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Addressing Gender Bias in Choosing Professional Fields: A Holistic Approach to Student Success

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Abstract

The aim and objective of this research is to understand and mitigate the impact of gender bias with the help of parents and educational institutions for addressing gender bias. However, this study considered the opinions of students about their gender-related perceptions and their parents' stereotypical beliefs related to the field of studies. It is a fundamental qualitative cross-sectional case study within a conflict theoretical framework. Twenty in-depth interviews were conducted for data collection. In this study, the universe is Karachi. The data was analyzed through the thematic analysis method. It was concluded that gender-related perceptions of intelligence and capability influence students' self-esteem and motivation. Parents and educational institutions can play a role in addressing and mitigating the impact of gender-related perceptions on students. Parents can motivate their children and increase their confidence, while educational institutions can arrange workshops, conduct seminars, and implement comprehensive gender education. The study's overall conclusion highlights the importance of eradicating gender stereotypes and promoting an environment that is more equal for all students. Stakeholders should assist children in achieving their full potential by comprehending the effects of gender bias and taking action to address them.

Keywords: Gender Bias, Student Success, Parental Influence, Educational Institutions.

Introduction

In the 21st century, gender equality is a well-known approach in almost all institutions. However, students still face many barriers in selecting specific fields and subjects due to gender bias (Ismatullina et al., 2022). Sociocultural norms influence the confidence and interest of students (Chan, 2022). Particularly, parents' beliefs and attitudes regarding gender roles and intelligence influence their children's confidence (McCoy et al., 2021). The World Economic Forum releases a report on the gender gap every year. Even in 2024, Pakistan ranks second last (Firdous, 2024). The gender gap in society originates from gender bias. This gender bias exists in people's minds (Wang, 2023).

Gender is a social construction that defines people's actions, attitudes, and behavior (Channa et al., 2020). Gender means dividing people into groups. This division intensifies the difference among people of different genders. It solidifies gender bias (Wang, 2023). Gender bias impacts field selection (Charlesworth & Banaji, 2019). After the fourth industrial revolution, workers in some specific fields (science, technology, engineering, and math) are more in demand. It will support economic development and human development. So many countries have taken the initiative to promote enrolment in these fields (Kayan-Fadlelmula et al., 2022). Although the female enrollment rate is increasing, a gender gap exists in specific fields (Aidy et al., 2021).

Gender equality and education equity are essential components of sustainable development goals (Wang et al., 2023). In primary school, the gender gap in specific fields and subjects is widespread (Bridge, 2022). Male students are more likely to select natural science. Female students are more likely to select the humanitarian and social sciences fields (Okanda et al., 2021). Males are underrepresented in female-dominated fields such as language (Chaffee & Plante, 2022). Female students underestimate their abilities in some specific fields because those fields are considered male-dominated fields (Halpern et al., 2007). Interest in a field and a student's confidence create a better educational journey (Ceylan et al., 2023).

There is a need to increase interest in a specific gender to increase the quantity of that gender in a specific field (Llorens et al., 2021). Parents play an essential role in their children's education (Chaffee & Plante, 2022). Parents and educational institutions also indirectly impact the interest of students in specific fields (Alam & Mohanty, 2023). Students seek guidance and approval from their parents in field and subject selection (Chaffee & Plante, 2022). Parents with traditional gender bias regulate the behavior of their children to confirm the prevalent gender bias (Starr & Simpkins, 2021). Parents' stereotypical beliefs can color the educational choices of students (Chaffee & Plante, 2022).). Stereotypical beliefs created in childhood impact career choice in future (Alvarenga & Braga, 2024). Stereotypical behavior in educational institutions impact negatively too (Chatzi & Kourousis, 2024).Teachers with bias about gender competence may lead towards gender inequality in classrooms and transmit gender bias in students through course instructions (Sigurdardottir et al., 2022). Moreover, the way males and females are represented in textbooks can directly or indirectly convey the gender bias (Yanti & Wirza, 2022). There is a need to address the impact of various social and environmental factors on student performance (Blackwell et al., 2007). Past studies have found that parental influence has a more significant effect on students' gender stereotyping behavior and career choices in Pakistan (Hassan et al., 2022).

There is a lack of female representation related to STEM field in teaching material (Lindner & Makarova, 2024). Another study found that course pedagogy and gender influence students'

motivation and engagement in some specific fields and subjects. Understanding these interconnections is crucial for effective teaching strategies (Stolk et al., 2021). The challenges faced by students due to gender bias is far from sufficiently addressed (Kapareliotis & Miliopoulou, 2019). More research is needed regarding occupational gender stereotypes too (Basfirinci et al., 2019).

