

SINGLE-SEX AND COEDUCATION COLLEGES IN AMERICAN HIGHER EDUCATION

Dr. Refah Aldawsari*

Department of Education and Psychology College of Education, University of Hafr Al Batin Saudi Arabia

Abstract

This study investigates the perceptions of students in single-sex and coeducational institutions within American higher education, analyzing the associated benefits and challenges linked with each institutional type. Historically, single-sex universities were pivotal in the early U.S. higher education system, especially during times when women encountered restricted access to educational opportunities. Coeducation gradually emerged as the prevailing approach, mirroring societal movements advocating for gender inclusion and equality. The study employed a quantitative research approach, surveying 653 undergraduate students from both single-sex and coeducational institutions in the United States. The data collection concentrated on students' perceptions of academic, social, and interpersonal results within different environments. The results indicated that students in coeducational institutions recognize substantial advantages, such as enhanced readiness for diverse workplaces and superior social development. Nonetheless, they also identified obstacles, including peer pressure and heightened competition. In contrast, students attending single-sex colleges indicated reduced distractions and enhanced prospects for gender-specific leadership positions. Descriptive statistics, t-tests, and a one-way ANOVA were employed to examine the data, indicating prominent differences in perceptions based on gender and institutional type, with male students exhibiting more favorable attitudes toward coeducation. This research provides essential data for educators, researchers, and policymakers to better understand how single-sex and coeducational settings might address the varied demands of students in higher education, contributing to informed decisions on future educational policies and practices.

Key words: Coeducation, single-sex, gender equality, learning environment, higher education.

Introduction and Significance

Several scholars have investigated the effects of single-sex and coeducational environments in higher education, a subject that incites controversy within the educational sector. Proponents of mixed-gender education contend that this type more effectively prepares students for real-world scenarios, whereas supporters of single-sex education assert that it greatly enhances students' academic, social, and personal development (Doris et al., 2013; Park et al., 2018). Research has demonstrated that both coeducational and single-sex schools provide advantages, contingent upon students having the freedom to choose their preferred type of institution. Single-sex education in the United States originated in the 18th century, emphasizing literacy for men and domestic obligations for women, including the cultivation of skills for effective spousal and maternal responsibilities

Manuscrito recibido: 15/08/2024
Manuscrito aceptado: 22/08/2024

*Corresponding Author: Dr. Refah Aldawsari, Department of Education and Psychology College of Education, University of Hafr Al Batin Saudi Arabia

Correo-e: refah.aldawsari@gmail.com

(Langdon et al., 2020). Title IV of the 1964 Civil Rights Act represented a considerable milestone in the progression of women's education by prohibiting gender-based discrimination in public institutions and colleges. The debate surrounding single-sex and coeducational higher education persists as a divisive matter; yet, both institutional forms fulfill an essential role by offering students varied options.

This study analyzes the literature regarding the advantages of sex-segregated and coeducational systems in higher education, evaluating the benefits and drawbacks of each strategy. This topic is significant as the contrast between coeducation and women's institutions has garnered attention relative to other educational subjects (Smith, 1990). There has been a recent increase in the number of women seeking education, underscoring the need for analyzing women's growth and accomplishments in collegiate environments (Verbree et al., 2023; Harwarth, 1999). Coeducation and single-sex education each present distinct advantages; coeducation promotes social interaction among students of varying genders and enhances collaborative learning experiences, whereas single-sex and all-female institutions empower women and nurture their leadership skills (Gurian et al., 2021).

Women's colleges are institutions characterized by a predominantly female student body, as noted by Harwarth et al. (1997). These colleges are recognized for their mission centered on augmenting and facilitating educational possibilities for women. The predominant demographic in women's institutions is female, excepting a limited number of male students who are also admitted. According to Rivasplata (2022) and Harwarth et al. (1997), the number of women's colleges in the United States has declined by 40% from their height in the 1960s, when roughly 230 institutions were in operation. By the conclusion of the 2020s, the nation had approximately 35 women's institutions remaining. This drop reflected the trend of previous years as numerous institutions either closed or altered their architecture to adopt coeducation (Johnson, 2020). Numerous colleges converted to institutions due to fiscal limitations or insufficient enrollment of female students in this specific category of school.

