The Moderating Effect of Perceived Organisational Support on the relationship between Perceived Gender Bias and Self-Esteem among Women in Science, Technology, Engineering and Mathematics (STEM) in Lagos, Nigeria

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Abstract

Women remain markedly underrepresented in Science, Technology, Engineering, and Mathematics (STEM), and the gender bias they encounter at work may carry psychological costs that extend beyond career outcomes. This study examined how perceived gender bias impacts the self-esteem and career aspirations of women in STEM in Lagos State. It also examined whether perceived organisational support moderates the relationship between perceived gender bias and self-esteem. Using a survey design, 150 women with at least 1 year of STEM work experience were recruited through convenience sampling across the technology (43.3%), academic (34.0%), and manufacturing (22.7%) sectors. Participants completed the Schedule of Sexist Events Questionnaire (SSEQ), the Career Aspiration Scale–Revised (CAS-R), the Index of Self-Esteem (ISE), and the Perceived Organisational Support Scale (POSS); the ISE was reverse-scored, so higher scores denote lower self-esteem. Data were analysed using Pearson correlations, simple linear regression and a one-way MANOVA. Findings indicate that perceived gender bias was significantly associated with lower self-esteem, but was unrelated to career aspirations. Age did not predict either outcome, while the perceived organisational support did not moderate the bias–self-esteem relationship. These findings suggest that gender bias operates as a psychological stressor that erodes self-esteem. We discuss how perceived gender bias could limit women's aspirations and undermine their potential to attain top positions in STEM, particularly their growth in the adoption of Artificial intelligence in corporate organizations. We recommend policies that sanction gender-based prejudices and discrimination.

Keywords: career aspirations; gender bias; organisational support; self-esteem; STEM

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1. Introduction

Women remain underrepresented in Science, Technology, Engineering, and Mathematics (STEM), and the gap is especially pronounced in developing economies. (Cheryan et al., 2017; UNESCO, 2017). Globally, women hold roughly 33.3% of STEM research and professional positions (UNESCO, 2021), and the imbalance widens in technical and leadership roles. In Nigeria, women account for approximately 17% of the information-technology workforce and 17% of active researchers (National Bureau of Statistics, 2023; UNESCO, 2010). These figures establish both the scale of underrepresentation and a verifiable baseline against which the present sample can be situated. Lagos State, Nigeria's commercial and technology hub and the site often described as "Yabacon Valley Extant literature suggests that gender bias in STEM is a structural problem, evident in unequal hiring, performance evaluation, and advancement (Moss-Racusin et al., 2012; Cheryan et al., 2017; Williams et al., 2016). Unfortunately, little attention has been paid to what such bias does to women psychologically, i.e., their confidence, self-concept, and sense of worth. This study argues that the psychological cost of bias is as consequential as its structural form, because it consists of a set of internalised beliefs about one's own competence that determine whether a woman continues in a STEM career (Cokley et al., 2015; London et al., 2011). Self-esteem, One of the possible consequences of perceived gender bias, shapes confidence in decision-making, tolerance of stress, and motivation to pursue demanding goals (London et al., 2011); where women's contributions are routinely belittled or overlooked, self-esteem is precisely the resource most at risk, and this is also intricately linked with career aspiration (Moss-Racusin et al., 2012). Career aspirations are the long-term goals that sustain effort over time (Hartung, 2013). Moreover, stereotype threat — the apprehension of confirming a negative stereotype about One's group — which usually reinforces gender bias, has been shown to depress women's performance and heighten anxiety under evaluative conditions (Spencer et al., 1999), eroding both persistence and resilience (Diekman et al., 2010; Hill et al., 2010). What remains unclear in past literature, however, is whether any organisational variable moderates this psychological toll, i.e., perceived organisational support; the employee's belief that the organisation values their contributions and cares about their wellbeing (Eisenberger et al., 1986). This has been found to buffer workers' sense of despair against workplace stressors. However, its role in protecting the self-esteem of women facing gender bias in STEM, and particularly in an African context, remains largely untested. The present study addresses this gap by examining perceived organisational support as a moderator of the bias–self-esteem relationship among women in STEM in Lagos.

