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POSTGRADUATE STUDENTS' PERCEPTION OF GENDER BIAS IN UNIVERSITIES IN GHANA

Francis Acheampong
Department of Social Science Education, St Joseph College of Education, Bechem, Ahafo Region, Ghana

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ABSTRACT

This research included 425 postgraduate students in Ghana, comprising 51.6% males, 45.7% females, and 2.7% who did not disclose their gender. The research examined a group of students enrolled in postgraduate programs in Ghana. A convenience random sampling method was utilized to reach respondents through an online survey conducted on the Microsoft Forms platform, distributed via WhatsApp groups. These platforms were employed due to their flexibility and the accessibility they provide to students based on their online presence. The study identified significant correlations between race and perceived gender bias. Black respondents exhibited a greater tendency than non-black respondents to foresee that females would face gender bias at university concerning discrimination, networking and mentoring opportunities, and socialization. In instances of university gender discrimination, black students reported experiencing a lesser impact compared to non-black students in terms of self-confidence, academic progression, academic satisfaction, and academic commitment. A potential explanation is that a greater proportion of black students have encountered various forms of discrimination, resulting in their heightened awareness of the continued prevalence of discrimination in multiple forms. Moreover, they exhibit a notable desensitization to acts of discrimination compared to non-black students. This represents a hypothesis and suggests further directions for future research.

KEYWORDS: *Gender bias; Postgraduate students; Racism; Universities in Ghana*

INTRODUCTION

Given the growing interest in the subject, gender perceptions have not been sufficiently examined in academic research to date (Wang & Degol, 2017; Ceci et al., 2023). It is crucial for the scientific culture of universities to determine the variability of students' perspectives, which affects attitudes towards gender roles and distinguishes the treatment of women and men (Osborne, 2003; Pollitzer, 2011; Brannon, 2016). The absence of a uniform comprehension of gender disparities across diverse scientific fields illustrates why the gender context within the university environment is insufficiently integrated into pedagogy and research (Thomas, 1990; Chisamya et al., 2012). A past European Commission report "She Figures 2015" shows that the percentage of research frameworks that incorporate a gender perspective, as measured in EU-28 scientific papers, varied from almost zero in engineering, technology, agricultural sciences, and natural sciences to more than 6 percent in recent research in EU-28 scientific papers. Technology and engineering had one of the lowest proportions of publications based on gender (0.1% from 2010 to 2013) yet experienced the most rapid growth rate between 2002 and 2013 (14%) (Položki Vokić et al., 2019; EC, 2016).

Moreover, gender-based perceptions and the study process are intricately connected to engagement, which governs the organization of women and men within and across various disciplines (Prakash et al., 2024; Pollitzer, 2011; Wharton, 2009). The Athena phenomenon is distinctly observable on a European scale (Dawson, 2014; Townley, 2010; Hewlett et al., 2008). Where gender disparities are pronounced regarding the most engaging subjects and training and development initiatives (Moser, 2012). Globally, 53% of individuals who obtain master's and bachelor's degrees are women (Haller, 2023). Gender inequality diminishes at the level of Ph.D. education (57% males compared to 43% females) and significantly higher at the postgraduate level, where merely 28% of women occupy faculty (Ceci & Williams, 2011; UNESCO, 2015; Ceci et al., 2014). The gender disparity is particularly pronounced at the senior level, where there is a diminished representation of women in leadership positions, thereby affecting policymaking and decision-making. Most especially, "men are over twice as likely to select engineering, manufacturing, and construction compared to women, whereas women are twice as likely to seek a degree in education." Essentially, the percentage of women in the student body declines from 35.57% at university entry to 34.00% at the bachelor's degree level; it subsequently increases to almost 36 percent at the master's level and then decreases to 32.69 percent among Ph.D. graduates (CESAER, 2015). In 2010, women constituted, on average, 46 percent of all Ph.D. graduates in graduate and postgraduate studies (Ceci et al., 2014). In research, mathematics, and computing, women constitute 40 percent of Ph.D. graduates, while their representation diminishes to 26 percent in engineering, manufacturing, and construction (NRCPGA, 2006; NRCDBSS, 2010). In 2012, women represented 28 percent of Ph.D. graduates in engineering, manufacturing, and construction, and only 21 percent of computer science graduates, highlighting the existing deficit of women in the science and technology fields (EC, 2016). Gender disparities in education, learning, and skills