Research Questions

- Are there specific subjects or fields of study where gender-related perceptions play a more significant role in shaping students' confidence?
- How do parents' stereotypical beliefs and attitudes regarding gender roles and intelligence influence their children's confidence in educational and career choices?
- What role educational institutions should play in addressing and mitigating the impact of gender-related perceptions on students' confidence?

Literature Review

The researchers reviewed past studies on this social problem. Previous studies have shown that parents also significantly impact a child's confidence in their studies (Bridge, 2022; Ching et al., 2023; Ma, 2023). There is a need for improved career guidance in educational institutions (Parkar & Chaudhari, 2023).

Gender disparity and specific fields

Gender stereotypes impact cognitive abilities, intrinsic motivation, and self-perception in science, technology, engineering, and math. Female students consider themselves less capable in math and science (Ismatullina et al., 2022). Moreover, teachers and parents often underestimate the abilities of female students regarding science, technology, engineering, and math. Parents and teachers overestimate the abilities of male students regarding science, technology, engineering, and math. That is how parents and teachers reinforce gender stereotypes (Sainz et al., 2020).

Motivational factors were also discussed in past studies. According to Stolk et al. (2021), there is a need to understand the interplay between course pedagogy, gender, and situational-level motivations. It will help teachers create a more inclusive environment because motivations play a significant role in selecting science, technology, engineering, and math fields. Moreover, according to Hofer et al. (2022), female students need more explicit competence support because perceived autonomy support is necessary for students of both genders in math.

According to Tandrayen-Ragoobur and Gokulsing (2021), in tertiary education, self-efficacy, academic performance, family school, and teacher support impact students' interest in science, technology, engineering, and math. A review of all these past studies provides direction for addressing gender disparity in science, technology, engineering, and math. There is a need to challenge stereotypes and foster positive self-perception. Teachers should create a supportive learning environment.

Parental Influence

Parents play a significant role in shaping a child's self-esteem and future. A mother's mindset can influence her parenting style, impacting a child's view of intelligence. In some cultures, parents, especially fathers, can limit educational and career options for girls.

Some past studies specifically focused on parents' gender biased influence on students' motivation about choosing a profession. Lee et al. (2022) used an intervention for parents. It showed positive results. According to them, a parent's growth mindset and gender-neutral perception can indirectly improve the motivation of their child to study math. Therefore, parents should change their stereotypes and expectations.

Some past studies focused on the influence of parents on gender stereotypes. For example, according to Hassan et al. (2022), the influence of parents has a significant impact on gender stereotyping behavior and the career choice of their child. Moreover, Xie et al. (2022) focused on parental mindset and children's math anxiety. According to them, parents' intelligence mindset indirectly impacts children's math anxiety through parents' failure beliefs and evaluations of the child's math performance.

Improving Educational and Career Guidance:

Previous studies recommended better career counseling in schools, with trained professionals and revised curriculums to guide students towards informed career decisions. This can empower students and contribute to economic growth. According to Parkar and Chaudhari (2023), there was a significant association between self-esteem and gender roles and responsibility among women. They have forecasted that maturity arises with age and financial independence, which leads to self-esteem and perception towards gender roles and responsibilities can be, improved (Parkar & Chaudhari, 2023).

The researchers also summarized the methodologies used in past studies related to gender disparity and specific fields. Some past studies selected the survey method. For example, Ismatullina et al. (2022) have collected data on gender stereotypes, cognitive abilities, self-perception, and intrinsic values of Russian school students through the survey. Hofer et al. (2022) conducted an online survey to assess perceived self-determination, engagement, and performance in math.

Tandrayen-Ragoobur and Gokulsing (2021) employed a survey of undergraduates to investigate gender disparity in the fields of science, technology, engineering, and math in tertiary education in Mauritius. Some past studies used statistical analysis. For example, Ismatullina et al. (2022) used network analysis to identify the structure of psychological traits and stereotypes about science, technology, engineering, and math. Tandrayen-Ragoobur and Gokulsing (2021) have used regression to analyze the factors influencing the selection of science, technology, engineering, and math fields.

Some past studies used the qualitative method. For example, Sainz et al. (2020) have conducted focus group discussions with secondary teachers and parents to explore their perceptions of gender disparity in science, technology, engineering, and math. The researchers also summarized the methodologies used in past studies related to parental influence. Different studies used different strategies. However, most of the studies were quantitative. There is a lack of qualitative research on this issue. For example, Lee et al. (2022) used a cluster-randomized control trial to study how interventions aimed at parents and students impact the motivation of children about math. MANCOVA, univariate ANCOVA, and structural equation modeling analyzed the data.

Hassan et al. (2022) conducted a survey to study how parental influence and media richness impact gender stereotypes and students' career decisions. Data was analyzed using regression analysis with SPSS software. Xie et al. (2022) conducted a correlational study and analyzed the data to explore the correlation and mediation effect between variables. At the same time, the variables were parents' intelligence mindset and children's math anxiety. Peixoto et al. (2023) used structural equation modeling to study how parental beliefs and involvement practices are associated with children's math motivation and achievement.