1.1 The Present Study

The world's current innovation and technology needs have placed STEM, including AI, at the forefront of economic growth and international competitiveness (UNESCO, 2021). Despite this reality, women continue to be woefully underrepresented in the STEM fields, not because of a lack of ability or credentials but mainly due to deep-seated gender stereotypes and workplace institutionalized discrimination (Asekun, 2023). Although much has been done to improve women's entry and participation in STEM fields, little has been done to alleviate the psychological experiences of women already working in these traditionally male-dominated fields (Settles et al., 2016). Gender stereotypes, organizational culture, and implicit bias remain the determinants of women's work lives, which psychologically underpin them and influence their career success as well as well-being (Moss-Racusin et al., 2012). Women in most STEM environments experience subtle exclusionary practices, including exclusion from leadership positions, denial of credit for

joint work, or being held to higher performance standards than the men with whom they work (Williams et al., 2016; Asekun, 2022). These are not merely external barriers; they also have internal psychological ramifications, such as loss of confidence, chronic doubts about competence, and imposter syndrome (Cokley et al., 2015

The present study therefore examines the psychological influence of gender bias on women working in STEM fields, exploring how perceived bias in male-dominated settings relates to women's self-esteem and career aspirations, and whether perceived organisational support alters that relationship. Specifically, the objectives are:

- To examine the relationship between perceived gender bias, career aspirations, and self-esteem among women in STEM fields.
- To examine whether perceived gender bias accounts for significant variance in the career aspirations and self-esteem of women in STEM fields.
- To examine whether age predicts variance in the career aspirations and self-esteem of women in STEM fields.
- To examine whether perceived organisational support moderates the relationship between perceived gender bias and self-esteem among women in STEM fields.

2. Literature Review

2.1 Career Aspirations and the STEM Pipeline

Career aspirations are the internalised, long-term goals that individuals develop for their working lives (Hartung, 2013). Such aspirations function as motivational anchors, shaped by self-concept, social pressure, cultural values, parental expectations, and exposure to role models (Lent et al., 2000; Super, 1990). Evidence indicates that interest in STEM is seeded early through socialization processes (see Fagboungbe and Longe, 2008). Moreover, childhood and adolescent experiences of problem-solving and exploratory curiosity have a lasting effect on later STEM trajectories (Tai et al., 2006; Maltese & Tai, 2011), and activities such as science fairs and coding clubs allow children to imagine themselves in these roles (Zeldin & Pajares, 2000). The developmental psychology literature makes it clear that aspiration is not fixed but cultivated. Therefore, minimal exposure or early negative stereotyping can thwart these aspirations, disproportionately affecting girls and under-resourced students (Cheryan et al., 2017). The recurring force eroding aspiration throughout this work is gender bias.

2.2 Gender Bias and Stereotyping

Gender stereotypes are among the most enduring forms of social categorisation: overgeneralised beliefs about the attributes and roles deemed appropriate for men and women (Eagly & Wood, 2012; Prentice & Carranza, 2002). They are both descriptive (assumptions about how men and women typically behave) and prescriptive (assumptions about how they ought to behave; Heilman, 2012), and they are learned early and reinforced through family, schooling, peers, and media (Bussey & Bandura, 1999; Eccles, 1994; Lauzen et al., 2008; Obioma et al., 2023). Crucially, these beliefs are not biological constants but culturally constructed and bound up with Power: a trait read as assertiveness in a man may be read as aggression in a woman (Eagly & Steffen, 1984; Heilman, 2012). A substantial body of work links exposure to gender bias with diminished psychological functioning. For example, stereotype threat undermines performance and elevates anxiety (Spencer et al., 1999), and the cumulative weight of bias has been associated with lower self-esteem and heightened distress, particularly for women in male-dominated fields (Settles et al., 2016; Cokley et al., 2015). Correll (2004) showed that cultural beliefs about competence depress

women's self-assessments and lead them to relinquish aspirations even when their performance is equivalent. These suggest that bias is internalised as self-doubt, and that self-esteem is a key psychological pathway through which structural disadvantage translates into attrition.

