REVIEW ARTICLE

Social Influences on Gender Differences in Academic Performance: A Review

Mindy Bao (student)[1 *]

1. Langley High School, 6520 Georgetown Pike, McLean, VA 22101, USA

*mindybao@outlook.com

Abstract

While discussions of gender differences in academic performance often emphasize biological explanations, this literature review examines how social factors, such as parents, teachers, schools, and the labor market, may play a more significant role. These factors operate through mechanisms such as social feedback, expectations, institutional bias, and stereotype threat and interact with and reinforce one another. Cross-cultural evidence demonstrates the importance of societal variations as they are related to gender gaps in academic performance and attainment: parenting styles function differently across countries, career motivations often vary more by culture than by gender, and gender roles differ significantly across societies. Further longitudinal research could clarify when gender differences in academic performance emerge and how parental influences, teacher expectations, and social feedback interact over time. Research within culturally and socioeconomically diverse groups, where different genders, cultures, and economic communities intersect in complex ways, could clarify how gender, cultural background, and socioeconomic circumstances jointly shape academic experiences and outcomes when students from different backgrounds share the same educational environment. Finally, this review argues for institutional changes in schools, labor markets, and policy, including more equitable feedback and reward systems for students' academic work and classroom participation, gender-neutral educational materials and policies, and customized community education designed to minimize gender stereotypes.

Keywords

Education Psychology, Gender Studies, Sociology, Cross-Cultural Studies, Academic Performance.

Introduction

Over at least the past fifty years, gender roles in U.S. society have changed considerably. There are many more women in the workforce, sports, and higher education now compared to thirty years ago. Women's representation in the workforce has increased by 9% since the mid-1980's, and the percentage of female high school athletes has increased by 33% since 1971. Seventeen percent more women have graduated with a bachelor's degree since the early 1980s, and enrollment in medical and law schools has also notably increased. However, these gains have not created gender equality: women's salaries continue to lag behind men's in almost every profession, there is less media coverage of women's sports, and female representation in politics is minimal.[1] Meanwhile, the number of men entering traditionally "female" roles has increased only by a marginal amount. For example, the number of male registered nurses has only increased by 5% between the mid-1980s and the mid-2010s, with an increase of only 0.5% from 2000 to 2010. In addition, the number of hours spent doing housework per week has consistently remained less than 10 hours for men, whereas women spend an average of almost double that time.

These gender roles can shape academic performance by influencing parent and teacher expectations, subject choices and school evaluations. This review focuses on gender differences in academic performance. Academic performance is characterized by achievement on exams, average test scores, cumulative measures such as grade point average (GPA), specific cognitive skill sets, and methods of learning. Gender difference is characterized by the disparity between male and female performance on these measures, as well as their responses in relative surveys. Being informed of these distinctions is a

first step for identifying what needs to be done in educational environments to improve scholastic achievement among students of all genders. Understanding how these differences emerge will help create school environments that maximize educational equality, enabling all students to achieve their potential.

An extensive literature examines gender differences in academic performance across multiple disciplines. This review focuses primarily on developmental psychology and education, drawing selectively on sociological research rather than attempting a comprehensive review of the sociological literature on gender inequalities in education. There has been a fair amount of interdisciplinary research on academic performance, covering study habits, parental involvement, teaching methods, school environment, cultural expectations, and how these factors interact. Although biological explanations are sometimes offered, the differences across cultures, economic backgrounds, and developmental stages suggest that social forces may be more influential.

The differences in academic performance between genders are not primarily due to biology, but are largely due to multiple social factors, including parenting techniques, societal expectations, and cultural influences. To establish this argument, this paper will first clarify the nature of academic differences in areas such as test grades, skills, and GPA, and how males and females differ in these areas. Secondly, the effects of social feedback and motivation on men's and women's personality traits in terms of academics and potentially career are discussed. Subsequently, parental influence and how different parenting styles factor into internalized gender roles will be explored. The review will then discuss socialization within schools, specifically how interactions with teachers reinforce gender roles and how stereotype threat can impact test scores, particularly within STEM fields. Lastly, gender differences will be reviewed in different cultural contexts, including how career choice and work habits are affected by cultural settings, and the relevance of social role theory. Through the above process, this review seeks to demonstrate how academic differences are profoundly shaped by the social environment.

Figure 1 presents the conceptual framework guiding this review. It illustrates how family, school, and broader social influences may interact within cultural and socioeconomic contexts to shape gender differences in academic performance. The following sections examine the evidence for these relationships.

