The Consequences of Higher Education: Gender Dilemmas in Contemporary American Female Employment

Yijin Shi(✉)

Shanghai Normal University, Shanghai 200072, China
1000514856@smail.shnu.edu.cn

Abstract. When talking about dilemmas females faced in contemporary employment, it could probably regard as an outcome of higher education. This paper mainly focused on the consequences of higher education due to gender bias. In this paper, boys' and girls' different performances in art and science have been discussed. For decades, men performed perfectly better in STEM and women did better in arts and literature. The further conclusion was made that males and females performed t different in their majors in higher education in college. Additionally, because of their higher scores and stronger logical thinking, males had more advantages than women when both were applying for a job. What's more, it needed to be noted that there was a real unequal payment for the same work and it's a common phenomenon that the society had different expectations of men and women in the labor market. Analyzing the ratio of certain jobs could lead to a clear consequence that the reason for this was that society had an inherent bias against the ability and prestige of men and women in the workplace, which had nothing to do with the men and women in the position themselves.

Keywords: American education · gender dilemma · American female employment · higher education outcomes · gender stereotypes

1 Introduction

Gender has long been recognized as a major factor in higher education outcomes. Inevitably that people will unconsciously pay attention to each other's gender in the first moment of meeting a stranger. The rapid rise of a capitalist nation can be seen in the short two-hundred-year history of the United States. Since the latter half of the 20th century, with the rise of the civil rights and feminist movements, the U.S. federal and state governments have become concerned about gender discrimination in schooling and have been paying high attention to realizing the goal of gender equality in schooling through a variety of administrative, legislative, and judicial means.

In the book Gender Issues in Education, the author mentioned that because boys and girls received different types of higher education, there would be a significant change in society. And due to the different types of higher education they have received, males and females performed different responsibilities in society [1].

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Although many studies had made clear illustrations that gender had a non-negligible impact on educational opportunities, educational experiences, and job positions for both male and female students, there was no detailed argument about the unequal treatment that higher education resulted in the workplace and the query of competencies due to gender bias.

Therefore, from the perspective of unfair treatment that women faced in the workplace, this paper will mainly focus on females' difficulties caused by problems in higher education in the labor market in the United States. The paper could be mainly separated into three parts: (a) the comparison of male and female students' performances in the arts and sciences in higher education in the United States; (b) analysis of the male-dominated labor market structures in the current American society; (c) the gender stereotypes in the social division of labor.

2 The Outcomes of Higher Education in Different Genders

2.1 Comparison of Male and Female Scores in Arts and Sciences

Starting in 1960, people gradually began to have a bias that male scores higher in mathematics than females. As time passes, this view is progressively supported by survey data. According to the data collected by the National Assessment of Educational Progress, the research proved that males have a better understanding of science, while females have more talent in arts [2].

With the statistics, the paper made an accurate description of the differences between the genders among American students in a standardized test. The ratio of men to women below the 10 percentile reading is 2.5 and above 95 percentiles is below 0.5. Now, focus on the other two elements of science and mathematics. The ratio is quite close, which is about 1 to 5 percentiles and about 1.5 to 2 over 95 percentiles. (The ratio in mathematics is 1.4 and the ratio in science is 1.9.) From these numbers, we could conclude that boys are much more skilled in STEM (Science, Technology, Engineering, Mathematics) and girls do a better job in readings.

It is safe to say that boys and girls have long had their specialties in their subject matter [3]. It's not just hearsay that "boys are science-oriented and girls are arts-oriented". It has been supported by diverse research data. Due to the different grades in the early years of study, boys and girls will have certain preferences when choosing their majors subsequently, and this would also result in the choices of major. Therefore, from all the analyses above, there is no doubt that a great difference would occur in the number of men and women in.

2.2 Gender Differences in Choosing Higher Education Major

As for the differences mentioned above, there're other statistics to prove the continued influence of major selection among men and women. Consider one of the Ivy League's most famous colleges as an example. The data were collected by Hopkins, Nancy (Massachusetts Institute of Technology) in 2007 [4].

