversation with.

We couldn't observe any significant difference in Sexual Misperception Scores across the environments. We expected to find an increased level of Sexual Over-Perception Bias in men, in conditions where we manipulated them in a way that they think there is female competition in the mating market. The reason behind this prediction was the idea of the benefits of over estimation being higher in that setting. If we compare the costs and benefits of overestimation of the sexual intent of a potential partner between two environments, overestimating a sexual intent has a greater reproductive benefit in places where men are the minority. In the light of Error Management Theory and Parental Investment Theory we can say that, in places where there are more women than men, overestimating women's sexual interest might help a male individual to increase his chances to mate with a fertile partner.

This idea was parallel with Pedersen's theory (1991), which was also supported by Barber (2000). They argued that, the basic dominant human mating strategy in an environment is shaped by the environment's sex ratio properties. Pedersen's (1991) theory was tested and supported by Barber (2000), who argued that in an environment where the female population is larger, men tend to adopt short-term mating strategies. Nevertheless, our findings suggest that when we manipulate men to believe that their chances of finding a suitable mate for themselves is lower, we did not observe any difference in their levels of sexual misperception towards their partner.

We also predicted that in an environment where men outnumber women, the competition among males may lead men to decrease their magnitude of the errors they made while evaluating women's sexual intent towards them. The reason behind that was, the cost of over-estimating the sexual intent is greater than the opposite environmental setting. Engaging in over-estimating behavior in evaluating the opposite sex's sexual intent, might cause men to experience time, resource and reputation loss, which is a cost that a male doesn't have a luxury to afford in that environmental setting. However, our manipulation didn't have any effect on men's Sexual Over Perception levels towards their partner across the conditions. When we compared the magnitude of Sexual Over Perception levels across environments with different sex ratio manipulations, we did not observe any significant difference for the Sexual Over Perception level.

Although we did not make any predictions in terms of women's evaluations of men's sexual intent, we obtained results for that too. Regardless of the environment, women significantly under-estimated their male partners' sexual intent towards themselves.

Findings show that, for both men and women, we couldn't induce a difference in their Sexual Misperception with our manipulation. However we observed a significant difference in the Sexual Misperception pattern, between the sexes. Our findings suggest that, regardless of the environmental sex ratio, there is a critical difference between men and women, in their start point of perceptions for the opposite sex's sexual intent. Results show that, in every condition, men are experiencing a Sexual Over Perception, regardless of the priming material they have received. We also observed a Sexual Under-Perception pattern in women, across each condition. These results replicate the findings in the current literature.

Another thing we expected to find was a direct correlation between how much men liked their partner and how much they misperceived their sexual intent, specifically in environments where they think there are more women than men. We stated that the competition among men would lead them to make more accurate evaluations about sexual intent. In conditions where men were manipulated to believe that there is high male competition in the environment and where they did not receive any kind of manipulation, we observed a significant strong positive relationship between how much they liked their partner and how much they have misperceived the corresponding partner. Contrary to that, in conditions where they thought there is high female competition in the mating market, we did not observe the correlation as strongly as in the former condition. Although our results did not completely support our prediction, we may conclude that under certain conditions, men's liking predicts how much they misperceive their partner's sexual intent.

Although we did not make any predictions related to the correlation between women's self reported interest in their partner and their sexual misperception, results also showed us that a relationship exists. A possibly important thing we observed in

women, regardless of whether they received priming or the priming types, we can see from the graphs that women's starting point always is below zero which implies a sexual under-perception starts occurring even though they don't have any feelings to the person they interact with. This can be originating from the differences across self-perceived attractiveness and self esteem. Controlling that for these variables might make this result more meaningful.

3.2 Limitations

Reasons for why we couldn't observe any significant effect of the environment's sex ratio on levels of sexual misperceptions could be examined from three different aspects.

3.2.1 Materials

There are two things that made us think that our priming material might be problematic. The first problem of our priming material is the credibility. In this experiment, we used the guided visualization prime, a fake newspaper article that is used for establishing a priming effect (Russel, 2015). Although they found a significant effect of operational sex ratio by using the same guided visualization prime, it is important to note that we received a great deal of feedback related to the persuasiveness of the fake news paper article that we used. At the end of the many experimental sessions, a considerable amount of participants asked us whether the content of the newspaper article we gave them was made up. In order to be certain about the conclusions we made about the effect of the Operational Sex Ratio of the environment, it could have been beneficial to also ask participants whether they found that article plausible at the end of the experiment as a manipulation check. This way we could have controlled our results for the credibility of our priming material.

