5-1-2022

Gender Bias and Creative Idea Evaluation

Carley Andrew

GENDER BIAS AND CREATIVE

IDEA EVALUATION

by

CARLEY ANDREW

Presented to the Faculty of the Honors College of

The University of Texas at Arlington in Partial Fulfillment

of the Requirements

for the Degree of

HONORS BACHELOR OF SCIENCE IN PSYCHOLOGY

THE UNIVERSITY OF TEXAS AT ARLINGTON

May 2022

ACKNOWLEDGMENTS

ABSTRACT

GENDER BIAS AND CREATIVE

IDEA EVALUATION

Carley Andrew, B.S. Psychology

The University of Texas at Arlington, 2022

Faculty Mentor: Logan L. Watts

Gender bias in evaluating creative ideas can partially be explained by role incongruity theory; a perceived mismatch of gender roles and stereotypes with an individual's sex, leading to gendered outcomes. Idea evaluation is the process of cognitive appraisal, and it is a vital aspect of the creative process. Previous literature links higher perceived levels of creativity to males. The present study utilized a mixed-subjects design of both within (idea gender source) and between-subjects factors (control vs. stereotype threat groups). The sample consisted of 261 undergraduates. The study found that male-generated ideas had fewer pros and cons and no higher evaluations of novelty, usefulness, and creativity than females. The main effect was only found between idea source gender and the numbers of pros and cons, with female sources receiving more of both. The two-way interaction was not found between idea source gender and the experiment's utilization of a gender stereotype threat. Concluding that despite the failure of the stereotype threat,

subtle gender bias still appeared in the more critical evaluation of ideas from female

sources. More research on idea evaluation concerning gender in the workplace is needed.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Gender role incongruity theory proposes that the mismatch between the gendered association of a role and the gender stereotypes associated with an individual on a sex basis leads to gendered outcomes (Eagly & Karau, 2002). This incongruity theory lends itself to gender-based discrimination and bias in the workplace, conceptions of leadership suitability, perceptions of creativity, etc. This study investigated the idea of gender bias in the evaluation of creativity.

Previous literature has found that in regard to gender and creativity, men are ascribed more creativity even when producing work identical to that of women. Men's ideas are evaluated as more ingenious than women's. Female executives tend to be stereotyped as less creative than their male counterparts by their superiors (Proudfoot et al., 2015). A study on gender and leadership conducted by Eagly and Karau (2002) found that perceived incongruity between traditional female gender roles and leadership roles led to two forms of prejudice in the workplace. The first form of prejudice is a less favorable perception of women as potential occupants of leadership roles while the second prejudice results in evaluating behavior that fulfills the prescription of the leadership role less favorably when such behaviors are enacted by women.

The purpose of the present study was to examine the effects of gender on the evaluation of ideas in the creative process. Idea evaluation is the process of cognitively

appraising ideas against a set of standards and involves considering potential pitfalls to their implementation in the creative process. The creative process refers to generating novel and useful ideas to solve complex problems (Watts et al., 2017). Idea evaluation is critical in forming solutions to problems; if an idea is not evaluated thoroughly, many processes stand to fail upon implementation. Biases in evaluating ideas could potentially hinder individual and creative team performance, which ultimately negatively impacts overall organizational creativity. A 2008 study found that when gender biases or fault lines are activated in teams, friction develops between the gender subgroups, leading to reduced communication about ideas and opinions, failure to see opposing viewpoints and delve into ideas deeply, and impedes the development of more innovative alternatives (Pearsall et al., 2008). It can be assumed that this same organizational creativity from companies has brought about most of the technological innovations, appliances, services, etc., that have improved the lives of consumers globally.

This study used a mixed-subjects design of both within and between-subjects factors. The dependent variables of pros of ideas, cons of ideas, novelty, usefulness, creativity, and final idea usage were measured in conjunction with gender (male or female). Two conditions of control and stereotype groups were implemented. The stereotype threat was used subtly to uncover any subconscious gender biases in participants. Since the literature shows that men appear to have the advantage of being recognized for their creativity in the workplace versus women, it stands to predict that gender would impact participants' evaluation of creative ideas. Although specific research on creative idea evaluation in the workplace is limited, this unique study will hopefully help to contribute new knowledge in this area.

Hypothesis 1: There will be a main effect of idea source gender on idea evaluation, such that participants will report more pros and fewer cons and higher novelty, usefulness, and overall creativity scores for male-sourced ideas.

Hypothesis 2: There will be a two-way interaction between idea source gender and stereotype threat on idea evaluation, such that the difference in evaluations between male and female ideas is more significant under conditions of stereotype threat.