2.3 Organisational Support as a Potential Buffer

Perceived organisational support reflects employees' belief that their organisation values them and cares about their wellbeing (Eisenberger et al., 1986). Mentorship and supportive organisational climates have been associated with higher self-esteem and stronger career commitment among women despite bias (Ragins & Kram, 2007; Kanter, 1977). However, whether such support actually changes the strength of the bias–self-esteem relationship, rather than merely being correlated with better outcomes, has rarely been tested as a moderation question and has rarely been examined among women in STEM in a Nigerian context. The present study addresses this gap by testing perceived organisational support as a moderator, extending a largely Western, structurally focused literature into the psychological and organisational experience of women in Lagos's STEM sectors.

3. Theoretical Framework

The study draws on two different but complimentary theories which are Social Identity Theory (SIT; Tajfel & Turner, 1979, 1986) and organisational support theory, SIT theory explains how individuals derive part of their self-concept and self-worth from the groups to which they belong, through three processes: social categorisation (classifying oneself and others), social identification (internalising group membership as part of the self), and social comparison (evaluating One's group against others to maintain positive distinctiveness). SIT was selected over alternatives such as stereotype threat because it provides the bridge this study requires: it connects a group-level phenomenon (gender bias) to an individual-level outcome (self-esteem) through identity, which is exactly the mechanism the study tests. Applied to the present study, the three processes map directly onto the hypotheses. Social categorisation positions women as a numerical and status out-group in male-dominated STEM, increasing their exposure to the sexist events captured by the SSEQ. Social identification implies that the more central a woman's STEM identity, the more such bias threatens her self-concept. Social comparison predicts that unfavourable intergroup comparisons depress self-esteem, forming the basis for Hypothesis 1. Within the same framework, perceived organisational support can be understood as a competing source of positive, group-based regard that might offset negative comparisons, thereby motivating the moderation tested in Hypothesis 4.

Organisational support theory, on the other hand, holds that employees feel a sense of belonging only to the extent that the organisation values their contributions and cares about their well-being (Eisenberger et al., 1986). Because this perception is interpreted through the logic of social exchange, strong perceived support is experienced as evidence that one is a valued partner in the relationship, thereby providing a psychological resource to draw upon when the relationship or the self is threatened. Integrating SET and OST with SIT yields the prediction tested in Hypothesis 4: the identity threat that gender bias poses to self-esteem (the SIT pathway) is expected to be weaker for women who perceive strong organisational support, because the support acts as a competing, positive source of self-relevant regard (the SET–OST pathway).

4. Research Hypotheses

- H_1: There will be a significant negative relationship between perceived gender bias and self-esteem among women in STEM fields.
- H_2: Perceived gender bias will account for significant variance in the career aspirations and self-esteem of women in STEM fields.
- H_3: Age will significantly predict variance in the career aspirations and self-esteem of women in STEM fields.
- H_4: Perceived organisational support will significantly moderate the relationship between perceived gender bias and self-esteem among women in STEM fields.

5. Method

5.1 Design

The study adopted a cross-sectional correlational survey design. Perceived gender bias was treated as the predictor, self-esteem and career aspirations as outcomes, and perceived organisational support as a moderator of the bias–self-esteem relationship. This design was appropriate because the research seeks to explore the associations among naturally occurring variables and a moderation hypothesis, rather than causal effects of a manipulated variable; experimental manipulation of perceived gender bias would be neither feasible nor ethical, and no register exists from which a longitudinal cohort of women in STEM in Lagos could be drawn.

5.2 Research Setting

The study was conducted in Lagos State, Nigeria's commercial and technological centre, home to a dense concentration of universities, research institutions, manufacturing firms, and technology start-ups. Lagos offers an appropriate setting because it combines a comparatively high concentration of women employed in STEM with sectors that remain male-dominated, the conditions under which perceptions of gender bias are most salient.