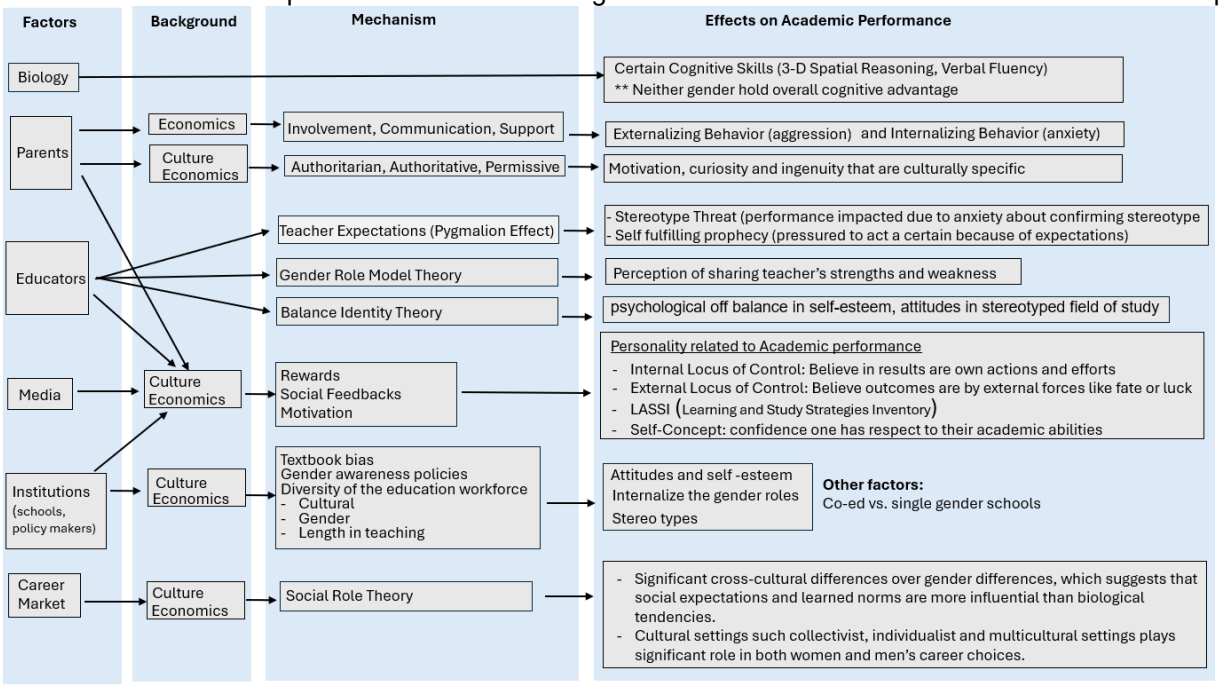


Figure 1. The conceptual model illustrates how social factors interact through developmental mechanisms to shape gender differences in academic performance, with cultural and socioeconomic contexts as the overarching framework. From early childhood at home to later experiences in schools and the labor market, students are continuously exposed to gender-biased forces, including parenting styles, rewards, social

feedback, and teacher expectations. These forces interact with and reinforce one another, forming a feedback loop that eventually contributes to gender differences in academic performance.

Gender Differences in Academic Performance

This section will clarify the nature of the academic differences, such as cognitive skills, immediate test scores, long term grade point averages (hereafter GPA), and how men and women differ in these areas. Establishing this baseline understanding provides the necessary context for the subsequent discussion of social factors.

Research shows that many of the differences between boys and girls are small, inconsistent, or limited to specific skills. One of the most frequently cited differences involves spatial reasoning, which is the ability to understand the relationship of objects in one's surroundings, particularly three-dimensional mental rotation. Studies consistently show a male advantage in this area. This is an academic area that has one of the most noticeable gender differences,[2] which men are typically known to be better at.[3] In contrast, girls tend to score higher on verbal fluency tasks.[2] These differences are highly specific and do not extend to broader cognitive domains. Research shows scarcely any contrast between the genders in general vocabulary knowledge[3] or general intelligence,[4] suggesting that neither gender holds an overall cognitive advantage. Compared to specific cognitive skills, performance in school, as measured by grades, GPA, and test scores, may provide a more comprehensive assessment of academic performance.

A study by Orabi (2007) at the University of New Haven examined 52 male and 49 female students in an engineering course. Average course grades differed by only 0.03 points, while mean scores across two exams were 80.75 for males and 81.7 for females.[5] These results suggest relatively small gender differences in performance within this particular course. However, the students' average GPAs showed a larger descriptive gap: 2.85 for males and 3.05 for females.[5] Because this study involved a small sample in a single engineering course and provided limited information about participants' backgrounds, its findings should not be generalized to the broader student population.

Broader evidence comes from Yavorsky and Buchmann (2019), who analyzed a nationally representative U.S. sample of 7,224 adolescents using survey data and linked high school transcripts. Girls had higher average GPAs than boys overall (2.76 versus 2.47), in English (2.64 versus 2.22), and in mathematics (2.37 versus 2.13). Although the study was published in 2019, its participants attended high school in the 1990s. These findings provide stronger evidence of a female advantage in course grades in that cohort, extending beyond the narrow setting of the New Haven study.[6]

The examination of gender differences and similarities in specific cognitive skills, such as spatial skills and verbal fluency, as well as more comprehensive measures of in-school performance like GPA and test scores, helps to form a foundation that allows for a more informed and nuanced discussion of the factors that influence these outcomes: personality traits, social pressure, cultural expectations, and parental influences. These various influencing factors consistently bleed into one another, making it challenging to distinguish their individual effects. For example, personality and environmental factors interact, making studies complex, and therefore, there are no generalizations that can be definitively proven.[7] However, understanding the causes of these differences through such nuanced subjects is essential for addressing inequalities in education. By identifying the root causes, society can begin to create more equal opportunities for both genders, enabling them to reach their full academic potential.[8] Although it is difficult to separate these factors from one another, the paper will attempt to understand how these factors individually and interactively contribute.

Personality, Gendered Behavior, and Social Feedback

After the landscape of academic differences is established, it is necessary to explore the factors that may contribute to such differences. Personality plays an important role in academic performance, influencing how students study, respond to challenges, and maintain motivation. Research suggests that many of the gendered differences in personality traits and learning strategies are shaped by social feedback rather than innate tendencies.

Despite the complexity, researchers have sought to classify key personality dimensions relevant to academics. Ghazvini and Khajepour (2011)[9] conducted an empirical study to investigate personality by separating personality factors into three categories: locus of control, self-concept, and learning strategies. Their research involved 363 students between the ages of 15 and 18, with 176 males and 187 females.

To determine students' locus of control, the researchers used the locus of control scale (LCS). There are two categories of locus of control: internal and external. Internal locus of control refers to the belief that life outcomes are primarily the result of one's own actions and efforts. In contrast, an external locus of control refers to the belief that outcomes are determined by external forces like fate or luck, which often leads to taking less personal responsibility. According to the LCS, females demonstrated a stronger internal locus of control, whereas there was little difference between males and females in external locus of control. This indicates that while both males and females believe in luck to some similar degree, female students have a stronger belief in their own efforts in academic performance.

Academic self-concept refers to the confidence one has specifically in respect to their academic abilities.[10] To assess students' self-concept, researchers designed a questionnaire for them to fill out. Both genders received remarkably similar scores on the academic self-concept questionnaire.

The most pronounced differences emerged in learning strategies. Researchers used the Learning and Study Strategies Inventory (LASSI) to examine the differences in students' learning strategies. The data indicated that females took more accountability for their learning and demonstrated better attitudes, time management skills, and motivation. Males, on the other hand, more effectively utilized strategies related to concentration, information processing, and selecting main ideas. The LASSI results reflect broader performance distinctions, such as female superiority in literature and males scoring better marks in mathematics.

However, these personality traits, locus of control, self-concept, and learning strategies are not formed in a vacuum. Schober and Finsterwald (2016)[11] conducted a study that provides insight into how social feedback could influence the personality traits of boys and girls differently. The research, which looked at 244 students and their success in mathematics, found that a girl who does not understand the material right away but puts in a lot of effort into school does better than a girl who innately understands the material right away but does not put a lot of effort into school. Conversely, boys in the study exhibit opposite tendencies, with innate understanding being a stronger factor of success than effort. This divergence leads to quite different feedback cycles between the genders: girls are more frequently praised for their effort, while boys are more often praised for their innate talent. Such social influence subsequently shapes motivation: girls learn to value persistence, and boys potentially develop a reliance on perceived ability.

