

Gender Differences in Artificial Intelligence Anxiety among Chinese College Students

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Abstract. The rapid diffusion of artificial intelligence (AI), particularly generative AI, has led to a widespread public concern commonly described as AI anxiety. Gender has emerged as a noteworthy factor in research attitudes toward AI, as surveys and studies demonstrate that women report higher levels of concern about AI technologies compared to men. Using a quantitative research approach, this study examines the level of AI anxiety among college and university students in China with focus on gender patterns. The results indicate that Chinese college students widely share AI anxiety with strong concerns about job replacements and socio-technical risks. Anxiety in these two dimensions is particularly high among female students, who also exhibits an overall higher level of AI anxiety. These findings support a multidimensional model of AI anxiety and the possible existence of a gender digital gap in AI. Targeted approaches should be developed to address the issue of equitable adoption of AI technology for college students in China.

Keywords: Artificial intelligence, anxiety, AI anxiety, attitudes, gender differences

1. Introduction

While bringing forth significant productivity gains, AI has also been a major disruptor, especially in the labor markets. Therefore, alongside enthusiasm for the future of this technology, the rapid integration and diffusion of AI have generated widespread concern as well as emotional unease. This discomfort is commonly referred to as AI anxiety.

While scholars in the past few years have become more and more focused on the concept of AI anxiety, they have not yet reached agreement on its definition. Wang and Wang define AI anxiety as "an overall, affective response of anxiety or fear that inhibits an individual from interacting with AI" [1]. Similarly, the definition by Stănescu and Romaşcanu emphasizes that AI anxiety is related to interactions with AI both in the present and expected in the future, which are associated with negative emotional experiences [2]. Lund et al. more specifically defined the negative feelings related to AI anxiety as discomfort and nervousness that arise when using AI tools like ChatGPT [3]. On the other hand, Kaya et al.'s definition identified AI anxiety as excessive fear due to the expectation of changes in personal and social life [4]. Kim et al. focuses beyond the individual level and suggests that AI anxiety is primarily associated with the apprehension towards how AI is rapidly developing and integrating into the different aspects of life [5].

Among studies and surveys about the attitudes toward AI technology, gender has emerged as a noteworthy factor since women tend to report higher levels of concern about AI compared to their male counterparts [6,7]. Survey results also show that women tend to be less likely to adopt generative AI tools as well as AI tools in general, which is likely associated with their negative attitudes towards this technology [7]. This gendered pattern in attitudes toward AI has been confirmed by Russo et al.'s study conducted using a general adult sample in Italy [8], as well as a study by Jacinto conducted among undergraduates in the Philippines [9]. Studies also find women to experience heightened levels of anxiety in certain aspects, including job replacement [9], learning [10], and social and ethical risks [11]. Understanding the gendered patterns of AI anxiety is valuable to assessing whether women are at the risk of exclusion during AI development and adoption. Focusing on college students in China, this study aims to AI anxiety manifest among male and female students.

2. Method

2.1. Research design

A quantitative research approach is adopted for this study to describe the level of AI anxiety among Chinese students and compare AI anxiety patterns between genders. This design is suitable for identifying to gender-based differences by comparing the general level of AI anxiety and anxiety levels across four dimensions (learning anxiety, job replacement anxiety, sociotechnical blindness anxiety, and AI configuration anxiety) among Chinese college students. Statistical tests are used to identify and assess differences between male and female students.

Data is collected using a self-administered questionnaire developed based on the Artificial Intelligence Anxiety Scale (AIAS) [1]. The AIAS is designed to measure overall AI anxiety and its four specific dimensions using 21 items structured on a 7-point Likert scale. An introduction was included to brief participants on the study's objectives and the voluntary nature of their involvement, which allowed withdrawal at any time. Furthermore, no personally identifiable data is collected, and the collected information are stored safely.

The survey is developed on the Chinese online survey platform WJX and distributed via social media platforms popular among Chinese college students. The participants are recruited through convenience sampling and snowball sampling, as the participants were invited to pass on the survey to their peers. The questionnaire was distributed for two weeks from January 5th to January 19th in 2026. A total of 345 valid questionnaires were collected.

2.2. Data analysis

Data analysis was conducted using Stata 16.0. The data collected with the questionnaire was imported to STATA, and only the answers of college and university students in China were kept. STATA was used for attaining descriptive statistics of respondent characteristics, including frequencies and percentage of gender, year in college, major and whether the respondent has ever used AI. Means and standard deviations were listed to describe AI anxiety levels across different dimensions. Lastly, gender differences in AI anxiety were compared using t-tests.

3. Results

3.1. Respondents' characteristics

In total, there are 345 valid questionnaires collected from college and university students in China. As shown in Table 1, the sample comprised 161 males (46.7%) and 184 females (53.3%). First-year students represent 29.3%, followed by second-year (23.5%), third-year (21.2%), and fourth-year or above students (26.1%). Business and Economics students had the largest sample size (32.5%), followed by Humanities and Social Sciences (25.2%), Science and Engineering (15.9%), Arts and Design (13.0%), Medicine/Health Sciences (10.1%). Among all students, 98.8% reported having used AI tools.