The literature review suggests that gender bias play a significant role in shaping students' confidence in educational and career choices. Addressing this gender bias requires a holistic approach. Therefore, this study aims to determine the influence of parents' belief and attitude on their children's confidence in

educational and career choice. This study will contribute to this body of literature by providing empirical evidence and students' perceptions on the specific mechanism though which parental belief and attitude shape students' confidence. This research will add to the understanding of how parental influence can influence students' professional field choice.

Methodology

This is primary research because the researchers were not relying only on existing data sources. The researchers collected original data from the primary source to answer the specific research questions. This is qualitative research. Qualitative research method suits holistic approach research because qualitative research method allows the researchers to study the complexity of a social phenomenon. Qualitative research considers the whole of a phenomenon, rather than just its parts, and the complex interconnectedness among all parts. There is a lack of a holistic approach to student success for addressing gender bias. Therefore, this study considered students' opinions about their gender-related perceptions and their parents' beliefs related to the field of studies. This study also considered the role of educational institutions in solving this social problem.

Study area: A study area is a geographical boundary where a researcher plans to conduct research. In this research, the researchers selected the study area at the beginning of the research to ensure that data is limited to a specific area. The researchers selected a city named "Karachi" of a country named "Pakistan" as the study area in this research.

Population and Sampling: A specific group of people that are the target of a study is called the population. The population of this study consisted of university students. The sample size was twenty students. The sampling method was the purposive sampling method. The researchers intentionally selected respondents with university-level educational backgrounds.

Data collection method: The researchers conducted in depth interviews in Urdu language with a small number of respondents to know their opinions in detail. The data was first transcribed, then translated into the English language.

Data collection tool: The researchers used a semi structured interview guide as a data collection tool to focus and organize the line of thinking and questioning during the interview. The researchers asked questions related to their demographic data. Then the researchers asked questions in accordance with the research questions of this research.

Data analysis method: The researchers used the thematic analysis method to analyze the data manually.

Results and Discussion

This research was conducted as a holistic approach to student success for addressing gender bias in Karachi, Pakistan. Demographic data of students is presented in Table 1.

Table 1: *Demographic Data of Students*

Case	Age	Gender	Ethnicity	Employment Status
1.	27	Female	Urdu speaking	Unemployed
2.	24	Female	Urdu speaking	Unemployed
3.	23	Female	Pathan	Unemployed
4.	21	Female	Urdu speaking	Unemployed
5.	23	Female	Hazara	Employed part-time
6.	21	Female	Gilgit	Unemployed
7.	21	Female	Hazara	Unemployed
8.	25	Male	Brahui	Employed part-time
9.	20	Female	Urdu speaking	Unemployed
10.	23	Female	Sindhi	Unemployed
11.	23	Female	Hindko	Unemployed
12.	21	Male	Punjabi	Employed full-time
13.	22	Female	Pathan	Unemployed
14.	21	Male	Sindhi	Unemployed
15.	23	Female	Gilgit	Unemployed
16.	21	Female	Urdu speaking	Employed part-time
17.	21	Male	Baloch	Unemployed
18.	22	Female	Kashmiri	Unemployed
19.	20	Female	Pathan	Unemployed
20.	21	Female	Urdu speaking	Employed part-time

Themes: After analysis, three themes emerged from the data. Those three themes are:

1. specific subjects and fields
2. parental influence
3. role of educational institutions

Specific Subjects and Fields: According to respondents, there are some specific subjects or fields of study where gender-related perceptions play a more significant role in shaping students' confidence and motivation. There are specific subjects or fields for girls, like teachers, doctors, makeup artists, tailors, and home economics. There are specific subjects or fields for boys, like technology, engineering, mathematics, flying control of aircraft, and armed forces.

For example, Case 1 identified social pressure regarding career choices. In her words:

"Due to societal pressures, people sometimes believe that there are specific subjects or fields decided for girls, such as teacher, doctor, chemist, seamstress, etc., and they do not believe that girls can be engineers, police, and mechanics too."

Moreover, Case 5 brought up a valid point about gender stereotypes in subjects and their impact on confidence. In her words:

"Commonly, subjects like technology, engineering, and mathematics are those subjects that are set mostly for boys, not girls in our society; similarly, nursing and the arts fields are said to be suitable for females, which discourages boys from joining these fields, and thus girls and boys both get their confidence low because if the people set these stereotypes."

However, Case 10 shared a positive perspective on the changing landscape of the Pakistani bureaucracy regarding gender. In her words:

"If we look at our bureaucratic system, there were only a few groups where girls could go, but now it has changed because when you are capable of doing all that motivates, neither boys nor girls are superior, and that motivation makes an individual unstoppable."