5.3 Participants and Sampling

A sample of 150 women STEM professionals was deemed sufficient for the quantitative component to fulfill the study objectives and enable robust statistical analysis. This sample size was reached because data on the exact number of females working in STEM in Lagos State is not publicly available. However, a check with the records of the National Bureau of Statistics (NBS) and other sources provides a broader national context, indicating a significant gender gap in STEM. Data according to the National Statistics on women in STEM point to the fact: women make up only 22% of the total number of engineering and technology universities graduate each year, less than 3% of researchers in Nigeria are women, women make up roughly 1/5th of the total workforce in the information and technology sector (ICT), in Sub-Saharan Africa, women make up less than 20% of professionals in engineering and technology related fields (NBC, 2019). The sample thus has sufficient Power to detect significant relationships and differences in the data. Convenience sampling of participants was carried out to ensure representation across the three leading sectors: technology (43.3%), academia (34%), and manufacturing (22.7%), based on the actual demographic split. Convenience sampling was employed due to the specificity of the population under study.

A total of 180 questionnaires were distributed, and 150 complete responses were retained for analysis. All participants were women with at least One year of STEM work experience, drawn from the technology (43.3%), academic (34.0%), and manufacturing (22.7%) sectors. The sample was predominantly early-career: 46.7% were aged 18–24 years and 40.7% were aged 25–34 years. Convenience sampling was used because no public sampling frame enumerates women working in STEM in Lagos State; therefore, recruitment relied on accessible professional and institutional networks. This approach is appropriate for a hard-to-reach, undocumented population. However, it does not yield a probability sample, and the resulting potential for selection bias is acknowledged in the Limitations.

5.4 Measures

Schedule of Sexist Events Questionnaire (SSEQ). This measure, developed by Klonoff and Landrine (1995), assesses the frequency of perceived sexist experiences across domains including work, Education, and interpersonal life. It comprises 20 items; higher scores indicate more frequent perceived sexist experiences. Internal consistency in the present sample was excellent (Cronbach's α = .94). The SSEQ operationalised perceived gender bias, the predictor variable.

Career Aspiration Scale–Revised (CAS-R). It is a measure developed by O'Brien (1996), the 24-item CAS-R measures aspirations for achievement, leadership, and further Education; higher scores reflect stronger aspirations. Although published reliabilities range from .78 to .91, internal consistency in the present sample was weak (α = .62); this is treated as a limitation when interpreting the aspiration findings.

Index of Self-Esteem (ISE). It is a measure **d**eveloped by Hudson (1982); the 25-item ISE measures global self-worth. The scale is negatively worded and reverse-scored: higher total scores indicate lower self-esteem. Internal consistency in the present sample was acceptable (α = .70). Because of this scoring direction, a positive correlation between the SSEQ and the ISE indicates that greater perceived bias is associated with lower self-esteem. The ISE served as the primary dependent variable.

Perceived Organisational Support Scale (POSS). This instrument, developed by Eisenberger et al. (1986), measures the extent to which employees believe their organisation values their contributions and well-being. The 17-item version was used in this study (observed range 17–102); higher scores indicate greater perceived support. Internal consistency in the present sample was excellent (α = .93). POSS served as the moderating variable.

5.5 Procedure

Ethical clearance was obtained from the University of Lagos Research Management Office (UNILAGREC/25/05/006) before data collection. Data were collected online using Google Forms, with the survey link circulated through professional and social media networks and STEM mailing lists to maximise reach; printed copies were also distributed to women working in technology organisations, a manufacturing company, and an engineering faculty in Lagos. The online platform supported anonymity and convenient data management.

5.6 Ethical Considerations

The study adhered to established ethical principles for research with human participants. Electronic informed consent was obtained, and participants were informed of the study's purpose, the voluntary nature of participation, confidentiality protections, and their right to withdraw at any time without penalty. No identifying information was collected, and data access was restricted to

the research team. Because the survey asked about experiences of sexism, a distress protocol was included: participants were advised at the outset that some items might be sensitive, were reminded that they could stop at any point, and were provided with a referral note directing anyone who felt distressed to counselling support. No conflicts of interest are declared, and the study received no external funding.