CHAPTER 2

METHODOLOGY

2.1 Participants

The first stage of the study, the photographic pilot study, utilized 70 participants. All participants were recruited from UT Arlington's Sona research participant pool. The second stage of the study, the main experimental study, recruited and collected data from a total of 300 participants from UT Arlington's Sona pool. However, the final number of participants used during data analyses was 261, due to participant data removals for issues such as missing or duplicated data, careless responders, self-reported inattention, high inattention indicators, and completion time extremes (too much or too little time spent on the survey). Access to the participant pool for both study phases was provided subject to approval from UT Arlington's Institutional Review Board.

Participants were compensated with course credit points (.25 credits for the pilot study and one credit for the main study) that could be applied as extra credit toward their psychology courses. Participants were randomly selected into one of two conditions in the main study: the stereotype threat group or the control group. The stereotype threat condition was designed to subtly invoke gender bias with the presentation of 100% male subject names in the experimental task prompt. The control condition presented a balance of gender subject names (50% male and 50% female names). 128 participants were in the control condition (49%), and 133 (51%) were in the stereotype threat condition. The participant demographics consisted mainly of participants aged 18 or older (~94%),

majority-female demographic (73%), primarily English speakers (first language spoken and at about 66%), and predominantly Freshman classifications (~69%).

2.2 Materials

In the study's first phase, the photographic pilot required a simple photographic categorization survey. Photographs of ten women and ten men of various racial/ethnic backgrounds (Black/African American, White/Caucasian, Hispanic/Latino(a), Asian, etc.) and varying levels of attractiveness were evaluated on measures such as sex, age, level of attractiveness, competence, and warmth. The sex options were male, female, or unclear. The photographic age options ranged from the 20s to 60+ years. The level of attractiveness ranged from very unattractive to very unattractive on a five-point Likert scale (with 1 being very unattractive and 5 being very attractive). Competence, defined as how accomplished or capable they looked at first glance, ranged from very incompetent to very competent on a five-point scale. Warmth, defined as how friendly or kind they appear at first glance, ranged from very cold to very warm on a five-point scale. Participants were presented with a consent form and instructions at the beginning and demographics questions at the end.

In the second phase, photos from the pilot study (16 of 20) were selected for use in the main study. Images were selected based on participants' greatest average agreement on sex, age, level of attractiveness, competence, and warmth. Images were also balanced in the final arrangement based on race and gender. The final photographic lineup consisted of two African American/Black subjects, one male and one female, and two White/Caucasian subjects, one male, and one female. The main study consisted of the main experimental task, a three-question divergent thinking measure, a 20-item mini–Big Five Personality measure, and an 18-item Need for Cognition measure. The survey also included a consent

form at the beginning, demographics questions, and a debriefing at the end. Qualtrics was used for survey data collection, and IBM SPSS Statistics 28 software was used for subsequent data analyses.

<div align="center">2.3 Procedures</div>

For the pilot portion of the study, participants were tasked with categorizing a variety of 20 subject photos on measures like sex, age, attractiveness, competence, and warmth, on a five-point scale (i.e., 1 being unattractive and 5 being extremely attractive). The pilot was conducted through Qualtrics. 16 of those photos went on to be used in the main study.

The main study began with a consent form and instructions for the main experimental tasks. Participants first completed a divergent thinking measure and were then launched into the experimental task, which had them take on the role of Senior Marketing Consultant at a fictional company. The stereotype threat and control conditions were set up to provide participants with a list of the company's recent creativity award winners' names, with photos included for each. Whether participants saw a name list of equally distributed genders (50/50 in control), or entirely males (100% in the stereotype threat) depended on their condition placement and served as a prime. Participants were tasked with reading the ideas of four colleagues (two males and two females, with two ideas per colleague); identifying the respective pros and cons of each idea, and evaluating them on measures of perceived novelty, usefulness, and overall creativity, on a five-point scale. These ideas were counterbalanced in the study. After the main task, follow-up questions about the experimental study were asked as a participant inattention check. A self-reported attentional check was also included. Participants were also asked to create a

final marketing plan and subsequently identify their usage of their colleagues' ideas, if any.