The subjects in Table 1 could all be classified into one category, science. These two lines clearly illustrated that about one-fifth of Ph.D. students chose mathematics and

Table 1. Female percent of Ph.D. students and faculty in the college of science at MIT

Department	Biology	Brain, Cognitive Science	Chemistry	Earth, Atmosphere & Planetary Sciences	Mathematics	Physics
Female PhD Students	52%	43%	35%	38%	22%	12%

Table 2. World top 500 industries distribution (2013–2019)

Industry	2013	2014	2015	2016	2017	2018	2019
Commercial Trade	78	76	71	77	78	75	71
Minerals & Resources	83	82	81	66	59	62	63
Insurance	51	52	54	56	59	58	55
Banks	54	55	55	53	51	51	54
Manufacture	48	45	48	49	51	53	54
Car Business	32	33	34	34	34	34	34
Aerospace Defense Industry	18	19	18	23	22	21	21
Building Materials	15	18	18	19	19	17	19
Metal Products	17	16	16	13	12	15	19
Transportation& Logistic	14	16	17	16	14	18	18
IT	12	13	13	14	18	18	17
Telecommunications	20	19	18	17	18	17	16
Public Utilities	18	18	18	18	18	18	16
Medical Biology	10	9	10	13	15	13	11
Other financial	6	5	5	6	8	9	9
Chemical Engineering	10	8	8	7	7	7	8
Real Estate	0	0	2	5	6	5	5
Medical Facilities	2	2	2	3	4	5	4
Others	12	14	12	11	2	4	6

only twelve students chose physics. In other words, most females tended to lean toward the liberal arts subjects as their major (Table 2).

In addition, there's a larger percentage of men choose economics and science, while more women choose humanities and social sciences [5]. And under the subcategory "grade in Introductory Economics", there are 20.7 men with an A, which is much higher than 13.3 in females. Now, shifting attention to the "pass" row, the number of women is 0.5 more than once than 0.2 for men. The data lead to the conclusion that men are

speedy to absorb the key points in science, and women have their place in the liberal arts.

What's more, it could be virtually said that women are much easier to continue learning in the humanities. In the first enrolling year, the p-value of science was 0.43, which means there's no apparent difference. While at the end of the course, the p-value was 0.00, which means women and men had totally different performances in the final examination. The situation was also the same in economics. However, courses like social science were just the opposite. The p-value of "Humanities" was 0.23 among freshmen and 0.00 after the entire class.

It's a good example for illustrating that gender did have a huge influence. And in this regard, a conclusion that men are more likely to insist on learning science than women could be drawn.

Therefore, given the data above, it may as well say that gender differences did occur in choosing higher education majors from various aspects. Scores undergraduates got could strongly reflect one's real feelings about one subject. One thing that needed to be admitted was that women tended to have a better understanding of the arts and a lower speed in absorbing science knowledge. And men were just the opposite.

2.3 Educational Expectations of Different Genders in the Social Division of Labor

What's more, another thing that had to be noticed was that besides score and one's ability, there's another element called "social expectations". Sometimes, the circumstance easy to be ignored was the big popularity trend in today's society. As the proverb says that "men earn money to support the family, while women cook and take care of the family", it goes without saying that elegance and grace are the public expectations of women, while men are more likely to be pictured as iron, which means they should always fight and compete with their colleagues in the workplace and struggle to path his career.

Due to these kinds of stereotypes, it's a common phenomenon that more and more women were willing to be teachers, for being a teacher under the education system is a stable job for most women, with many aspects (including but not limited to insurance, pension, etc.) guaranteed by the state government [6]. They won't have much pressure and would be able to spend more time at home.

On the other side, it's far more competitive for men. The expectations of society for men were very high, and it could even be said that if a man did not have a career, then his life was a failure. Although more and more women were now trying to get into aerospace and some other mathematics or scientific fields, the number was still very little compared to men. History has left some gender bias as if men were born to be in certain occupations.

3 Male-Dominated Labor Market Power Structures

3.1 The Advantages of Men in Applying for Jobs

It is not nonsense to say that "men have an advantage over women when applying for jobs". From the following perspectives, it is easy to see that men have certain advantages over women in interviews.