5.7 Data Analysis

Data were analysed using IBM SPSS Statistics version 26 and independently verified. Descriptive statistics summarised the sample and key variables. Pearson correlations were used to test the associations among perceived gender bias, career aspirations, and self-esteem (H1). Simple linear regressions were used to test whether perceived gender bias predicted career aspirations and self-esteem (H2). A one-way MANOVA tested age-group differences in the two outcomes (H3); a regression-based moderation analysis, with both predictors mean-centred and a bias × support interaction term, tested whether perceived organisational support moderated the bias–self-esteem relationship (H4). The significance threshold was $p < .05$.

6. Results

6.1 Sample Characteristics

The sample was skewed toward younger ages: 46.7% were aged 18–24 years and 40.7% were aged 25–34 years, with 6.0% each in the 35–44 and 45–54 age groups and 0.7% aged 55 or older. Most participants were Christian (78.7%), followed by Muslim (18.0%) and traditional faiths (3.3%). By sector, 43.3% worked in technology, 34.0% in academia, and 22.7% in manufacturing.

Descriptive Statistics and Correlations (H1)

Variable	M	SD	1	2	3	4
1. Perceived gender bias (SSEQ)	50.49	20.93	—			
2. Self-esteem (ISE)	78.23	11.21	.364***	—		
3. Career aspirations (CAS-R)	72.00	8.27	-.017	.148	—	
4. Organisational support (POSS)	61.35	22.22	.366***	.009	.138	—

Note. N = 150. The ISE is reverse-scored: higher scores indicate lower self-esteem. ***$p < .001$; all other correlations non-significant. A positive SSEQ–ISE correlation therefore indicates that higher perceived gender bias is associated with lower self-esteem. Perceived gender bias was significantly and positively correlated with ISE scores, $r = .364$, $p < .001$. Because the ISE is reverse-scored, this indicates a negative relationship between perceived gender bias and self-esteem: as perceived bias increases, self-esteem decreases. Hypothesis 1 was supported. Perceived gender bias was not associated with career aspirations, $r = -.017$, $p = .84$.

H2: Perceived Gender Bias as a Predictor

Outcome	B	SE	B	t(148)	P	R^2
Self-esteem (ISE)	0.195	0.041	.364	4.76	<.001	.133
Career aspirations (CAS-R)	-0.007	0.033	-.017	-0.21	.836	.000

Note. N = 150. Predictor: perceived gender bias (SSEQ). ISE is reverse-scored, so the positive coefficient indicates that higher bias predicts lower self-esteem.

Perceived gender bias significantly predicted self-esteem, B = 0.195, SE = 0.041, β = .364, t(148) = 4.76, $p < .001$, accounting for 13.3% of the variance, $F(1, 148) = 22.63$, $p < .001$. It did not predict career aspirations (B = -0.007, β = -.017, t(148) = -0.21, p = .836, $R^2 = .000$). Hypothesis 2 was therefore partially supported: perceived gender bias predicted self-esteem but not career aspirations.

H3: Age and the Two Outcomes

Age group	N	Career Aspiration M (SD)	Self-Esteem M (SD)
18–24	70	70.47 (8.09)	77.13 (11.62)
25–34	61	73.52 (8.80)	78.79 (11.92)
35–44	9	73.67 (4.47)	83.67 (5.43)
45–54	9	71.44 (8.13)	77.11 (5.44)
55+	1	76.00 (—)	83.00 (—)
Total	150	72.00 (8.27)	78.23 (11.21)

Note. N = 150.

The multivariate test revealed no significant effect of age on the combined outcomes, Wilks' $\Lambda = .949$, $F(8, 288) = 0.949$, $p = .477$; the more robust Pillai's Trace agreed, $V = .051$, $F(8, 290) = 0.949$, $p = .476$. The univariate tests were likewise non-significant for both career aspirations, $F(4, 145) = 1.285$, $p = .279$, $\eta^2 = .034$, and self-esteem, $F(4, 145) = 0.799$, $p = .527$, $\eta^2 = .022$. Age did not predict either outcome; Hypothesis 3 was not supported. This null result should be read in Light of the highly unequal and, in the older bands, very small cells (n = 9, 9, and 1), which leave the analysis underpowered to detect age effects.