2.4 Covariates & Demographics

A 20-item mini-Big Five Personality measure was presented, which measured participants on the five major personality traits of openness, conscientiousness, extraversion, agreeableness, and neuroticism (OCEAN) (Donnellan et al., 2006). An 18-item Need for Cognition measure was also completed, in which participants identified how much statements aligned with their personal needs for cognition, on a scale of 1 to 5 (Cacioppo et al., 1984). A 13-item gender attitudes survey was also presented, in which participants identified their attitudes toward the work styles of men and women, on a scale of 1 to 5 (George & Zhou, 2001). Participants completed demographics questions at the end and were provided with a debriefing statement and end survey message. The main study was also conducted through Qualtrics. Reliabilities were calculated for several measures used in the study. The 20-item Big Five measure identified whether participants showed more alignment with one of the five major personality traits: openness (α = .595), conscientiousness (α = .642), extraversion, agreeableness, and neuroticism (α = .455). Extraversion (α =.789) and agreeableness (α =.706) produced acceptable reliabilities.

The 18-item Need for Cognition measure was used to measure participants' cognition styles (e.g., preference for more complex or simpler ideas). The Need for Cognition scale produced a reliability of α =.861. The 13-item measure of gender biased attitudes about creativity was used to gauge participants' attitude alignment about males' and females' creativity and work styles. The measure produced a reliability of α =.761,

meaning that there was no inherent difference in how participants evaluated the creativity and work styles of the genders.

2.5 Independent Variables

The overall study used a mixed-subjects design, with within and between-subject aspects. The between-subjects factor consisted of the stereotype threat and control groups. The within-subjects factor included the participant experience of both sets of male and female idea sources in the main experiment.

2.6 Dependent Variables

The study consisted of six measured dependent variables: pros of ideas, cons of ideas, novelty of ideas, usefulness of ideas, overall creativity of ideas, and final idea usage. Each DV consisted of two levels, male and female.

CHAPTER 3

RESULTS

IBM SPSS Statistics 28 was used in data analyses. Regarding the main study, it was hypothesized that there would be a main effect of idea source gender on idea evaluation, such that for male ideas participants would report (a) more pros, (b) fewer cons, (c) higher novelty, (d) higher usefulness, and (e) higher creativity, and ultimately (f) use more male ideas in their final plans. It was also hypothesized that there would be a two-way interaction between idea source gender and stereotype threat, when the stereotype threat is present (vs. absent), the effect of idea source gender on idea evaluation would be amplified.

Stereotype threat use did not produce any interactions with any dependent variables, thus dropping from analyses. A multivariate repeated-measures ANOVA was performed, in which a main effect was found between idea source gender and the six dependent variables (pros of ideas, cons of ideas, novelty of ideas, usefulness of ideas, overall creativity of ideas, and final ideas used) using Pillai's trace, $F (6, 237) = 2.31$, $p =.035$, $\eta_p^2 =.055$. The main effect between idea source gender and pros of ideas, approached significance using Huynh Feldt, $F (1, 242) = 3.71$, $p =.055$, $\eta_p^2 =.015$. More specifically, participants generated more pros for female idea sources (M = 7.90, SD = 2.87) versus male sources (M = 7.63, SD = 2.71); this finding does not support H1a. A main effect was identified between idea source gender and cons of ideas using Huynh Feldt, $F (1, 242) = 8.77$, $p =.003$, $\eta_p^2 =.035$. More cons were generated for female sources (M = 6.29, SD =

9

2.47) versus male sources (M = 5.79, SD = 2.55); this finding supports H1b. No main effects were found between the other dependent variables and idea source gender, thus no support was found for hypotheses H1c through H1f. For the hypothesis that there would be a two-way interaction between idea source gender and stereotype threat using Pillai's trace, $F (6, 236) = .477$, $p =.825$, $\eta_p^2 =.012$; the findings do not support H2.

CHAPTER 4

DISCUSSION

The present study hypothesized that there would be a main effect of idea source gender on idea evaluation. Participants would report more pros, fewer cons, higher novelty, higher usefulness, and higher creativity for male idea sources; and ultimately use more male ideas in their final plans. It was also hypothesized that there would be a two-way interaction between idea source gender and stereotype threat. Thus, the effect of idea source gender on idea evaluation would be amplified. Results showed only a main effect between idea source gender and the numbers of pros and cons, with female idea sources generating greater amounts of pros and cons versus male sources. A two-way interaction was not found between idea source gender and the experiment's utilization of a stereotype threat. It is worth speculating why participants listed more pros and cons for female sourced ideas. One line of reasoning is that the finding indicates bias, in the sense that more cognitive effort was exerted by participants in the evaluation of female sourced ideas, whether consciously or subconsciously. The situation could be interpreted in one of two ways. The first explanation is that to combat subconscious biases, participants were consciously more intentional in critically evaluating the ideas from female sources, as they would for male sources. The second explanation is that in succumbing to subconscious gender biases, participants tended not to scrutinize male sourced ideas more than those from females.