Beyond individual personality traits and learning strategies, gendered patterns of behavior may also be associated with academic performance. Yavorsky and Buchmann (2019) examined gender typicality, measured by how closely students' reported behaviors resembled those more common among boys or girls in their sample. Boys with moderately gender-atypical behavior had the highest predicted overall GPAs, whereas increasingly male-typical behavior was associated with lower GPAs. Among girls, predicted overall GPAs peaked at slight gender typicality, with smaller differences across the scale. These associations connect gendered behavioral patterns directly to academic performance, although they do not establish that gender typicality causes differences in achievement.[6]

The findings from these studies above indicated a strong tendency that the differences between men's and women's personality traits in terms of academics and potentially career are significantly affected by feedback and motivations from society. Differences in academic outcomes are therefore closely tied to how boys and girls are encouraged, supported, and evaluated by the people around them. By understanding such a tendency, schools should begin to create more equitable and gender neutral motivational and feedback frameworks to better shape personality factors, thus maximizing the potential of both male and female students in all academic areas.

Parents as the Foundation of Social Influence

Parents play a central role in shaping children's behaviors, beliefs, and academic outcomes. This section discusses different parenting styles and how they affect the academic performance and gender role development of boys and girls differently.

The process through which individuals adopt gender roles begins in the home. Later in life, these roles are reinforced and refined through peers, school, and media. However, research consistently identifies family life as the most influential factor in the formation of core beliefs about gender.[12] Parents' own goals, expectations, and unconscious biases are projected onto their children, strongly influencing their decision-making processes and academic trajectories.[13]

Society operates with a certain set of pervasive stereotypes and generalizations that internally affect the way we treat people, often without our conscious awareness. For example, parents naturally employ different techniques when raising their children, and these techniques are often gendered, affecting the way the children act and what they tend to favor later in life. To illustrate, assertiveness is typically associated with men, and warmth and caretaking are typically associated with women. Similarly, men are stereotyped as making riskier decisions, whereas women are perceived as more careful. These deeply ingrained ideas can easily influence parenting choices.

Because we are told these stereotypes our whole lives, we often come to believe them as truths and feel a subconscious sense of responsibility to live up to and fulfill those expectations.[14] For instance, because women are seen as more caring, they may internalize this belief and therefore be more likely to choose nursing as a career. This happens for men as well; they may believe they are risk-takers, leading them to pursue a career as a police officer or firefighter.[15] The same psychological mechanism applies to academic achievements and performance. Parents absorb these socializations and then apply them to how they treat their sons and daughters. It may not be a conscious decision, but it happens, nevertheless.

Research by Gryczkowski, Jordan, and Mercer (2010)[16] delves into the impact of parental involvement on their children's behaviors. It is important to distinguish between two types of behaviors: externalizing behaviors that involve expressing emotions outwardly and directing actions at others or the environment (e.g., aggression), and internalizing behaviors that involve coping with negative emotions by directing them inward (e.g., anxiety, withdrawal). Maternal involvement is generally related to better behavior from both boys and girls, and conversely, a lack of involvement is linked to poorer behavior. The presence or absence of the father had a more pronounced effect on sons' externalized behavior than on daughters'. Specifically, greater father involvement was correlated with less externalized behavior in sons; therefore, when the father was not involved, the result was more aggressive behavior from boys.[16] Gryczkowski, Jordan, and Mercer[16] interpreted their findings by concluding that boys would benefit significantly from greater father involvement and would be at greater risk for behavioral problems than girls when paternal involvement was lacking. Furthermore, they found that maternal involvement had less of an impact on externalized behavior than paternal involvement. On the other hand, internalized behaviors were affected by paternal involvement for both sons and daughters similarly. Because behavioral problems can negatively affect academic performance, these findings suggest that parental involvement, especially from fathers, plays an important role in supporting boys' academic and emotional development. Their work underscores the importance of continued studies on the relationship between parenting, particularly the role of fathers, and their children's behavioral outcomes. Table 1 compares how paternal and maternal involvement affect boys' and girls' externalizing and internalizing behaviors.

Table 1. Impact of paternal and maternal involvement on children's externalizing and internalizing behaviors. Maternal involvement is generally related to better behavior from both boys and girls. The presence or absence of the father had a more pronounced effect on sons' externalized behavior than on daughters, suggesting that paternal involvement may play a particularly important role in supporting boys' academic and emotional development.

	Externalized Behavior (e.g., aggression)		Internalized Behavior (e.g., anxiety, withdrawal)	
	Boys	**Girls**	**Boys**	**Girls**
Paternal Involvement	High	Low	Equal	Equal
Maternal Involvement	Lower than Paternal	Lower than Paternal	Equal	Equal

The findings across studies are not always consistent, partly because the effects of parenting vary by the child's age. Some research suggests that poor parenting affects girls more strongly in early childhood, while other studies show that both boys and girls are affected as they grow older.[16] Despite these variations, the research consistently shows that positive parenting—characterized by support, involvement, and communication—contributes to better academic and behavioral outcomes for all children.

Research focused on academic outcomes provides a more direct connection between parental involvement and gender differences in education. Avcı, Özgenel, and Avcu (2025) examined homework behavior, intrinsic motivation, academic achievement, and parental involvement among 920 middle- and high-school students in Turkey. Female students showed higher academic achievement and intrinsic motivation than male students at both school levels, while male students experienced more controlling parental involvement. Parental autonomy support was also lower among high-school students than among middle-school students. These findings identify gender and school-level differences in parental involvement alongside differences in academic outcomes, although they do not establish that greater parental control explains boys' lower achievement.[17]

In summary, parents have a significant role in determining how children behave and the way they think or approach challenges. This influence can impact not only their academic performance but also their overall lifestyle and career choices.

The mere amount of presence of parents in their child's life is not the only impactful aspect of parenting. The next section will discuss how the specific values that mothers and fathers hold, and how they project those values onto their kids, also contribute significantly to academic performance.

Cross-Cultural Differences

The amount of parental presence is just one part of the equation; the specific values parents emphasize, and the parenting styles they adopt, vary dramatically across cultures. These differences encourage certain parenting behaviors while discouraging others. This section explores how cultural context shapes parenting and, consequently, academic achievement.