H4: Organisational Support as a Moderator

Predictor	B	SE	t(146)	p
Constant	77.99	0.91	85.60	<.001
Gender bias (SSEQ, centred)	0.212	0.047	4.55	<.001
Org. support (POSS, centred)	-0.061	0.044	-1.40	.163
Bias × Support	0.001	0.002	0.74	.460

Note. Outcome = self-esteem (ISE; reverse-scored). Model $R^2 = .154$, $F(3, 146) = 8.83$, $p < .001$; interaction $\Delta R^2 = .003$, $F(1, 146) = 0.55$, $p = .460$.

Simple slopes of perceived gender bias on self-esteem (ISE) at three levels of perceived organisational support:

Level of support	Slope (B)	SE	t(146)	p
Low (M − 1 SD = 39.1)	0.180	0.073	2.46	.015
Average (M = 61.3)	0.212	0.047	4.55	<.001
High (M + 1 SD = 83.6)	0.243	0.052	4.71	<.001

Note. A positive slope indicates that higher perceived gender bias is associated with lower self-esteem at that level of support.

Perceived gender bias again predicted lower self-esteem, B = 0.212, $p < .001$, but perceived organisational support did not, B = -0.061, p = .163. Critically, the bias × support interaction was non-significant, B = 0.001, SE = 0.002, t(146) = 0.74, p = .460, adding negligible variance ($\Delta R^2 = .003$). As the simple slopes show, the association between bias and lower self-esteem was of similar magnitude at low, average, and high levels of support. Hypothesis 4 was not supported.

7. Discussion

This study examined how perceived gender bias relates to the self-esteem and career aspirations of women in STEM in Lagos, and whether perceived organisational support moderates the bias–self-esteem relationship. Consistent with Hypothesis 1, perceived gender bias was significantly associated with lower self-esteem ($r = .364$, $p < .001$) and remained a significant predictor in regression, accounting for about 13% of the variance. This converges with evidence that women who report more gender bias score lower on self-esteem and higher on distress (Settles et al., 2016; Cokley et al., 2015). The result reflects the cost of unfavorable social comparison. When a woman's STEM in-group membership is devalued, the negative comparison is likely to be incorporated into her self-concept, potentially lowering her self-esteem (Tajfel & Turner, 1979). The finding supports the study's central claim that bias is not only a structural barrier but a psychological stressor that reaches identity and self-worth. With this finding, women with innovative ideas in artificial intelligence may be unappreciated and overlooked, which may demotivate efforts to embrace emotional intelligence as an innovative tool.

Contrary to expectation, however, perceived gender bias was unrelated to career aspirations ($r = -.017$; $\beta = -.017$, $p = .84$), so Hypothesis 2 was only partially supported. This diverges from work reporting that bias narrows women's STEM aspirations (Correll, 2004; Moss-Racusin et al., 2012). Two cautions temper this null result. First, the Career Aspiration Scale showed weak internal consistency in this sample ($\alpha = .62$), which attenuates observed associations and limits

confidence in the aspiration findings. Second, the sample was predominantly early-career, a stage at which aspirations may be uniformly high and therefore restricted in variance. The bias–aspiration relationship in this population should be re-examined with a more reliable measure before firm conclusions are drawn. However, with partial support of our hypothesis, One may say that aspiring a career in technology and artificial intelligence may not be that appealing, as women are not properly appreciated in the workplace, going by this finding and may thus slow down the rate at which artificial intelligence is adopted among women.

Age did not predict career aspirations or self-esteem (Hypothesis 3). Although some longitudinal work reports that younger women hold stronger aspirations that erode with accumulated experiences of discrimination (Xu, 2017; Diekman et al., 2010), the present data show no such effect. This is best read cautiously rather than as evidence against an age relationship, because the older age bands contained very few participants (n = 9, 9, and 1), leaving little Power to detect differences.