The second problem about our priming material was the content. In the fake article we used, there were statements of a match making web site CEO's, asserting an imbalance in the sexes of their users. It could have been helpful to ask people whether they are familiar with the match making web sites. In debriefing sessions, a considerable amount of people told us that they are unaware of the existence of such websites and people who were familiar with them, told us that they have never thought about creating an account in a match making website. This might lead some one to think that our sample is unaware of these alternative methods for finding themselves a partner. But when we asked them whether they have ever used any kind of means to meet people instead of engaging in conversations in person, we realized that a great deal of people are using match making applications on their mobile phones, but not websites. Therefore, perhaps instead of mentioning websites in our manipulation, we could have mentioned modern day dating applications and the sex ratios of their users.

An alternative solution to the problem of priming can be trying to create the desired sex competition atmosphere in the laboratory settings. Instead of using a counterfeit article that addresses the desired priming message, we could have arranged a more realistic theatrical shenanigan in the laboratory, where participants would develop the desired priming idea, by observing the environment themselves.

Another limitation about used materials is the fact that we only used self-report measures in our experiment and asked participants to provide personal information about them, including their sexual life. It is important to acknowledge the fact that people might have provided some answers in order to make them appear socially more desirable.

3.2.2 Sample

This experiment was conducted with Turkish participants who were university students only who were under the influence of a collectivistic culture. Conducting this experiment with people from an older age group might center the effect of operational sex ratio that we were trying to form. Different occupational and educational groups also reveal different aspects of the effect. It is also important to note that, this experiment is conducted with Turkish participants only, who were influenced by the non-western culture. It is important to take these issues into consideration when interpreting our results.

Ihsan Doğramacı Bilkent University is located in Ankara, the metropolitan capital city of Turkey. It is important to note that conducting the same experiment in more rural areas could reveal differences in the magnitude of experienced biases and both men and women's attitude towards each other.

While recruiting participants, we randomly engaged in face-to-face interactions with people around the campus and asked them whether they want to participate this experiment. Because of this speed meeting design of this experiment, many people declined to participate, claiming that this was a challenging and anxiety provoking social experience for them. This can help us see that people who participated, are people who are similar to each other in terms of outgoingness. Controlling them in terms of their personality traits might solve this problem. We can say that perhaps we couldn't derive answers for our questions for the people who are more anxious in social interactions.

3.2.3 Procedure

During the participant recruiting period, we experienced a very hard time in gathering ten people (five male and five female) for each experimental session, in the laboratory. In order to secure our participants' personal privacy, we couldn't collect

any kind of contact information. Instead, we gave them a phone number where they could reach and inform us in any case of cancellation. Unfortunately, we experienced many cases where people did not show up without letting us know, which caused present participants to wait in the laboratory, while we tried to gather new participants. This situation may have had an effect on people in terms of preventing the desired priming effect to appear among participants. The reason behind that is people were agreeing to come to the experiment with their friends and in cases when one of them cancelled, others did not want to come either. Considering the fact that these people were from same sex, this might have damaged the image we tried to create with our manipulation.

Another problem about the experiment procedure was that we did not have any information about the actual female to male ratio of the campus. In addition to that, also we did not realized that collecting data related to people's beliefs about the sex ratio of the campus and their environment in general would be an impact on interpretation of results. It is important to note that we interpreted our results with the absence of the information that described above.

3.3 Future Research

Examining the existence of the same erroneous pattern between people and their relatives might reveal a totally different pattern. Due to the shared genes and shared reproductive interests, we might observe men and women manifesting different Sexual Over-Perception and Sexual Under-Perception patterns.

There is a considerably huge gap in the literature for non-heterosexual sample. Exploring this erroneous patterns in evaluations of sexual and commitment intent among non-hetero sexual sample can reveal valuable insight and help researchers to start filling this gap.

Controlling the results for participants' self perceived attractiveness and self-esteem might reveal an interesting results as well. We could not control our results for these variables and we believe that this actually might add critical information in interpretation for the erroneous evaluation patterns.

Finally, using a different manipulation technique or the same manipulation material with more suitable content would eliminate the possible problems that could be experienced by other researchers.

3.4 Conclusion

The current thesis examined the effect of operational sex ratios and the way they affect the magnitude of sexual misperception in males and commitment skepticism in females. We expected that men would engage in sexual over-perception with a bigger magnitude when there are more women, competing for them, compared to an environment where they are competing for women. Also we expected women to express a greater magnitude of commitment skepticism where they compete for men, compared to the environment where men compete for women. Our results show that there is no difference in the magnitude of sexual misperception across environments for both sexes. Although this actually might be the case, it is also possible that the absence of the effect might be originating from the prime material, not being sufficiently suitable for our sample. We do not have any results related to women's evaluations towards men's commitment intent yet, but the data we gathered has all the necessary content to make the relevant calculations to answer the commitment related issues. But it's also important to note that, we did not observe any effect of our sex ratio manipulation. This could be because there is no effect of sex ratio on the accuracy of commitment intent evaluations of women when making the comparisons across different conditions. Future researches might make discoveries

on this issue, with different experimental designs and materials.



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