Leung, Lau, and Lam (1998)[18] conducted influential research on the relationship between parenting styles and academic achievement among children in three distinct regions: Hong Kong, the United States, and Australia. They categorized parenting styles into three types: authoritative, authoritarian, and permissive:

- Authoritative parenting is characterized by a balance between being responsive (supportive) and demanding (having clear, consistent rules).
- Authoritarian parenting is more controlling, involving a strict set of rules and high expectations with less flexibility. Permissive parenting involves the least amount of control, with parents being lenient and generally avoiding strict rules.

A crucial distinction was also made between general parenting styles and academic parenting styles:

- Academic parenting styles focus specifically on school and academics, whereas
- General parenting takes a broader perspective, focusing on the bigger picture of a child's life, including social development, morals, and etiquette.

Unsurprisingly, permissive parenting was found to be the least effective of all parenting types across most cultures. A key finding was that in Hong Kong, the United States, and Australia, academic authoritarianism did not improve academic achievement, and academic achievement showed no significant response to academic authoritarianism. In contrast to academic authoritarianism, general authoritarianism was positively related to academic achievement among participants who lived in the English-speaking regions (the US and Australia). This suggests that putting extreme emphasis on academic excellence above all else—the hallmark of academic-style parenting—is not necessarily better than enforcing obedience and discipline across a broader range of behaviors (general-style parenting). In fact, the data indicated it was less effective. This could be due to a variety of reasons. One explanation might be that since academic authoritarianism is confined to educational and intellectual spaces, it might stifle genuine inquiry and intellectual curiosity, making learning a chore rather than a passion. These results challenge popular assumptions about strict "academic parenting" and suggest that broader values and expectations—not just school-focused pressure—shape students' success.

Australian parents showed the lowest levels of participation in academic authoritarianism. Chinese parents scored the highest in general authoritarianism and lowest in authoritativeness. The United States, in particular, showed a strong relationship between higher academic achievement and lower parental authoritarianism coupled with higher parental authoritativeness.[18] This demonstrates that academic achievement is largely influenced by parenting styles, and that the same style can have either negative or positive effects depending on the cultural context in which the child is raised.

Here is another situation demonstrating different positive parenting styles under different cultural economic conditions. Arab parents also tend to show authoritarian parenting styles, which some studies have found to be an effective style that is beneficial for adolescent development. However, there is considerable variability in parenting styles within the Middle East. For example, research on Arab refugees in Jordan found that parents, instead of authoritarian parenting, typically showed authoritative parenting, which was also associated with better child adjustment. This indicates that both authoritative and authoritarian parenting can be beneficial for children's development, depending on the cultural and environmental context.[19] Table 2 summarizes the effectiveness of different parenting styles across cultural contexts, with distinctions between general parenting styles and academic parenting styles.

Table 2. Cross-cultural study of the relationship between parenting styles and academic achievement. Three types of parenting styles are studied: authoritative, authoritarian, and permissive, with a crucial distinction between general and academic styles. Both authoritative and authoritarian parenting can be beneficial for children's development, depending on the cultural and environmental context. It also suggests that broader values and expectations (general parenting styles)—not just school-focused pressure (academic parenting styles)—shape students' success.

	Authoritative (Balance between supportive and demanding)		**Authoritarian** (more control with less flexibility)		**Permissive** (Least control, lenient)
	General (Bigger Picture)	**Academic** (Focus on school)	**General** (Bigger Picture)	**Academic** (Focus on school)	
Hong Kong		No response	Positive	Not positive	
US	Positive	No response	Positive	Not Positive	
Australia		No response	Positive	Not positive	Least Effective
Arab Countries			Positive		
Arab Refugees in Jordan	Positive				

Cultural background also influences why certain parenting styles develop. People in lower economic classes, Eastern cultures, and racial minorities tend to employ a more authoritarian parenting style. This may be an adaptive response to living in economically disadvantaged and potentially dangerous communities, eliciting protective instincts over their children.[19] However, strictness alone does not guarantee better outcomes. Research shows mixed results among groups commonly associated with

strict parenting, such as “Tiger Moms.” While this parenting style may motivate some students, it does not reliably predict strong academic performance across families.[20]

Research also shows that cultural context shapes not only parenting styles but also the social structure and economic structures that affect gender disparities in education and the career market. For example, a study conducted at a large public university in Turkey found that although fewer women were admitted, once in, they often exceeded their counterparts in terms of academic performance.[21] This is significant because it suggests that structural or cultural barriers may limit women’s access to higher education, even when their academic potential is equal or greater. These findings about the school are consistent with broader labor-market data in Turkey, where many qualified women end up as part of the unemployed female workforce who are less likely to get a job since men are more likely to be considered wage earners. [22] The situation in Turkey illustrates how educational performance cannot be separated from the social and economic structures surrounding it.

The analysis of three culturally variable parenting styles—authoritative, authoritarian, and permissive—supports the idea that parenting can significantly influence academic performance. Because dominant parenting styles vary across regions, they may help explain how cultural and economic contexts contribute to the differences in size and nature of gender gaps across cultures. These parenting patterns, together with previously discussed personality factors, suggest that gender differences in academic achievement are influenced not only by individual traits but also by broader social conditions.

Socialization in the School Environment: Teachers’ Expectations and Stereotype Threat

Teachers, peers, and school environments play a major role in reinforcing gender roles and academic expectations. Children encounter stereotypes early in their education, and these stereotypes—sometimes subtle and unintended—shape motivation, self-concept, and performance.

These stereotypes are evident in educational materials themselves. Finsterwald and Ziegler (2007),[23] examined the pictures in 28 school textbooks and detected significant bias. This examination revealed that female characters were less often shown in athletic activities than male characters. Furthermore, female characters were depicted doing more household chores, whereas male characters were often shown in the workplace. Men were also shown as more adventurous, independent, and competitive. On the other hand, women were painted as more submissive, which may limit their potential in life, as it influences their decision-making and passion, while being more submissive as well.[23] As a result, they develop a lack of self-esteem and shy away from professions that are stereotyped as more "male" professions, thereby limiting their career goals.[24] Gender stereotypes may minimize children’s beliefs about their abilities in certain fields from a young age, and the lack of self-belief makes it harder for students to develop interest, leading to self-doubt and decreased motivation.[25]