Table 1. Respondent characteristics (n=345)

Characteristics	Items	Frequency	Percentage (%)
Gender	Male	161	46.7
	Female	184	53.3
Year in College	First year	101	29.3
	Second year	81	23.5
	Third year	73	21.2
	Fourth year or above	90	26.1
Major	Humanities and Social Sciences	87	25.2
	Science and Engineering	55	15.9
	Business and Economics	112	32.5
	Medicine / Health Sciences	35	10.1
	Arts and Design	45	13.0
	Other	11	3.2
AI Usage	Yes	341	98.8
	No	4	1.2

3.2. Descriptive statistics on AI anxiety

Table 2 presents the overall anxiety level of Chinese students and responses for each dimension in the AIAS, which are AI Learning, AI Configuration, Job Replacement, Sociotechnical Blindness. Job Replacement anxiety showed the highest mean ($M = 4.69$, $SD = 0.73$).

The second highest dimension is Sociotechnical Blindness ($M = 4.34$, $SD = 0.82$). Additionally, AI Learning anxiety ($M = 3.98$, $SD = 0.85$) and AI Configuration anxiety ($M = 3.52$, $SD = 0.97$) showed relatively lower scores.

The overall anxiety score, calculated as an average across dimensions, was 4.19 ($SD = 0.47$). It showed the students in China were anxious about AI.

Table 2. Descriptive statistic of AI anxiety dimensions among college and university student in China

Variables	Mean	Std.Deviation
AI Learning	3.98	0.85
AI Configuration	3.52	0.97

Table 2. (continued)

Job Replacement	4.69	0.73
Sociotechnical Blindness	4.34	0.82
Overall Anxiety	4.19	0.47

3.3. Descriptive statistics on AI anxiety

T-tests were conducted to examine gender differences in AI anxiety (Table 3). Statistical significance was set at $p < 0.05$. All statistical tests were two-tailed. Effect sizes were calculated using Cohen's d to evaluate the practical significance of observed differences. Significant gender differences were found in Job Replacement, Sociotechnical Blindness, and overall anxiety.

In detail, female students reported significantly higher overall anxiety toward AI ($M = 4.26$, $SD = 0.45$) compared to male students ($M = 4.11$, $SD = 0.49$), ($p = .003$). Job Replacement anxiety dimension showed females ($M = 4.84$, $SD = 0.65$) scored significantly higher than males ($M = 4.52$, $SD = 0.77$), ($p < 0.001$). Females ($M = 4.46$, $SD = 0.84$) also reported significantly higher Sociotechnical Blindness anxiety than males ($M = 4.20$, $SD = 0.78$), ($p = .004$).

Besides, there are no significant gender differences in the other two dimensions, which are AI Learning anxiety ($p = .661$) and AI Configuration anxiety ($p = .700$).

Table 3. Gender differences in anxiety toward AI

Variables	Gender	N	Mean	SD	t	df	p value	d	Interpretation
AI Learning	Male	161	3.96	0.88	-0.44	343	0.661	-0.05	Not Significant
	Female	184	4.00	0.82					
AI Configuration	Male	161	3.54	1.01	0.39	343	0.700	0.04	Not Significant
	Female	184	3.50	0.93					
Job Replacement	Male	161	4.52	0.77	-4.18	343	0.000	-0.45	Significant
	Female	184	4.84	0.65					
Sociotechnical Blindness	Male	161	4.20	0.78	-2.91	343	0.004	-0.31	Significant
	Female	184	4.46	0.84					
Overall Anxiety	Male	161	4.11	0.49	-2.96	343	0.003	-0.32	Significant
	Female	184	4.26	0.45					

4. Discussion

Overall, the results indicate that Chinese college students widely share AI anxiety with strong concerns about job replacements and socio-technical risks, while female Chinese college students experienced considerably higher AI anxiety compared to male students.

Chinese college students share a relatively high overall level of AI anxiety ($M = 4.19$) across genders. The difference between male and female students is most pronounced in the dimensions of job replacement and sociotechnical blindness, which are also the two dimensions in which all students reported the highest levels of AI anxiety. According to the results of the questionnaire survey, almost all students (98.8%) have used AI tools. Therefore, it is less likely that AI anxiety is the result of the lack of engagements with this new technology. Similarly, considering that the rate at

which Chinese college students are exposed to AI technology is relatively high, the gender differences is unlikely due to previous engagements with AI, as found in other studies on AI anxiety.