Furthermore, Case 16 brought up some interesting points about gender and career choices in Pakistan. In her words:

"There are very few male gynecologists because it is a more woman-dominated field. Men are not likely to take economics home as their subject in a country like Pakistan."

Similarly, Case 19 brought up some points about gender-related perceptions and students' confidence and motivation about career choices in Pakistan. In her words:

"I believe that gender-related perceptions play a more significant role in shaping students' confidence and motivation in engineering, flying control of aircraft, and armed forces. Because in our society, girls are not allowed to join these fields as professions."

Parental Influence: Respondents shared how parents' beliefs and attitudes regarding gender roles and intelligence influence their children's confidence and motivation in educational and career choices. According to them, not only does parental bias affect children's confidence, but sometimes, gender bias and parents' potential overprotectiveness intersect.

For example, Case 2 shared how parental attitude impacts a child's career choices. In her words:

"If parents do not have a good attitude towards their children, then the children will not be able to discuss their problems with them or share their thoughts with them. If parents motivate their children and increase their confidence level, then their career will be secure, and they will try to move forward."

Moreover, Case 5 brought up an important point about parental bias and its impact on children's confidence. In her words:

"Parents, based on gender, judge their child's abilities, and the child cannot become confident. For example, parents may believe their daughter is intelligent and hardworking enough to win in any field. Parents don't let their son get into hard subjects where he cannot easily pass the exams, which leads to lower confidence in boys."

Furthermore, Case 6 highlighted a complex situation where gender bias and the potential overprotectiveness of parents intersect. In her words:

"My father has been in a political party for 20 years. My mother told me to enter my father's field and contest elections. When I shared these thoughts with my father, he stopped me from joining the party and said, 'There are bad people in the party who ruin girls from good families. After completing your studies at the university, go into some other field.'"

Additionally, Case 17 brought up an interesting point about parental experiences and their impact on supporting a child's education. In his words:

"If a parent is uneducated and their child is interested in learning, the parent's attitude towards the child may change. However, if the parent is educated, they are more likely to support the child's educational goals. In my case, my parents are educated and supportive of my educational goals. However, if I stop pursuing your education, my parents may become less supportive and withdraw their love and support."

Coping Mechanisms: Respondents shared some coping mechanisms that students employ to counteract negative gender-related perceptions and boost their self-esteem and motivation. For example, they engaged in emotional manipulation, got help from friends, and gave examples of successful people. A respondent stopped eating, locked herself in her room, threw things, stopped talking to anyone, refused to meet or interact with guests, and cried and begged. These tactics were effective in getting parents to change their minds.

For example, Case 3 highlighted a complex situation where family dynamics and financial limitations intersect with educational aspirations. In her words:

"My parents were not allowing me to continue my education. I went to my cousin and cried; she paid for my university tuition with her own money. This forced my parents to accept my decision, and they now pay my tuition every semester out of their salaries."

Moreover, Case 7 highlighted a situation where parental restrictions based on gender roles limited educational opportunities. In her words:

"My friend was not allowed to continue her education after high school because her parents thought the university environment was bad. They thought it was inappropriate for boys and girls to be together. However, we convinced them, and they allowed my friend to attend university. She was able to get admission."

Furthermore, Case 8 brought up an interesting point about the power of role models in shaping career aspirations. In his words:

"In our society, students have to give examples of successful people to make their careers successful and to counter negative thoughts so that they can also get a chance to make their career."

Additionally, Case 11 highlighted an unhealthy approach to gaining permission to study. In her words:

"When I was being stopped from studying, I had done many things, such as not eating and drinking. I locked myself in my room. Sometimes, I threw things. I stopped talking. I stopped meeting guests, and only after that did I get permission to study again, while my father did not want me to go to university."

Role of Educational Institutions: According to respondents, educational institutions should play a role in addressing and mitigating the impact of gender-related perceptions on students' self-esteem and motivation. Educational institutions should arrange workshops, conduct seminars, and even, through social media, guide parents according to modern times. They should play a

role in identifying and reducing gender-related stereotypes that can affect students' self-esteem and confidence. They should counsel children and parents, who are essential at the school level. They should implement comprehensive gender education by incorporating gender education into the curriculum. They should raise awareness about gender-related issues, stereotypes, and bias. It can help students better understand gender roles and encourage critical thinking.

For example, Case 1 highlighted educational institutions' positive role in promoting parental education and support. In her words:

"There are many educational institutions in which they give parents counseling. They arrange workshops and parent-teaching meetings. Moreover, even through social media, they guide parents according to modern times."

Similarly, case 2 highlighted the crucial roles of educational institutions in combating gender stereotypes and fostering a more inclusive learning environment. In her words:

"These institutions must operate inclusively and equitably so that every student can feel confident and capable and achieve their goals."