Growing up with stereotypes often depicted as facts, individuals frequently sculpt their lives according to these stereotypes, allowing them to influence major decisions. Families, teachers, and media all model gender roles.[26] The seminal Pygmalion study by Rosenthal and Jacobson (1968)[27] powerfully demonstrates the influence of teacher expectations. In this experiment, elementary school teachers were told that certain students had scored well on a test designed to identify "late bloomers" - students who were predicted to have a sudden increase in intelligence within the next year. In reality, these students were selected at random, and there was no actual evidence or test to support this “late bloomers” prediction. After each year, over two years, the researchers measured every student's IQ. The results showed that the students who had been randomly labeled as "late bloomers" scored higher on the IQ test than did the students in the control group (those who were not labeled as bloomers).[28] Such a contrast could be due to a prolonged period of exposure to the different treatments practiced by the teachers. This demonstrated how teacher expectations can shape student outcomes through subtle differences in encouragement, attention, and support. The Pygmalion study provides strong support for the ideas of stereotype threat and self-fulfilling prophecy. Stereotype threat occurs when a negative stereotype about a group to which one belongs impacts performance, often because the individual is anxious about confirming the stereotype.[14] The self-fulfilling prophecy theory posits that individuals are pressured to act a certain way because of expectations

that have been placed upon them.[29] Both concepts can be directly connected to gender stereotypes and how they might cause self-fulfilling prophecies about academic abilities.

Jussim and Harber (2005)[28] have explained how students internalize gender roles through interactions with teachers by way of the gender role model theory, which suggests that if students perceive a teacher as someone similar to themselves, they tend to believe that they share that teacher's strengths and weaknesses. For example:

- If a male teacher teaches a boy pre-algebra poorly, the boy might internalize the belief that he himself is not proficient in pre-algebra.
- If a female teacher is skilled and confident in math and science, her female students may be more likely to believe they are also good at those subjects.
- If the female teacher displays anxiety or a lack of skill, the female student might adopt the same negative self-view.

Furthermore, how long the teacher has been teaching influences how they depict gender roles because they form generalizations based on their past experiences. The longer teachers have taught in their careers, the stronger the distinctions they make between boys and girls.[26] These sharp distinctions the teachers have can then be unconsciously internalized by their students.

Within the science, technology, engineering, and math (STEM) community, there are many gender stereotypes about who is good at what and who should go into what field. These stereotypes can significantly affect which classes students choose to take and how well they perform in those classes. This relates directly to the balanced identity theory (BIT), which deals with the psychological consistency between a person's attitudes, the stereotypes they are aware of, their self-concept, and their self-esteem.[30] The common stereotype that men are more successful and intelligent in STEM fields, while women are more successful in language and reading fields, impacts girls' interest in STEM and boys' interest in language. Throughout school, children are exposed to these ideas, and these stereotypes become so well-known that students may start believing them.[31] When this happens, their self-esteem and attitude in those stereotyped fields decrease, throwing off the psychological balance described in BIT.

Another powerful force is stereotype threat—the fear of confirming a negative stereotype about one's group. Keller and Dauenheimer (2003)[32] conducted a classic study that demonstrated stereotype threat in the context of gender. They gave a math test to 15-year-olds and told half of them that boys usually did better than girls on such tests, while the other half were given no such information. The group that received no such information showed no significant difference in scores between boys and girls. However, among those who were in a high-stereotype condition, the girls performed significantly worse. In another well-known study by Danaher and Crandall (2008),[33] students taking an AP Calculus AB exam were asked to indicate their gender either before or after they took the test. The results showed that girls who were asked before they took the test performed 33% lower than those who were asked after. Making gender salient before a challenging task can harm students' performance and prevent them from reaching their full potential. The students become apprehensive about fulfilling the negative stereotype, which heightens stress and anxiety levels and distracts them from the task at hand. It is important to note that Stricker and Ward (2008)[34] have disagreed with Danaher and Crandall's[33] findings, arguing that they only focused on mathematics and that the observed effect size was too small to be significant. Danaher and Crandall responded to this criticism by arguing that Stricker and Ward were too conservative with what constitutes a significant difference and that asking the gender question was an inexpensive and simple solution worth implementing. Nevertheless, interestingly, when Stricker and Ward (2004)[35] subsequently conducted a similar study on reading comprehension, they found the same results as Danaher and Crandall, which contradicted their own initial skeptical stance.

Inglis and O'Hagan (2022)[36] created an experiment similar to Danaher and Crandall's.[33] However, their results are different. For female participants, those who were asked their gender first actually performed slightly better than those asked later. Inglis and O'Hagan's study included data from both coeducational schools and all-girls schools. This may have affected the outcome because students in an all-girls school environment may not be as impacted by gender stereotypes compared to those in coeducational schools.

These experiments show how classrooms, textbooks, and teacher interactions lead students to internalize societal beliefs about what boys and girls are “supposed” to be good at. This internalization can negatively impact confidence, interest, and achievement in areas where students could have otherwise done well. Such effects extend far beyond the classroom.

Career Choice as the Outcome of Social Influences

Parental expectations, school environments, and cultural norms also influence students’ career choices. By the time students reach late adolescence or early adulthood, many have internalized beliefs about what careers are “appropriate” or “expected” for their gender. The history and culture of a certain geographic and demographic area affect how gender roles are internalized. In Italy, for example, a historical reliance on a commercial culture that prized negotiation and social networking allowed women to secure more favorable societal positions. On the other hand, agrarian economies like historical China relied heavily on intensive manual labor and physical strength, thus developing more pronounced gender inequalities.[37]

A systematic review conducted by Akosah-Twumasi *et al*. (2018)[38] studied the factors that influence career choices in individualistic and collectivist cultural settings. An individualistic cultural setting is one where society emphasizes the needs and rights of the individual over the needs of the entire group, whereas a collectivist cultural setting emphasizes the needs of the entire group over the individual.[39] In individualistic settings, personal interest was the major factor that led to career choice, and children were more independent in their decision-making. In collectivist cultures, children were mainly influenced by family expectations. The more similar their chosen career was to their parents', the more confident they felt in that career path.

Notably, only three articles out of the thirty explored bicultural youth. Based on this subset, multicultural youth who were more connected to their host country demonstrated higher intrinsic motivation - the drive to pursue a career out of personal enjoyment rather than external rewards.[40] For example, bicultural Chinese students living in Canada who adhered more closely to Canadian values were more intrinsically motivated in their own career decision-making. Conversely, US-born students of Asian descent, for instance, who adhered more strongly to traditional Asian values were more likely to receive support for science-related careers.