Many studies discuss the issue of gender discrimination in the workplace and in hiring processes. In a survey of gender discrimination using a vignette-based study, Kubler

11

et al. (2018) determined that gender discrimination against females is more likely to occur in male-dominated professions, despite candidates of both genders being similarly qualified for the job. It could be that the use of the title "Junior Marketing Consultant" in the current study was viewed as a male-dominated role by participants, thus leading them not to be as critical of male sourced ideas. The perception could have been that males were better suited for the position; therefore, their ideas were not worth heavily scrutinizing, along the lines of reasoning (b). Bosak and Sczesny's (2011) study on gender bias in leader selection in the workplace provided the finding that in hiring practices, group members are held to a higher standard to confirm traits on which they are perceived to be deficient. Male study participants were more likely to hire female applicants to leadership positions with more uncertainty than their male peers due to having higher confirmatory standards for leadership abilities for women than men. It could be that participants in the present study were more critical of female sourced ideas due to uncertainty of their ability to meet high creative standards in comparison to males, lending support to reasoning (a).

The fact is that the marketing workforce has been slightly led by women in recent years, with 61.3% of marketing managers and employees being female and 55.2% of marketing degree holders being female (Deloitte, 2022a, 2022b). Despite these figures, business degrees and associated fields like marketing and consulting may still be subconsciously perceived as male-dominated areas. A 2017 study showed that although the distributions are changing, women still tend to major in lower-paid occupations such as the humanities, education, etc., while men lean towards majors in engineering and business (Kugler et al., 2017). The media and television still often portray men in powerful, high-status positions (Wood, 1994). This could support both reasonings (a) and (b).

Participants could have felt that men were better suited to the consulting job, and thus their ideas were not worth scrutinizing. The present study leads one to theorize that women could have still been viewed as needing to be more scrutinized because of a perceived underrepresentation in marketing (albeit a false perception).

Another avenue of speculation would be regarding the failure of the experimental stereotype threat condition. A two-way interaction was not found between the idea source gender and the stereotype threat. Pennington et al. (2018) explain why gender-based stereotype threats may not always work. In the context of digital gaming, it was determined that gender-based stereotype threats toward female gamers did not have a strong effect because they already face these same stereotypes daily in the gaming community. A theory is that the failure of the stereotype threat was likely because gender discrimination and biases are salient phenomena in the modern workforce, and an experimental threat did not affect participants.

Other theories about the stereotype threat failure include that participants simply do not have a preconceived stereotype about gender creativity. This theory would be most probable due to the limited scope of research on gender bias in the creative process in general. It could also be that marketing was the wrong field to use as a threat when the gender distribution leans slightly toward women. Future studies could be more successful with a more "threatening" occupational area like engineering or physics. A final theory is that college students are not in the position to perceive gender-based career stereotypes genuinely. College students are constantly surrounded by peers of both genders pursuing any degree and field of choice despite stereotypes. It would make sense for stereotyped notions to appear more readily in the workforce versus the college setting.

4.1 Limitations & Future Directions

The findings of this study must be evaluated in the context of its limitations. One noticeable limitation was the makeup of more female participants versus male ones (73% female and 20% male). A future study replication should have a more equally distributed gender sample; this might give a clearer picture of the effect of participant gender on gender-based idea evaluation. Another limitation is the lack of generalizability due to the sample being composed of entirely college students. College students are not representative of the general public. Actual employees are likely to have the expertise that makes them more prone to showing gender bias in the workplace than college students. Future studies could have this study replicated with a workforce population to clarify gender-based idea evaluation biases in the workplace. A subsequent limitation is the aspect of attractiveness equivalence. Sample photos used in the study were selected for a subjectively attractive appearance. Using highly attractive images produces some range restrictions. More appearance variability in prospective studies might allow more gender differences to show. A final limitation was that the study only looked at the effects of idea source versus gender when ethnicity could have also played a factor. Future studies should investigate the impact of ethnicity and race on evaluating ideas in conjunction with gender.

4.2 Conclusion

Gender bias and discrimination in the workplace, primarily on account of women, have been a longstanding issue worldwide. This study discovered that ideas from female sources are more likely to be critically evaluated compared to males. It was also determined that interaction was not found between the stereotype threat and idea gender source. Practical applications drawn from this study and applied in the workplace would include

more company training in bias awareness. Diversity and sensitivity training are often dedicated to ethnic and racial diversity, biases, and discrimination and not so much toward issues of gender. Employees and employers alike could potentially benefit from additional training in gender bias awareness and discrimination, beyond the scope of hiring practices and in application to daily work interactions. Future studies should be directed toward replicating these procedures in a real workplace context.