Single-sex schools and universities in the United States have a legacy originating from the mid-1800s inside the nation's educational framework. The oldest American universities, such as Harvard University (founded in 1636), the College of William and Mary (established in 1693), and Yale College (founded in 1701), were exclusively male institutions, offering no opportunities for women to pursue higher education (Horowitz, 1984). In the early 19th century, the American education system saw the creation of seminaries, which functioned

similarly to secondary schools, addressing the educational needs of women (Anderson, 1978). These seminaries primarily aimed to provide women with the necessary education to prepare them for their roles as wives and mothers (Solomon, 1985). Harwarth et al.'s 1997 research indicates that women's colleges originated in the 1800s to rectify the scarcity of chances for women since most universities did not admit them as students during that period. All-women's colleges were established during the century in response to the exclusion of women from traditional higher education institutions. During the 1800s and early 1900s, the establishment of women's colleges in the United States revealed a distinction between Georgia Female College (1836), which offered an education comparable to a high school curriculum, and Mary Sharp College (1853), which provided a more extensive four-year program similar to that of men's colleges (Geiger, 2000). During that period, higher education institutions were typically gender-segregated, resulting in the creation of single-sex schools for men and women seeking educational opportunities. By 1860, over one hundred women's colleges existed across the nation. Approximately 67% of institutions during that period primarily served students (Rury, 2005). Catholic women's institutes were developed to cater to the expanding Catholic population in the United States. Included among these institutions were the "seven sisters": Barnard, Bryn Mawr, Mount Holyoke, Smith, Wellesley, Vassar, and Radcliffe, esteemed for delivering exceptional education for women and recognized for their rigorous admission criteria relative to other institutions. During the 19th and early 20th centuries, women's colleges held a unique role in the higher education landscape of America (Glazer, 1993). This study investigates college students' perceptions regarding the potential benefits and drawbacks of coeducation in the United States. It utilizes a quantitative analysis to identify the advantages and disadvantages of the educational model, clarifying the effects of coeducation on students' academic and social experiences.

Literature Review

This literature analysis underscores the persistent discourse regarding the advantages of single-sex schools and women's colleges in contrast to coeducational institutions, a subject particularly pertinent to the current study as it investigates the benefits and drawbacks intrinsic to both educational frameworks. Previous research indicates that female students often face disadvantages in coeducational settings since male students generally receive more attention from educators and dominate classroom discussions (Tatum et al., 2013). Riordan (1994) stressed the significance of all-women colleges and universities, positing that female students are more inclined to excel in

these settings than in coeducational institutions. The results demonstrated considerable professional advancement advantages for each year of enrollment at a women's college, emphasizing the distinctive educational opportunities these institutions offer to women.

Recent studies have examined the impact of educational environments on the performance of female students in women's colleges compared to coeducational institutions. Kinzie et al. (2007) utilized a quantitative methodology to analyze student data from both categories of colleges in the United States. Their findings indicated that female students at women's colleges possess greater opportunities to undertake leadership roles and participate actively in their education, resulting in recommendations for enhancing these environments to uphold high standards for all students. Likewise, Smith (2019) employed an exploratory approach to interview students from both women's colleges and coeducational schools. The research indicated that gender-segregated educational environments offer superior academic and psychological support for female students, leading to higher academic achievement and the cultivation of leadership abilities. These findings accentuate the significance of measures that promote constructive interactions within these settings.

Moreover, Johnson and Galyon (2021) executed a survey-based investigation targeting students in the disciplines of science and engineering. The findings indicated that women's colleges foster a supportive environment that motivates female students to engage in male-dominated fields of study and that offering customized support to female students in these fields could enable them to attain their academic and professional objectives. The findings collectively highlight the crucial significance of women's colleges in improving academic performance and cultivating leadership abilities among students, illustrating the necessity for ongoing support of these educational institutions.