Furthermore, Malach-Pines and Kaspi-Baruch (2008)[41] conducted a significant study that consisted of 390 male and 357 female MBA students from Israel, the United States, the United Kingdom, Turkey, Cyprus, Hungary, and India who self-reported their reasons for choosing a career in management. They employed biological theory and social role theory in this experiment. Biological theory states that men tend to create hierarchies and women tend to create more networks and connections, a divergence traced back to hunting/gathering societies. If this theory were dominant, one would expect gender differences among the MBA students to be greater than cross-cultural differences. The social role theory, which focuses on social norms, stereotypes, and learned gender roles,[42] advocates that differences in management career choices are a result of socialization, and cross-cultural differences would be significant.

Malach-Pines and Kaspi-Baruch[41] examined how much of the variation in career motivations was explained by country differences compared with gender differences. Their analysis found that country explained a larger share of the variation in career motivations than gender. The statistical calculation determined that the percentage of a student's career aspirations explained by their nationality was consistently larger and statistically more powerful than that by their gender. Table 3 provides examples showing how culture is a more significant factor than gender in this study.

Table 3. Examples Illustrating Comparison of Cross-Cultural Gaps vs. Gender Gaps in MBA Career Determinants. In terms of who influenced students’ career choices, cross-country differences were noticeable, with teacher or partner influence being stronger in some cultures than others, while no overall gender differences were found. When comparing drivers and intentions, familial expectations played a significant role in some Eastern cultures, while self-actualization played a more dominant role in some Western cultures. However, a female student shared more similarities with her male classmates from the same country than with a female student from a different country, again demonstrating that nationality is more influential than

gender. In terms of the perceived meaning of success, culture appeared to even override biological disposition, as a Turkish businesswoman showed a significantly higher orientation toward traditional, aggressive, competitive traits than a British businessman.

	Cross Cultural Gap	Gender Gap
Who influenced student's career choice	Across countries, the influence of father, mother, partner, friends, teachers, colleagues, and managers varied noticeably. For instance, teacher influence was much higher in North Cyprus than in Israel, while partner influence was higher in the UK and USA than in Turkey or India.	the study found no overall gender difference in the influence of these people on career choice.
Drivers and Intentions	India and Turkey displayed a significantly higher drive toward corporate leadership and entrepreneurship, heavily influenced by familial expectations and macroeconomic growth pressures VS. American and British MBA students prioritized personal self-actualization, individual autonomy, and a balanced lifestyle	A female American MBA student shared more professional commonalities with her male classmate than she did with a female Indian or Turkish MBA student
Perceived Meaning of Management Success	In highly "masculine" or competitive cultural contexts (UK, US, Turkey, India), management was widely defined by both sexes as achieving high status, power, and distinct financial hierarchy. VS. In more "feminine" or egalitarian cultures (Israel or parts of Western Europe), management was viewed across the board as an exercise in team coordination, relationship-building, and organizational flat structures.	Evolutionary psychology predicts that men will inherently skew toward status-seeking, while women will universally skew toward relational management. However, the analysis results broke this assumption: a Turkish businesswoman showed a significantly higher orientation toward traditional, aggressive competitive traits than a British businessman, proving culture overrode biological disposition

The evidence provided in this section - the variation in internalized gender roles for women's career outlooks in commercial cultures like Italy versus agrarian economies like China, the contrast in children's decision-making in individualist and collectivist cultures, and the statistical primacy of cultural over gender differences for MBA career aspirations - provide strong support for the social role theory, demonstrating that social expectation and learned norms are significantly more influential than presumed biological tendencies.

Biology vs. Socialization

Some theorists argue that inherent biological characteristics, such as genetics and hormones, are the major factors affecting the observed differences between men and women.[43] According to this view, behavioral and cognitive attributes are largely innate and fixed, rather than primarily shaped by society or cultural expectations. While biological factors may contribute to gender differences, they do not account for the wide variation in behaviors, roles, and identities observed across different societies.

From a very young age, children are exposed to a wide range of stereotypes that shape their understanding of gender. Research has consistently shown that parents often exhibit gender bias in their selection of toys, clothing, and activities for their children.[25] For example, girls are more likely to be encouraged to play with dolls, while boys are more likely to be encouraged to play with trucks or more aggressive toys like action figures.[44] These early experiences are instrumental in internalizing gender roles since childhood.

As children grow older, this process of socialization continues through multiple, interconnected channels, including parental guidance, media influences, and schooling systems, influencing future life choices, from academic interests to career paths. For instance, women are usually portrayed as nurturing, empathetic, and passive, whereas men are displayed as assertive, competitive, and independent.[44] Consequently, women may gravitate towards caregiving professions such as nursing or teaching, while men may feel drawn to leadership roles.[45]

Perhaps the most compelling evidence against a purely biological determinist view comes from cross-cultural research. Some cultures feature relatively similar gender roles, where men and women participate more or less equally in the same economic, domestic, and political activities. For example, in Scandinavian

countries, men commonly take extended paternity leave, and women are highly represented in political and professional leadership.[46] In some other regions, gender roles are highly distinct with clear, often rigid, boundaries. This inconsistency across cultures demonstrates that gender differences are not simply biological but are deeply influenced by social and cultural contexts.[47]

Results and Discussion

Based on the studies reviewed, gender differences in academic performance are best understood as the result of complex social processes rather than biological factors. Although small cognitive differences exist due to biological factors, evidence from psychological, educational, and sociological research consistently demonstrates the importance of social influences. A key purpose of this review is to identify the mechanisms through which these social factors produce observable differences in academic outcomes.

As shown in Figure 1, gender differences emerge through a cumulative and interacting system of social influences rather than isolated factors. Social factors do not function independently but are deeply interconnected and mutually reinforcing. Early family experiences, particularly through parents, establish children's foundational beliefs about ability, effort, and gender roles. These beliefs are a result of everyday interactions, such as parental guidance and early exposure to gendered expectations. Over time, they are reinforced by broader social influences, including media and social feedback, leading to differences in personality traits such as studying habits, responses to challenges, and persistence, which can be measured by Locus of Control Scores (LCS) and Learning and Study Strategies Inventory (LASSI).

As students enter the school environment, teacher influences (including expectations and role models), peer interactions, and institutional practices (such as textbook bias and gender-related policies) further reinforce these patterns. This can lead to psychological imbalances in self-esteem, increased vulnerability to stereotype threat, and the development of self-fulfilling prophecies. Over time, repeated exposure to these reinforcing mechanisms leads to measurable gender differences in academic performance. Importantly, institutional structures do not simply reflect these differences but may in turn reaffirm and consolidate parents' gender beliefs, creating a feedback loop that extends into broader social expectations.