First, as men got higher grades in STEM lessons, it's much easier for them to gain occupation in scientific, technology, or mathematic fields. Interviews tended to hire people with stronger abilities, and it could be said that there were some kinds of jobs, such as astronauts, which were made for men. Because only people who systematically study the space and all the operating principles of the spacecraft could safely explore outer space. If women didn't choose such kind of major, it's almost impossible for them to get all-around learning after they leave college.

Second, men were seen as a group of people with logic, cause men got much higher grades them women in STEM subjects. It's generally acknowledged that mathematics and science required logic and arts and literature required imagination and creativity. In the interview, the interviewer paid much attention to the logic of the candidate's answers when asking questions. To some extent, the interviewer wouldn't be able to know all perspectives of a person in a limited time, even if the interviewer had a lot of personal light spots in a field. To show your strengths in just a few minutes, you must be logical when answering questions. In this respect, men were much easier to be employed during the application than women.

Third, men are regarded as the "power" bearers. Women were naturally seen as the "weaker" side. In other words, men had a wider range of options than women in today's labor market and could choose jobs that require strong physical strength. It couldn't be ignored that there were jobs such as police and firefights that required high physical fitness, and men were certainly more suitable for these kinds of jobs.

3.2 Different Pay for Equal Work

The United States has always claimed to be nominally "equal", but it has always been easy to figure out the gender gap between men and women in the United States from any perspective. It's a common phenomenon that women were always the last choice when hired. They're considered as being unable to take on tough tasks. And for decades, women accounted for a disproportionate number of immigrants to the United States, but their contributions to the country have long been overlooked and they have been subject to severe gender discrimination in employment.

Among these, one of the most obvious features is different pay for equal work. The so-called different pay for equal work is that in the workplace, although men and women perform the same kind of work, the same level of proficiency in the same work after providing equal amounts of labor. However, because of their gender differences, the employer tended to pay two sides different pay. Although the United States has established a constitution that provides equal rights for men and women, as women have long played the role of homemakers, they have been labeled as "weakness" and "powerlessness" [7]. What's more, for this gender discrimination, women are unable to compete on the same level as men in the labor market. Their relatively narrow range of professions, such as secretaries, assistants, nurses, etc., is one of the primary factors contributing to women's low income.

Another noteworthy point is that although American women have become more educated in the last half-century and have been employed in fields such as science, technology, and engineering, there is still some discrepancy between the average earnings of women and men in the United States. According to the hourly occupations listed by

the U.S. Bureau of Labor Statistics, the lowest hourly earnings on the female side are for waitresses at $3.55 per hour (not counting tips), just shy of the federal minimum income standard [8]. Men, on the other hand, can earn $6.08 for one hour as a janitor. The difference between the two is only double the wage.

In summary, it's easy to see that the wage gap between men and women contains historical legacy factors. Although the increase in education has made some significant changes, in a short, the United States still cannot eliminate the wage gap caused by gender.

3.3 Male-Dominated Elite Positions

Before discussing elite positions that are predominantly male, it is important to focus on what matters to elite industries [9]. The most rigorous and accurate proof can be found in the internationally recognized "World Top 500 Companies List", and the following table is the official "World Top 500 Industries Distribution" (2013–2019).

According to the statistics in the table above, it's safe to conclude that most of the elite occupations can be concluded into the category "science". And men usually worked in these high positions in these fields. As men got much higher scores than women in STEM subjects, there's no doubt to acknowledge that men were better dominators in elite positions. As previously mentioned that women are getting higher and higher education nowadays, they started to seize the opportunities and fit themselves into these occupations. However, to change the main-dominated gender, there's still a long way to the path.

4 Gender Stereotypes in the Social Division of Labor

4.1 Historically Inherited Stereotypes of the Male and Female Division of Labor

The trend of the division of labor between men and women in today's society is not unrelated to history [10]. A social phenomenon is not created overnight, it is the result of a long period of influence in the process of historical development. In the Nineteenth Amendment to the Constitution (1919) and its subsequent addition, the Equal Rights Amendment (1921), women's rights were formally introduced in the General Assembly and ratified. Having discussed in previous subheadings the relationship between male and female performance in liberal arts and science courses and employment positions in higher education, it is appropriate to shift perspective and look at how the education received by male and female students has differed over the course of history.