The results of the study find that Chinese college students experience the strongest level of anxiety in the dimensions of job replacements in the AIAS, out of the total four. From this finding, it is consistent with previous studies conducted on assessing AI anxiety in different groups, which together suggest that individuals are most concerned about AI technologies replacing their jobs and bringing economic uncertainty [1,5,12]. For Chinese college students, the concern about the impact of AI on the labor market and on work is particularly strong, perhaps due to the fact that they are expected to enter the labor market very soon. It is also possible for this anxiety about job replacements by AI to be amplified by the current economic conditions in China, which is marked by a very high level of unemployment among young adults and increased economic uncertainty due to growth stagnation and international trade conflicts [13].

The second highest dimension of AI anxiety is sociotechnical blindness. This indicates that Chinese college students are concerned about the broader societal and ethical implications of AI. Students are not only worried about how AI diffusion may impact them personally, but also about systemic risks that may emerge from the insufficient developments or regulation of the technology. By contrast, AI learning and configuration anxieties were relatively lower, which suggests that Chinese college students are more confident about learning and using AI tools than the long-term impact of AI.

Existing literature suggests that women are disproportionately concentrated in occupations that are more susceptible to AI replacements [8,10]. As a result, women tend to experience a higher level of anxiety about being replaced. For college students, while they have not yet entered the workforce, they have formed certain expectations about their future careers. Previous studies found women to be more concerned about the ethical and social impacts of AI use, such as deepfake pornography, because of the current power asymmetries between genders [8,14]. Consistent with this, the current study finds that female students experience higher sociotechnical blindness anxiety. As AI-based harm today largely targets women, they often have a higher level of sensitivity toward the negative consequences of adopting AI [14]. In contrast, this study finds that there are no significant gender differences in the AI anxiety aspects of learning or configuration, likely due to having similar educational backgrounds. As previously noted, almost all the college students who participated in this questionnaire survey have used AI tools before, indicating similar levels of AI exposure between genders.

Overall, the results of this study found that there is gender differences in AI anxiety levels among Chinese college students, with female students exhibiting higher levels of anxiety. The anxiety of both male and female students is concentrated in job replacement and socio-technical risks. However, female students experience a higher level of anxiety in both of these aspects and in ethical risks of AI. This suggests that gender is unlikely an isolated psychological variable. Instead, it is more likely a proxy for the unequal experiences and expectations related to gender due to current inequalities in social structure. Female students experience a higher level of insecurity in being replaced by AI as well as being harmed by the problematic uses of AI technology without sufficient regulation.

The findings of this study have both theoretical and practical implications. Theoretically, the findings support a multidimensional model of AI anxiety and the possible existence of a gender digital gap in AI. In terms of the practical development of interventions to address AI anxiety, especially those targeting the younger generation, the intervention should target concerns about employment and ethics in addition to only providing technical education about AI use. For

mitigating the anxiety about AI experienced by women, interventions can focus on enhancing the perceived control over AI use.

5. Conclusion

Overall, the study generally finds that Chinese college students experience a high level of anxiety towards AI technologies, especially due to employment-related concerns. Furthermore, female students tend to experience more anxiety compared to their male counterparts, especially in terms of job replacements and the ethical consequences of AI technology. From these results, this study concludes that there is a significant AI anxiety gender gap between male and female college students in China. Concerning existing literature on AI anxiety and gendered patterns in terms of AI use, the study suggests that the gendered AI anxiety difference among students is closely related to the wider structural problems associated with gender.

The value of this study was in providing supporting evidence to a gender difference in AI anxiety. First of all, the results of the study indicate that AI anxiety is a multidimensional phenomenon encompassing different aspects related to both practical concerns about individual well-being and the more philosophical concerns about the impact of AI on society and humanity. The study finds that the anxiety about AI technology experienced by Chinese college students is not due to the lack of knowledge or exposure. Instead, Chinese college students are primarily anxious about how AI may bring substantial changes to their personal futures and to the society. More importantly, this study finds that there is a statistically significant gender differences between male and female college students in both the overall level of AI anxiety as well as in anxiety experienced in specific aspects. Those results indicate that the gender experiences and expectations of college students likely impact their psychological and emotional responses to AI technology. Due to cultural and societal gender factors, female students tend to experience a higher level of AI anxiety.

This study improves the understanding of how Chinese college students respond to AI technology, particularly how they experience AI-related anxiety, internally supports the development of targeted interventions for supporting students' adaption to a society increasingly shaped by the use of AI. In particular, the understanding of gendered patterns in AI anxiety supports the development of targeted interventions to help students with equitable technology adoption. Looking ahead, future studies should further address the complexity of AI anxiety, especially how this concept may evolve over time as AI technology develops and the interaction with this technology deepens. Particularly, longitudinal study is needed to understand how AI anxiety may evolve over time, including for individuals and different gender groups. Similarly, comparative studies should be carried out to see how the influence of gender on AI anxiety may interact with other important factors, including education levels, socioeconomic backgrounds, fields of work, etc. The increased understanding of AI anxiety in terms of gender differences contributes to the development of a more inclusive AI adoption and education.

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