A key insight from this review is the overarching influence of cultural and economic context. Culture and economic conditions are closely associated with parental involvement and parenting styles, such as authoritarian, authoritative, and permissive. Even the same parenting styles generate different results in different cultures. Culture also defines gender norms, expectations, and the value in the education and career market, as the Turkish study[21] demonstrates. Malach-Pines and Kaspi-Baruch[41] further demonstrate that cross-cultural differences are more significant than gender differences when examining career perspectives, suggesting that social norms are more influential than biological tendencies. Culture and economic context serve as the foundation and catalyst behind the mechanisms that produce gender differences.

Despite all these findings, several limitations remain. Many studies focus on specific age groups and do not account for how influences change over time. The lack of longitudinal research limits understanding of how these mechanisms develop and accumulate. Additionally, much of the research is concentrated in Western contexts. Greater cross-cultural and socioeconomic data would help identify underlying social mechanisms that may otherwise be overlooked. The inconsistency in results between the studies with only co-ed schools and those with both co-ed and single-gender schools also suggests that institutional structure plays a role, and that further comparative research in this area may provide deeper insight into the causes of gender differences.

Conclusion

This review has examined the various social forces that impact gender differences in academic performance. The findings highlight the complexity of these influences, which affect boys and girls differently across age groups and within diverse cultural and economic contexts. It is essential to better

evaluate existing studies to design more culturally, economically, and neighborhood-specific research in the future.

To gain a more comprehensive understanding, continued interdisciplinary studies that integrate psychology, sociology, education, and cross-cultural research are needed. Future research should follow students over time at different ages, as the current studies suggest that maternal and paternal involvement affect both boys and girls differently at different stages of development. It is also necessary to dissect the population into different cultural and economic groups to identify specific causal factors for gender bias and inequalities, particularly within those different groups. In addition, researchers need to analyze the existing institutional structures to identify potential systemic factors that contribute to gender inequality, such as textbook designs and academic feedback mechanics.

By strengthening the research foundation, scholars can help schools and policymakers rely on targeted empirical evidence, rather than broad assumptions, when addressing gender differences in academic performance for different school districts, different schools, and even different communities within a school system. Effective approaches may include teacher training to mitigate unconscious bias, curricular reforms that challenge gender stereotypes, and structured mentoring programs for underrepresented groups. More importantly, an effort to recruit a more culturally, gender- and age-diversified teaching workforce may help with children's subconscious confidence and willingness to pursue a wider range of academic fields.

In addition, schools can play an important role in increasing parental awareness through workshops and communication strategies that encourage balanced expectations for all children. Promoting interaction and cultural/academic exchange between different communities, or even between schools from different countries, can further broaden both educators' and students' perspectives. Ultimately, these efforts would create a more equitable and effective system, allowing both boys and girls to reach their full potential free from the constraints of social stereotypes.

Acknowledgement

Ellen Robertson (Ph.D. in Social and Developmental Psychology), Oakland, CA, US

References

1. Haines, E. L., Deaux, K., & Lofaro, N. (2016). Gender stereotypes from 1983 to 2014. Psychology of Women Quarterly, 40(3), 353–363. https://doi.org/10.1177/0361684316634081

2. Hyde, J. S. (2016). Sex and cognition: Gender and cognitive functions. Current Opinion in Neurobiology, 38, 53–56. https://doi.org/10.1016/j.conb.2016.02.007

3. Halari, R., Sharma, T., Hines, M., Andrew, C., Simmons, A., & Kumari, V. (2006). Comparable fMRI activity with differential behavioral performance on mental rotation and verbal fluency tasks. Experimental Brain Research, 169(1), 1–14. https://doi.org/10.1007/s00221-005-0127-5

4. Spinath, B., Eckert, C., & Steinmayr, R. (2014). Gender differences in school success. Educational Research, 56(2), 230–243. https://doi.org/10.1080/00131881.2014.898917

5. Orabi, K. (2007). Gender differences in engineering performance. American Society for Engineering Education Annual Conference Proceedings.

6. Yavorsky, J. E., & Buchmann, C. (2019). Gender typicality and academic achievement among American high school students. Sociological Science, 6, 661–683. https://doi.org/10.15195/v6.a25

7. Biggs, J. B. (1978). Individual and group differences in study processes. British Journal of Educational Psychology, 48(3), 266–279. https://doi.org/10.1111/j.2044-8279.1978.tb02304.x

8. Wrigley-Asante, C., Ackah, C. G., & Frimpong, L. K. (2023). Gender differences in STEM performance. SN Social Sciences, 3(1), 12. https://doi.org/10.1007/s43545-022-00512-4

9. Ghazvini, S. D., & Khajepour, M. (2011). Gender differences in factors affecting the academic performance of high school students. Procedia – Social and Behavioral Sciences, 15, 1040–1045. https://doi.org/10.1016/j.sbspro.2011.03.235

10. Reyes, L. H. (1984). Affective variables and mathematics education. The Elementary School Journal, 84(5), 558–581. https://doi.org/10.1086/461384

11. Schober, B., & Finsterwald, M. (2016). Student teachers' gender-stereotyped attributions to success and failure in mathematics. Manuscript in preparation.

12. Witt, S. D. (1997). Parental influence on children's gender role socialization. Adolescence, 32(126), 253–259.

13. Hegna, K., & Smette, I. (2017). Parental influence in educational decisions. British Journal of Sociology of Education, 38(8), 1111–1124. https://doi.org/10.1080/01425692.2016.1245130

14. Spencer, S. J., Logel, C., & Davies, P. G. (2016). Stereotype threat. Annual Review of Psychology, 67, 415–437. https://doi.org/10.1146/annurev-psych-073115-103235

15. Ellemers, N. (2018). Gender stereotypes. Annual Review of Psychology, 69, 275–298. https://doi.org/10.1146/annurev-psych-122216-011719

16. Gryczkowski, M. R., Jordan, S. S., & Mercer, S. H. (2010). Differential relations between mothers' and fathers' parenting practices and child externalizing behavior. Journal of Child and Family Studies, 19(5), 539–546. https://doi.org/10.1007/s10826-009-9326-2

17. Avcı, S., Özgenel, M., & Avcu, A. (2025). Gender and school level in relation to homework behavior, intrinsic motivation, and parental involvement. Psychology in the Schools, 62(9), 3158–3172. https://doi.org/10.1002/pits.23527

18. Leung, K., Lau, S., & Lam, W.-L. (1998). Parenting styles and academic achievement: A cross-cultural study. Merrill-Palmer Quarterly, 44(2), 157–172.