Moreover, Case 13 brought up a point about the importance of early intervention and creating a well-rounded school experience. In her words:

"I feel like counseling children and parents is really important from school levels, and activities of all sorts should be conducted so kids can participate and find their interests. Ad campaigns are beneficial in such cases, etc."

Furthermore, Case 16 raised a point about the role of educational institutions in promoting gender equality. In her words:

"The education sector should organize workshops on gender equality policies, and youth should be made aware of gender roles and how they affect them. They should help the youth change their perceptions of gender inequality."

Additionally, Case 20 shared some benefits of integrating comprehensive gender education into the curriculum. In her words:

"By implementing comprehensive gender education and incorporating gender education into the curriculum, schools can raise awareness about gender-related issues, stereotypes, and biases. This education can help students better understand gender roles and encourage critical thinking."

In this study, researchers addressed gender bias. It highlighted the importance of equitable and inclusive educational and career development approaches. The result of a study showed that gender stereotypes impact the perception of girls about math (Ismatullina et al., 2022). Another study found a lower level of interest in female students in math, although there was no significant difference in the math performance of both male and female students (Hofer et al., 2022). However, results of a study suggest that stereotypes that language and arts are not for boys push them instead toward mathematics (Chaffee & Plante, 2022). However, another study showed that the gender gap is not limited to a specific field (Fielder et al., 2024).

Furthermore, the results of one study support the notion that gender expectations are more rigid for boys than girls, preventing men from entering many female career paths (van der Vleuten et al., 2016). A study found a change in the relation of gender and managerial preconception over the ten year course of that study (Berkery & Ryan, 2023). Another study found that parents, educational institutions, and teacher support can positively impact female

students' decisions about selecting the fields of science, technology, engineering, and math (Tandrayen-Ragoobur & Gokulsing, 2021). A study also highlighted the unique role of parental beliefs in traditional gender roles for boys' motivation and career aspirations. This emphasizes that research on gender differences in female-dominated environments should consider stereotypes about appropriate behavior and social roles played by boys (Chaffee & Plante, 2022).

Another study found that both parents recognize the underestimation of female students' abilities in science, technology, engineering, and math due to sociocultural factors (Sainz et al., 2020). Similarly, a study revealed that parents of girls tend to hold gender stereotypes about girls' abilities in STEM subjects. This misconception will severely damage a girl's personal potential and prevent her from going further into STEM fields (Sun, 2023). A parent's timely support and guidance can work wonders. Parental encouragement can help the child overcome various difficulties in life, especially in academics (Narad & Abdullah, 2016).

Parental growth mindset and gender-fair beliefs can indirectly improve children's math motivation through changes in their stereotypes and expectations (Lee et al., 2022). Parents' math attitudes and fixed mindsets can influence their involvement practices, affecting children's perceptions of math value and cost, ultimately impacting motivation and achievement (Peixoto et al., 2023). Interventions targeting parents can weaken their gender stereotypes regarding specific fields of study.

Conclusions and Recommendations

There are some variations in the perception of intelligence and capability based on gender in our society that affect children's self-esteem and motivation in educational and career choices. Parents' beliefs and attitudes regarding gender roles and intelligence influence their children's confidence and motivation in educational and career choices. Although parents often encourage their son to seek jobs in engineering or do business. At the same time, daughters are encouraged to pursue careers in teaching or healthcare. Sons are not expected to help as much with cooking and cleaning as daughters are.

Nonetheless, some parents have encouraged their daughters to pursue careers in traditionally male-dominated sectors such as computer science. These parents deliberately oppose gender stereotypes, which can affect one's self-esteem about educational and career choices. Respondents also believe that parents and educational institutions can play a role in addressing and mitigating the impact of gender-related perceptions on students. Parents can motivate their children and increase their confidence, while educational institutions can arrange workshops, conduct seminars, and implement comprehensive gender education.

The study's overall conclusions highlight the importance of eradicating gender stereotypes and promoting an environment that is equal for all students. Stakeholders can assist children in achieving their full potential by comprehending the effects of gender-related perceptions and taking action to address them. Parents should encourage their children to explore their interests, regardless of gender stereotypes. Parents should praise their children for their intelligence, hard work, and accomplishments, regardless of gender. Parents should be role models for their children by challenging gender stereotypes in their own lives. Parents should talk to the children about gender-related perceptions and how they affect self-esteem and motivation.

Educational institutions should implement comprehensive gender education into the curriculum (Chan, 2022). Educational institutions should raise awareness about gender-related issues, stereotypes, and biases. Educational institutions should create a

supportive and inclusive environment for all students. Educational institutions should challenge gender stereotypes in the classroom and extracurricular activities (Chan, 2022). Educational institutions should provide students with opportunities to learn about and be inspired by successful people of all genders (Chan, 2022). By working together, parents and educational institutions can help students develop a positive self-image and pursue their dreams, regardless of their gender. Further research should be conducted to explore regional and cultural variances in these dynamics.