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acquisition are pronounced in higher education and access to leadership roles: women and men are inequitably represented at the doctoral level, among scholars, and as academic decision-makers (Melo-Martín 2013; Allan, 2011; Ashcraft and Breitzman 2006; Posselt, 2020). UNESCO (2018) reports that "merely 18% of full professors are female, and only 13% of higher education institutions are led by females in 27 EU countries." Consequently, women receive lesser financial compensation than men, are allocated insufficient research funding, and lack equitable authorship status in scientific publications and patent applications compared to their male counterparts (Ranga, 2012; EC 2016; Ceci et al., 2023). Gender perceptions can influence women's advancement to senior roles (Wood, 2008; van den Brink & Benschop, 2012; McIntosh et al., 2015). Women are perceived as inferior science leaders (Carli et al., 2016; Smyth & Nosek, 2015) and are stigmatized as lacking the innate capability required in specific disciplines (Phillips, 2024; Cimpian et al., 2015). Gender stereotypes elucidate why, despite receiving equivalent research funding based on study quality, women obtain diminished financial support when assessed on researcher competence (Witteman et al., 2019; Ceci et al., 2014), are infrequently invited to conferences (Casadevall & Handelsman, 2014; Klein et al., 2017) and are less likely to be selected for scientific awards (Ceci et al., 2009; Popejoy et al., 2014; Lincoln et al., 2011). Individuals with lesser representation on editorial boards are less frequently selected for scientific awards (Ceci et al., 2014; Cho et al., 2014).

Postgraduate students in Ghanaian universities perceive gender bias as a persistent issue affecting academic and professional opportunities (Wurah-Norgbey, 2019). Female students often report challenges such as limited mentorship, implicit biases in grading and supervision, and lower representation in leadership roles within academia (Adams, 2023). Some male students, however, perceive gender policies as favouring women, leading to debates on fairness in opportunities and resource allocation. Institutional efforts, such as gender equity policies and female-focused scholarships, aim to address these concerns, but perceptions of bias remain due to deeply rooted cultural norms and structural barriers (Ampofo, 2000). The extent and nature of these perceptions vary across disciplines, with STEM fields experiencing more pronounced gender disparities. A study asserted that men do not acknowledge the influence of gender bias in research to the same extent as women: when both genders evaluated an abstract from a study addressing gender bias, men tended to assess the study less favourably, indicating their difficulty in recognizing gender bias (Handley et al., 2015).

The gender gap was more pronounced among academics in science, technology, engineering, and mathematics (STEM) (Stoet & Geary, 2018; Wang & Degol, 2017; Handley et al., 2015). Furthermore, numerous women's selections of postgraduate disciplines are influenced by the anticipated discrimination associated with each field (Ganley et al., 2018). A deficiency in awareness of these issues, especially at the senior level, is likely to lead to a reduced implementation of solutions. Thus, it is essential to comprehend how individuals perceive gender biases in their workplace and, importantly, whether these perceptions are influenced by gender, seniority, field of study, and type of institution. This study aims to critically evaluate postgraduate students' perceptions of gender bias in universities to comprehend this phenomenon.

MATERIALS AND METHOD

Participants and data collection

The participants in the study consisted of 425 postgraduate international students in Ghana, with 51.6% identifying as male, 45.7% as female, and 2.7% not disclosing their gender. The investigation focused on a diverse group of students pursuing their postgraduate studies in Ghana. In this study, a convenience random sampling technique was employed to engage respondents via an online survey conducted on the Microsoft Forms platform. The survey was disseminated through WhatsApp groups. The selection of these platforms was influenced by their adaptability and the accessibility of students through their online engagement. It was ensured that the confidentiality and anonymity of respondents were maintained throughout the data collection process. The response rate reached a remarkable 100%, with every participant engaging with the questionnaires distributed via online platforms.

Variables measurement

Gender bias

Participants were requested to assess the potential impact of their gender on various aspects, including emotions and psychology, socialization and networking, mentoring, anger, and sympathy, utilizing a five-point Likert scale, with 5 representing 'likely' and 1 denoting 'never.' The instruments employed to assess gender bias were modified from earlier research that investigated the effects of gender bias on students' perceptions (Geddes et al., 2012; Sipe et al., 2009; Bible & Hill, 2007; Carr et al., 2003; Ngo et al., 2003). Respondents were additionally asked to indicate if gender bias could influence the gender of other students. The reliability and validity of the items were assessed, yielding a Cronbach's alpha of 0.87 for gender bias and 0.82 for gender bias among other students. The composite reliability values were 0.85 and 0.83, respectively. The validity and reliability results of the loaded items met the accepted standard threshold of 0.70, indicating good quality (Nunally, 1978; Nunally & Bernstein, 1994).