Finally, contrary to Hypothesis 4, perceived organisational support did not moderate the bias–self-esteem relationship; the interaction was small and non-significant (B = 0.001, p = .46), and the link between bias and lower self-esteem was comparable across low, average, and high support levels. Perceived support was also uncorrelated with self-esteem (r = .009). These results do not support the expectation, drawn from work on supportive climates and mentorship (Ragins & Kram, 2007; Kanter, 1977), that organisational support buffers the psychological impact of bias in this setting. One interpretation is that generalised organisational support is too distal to offset a specifically gendered stressor. That targeted, identity-relevant support, for example, mentoring by senior women or explicit anti-bias practices, may be needed to alter the bias–self-esteem link. Notably, perceived bias and perceived support were themselves positively correlated (r = .37), suggesting that the women reporting more bias were not simply those in unsupportive organisations; this pattern warrants further investigation.

8. Limitations

There are some limitations of this study to acknowledge: first, the cross-sectional design precludes causal inference; hence, the relationships observed are associational. Second, convenience sampling and the single-city setting limit the generalizability of the findings: the results speak to women in urban Nigerian STEM workplaces and should not be taken to represent all women in STEM. Third, the sample was small and unevenly distributed across age and sector, leaving some analyses, most notably the age comparison and the moderation test, underpowered. Fourth, two measures showed less-than-ideal internal consistency in this sample (the Career Aspiration Scale, $\alpha = .62$, and the Index of Self-Esteem, $\alpha = .70$), which limits the validity of the findings involving them. Finally, all measures were self-reported and therefore subject to common-method and social-desirability biases, and the moderator was a generalised, rather than gender-specific, measure of support. Future research would benefit from larger, probability-based and longitudinal samples, more reliable and identity-relevant measures, and multi-site replication across Nigerian and other African contexts.

9. Conclusion

This study examined the relationship between perceived gender bias and self-esteem among women working and studying in Science, Technology, Engineering, and Mathematics (STEM) fields in Lagos, Nigeria. The findings underscore the persistent influence of gender-related challenges within STEM environments and their implications for women's psychological well-

being. Despite increasing participation of women in STEM disciplines, perceptions of unequal treatment, discrimination, stereotypes, and limited opportunities continue to shape their professional and academic experiences. This would undermine our embrace of artificial intelligence in national development. The study revealed that perceived gender bias is associated with variations in self-esteem among women in STEM, suggesting that such experiences may negatively affect individuals' sense of self-worth, competence, and confidence. Women who reported higher levels of perceived gender bias were more likely to experience lower levels of self-esteem, highlighting the psychological consequences of gender-based inequalities. These findings support existing theoretical and empirical literature that emphasizes the role of social and organizational environments in shaping self-perceptions and personal development. Furthermore, the study contributes to the growing body of knowledge on gender issues in STEM within the Nigerian context, where research in this area remains relatively limited. It highlights the need for institutions, employers, policymakers, and professional bodies to develop and implement gender-inclusive policies, mentorship programs, and supportive workplace cultures that reduce discrimination and promote equal opportunities for women. Thus, addressing gender bias in STEM is not only a matter of social Justice but also a critical strategy for enhancing women's self-esteem, professional growth, and overall participation in scientific and technological advancement. Hence, creating equitable and supportive STEM environments will contribute to the empowerment of women and the sustainable development of Nigeria's scientific and innovation sectors. The study demonstrated that gender bias was associated with lower self-esteem among women in STEM in Lagos, although this was not related to career aspirations; age predicted neither outcome; and perceived organisational support did not buffer the bias–self-esteem relationship. The clearest message is that the harm of gender bias in this sample was psychological, registering on self-worth rather than on stated aspirations. The expected protective role of general organisational support was not borne out; these findings argue for interventions that address bias directly and strengthen women's self-concept, and for replication with more reliable measures and larger, more diverse samples.

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