As Chafetz said that "undergirding all systems of gender stratification is a gender-based division of labor, by which women are chiefly responsible for different tasks than are men" (1991, 77) Savitribai Phule and her husband Jyotirao Phule were the first people to appeal to women's education. Focusing on America, the first normal school for women was established at Lexington, in 1839. And it was actually in the 19th century that the blossoming of higher education for women started to raise around the world. This meant that before 1900, 1871 to be exact, women had no access to education.

Another thing that needed to be noticed was that women were also labeled as "housewives", which meant that the society defined the status of women as being at home doing

housework and taking care of kids, while men were the ones who working outside the home and making money to support the family.

Although more and more women are now going to school and the workplace nowadays, some of the stereotypes that society had about women are not going to change anytime soon. And because of the complexity of science and the demanding nature of logic, there are not yet a large number of women who have been allowed to work in elite positions. Inevitably women were not as competitive as men in these positions. As a result, only a smaller percentage of women were willing to challenge themselves to try something completely new and unknown, and most of them still prefer to work in long-standing popular industries, such as service positions. Therefore, it could be concluded that society's stereotype of women was to serve the family, while men should work hard to have their careers.

4.2 Occupational Gender Stereotypes

While mentioning the occupational stereotypes in gender, the question would exactly be as "are there any gendered predictions in occupation" or "are people prejudiced against gender in the workplace".

A study tested differences in gender within occupations by collecting data for predictions. The data illustrated differences in mean positive class probability between sentences with male and female nouns for each profession [11]. Focusing on the pilot. It had the highest positive difference between gender noun sentences and women tended to be higher. At the same time, the women flight attendant had the most negative difference. Due to this dichotomy, it could be figured out that pilot was a male-dominated profession, while the flight attendant was a female-dominated job.

What's more, considering that this might only be a contingency without a broad significance, further control experiments were taken. The difference in gender noun sentences for the control experiment was 0.039, among which, the three occupations with the most negative difference were flight attendant (−0.132), bartender (−0.126), and clerk (−0.116). According to the statistics, flight attendants (72%) and clerks (86%) were female-dominated professions (Current Population Survey, 2018).

In summary, occupational gender stereotypes still existed in today's society. The career orientation of women was still skewed toward clerical work.

4.3 Gender Stereotypes of Work Ability

In today's world, there are far fewer women leaders than men, in other words, the percentage of women in executive positions is much smaller than that of men [12]. The reason why we talk about leadership is that a superior or subordinate position in the workplace is often an indication of one's ability to do the job. And society, for males and females in the superior-subordinate position, there is an early trend.

It is not difficult to find that the positions of managers are mostly held by men. In the implementation of the relevant rights, men are often very confident, making people feel that they are a symbol of authority. For the few women in high positions, they were seen as representatives of "hegemony" [13], and many capable women were even labeled as

"feminists". Under such circumstances, people had some preconceived prejudices about gender.

There were early signs of this. During their school years, students participated in a lot of team works. Many groups were led by male students, and after years of experience, males had a higher level of authority and greater cohesiveness than females when it came to being a leader. It was only logical that examiners will give more weight to men who have valuable experience [14]. This had led to the prejudice that men are more of a "power" symbol in the public.

5 Conclusion

In this article, a conclusion could be made definitely that different performances in arts and science between boys and girls would strongly affect their choices in majors during higher education. And all of these would result in different occupations that males and females were good at in the labor market. Mentioning the male-dominated labor market power structures in today's society, it's inevitable that males gained much easier access to elite positions and had certain kinds of advantages during job applications. Also taking the social stereotype towards working abilities between males and females into consideration, females were not as trustable as males and this kind of bias was just because of their gender, not being based on their actual competencies. In one sentence, as the outcomes of higher education, gender played an important role in contemporary American female employment. In summary, this paper could demonstrate that the dilemmas women face in today's American labor market are related to the outcomes of the higher education they receive. Further studies could be worked on the future share of female choices in male-dominated fields and whether there would be any changes in the selection of majors for either men or women to break up such a relatively gender-fixed labor market.

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