The academic impact of gender bias

Questions were posed to assess the influence of gender bias on the academic success of postgraduate students. The items reflecting the questions included confidence level, academic commitment, academic satisfaction, and academic advancement. The items were derived from Geddes et al. (2012). All items demonstrated valid and reliable loading, evidenced by a Cronbach Alpha coefficient of 0.78 and a composite reliability coefficient of 0.81.

Demographic information

The research comprised eight demographic inquiries concerning age, gender, major, GPA, duration of study, course length, university affiliation, and political perspective. In contrast, race and gender were the sole variables that demonstrated statistical significance in the responses.

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Consequently, additional variables were excluded from the analysis.

Data analytical technique

The analysis was conducted utilizing SPSS statistical software. Descriptive statistics include measures such as mean, frequencies, standard deviation, and correlations. An independent t-test was conducted to assess the influence of gender bias on gender and race. Additionally, total scores were not utilized; instead, the average scores of all responses were computed to prevent the dissemination of misleading information resulting from missing data. Finally, cross-tabulation was conducted utilizing gender and race as dependent variables in relation to measures of gender bias.

Results and discussion

The average age of the respondents is 27 years, with a standard deviation of 2.56 years, and ages span from 24 to 45 years. The respondents had an average GPA of 3.02, with a standard deviation of 0.21 on a 4.00 scale. Sixty-eight percent of the respondents have spent 2 to 4 years at their respective universities. The respondents' average course duration was three years. Approximately 80.5% of respondents were enrolled in humanities, 12.5% in natural sciences, and the remaining 7% in other fields of study. Seventy-six percent of respondents identified as Black, while twenty-four percent identified as another race. According to their political orientation, 56% identified as conservative, 40% as liberal, and 4% as belonging to other categories.

The study aims to evaluate the significance of gender bias as perceived by students in relation to their gender and race. This was achieved by calculating the mean responses across various variables, categorized into groups reflecting gender bias towards respondents, gender bias towards other students, and the potential effects of gender bias on the academic success of respondents. Independent sample t-tests were conducted to determine the significant effects of gender (male and female) and race (black and non-black) on the perception of gender bias across each factor grouping. Table 1 indicates that female students are more likely to encounter gender bias compared to male students, as reported by 425 respondents, with a t-statistic of -14.75 and a p-value less than 0.00. The experience of gender bias among other students is reported by 325 respondents, with a t-statistic of -2.32 and a p-value of less than 0.01. Evidence presented in Table 1 indicates that gender bias negatively affects the academic success of female students (N=432, t-statistics= -1.98, p-value<0.00). The findings indicate that students of black race experience negative effects, in contrast to non-black race students (N=325, t-statistics = -1.24, p-value <0.01). Likewise, students experiencing gender bias victimization predominantly belong to the black racial group (N=412, t-statistics = -3.25, p-value <0.00). Gender bias adversely impacts the academic success of black students in comparison to their non-black counterparts (N=412, t-statistics = -2.32, p-value <0.01).

Table 1 Independent t test of Factor Grouping

Factor grouping: Gender biases	DF	T-stat.	P-val.
Self:			
G	425	-14.75	0.00
R	325	-1.89	0.01
Other postgraduate students			
G	412	-2.92	0.00
R	425	-3.75	0.00
Impact on Academic Activities			
G	432	-1.98	0.00
R	424	-2.32	0.01

G = Gender, R = Race. DF = Degree of Freedom, T-stat. = T-statistics, P-val. = P-value

Table 2 presents the results of the cross-tabulation. It provides insight into the relationship between students' perceptions of gender bias in universities and their demographic characteristics. In the analysis, students' overall responses of rarely, never, and possibly were combined into a single negative response. The negative responses were subsequently analyzed in comparison to the non-negative responses, focusing on differences related to race and gender. The findings indicate that students did not perceive gender bias as a significant threat. For example, 67.8% of students indicated that they do not anticipate experiencing gender bias at their universities. Furthermore, over 80% of students indicated that they do not