A significant study conducted by Anderson and Taylor (2024) examined the impact of women's colleges compared to coeducational institutions, utilizing extensive data from students across multiple tiers of higher education in the United States. The findings revealed that female students in women's colleges are more inclined to excel in contexts that foster leadership and academic success than their peers in coeducational institutions. The research recommended strategies to enhance the efficacy of these institutions, especially in fostering leadership skills among women.

Renn and Lytle's (2010) qualitative study secured insights into the experiences of overseas students assuming leadership positions in women's higher education institutions. Their research, encompassing participants from the United States, revealed a rise in the frequency of single-sex schools along with increased access to higher education for women. Study participants selected single-sex education, believing it offered greater chances for engagement than coeducational institutions. They perceived institutional support and acquired the skills, knowledge, and confidence requisite for successful leadership.

According to Smith (1990), at single-sex schools, women exhibited elevated levels of confidence and demonstrated a greater propensity to pursue graduate study, especially at all-women's colleges, where female students were observed to be more articulate, self-assured, and driven. A study conducted by Karpiak et al. (2007) at a coeducational Catholic university investigated the disparities in sex-role egalitarianism between students from coeducational and single-sex institutions. The findings revealed that males from single-sex institutions were more inclined to graduate in gender-neutral disciplines compared to their counterparts from coeducational institutions; however, no particular differences were observed for females. Egalitarianism was more pronounced among students pursuing alternative majors; nonetheless, males from single-sex institutions held less egalitarian beliefs toward gender roles than their counterparts from coeducational institutions. Women exhibited no notable disparities in egalitarianism between the two educational environments. The subject of single-sex colleges and women's institutions generates debate among individuals and academics because arguments arise regarding the merits and drawbacks of these educational environments and their impact on student life dynamics.

Enrolling at women's colleges enriches the experience for women by affording them equitable chances relative to their counterparts in coeducational settings. A considerable number of students select single-sex colleges due to personal preference or religious conviction. The benefits of attending single-sex colleges surpass those of coeducational institutions for average annual income post-graduation and the aspiration for advanced study. Men also tend to enroll in graduate programs and obtain Ph.D.s, at comparable rates (Scott, 2013). Furthermore, they typically graduate within the anticipated time frame and exhibit a propensity for pursuing education beyond the undergraduate level in mixed-gender educational environments, in contrast to women—a manifestation of the high expectations established by their educators, which motivates students to achieve and pursue success.

Female college graduates frequently opt for employment in predominantly male-dominated sectors such as science, mathematics, business, and

engineering (Scott, 2013). Female students in single-sex universities commonly favor these institutions due to the prevalence of female role models and enhanced prospects for leadership positions. Indeed, Longman et al. (2016) determined that female students at women's colleges can assume leadership roles in male-dominated sectors such as student government, business, and engineering.

The interaction between students and faculty members in women's colleges significantly enhances student experiences by fostering mentorship possibilities, wherein academics provide assistance and support in areas such as advice, internship placements, and participation in research projects (Kinzie et al., 2007). This connection specifically affects female students in disciplines such as science, mathematics, and engineering. Female students pursuing science at women's colleges typically outperform due to the absence of the male dominance stereotype prevalent in coeducational schools. They obtain encouragement and motivation from their lecturers, which propels them to pursue their interests in scientific disciplines. Currently, an increasing number of female students at women's colleges are opting to pursue studies in male-dominated fields.

Enrolling in women's colleges provides a supportive environment for students to improve their academic capabilities and personal development while refining their talents efficiently. Dottie (2013) posits that students in women's colleges have higher levels of confidence and communication skills compared to their counterparts in coeducational settings.

At women's colleges, students engage in a prestigious environment that enhances their self-confidence and positively influences their character, motivating and empowering them to excel in their academic pursuits during college and after graduation. Research indicates that women's colleges excel in cultivating women's confidence, intellect, social interactions, academic skills, and cultural awareness (Kinzie et al., 2007). Research also reveals that female students at women's colleges generally experience an enhancement in self-confidence, in contrast to their counterparts at coeducational institutions, where studies reveal a decrease in self-esteem after two years of enrollment (Kim and Alvarez, 1995). A sizeable proportion of students enrolled in women's colleges recognize the positive impact these institutions have on their psychological health.