Conflict of Interest

The authors showed no conflict of interest.

Author Contributions

Dr. Muhammad Yaseen: Conceptualization (equal), Methodology (equal), Qualitative Analysis, Writing –original draft, Writing –review & editing

Syed Saba Hashmi: Conceptualization (equal), Methodology (equal), Quantitative Analysis, Writing –review & editing

References

Aidy, C. L., Steele, J. R., Williams, A., Lipman, C., Wong, O., & Mastragostino, E. (2021). Examining adolescent daughters' and their parents' academic-gender stereotypes: Predicting academic attitudes, ability, and STEM intentions. *Journal of Adolescence*, *93*(1), 90–104. https://doi.org/10.1016/j.adolescence.2021.09.010

Alam, A., & Mohanty, A. (2023). Cultural beliefs and equity in educational institutions: Exploring the social and philosophical notions of ability groupings in teaching and learning of mathematics. *International Journal of Adolescence and Youth*, *28*(1). https://doi.org/10.1080/02673843.2023.2270662

Alvarenga, C., & Braga, C. (2024). Assessing the effects of gender stereotype in STEM in a Brazilian university. *EconomiA*.Basfirinci, C., Cilingir Uk, Z., Karaoglu, S., & Onbas, K. (2019). Implicit occupational gender stereotypes: a research among Turkish university students. *Gender in Management: An International Journal*, *34*(2), 157-184.

Berkery, E., & Ryan, N. F. (2023). Think manager–Think male or female: exploring the content of gendered stereotypes of the managerial role among undergraduate business students in Ireland over a 10-year period. *Gender in Management: An International Journal*, (ahead-of-print).

Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development*, *78*(1), 246–263. https://doi.org/10.1111/j.1467-8624.2007.00995.x

Bridge, L. (2022, May 1). *Male hubris, female humility: How schools can close the gap*. The Educator K/12. https://www.theeducatoronline.com/k12/news/male-hubris-female-humility-how-schools-can-close-the-gap/280101

Chan, R. C. (2022). A social cognitive perspective on gender disparities in self-efficacy, interest, and aspirations in science, technology, engineering, and Mathematics (STEM): The influence of cultural and gender norms. *International Journal of STEM Education*, *9*(1). https://doi.org/10.1186/s40594-022-00352-0

Ching, B. H.-H., Li, X. F., & Chen, T. T. (2023). Longitudinal links between parental failure mindsets, helicopter parenting, and fixed mindset of intelligence in adolescents. *Journal of Youth and Adolescence*, *52*(10), 2196–2213. https://doi.org/10.1007/s10964-023-01815-5

Ceylan, G., Eken, M. O., Yuruk, S., & Emir, F. (2023). Examining the influence of self-esteem and digital literacy on professional competence factors in dental education: A cross-sectional study. *Applied Sciences*, *13*(16), 9411. https://doi.org/10.3390/app13169411

Chaffee, K. E., & Plante, I. (2022). How parents' stereotypical beliefs relate to students' motivation and career aspirations in mathematics and Language Arts. *Frontiers in Psychology*, 12. https://doi.org/10.3389/fpsyg.2021.796073

Channa, A. R., Channa, K. H., & Tahir, T. B. (2020). Gendered discourse of Pakistani parents regarding professional choices for their children. *Progressive Research Journal of Arts & Humanities (PRJAH)*, 2(2), 55–64. https://doi.org/10.51872/prjah.vol2.iss2.38

Charlesworth, T. E. S., & Banaji, M. R. (2019). Gender in science, technology, engineering, and mathematics: Issues, causes, solutions. *The Journal of Neuroscience*, *39*(37), 7228–7243. https://doi.org/10.1523/jneurosci.0475-18.2019

Chatzi, A. V., & Kourousis, K. I. (2024). Investigating gender stereotypes in nursing/midwifery and engineering students in Ireland. *International Journal of Educational Research Open*, *7*, 100367. https://doi.org/10.1016/j.ijedro.2024.100367

Cherry, K. (2023, May 3). *The psychology of what motivates us*. Verywell Mind. https://www.verywellmind.com/what-is-motivation-2795378#:~:text=The%20term%20motivation%20describes%20why,get%20that%20promotion%20at%20work.

Firdous, P. M. A. A. (2024, August 1). *Where does Pakistan stand in the Global Gender Gap Report 2024?* Paradigm Shift.