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anticipate gender bias to influence their emotions, psychology, or feelings of anger and sympathy towards their peers and instructors. Furthermore, 87.2% do not anticipate that their gender will influence their mentoring, networking, and socialization experiences within their universities. Students were additionally queried on the potential impact of a female's gender on their academic life; the majority of respondents indicated that it is unlikely to have a negative effect. Approximately 59% of students reported that females are unlikely to face gender-related obstacles or biases in their universities. Approximately 89% of students asserted that females face no barriers to socialization, mentoring, and networking as a result of their gender, while 84% indicated that emotional and psychological factors do not hinder their academic success due to gender. Additionally, 74% of students recognize that females do not encounter anger or sympathy from their teachers and peers due to their gender.

The data presented in Table 2 illustrates the gender and race analysis derived from the cross-tabulation of students' perceptions regarding gender bias in their universities. Responses indicated variations in perceptions of gender bias. The responses were analyzed through cross-tabulation concerning perceptions of gender bias, taking into account gender and race in relation to self-impact and impact on peers. Both male and female students generally perceive mentoring, socialization, and networking opportunities as unaffected by gender; however, a negative correlation is observed between the female gender and the influence on mentoring. A negative correlation is observed between female gender and sympathy towards teachers. Despite this, when analyzing students' responses concerning the same outcome, it appears that female students are more likely to exhibit a negative correlation between their gender and academic success compared to male students. Approximately 49% of female students anticipated that women would experience gender bias in universities. Conversely, approximately one-third of male students anticipated this outcome for other females. While both male and female students provided comparable feedback regarding females' opportunities for socialization and networking at universities, 41% of female students, compared to 30% of male students, indicated that females are more susceptible to emotional and psychological effects. Regarding mentoring, students indicated that female students are more likely to encounter gender bias (29% compared to 16%). The findings indicate that female students are more inclined to express their anger and sympathy towards their peers compared to male students.

Black students are perceived to be more likely than non-black students to experience gender bias, with rates of 7% and 3%, respectively, attributed to their socialization and networking efforts. Students indicate that non-black individuals are more susceptible to emotional and psychological issues than black students, with reported rates of 16% compared to 8%. The students' responses indicate that a higher proportion of black students encounter gender bias or obstacles, with 56% of black students reporting such experiences compared to 45% of non-black students. Over fifty percent of black students recognize that their peers are likely to encounter gender bias in university settings. Approximately 33% of black students recognize that their peers may encounter emotional and psychological challenges related to gender bias, in contrast to 24% of non-black students who also acknowledge this issue. Black students (15%) are more inclined to believe that sympathy from students towards teachers is influenced by instances of gender bias, in contrast to the beliefs of non-black students (10%). Refer to the table for additional information.

Table 2 Cross-tabulation results of students' self impact and perception of other students impact

	G M (%)	F (%)	R B (%)	NB (%)
No Self impact				
OEGB	79	54	75	65
EPI	89	79	92	84
STOS	93	70	85	82
STT	97	92	95	93
ATT	98	82	94	91
ATS	97	87	95	90
IOSN	97	86	93	97
IOM				
No impact on other students				
OEGB	64	51	44	65
EPI	70	59	66	76
STOS	89	86	78	83
STT	91	92	85	90
ATT	84	76	69	74
ATS	80	66	78	66
IOSN	81	68	79	71
IOM	84	71	65	73

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G = Gender, R = Race, M = Male, F = Female, B = Black, NB = Non-black. OEGB = obstacles encountered or gender bias. EPI = Emotional and psychological impact. STOS = Sympathy towards other students. STT = Sympathy towards teachers. ATT = Anger towards teachers. ATS = Anger towards students. IOSN = impact of socialization and networking. IOM = impact on mentoring.