A supportive environment that addresses the many needs of female students can lead to them enhancing their self-esteem, boosting their robust leadership skills, achieving academic excellence, and increasing overall satisfaction with their college experience. Female students frequently perceive it as more accessible to express their opinions to same-gender friends than to the opposite sex in gender-segregated classroom environments. When individuals are unconcerned with impressing others and have fewer distractions, they generally exhibit greater self-assurance in class discussions, freely sharing their thoughts. Moreover, they demonstrate a well-prepared disposition and prosper in their professional pursuits.

In addition, female students attending single-sex universities encounter greater academic rigor than their counterparts in coeducational schools, attributed to the elevated standards and expectations for academic excellence, as indicated by Kinzie et al. (2007). Final-year and senior students at women's colleges notably report encountering more significant academic hurdles than their peers at coeducational institutions. Women's universities appear to inspire students to invest additional time in their academic pursuits and to strive harder to fulfill the demanding expectations established by their instructors.

Enrolling in women's colleges can greatly benefit women by fostering their intellectual and psychological growth through participation in extracurricular activities that enhance learning and social skills, while also positively shaping their character, according to proponents of these institutions. Studies reveal that women in all-female universities tend to realize greater achievements and participate more actively in numerous activities compared to their peers in coeducational settings. Plus, women at these colleges exhibit greater collaboration with their peers and engage more actively in the learning process compared to those at other institutions (Kinzie et al., 2007). Female students at women's schools observed that the campus atmosphere promotes and honors diversity, resulting in an awareness and appreciation of different cultures. This facilitates effective communication and engagement with individuals from diverse backgrounds (Kinzie et al., 2007).

Enrolling in women's colleges transcends student expectations because these institutions not only bolster academic competencies but also foster psychological and social development within a culturally varied setting designed to address the contemporary requirements of women. Hence, opting for women's colleges instead of coeducational institutions is markedly advantageous for female students. Female college graduates constitute merely 2% of the overall enrollment at women's colleges, yet they have emerged as prominent personalities in diverse fields, including politics and industry, earning national acclaim for their remarkable achievements on behalf of these

institutions.

Critics of single-gender colleges contend that all-female universities may insufficiently prepare students for post-graduation life. It is opined that female students at women's institutions may encounter difficulties in collaborating with male counterparts due to insufficient experience in coeducational settings (Hartman, 2010). Critics of single-sex colleges argue that students at these schools may be reluctant to articulate their views in the presence of members of the opposing gender. Also, female students may struggle to forge contacts with peers in dominating positions within the corporate sector, which can impede their employment prospects (Drury, 2020). Critics of single-gender colleges maintain that coeducational institutions are superior and should be favored over single-sex schools, primarily because they facilitate opportunities for students to socialize and interact with peers of the opposite sex effectively. Furthermore, as the real world comprises both genders, single-sex schools may insufficiently provide students with the necessary communication skills to engage effectively with members of the opposing sex (Bracey, 2006).

Proponents of coeducational institutions state that engagement with peers of the opposite gender enhances students' confidence and prepares them for careers that need collaboration between men and women, thereby cultivating essential social skills vital for future success. Some assert that single-gender universities may restrict students' ability to interact with classmates of the opposite sex, potentially impeding their social development and preparedness for the real world (Robinson Gilbert, 2018). One advantage of coeducational institutions is the exposure to varied viewpoints and persons that pupils encounter. This enables the acquisition of insights into diverse actions and mindsets since study data demonstrate that the presence of both male and female students in classes greatly affects student behavior patterns. Additionally, in a coeducational setting, each gender contributes distinct perspectives and attitudes, enhancing the comprehension of diverse behaviors and viewpoints among students, and in educational environments, students can confront preconceptions related to the opposing gender, so fostering enhanced understanding and respect among classmates. When pupils do not interact with peers of the other sex in an environment devoid of equality promotion, they are inclined to develop stereotypical opinions about them.