Halpern, D. F., Benbow, C. P., Geary, D. C., Gur, R. C., Hyde, J. S., & Gernsbacher, M. A. (2007). The science of sex differences in science and Mathematics. *Psychological Science in the Public Interest*, *8*(1), 1–51. https://doi.org/10.1111/j.1529-1006.2007.00032.x

Hassan, M., Luo, Y., Gu, J., Mushtaque, I., & Rizwan, M. (2022). Investigating the parental and media influence on gender stereotypes and young student's career choices in Pakistan. *Frontiers in Psychology*, 13. https://doi.org/10.3389/fpsyg.2022.890680

Hofer, S. I., Reinhold, F., Hulaj, D., Koch, M., & Heine, J. (2022). What Matters for Boys Does Not Necessarily Matter for Girls: Gender-Specific Relations between Perceived Self-Determination, Engagement, and Performance in School Mathematics. *Education Sciences*, *12*(11), 775. https://doi.org/10.3390/educsci12110775

Ismatullina, V., Adamovich, T., Zakharov, I., Vasin, G., & Voronin, I. (2022). The place of gender stereotypes in the network of Cognitive Abilities, Self-Perceived Ability, and Intrinsic Values of school in school children depending on sex and preferences in STEM. *Behavioral Sciences*, *12*(3), 75. https://doi.org/10.3390/bs12030075

Hassan, M., Luo, Y., Gu, J., Mushtaque, I., & Rizwan, M. (2022). Investigating the parental and media influence on gender stereotypes and young student's career choices in Pakistan. *Frontiers in Psychology*, *13*. https://doi.org/10.3389/fpsyg.2022.890680

Hussain, S., Hussan, K. H., & Ahmed, M. (2023). Exploring the need of career counselling for choosing the career at school level in Pakistan: Parents and teachers' perception. *Global Educational Studies Review*, VIII(I), 142–153. https://doi.org/10.31703/gesr.2023(viii-i).13

Kapareliotis, I., & Miliopoulou, G. Z. (2019). Gender bias in academia: An attempt to render the intangible tangible. In *Diversity within diversity management* (Vol. 22, pp. 247-271). Emerald Publishing Limited.

Kayan-Fadlelmula, F., Sellami, A., Abdelkader, N., & Umer, S. (2022). A systematic review of STEM Education Research in the GCC countries: Trends, gaps and barriers. *International Journal of STEM Education, 9*(1). https://doi.org/10.1186/s40594-021-00319-7

Lee, H. J., Lee, J., Song, J., Kim, S., & Bong, M. (2022). Promoting children's math motivation by changing parents' gender stereotypes and expectations for math. *Journal of Educational Psychology*, *114*(7), 1567–1588. https://doi.org/10.1037/edu0000743

Lindner, J., & Makarova, E. (2024). Challenging gender stereotypes: Young women's views on female role models in secondary school science textbooks. *International Journal of Educational Research Open, 7,* 100376. https://doi.org/10.1016/j.ijedro.2024.100376

Llorens, A., Tzovara, A., Bellier, L., Bhaya-Grossman, I., Bidet-Caulet, A., Chang, W. K., Cross, Z. R., Dominguez-Faus, R., Flinker, A., Fonken, Y., Gorenstein, M. A., Holdgraf, C., Hoy, C. W., Ivanova, M. V., Jimenez, R. T., Jun, S., Kam, J. W. Y., Kidd, C., Marcelle, E., … Dronkers, N. F. (2021). Gender bias in academia: A lifetime problem that needs solutions. *Neuron*, *109*(13), 2047–2074. https://doi.org/10.1016/j.neuron.2021.06.002

Ma, M. (2023a). Exploring the relationship between gender, Family SES, and education. *SHS Web of Conferences,* p. *171*, 03003. https://doi.org/10.1051/shsconf/202317103003

Makino, M. (2022). Labor Market Information and parental attitudes toward women working outside the home: Experimental evidence from rural Pakistan. Economic Development and Cultural Change. https://doi.org/10.1086/722160

McCoy, S., Byrne, D., & O'Connor, P. (2021). Gender stereotyping in Mothers' and teachers' perceptions of boys' and girls' mathematics performance in Ireland. *Oxford Review of Education, 48*(3), 341–363. https://doi.org/10.1080/03054985.2021.1987208

Naeem, H., Sharif, S., Sharif, H., & Seemi, T. (2023). Self-esteem levels in school-going adolescents across the slums of Karachi, Pakistan: A cross-sectional analysis. *Frontiers in Child and Adolescent Psychiatry*, 2. https://doi.org/10.3389/frcha.2023.1175826

Narad, A., & Abdullah, B. (2016). Academic performance of senior secondary school students: Influence of parental encouragement and school environment. *Rupkatha Journal on Interdisciplinary Studies in Humanities*, *8*(2), 12–19. https://doi.org/10.21659/rupkatha.v8n2.02

Okanda, M., Meng, X., Kanakogi, Y., Uragami, M., Yamamoto, H., & Moriguchi, Y. (2021). *Gender Stereotypes about Intellectual Ability in Japanese Children*. https://doi.org/10.31234/osf.io/8fu2m