Table 3 presents the results of the cross-tabulation analyzing students' perceptions of gender bias in relation to their academic success, categorized by gender and racial characteristics. Students were asked to report their experiences of gender bias in their universities. The influence of gender bias on confidence levels, academic achievements, satisfaction, and commitment was examined. The findings indicate that female students are more susceptible to gender biases or challenges within their universities compared to male students. Black students are more likely to encounter gender bias or obstacles compared to their non-black counterparts. Female students are more likely to experience a greater impact on their confidence compared to male students (35% vs. 22%). Female students are more likely to influence their academic commitment compared to male students, with rates of 25% and 15%, respectively. Female students are more likely to influence their academic satisfaction compared to male students, with rates of 46% and 31%, respectively. The findings indicate that gender bias influences students' perceptions of academic advancement, with female students demonstrating a greater likelihood of impacting their academic progress compared to male students (19% vs. 11%). The findings indicate that race significantly influences the academic success of black students compared to non-black students. Specifically, 19% of Black students are likely to influence gender bias regarding their confidence levels, compared to 11% of non-Black students. Furthermore, 22% of black students are more likely to achieve academic advancement compared to 14% of non-black students. Additionally, 35% and 22% of black students demonstrate a greater likelihood of influencing their academic satisfaction and commitment compared to 14% and 11% of non-black students, respectively.

Table 3 Cross-tabulation: perception of Gender Bias and its effect on academic success

Cross-Tabulation of students perceived academic effects of gender bias				
	G		R	
	M (%)	F (%)	B (%)	NB (%)
CL	78	65	81	89
AA	89	81	78	86
AS	69	54	65	86
AC	85	75	78	89

G = Gender, R = Race, M = Male, F = Female, B = Black, NB = Non-black. CL = Confidence Level, AA = Academic Achievement, AS = Academic Satisfaction, AC = Academic Commitment

CONCLUSION

The findings of this study are notable, although they align with previous research. The research indicates that students' perceptions of gender bias at the university are consistent with existing literature. Research indicates the presence of gender bias in certain universities today, particularly in areas such as socialization and networking, mentoring, and academic achievement. The expectation was to find students underestimating the potential impact of gender bias on their academic success; however, the responses contradicted these skewed expectations. Nearly 89% of students asserted that their gender would not influence socialization, networking, mentoring, emotions, or psychological factors. Likewise, 89% of students indicated that other female students are viewed as having no effect on their networking, socialization, mentoring, and psychological well-being within their universities. Additionally, 74% of respondents assert that females exhibit anger towards their teachers and colleagues as a result of gender bias, while 59% contend that gender does not affect the perception of gender bias within the university context.

Previous studies suggest that female students are more likely than male students to anticipate the potential impact of gender bias on themselves. Female students are more likely than male students to perceive potential gender inequality at university. Student responses corroborated these assumptions and previous study findings. The literature indicates that female students are more likely than male students to anticipate potential gender inequality in university settings. However, female students tend to be less likely to foresee gender bias directed at themselves compared to their expectations of gender discrimination affecting other females.
The current results align with the findings of Schmitt et al. (2002) and others, indicating that individuals from disadvantaged groups may be reluctant to acknowledge prejudice directed at themselves (Pla-Julián & Díez, 2019; Crosby et al., 1989). Social psychology theories elucidate this phenomenon, indicating that contemporary female postgraduate students may exhibit a greater propensity than their male counterparts to endorse the infallibility of a meritocratic structure. The potential negative implications of gender stereotypes surpass the value of information, skills, and abilities. This topic warrants further investigation.

The study revealed noteworthy relationships between race and perceived gender prejudice. Black respondents exhibited a higher likelihood than non-black respondents to anticipate that females would encounter gender bias at university in relation to discrimination, networking and mentoring opportunities, and socialization. In the context of university gender

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discrimination, black students indicated a lesser impact compared to non-black students regarding self-confidence, academic advancement, academic satisfaction, and academic commitment. A possible explanation is that a higher percentage of black students have experienced various forms of discrimination in their lives, leading to an awareness of ongoing discrimination and resulting in greater desensitization to such acts compared to non-black students. This represents a hypothesis and suggests additional avenues for future research.

The results of the present study indicate that postgraduate students tend to underestimate the potential occurrence of gender discrimination in the workplace, particularly against women, and its influence. The findings align with the research conducted by Garcıa-Gonzalez et al. (2019), Sipe et al. (2009), Carr et al. (2000), and Carr et al. (2003), which suggests that female students feel unprepared for the gender discrimination encountered in their academic experiences, stemming from their early educational opportunities. The consequences of this lack of preparedness are potentially significant. Educational authorities must recognize and address the ongoing issue of gender-based discrimination in contemporary universities to avoid missing significant opportunities for mitigation through strategic preparation, compliance, and intentional human resource planning.

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