APPENDIX A

DESCRIPTIVE STATISTICS OF DEPENDENT VARIABLES

Table A.1: Descriptive Statistics of Dependent Variables

		Male		Female	
Variable	*n*	*Mean*	*SD*	*Mean*	*SD*
Pros	243	7.63	2.71	7.90	2.87
Cons	243	5.79	2.55	6.29	2.47
Novelty	243	3.52	.55	3.53	.57
Usefulness	243	3.66	.57	3.68	.53
Creativity	243	3.60	.62	3.54	.61
Final Idea	243	1.77	1.10	1.66	.93

REFERENCES

Bosak, J., & Sczesny, S. (2011). Gender bias in leader selection? Evidence from a hiring

   simulation study. *Sex roles*, *65*(3), 234-242. doi: 10.1007/s11199-011-0012-7

Cacioppo, J. ., Petty, R. E., & Feng Kao, C. (1984). The efficient assessment of need for

   cognition. *Journal of personality assessment*, *48*(3), 306-307. doi:

   10.1207/s15327752jpa4803_13

Deloitte. (2022a). *Marketing*. Data USA. Retrieved March 23, 2022, from

   https://datausa.io/profile/cip/marketing

Deloitte. (2022b). *Marketing managers*. Data USA. Retrieved March 23, 2022, from

   https://datausa.io/profile/soc/marketing-managers

Donnellan, M. B., Oswald, F. L., Baird, B. M., & Lucas, R. E. (2006). The mini-IPIP

   scales: tiny-yet-effective measures of the Big Five factors of personality.

   Psychological assessment, *18*(2), 192. doi: 10.1037/1040-3590.18.2.192

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female

   leaders. *Psychological review*, *109*(3), 573. doi: 10.1037//0033-295X.109.3.573

George, J. M., & Zhou, J. (2001). When openness to experience and conscientiousness

   are related to creative behavior: an interactional approach. *Journal of applied

   psychology*, *86*(3), 513. doi: 10.1037/0021-9010.86.3.513

Kübler, D., Schmid, J., & Stüber, R. (2018). Gender discrimination in hiring across

    occupations: a nationally-representative vignette study. *Labour Economics*, *55*,

    215-229. doi: 10.1016/j.labeco.2018.10.002

Kugler, A. D., Tinsley, C. H., & Ukhaneva, O. (2017). *Choice of majors: Are women*

    really different from men? (No. w23735). National Bureau of Economic

    Research. doi: 0.3386/w23735

Pearsall, M. J., Ellis, A. P., & Evans, J. M. (2008). Unlocking the effects of gender

    faultlines on team creativity: Is activation the key?. *Journal of Applied*

    Psychology, *93*(1), 225. doi: 10.1037/0021-9010.93.1.225

Pennington, C. R., Kaye, L. K., & McCann, J. J. (2018). Applying the multi-threat

    framework of stereotype threat in the context of digital gaming. *PloS one*, *13*(2),

    e0192137. doi: e0192137

Proudfoot, D., Kay, A. C., & Koval, C. Z. (2015). A gender bias in the attribution of

    creativity: Archival and experimental evidence for the perceived association

    between masculinity and creative thinking. *Psychological science*, *26*(11), 1751-

    1761. doi: 10.1177/0956797615598739

Roca, D., Tena Parera, D., & Lázaro Pernias, P. (2012). Is there gender bias in the

    assessment of advertising creativity?. In *International Conference on Research in*

    Advertising (pp. 10-17).

Watts, L. L., Mulhearn, T. J., Todd, E. M., & Mumford, M. D. (2017). Leader idea

    evaluation and follower creativity: Challenges, constraints, and capabilities. In

    Handbook of research on leadership and creativity. Edward Elgar Publishing.

    doi: 10.4337/9781784715465

Wood, J. T. (1994). Gendered media: The influence of media on views of gender.

    Gendered lives: Communication, gender, and culture, *9*, 231-244.

BIOGRAPHICAL INFORMATION

Carley Andrew is a Psychology undergraduate at the University of Texas at Arlington. She will receive an Honors Bachelor of Science in Psychology in the spring of 2022. Carley's research interests include Personality and Industrial/Organizational psychological research. She has assisted on projects in the Social Interaction and PELICAN research labs at UTA. Carley hopes to matriculate to graduate school in the coming year.