Peixoto, F., Mata, L., Campos, M., Caetano, T., Radišić, J., & Niemivirta, M. (2023). 'Am I to blame because my child is not motivated to do math?': Relationships between parents' attitudes, beliefs, and practices towards mathematics and students' mathematics motivation and achievement. *European Journal of Psychology of Education, 39*(2), 1561–1586. https://doi.org/10.1007/s10212-023-00774-6

Randal, C., Pratt, D., & Bucci, S. (2015). Mindfulness and self-esteem: A systematic review. *Mindfulness*, *6*(6), 1366–1378. https://doi.org/10.1007/s12671-015-0407-6

Rehman, A.-U., Khan, M. I., & Waheed, Z. (2021). Impact of socially constructed choices on female school heads' educational and career choices in Pakistan: A qualitative study. *Eurasian Journal of Educational Research*, 21(26). https://doi.org/10.14689/enad.26.10

Reilly, D., Neumann, D. L., & Andrews, G. (2022). Gender differences in self-estimated intelligence: Exploring the male hubris, female humility problem. *Frontiers in Psychology*, *p. 13*. https://doi.org/10.3389/fpsyg.2022.812483

Sakellariou, C., & Fang, Z. (2021). Self-efficacy and interest in STEM subjects as predictors of the STEM gender gap in the US: The role of unobserved heterogeneity. *International Journal of Educational Research, p. 109*, 101821. https://doi.org/10.1016/j.ijer.2021.101821

Sigurdardottir, M. S., Rafnsdottir, G. L., Jónsdóttir, A. H., & Kristofersson, D. M. (2022). Student evaluation of teaching: Gender bias in a country at the forefront of gender equality. *Higher Education Research & Development*, *42*(4), 954–967. https://doi.org/10.1080/07294360.2022.2087604

Starr, C. R., & Simpkins, S. D. (2021b). High school students' math and science gender stereotypes: Relations with their stem outcomes and socializers' stereotypes. *Social Psychology of Education*, *24*(1), 273–298. https://doi.org/10.1007/s11218-021-09611-4

Stern, M., & Hertel, S. (2020). Profiles of Parents' Beliefs about their child's intelligence and Self-Regulation: A Latent Profile Analysis. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.610262

Stolk, J. D., Gross, M. D., & Zastavker, Y. V. (2021). Motivation, pedagogy, and gender: examining the multifaceted and dynamic situational responses of women and men in college STEM courses. *International Journal of STEM Education*, *8*(1). https://doi.org/10.1186/s40594-021-00283-2

Sun, Y. (2023). The influence of gender stereotypes on Chinese international high school students' perception of self-competence in STEM subjects: A qualitative study. *Journal of Education, Humanities and Social Sciences*, 8, 2253–2261. https://doi.org/10.54097/ehss.v8i.4685

Sáinz, M., Fàbregues, S., & Solé, J. (2020). Parent and teacher depictions of gender gaps in secondary student appraisals of their academic competencies. *Frontiers in Psychology*, *11*. https://doi.org/10.3389/fpsyg.2020.573752

Tandrayen-Ragoobur, V., & Gokulsing, D. (2021). Gender gap in STEM education and career choices: what matters? *Journal of Applied Research in Higher Education*, *14*(3), 1021–1040. https://doi.org/10.1108/jarhe-09-2019-0235

van der Vleuten, M., Jaspers, E., Maas, I., & van der Lippe, T. (2016). Boys' and girls' educational choices in secondary education. The role of gender ideology. *Educational Studies*, *42*(2), 181–200. https://doi.org/10.1080/03055698.2016.1160821

Wang, N., Tan, A., Zhou, X., Liu, K., Zeng, F., & Xiang, J. (2023). Gender differences in high school student's interest in STEM careers: a multi-group comparison based on structural equation model. *International Journal of STEM Education*, *10*(1). https://doi.org/10.1186/s40594-023-00443-6

Wang, X. (2023). An investigation on gender stereotypes targeting female role on family, career and characteristics for international students through interview and IAT. *Journal of Education, Humanities and Social Sciences*, pp. 8, 963–972. https://doi.org/10.54097/ehss.v8i.4387

Xie, F., Duan, X., Ni, X., Li, L., & Zhang, L. (2022). The impact of parents' intelligence mindset on math anxiety of boys and girls and the role of parents' failure beliefs and evaluation of child's math performance as mediators. *Frontiers in Psychology*, p. *13*. https://doi.org/10.3389/fpsyg.2022.687136

Yanti, M. S., & Wirza, Y. (2022). Gender representation in the textbook for vocational school students in the Indonesian EFL settings. *ELT Forum: Journal of English Language Teaching*, *11*(3), 217–228. https://doi.org/10.15294/elt.v11i3.58723