19. Smetana, J. G. (2017). Current research on parenting styles. Current Opinion in Psychology, 15, 19–25. https://doi.org/10.1016/j.copsyc.2017.02.012

20. Fu, A. S., & Markus, H. R. (2014). Why Tiger Mothers motivate Asian Americans but not European Americans? Personality and Social Psychology Bulletin, 40(6), 739–749. https://doi.org/10.1177/0146167214527309

21. Dayioğlu, M., & Türüt-Aşik, S. (2007). Gender differences in academic performance in a large public university in Turkey. Higher Education, 53(2), 255–277. https://doi.org/10.1007/s10734-005-2464-6

22. Tansel, A. (1994). Wage employment, earnings and returns to schooling in Turkey. Economics of Education Review, 13(4), 305–320. https://doi.org/10.1016/0272-7757(94)90003-5

23. Finsterwald, M., & Ziegler, A. (2007). Gender role expectations conveyed through elementary school textbook illustrations. In P. Ludwig & H. Ludwig (Eds.), Erwartungen in himmelblau und rosarot (pp. 117–142). Juventa Verlag.

24. Tindall, T., & Hamil, B. (2004). Gender disparity in science education. Education, 125(2), 282–295.

25. Kollmayer, M., Schultes, M.-T., Schober, B., Hodosi, T., & Spiel, C. (2018). Parents' judgments about the desirability of toys for their children. Sex Roles, 79(5–6), 329–341. https://doi.org/10.1007/s11199-017-0882-4

26. Huang, M., Yi, H., & Rozelle, S. (2023). On the origins of gender gaps in education (SSRN Working Paper No. 4325965).

27. Rosenthal, R., & Jacobson, L. (1968). Pygmalion in the classroom: Teacher expectation and pupils' intellectual development. New York: Holt, Rinehart & Winston.

28. Jussim, L., & Harber, K. D. (2005). Teacher expectations and self-fulfilling prophecies. Personality and Social Psychology Review, 9(2), 131–155. https://doi.org/10.1207/s15327957pspr0902_3

29. Jussim, L. (1986). Self-fulfilling prophecies: A theoretical review. Psychological Review, 93(4), 429–445. https://doi.org/10.1037/0033-295X.93.4.429

30. Cvencek, D., Greenwald, A. G., & Meltzoff, A. N. (2012). Balanced identity theory: Review of evidence for implicit consistency in social cognition. In B. Gawronski & F. Strack (Eds.), Cognitive consistency: A fundamental principle in social cognition (pp. 157–177). Guilford Press.

31. Master, A. (2021). Gender stereotypes influence children's STEM motivation. Child Development Perspectives, 15(3), 203–210. https://doi.org/10.1111/cdep.12424

32. Keller, J., & Dauenheimer, D. (2003). Stereotype threat in the classroom. Sex Roles, 49(11–12), 631–640. https://doi.org/10.1023/A:1025837209620

33. Danaher, K., & Crandall, C. S. (2008). Stereotype threat in applied settings re-examined. Journal of Applied Social Psychology, 38(6), 1639–1655. https://doi.org/10.1111/j.1559-1816.2008.00364.x

34. Stricker, L. J., & Ward, W. C. (2008). Stereotype threat in applied settings re-examined: A reply. Journal of Applied Social Psychology, 38, 1656–1663. https://doi.org/10.1111/j.1559-1816.2008.00363.x

35. Stricker, L. J., & Ward, W. C. (2004). Stereotype threat, inquiring about test takers' ethnicity and gender, and standardized test performance. Journal of Applied Social Psychology, 34(4), 665–693. https://doi.org/10.1111/j.1559-1816.2004.tb02564.x

36. Inglis, M., & O'Hagan, S. (2022). Stereotype threat, gender, and mathematics attainment. PLOS ONE, 17(5), e0267699. https://doi.org/10.1371/journal.pone.0267699

37. Bentley, J. H. (2023). Traditions and Encounters (7th ed.). McGraw-Hill.

38. Akosah-Twumasi, P., Emeto, T. I., Lindsay, D., Tsey, K., & Malau-Aduli, B. S. (2018). A systematic review of factors that influence youth career choices—the role of culture. Frontiers in Education, 3, 58. https://doi.org/10.3389/feduc.2018.00058

39. Triandis, H. C. (2001). Individualism–collectivism and personality. Journal of Personality, 69(6), 907–924. https://doi.org/10.1111/1467-6494.696169

40. Fishbach, A., & Woolley, K. (2022). The structure of intrinsic motivation. Annual Review of Organizational Psychology and Organizational Behavior, 9, 339–363. https://doi.org/10.1146/annurev-orgpsych-012420-091122

41. Malach-Pines, A., & Kaspi-Baruch, O. (2008). Culture and gender in management career choice. Career Development International, 13(4), 306–319. https://doi.org/10.1108/13620430810880800

42. Eagly, A. H., & Wood, W. (1999). The origins of sex differences in human behavior: Evolved dispositions versus social roles. American Psychologist, 54(6), 408–423. https://doi.org/10.1037/0003-066X.54.6.408

43. Krampen, G., Effertz, B., Jostock, U., & Müller, B. (1990). Gender differences in personality: Biological and/or psychological? European Journal of Personality, 4(4), 303–317. https://doi.org/10.1002/per.2410040405

44. Campenni, C. E. (1999). Gender stereotyping of children's toys: A comparison of parents and nonparents. Sex Roles, 40(1–2), 121–138. https://doi.org/10.1023/A:1018886518834

45. Martin, C. L., Eisenbud, L., & Rose, H. (1995). Children's gender-based reasoning about toys. Child Development, 66(5), 1453–1471. https://doi.org/10.2307/1131657

46. Ramakrishnan, A., Sambuco, D., & Jagsi, R. (2014). Women's participation in the medical profession across countries. Journal of Women's Health, 23(11), 927–934. https://doi.org/10.1089/jwh.2014.4736

47. Kaul, N. (2021). The misogyny of authoritarians in contemporary democracies. International Studies Review, 23(4), 1619–1645. https://doi.org/10.1093/isr/viaa081

Author

As a junior at Langley High School, Mindy Bao is a student researcher interested in East Asian Studies and the social factors that shape academic performance. Her work focuses on how cultural context influences gender differences, education, and social development.