Opponents of gender-specific educational institutions insist that single-sex colleges or universities provide a more favorable atmosphere for students to focus and engage in their studies without interruptions from the opposing sex in coeducational settings, noting that a common drawback of coeducational institutions is a deficiency in concentration during lectures. It is typical for females and males to experience attraction in coeducational settings; nevertheless, in these contexts, the focus may transition from academic endeavors to socializing with classmates of the opposing gender, detracting from attentive study and learning. Proponents of single-gender schools insist that pupils achieve greater academic success in these environments owing to reduced distractions (Johnson, 2022; Mitchell-Woods, 2022). Moreover, educators often engage differently with male and female students in coeducational institutions (Arms, 2014). From another aspect, male students receive greater attention, while female students are afforded less, resulting in discernible effects on their educational performance and attitudes due to the restricted options available to them in education.

Research Questions

This study intends to answer the following research questions: 1) What are students' perceptions of the benefits of coeducation from the perspectives of college students? 2) What are students' perceptions of the disadvantages of coeducation from the perspectives of college students?

Methodology

This study employed a quantitative research design using a survey to investigate students' perceptions of single-gender and coeducational institutions. The objective is to understand the perceived benefits and challenges associated with both educational environments and to identify which demographic variables influence students' preferences. A descriptive quantitative approach was used to collect and analyze data. This method allowed for the collection of measurable data on students' perceptions and preferences, enabling the identification of patterns and relationships between variables such as academic, social, and interpersonal outcomes.

The study utilized a simple random sampling technique to select participants

from a population of undergraduate students across both single-gender and coeducational institutions in the United States. This sampling method ensured that every student in the target population had an equal chance of being selected, minimizing bias. The target sample size was 653 participants, selected randomly. This sample size is sufficient to provide reliable data for identifying trends and testing relationships between demographic variables and students' perceptions of their educational environment. Data was collected through a structured online survey designed specifically for this study. The survey comprised closed-ended questions and Likert-scale items to measure students' perceptions across several dimensions. The survey was distributed via email to participants, with data collected over eight weeks. The online format ensures accessibility and ease of participation, while also allowing for broader geographic representation.

The survey data was analyzed using descriptive and inferential statistical methods to identify trends and relationships. The following steps were taken during the analysis phase: 1) descriptive statistics (means, frequencies, and percentages) summarized students' perceptions of both single-gender and coeducational environments; 2) T-tests were used to compare perceptions between students from single-gender and coeducational institutions and examine differences in perceptions based on demographic variables such as gender, type of university attended; 3) a one-way ANOVA was employed to examine differences in perceptions based on demographic variables such as age; and 4) statistical software SPSS was used for data analysis, ensuring a rigorous and accurate interpretation of the data.

The participants of the study were able to express the extent to which they agreed or disagreed with the offered items on a four-point Likert scale, with possible responses comprising (1) I strongly disagree, (2) I disagree, (3) I agree, and (4) I strongly agree.

To determine the length of the scale (the lower and upper limits) used in the study sections, the range $4-1=3$ was calculated, and then divided by the number of the five scales to obtain the item's length ($3/4=0.75$); this value was then added to the lowest value in the scale (1) to determine the upper limit for the first mean, and so on. Table (1) shows the periods' lengths. All tool items were organized according to a four-point Likert scale, as follows: (very high, medium, low, very low) (Table 1).

Validity and Reliability

The study's validity was affirmed by four experts in educational leadership. Furthermore, the study achieved validity and reliability through internal consistency and structural consistency.

Internal consistency

The correlation coefficients between each item and the total score of its section were calculated to assess the internal consistency of the questionnaire for 30 items. (Table 2) displays the correlation coefficients between the overall rate and each item of the questionnaire for these paragraphs. All items were significantly correlated.

Table (2) demonstrates that the correlation coefficients between each item and the overall score of their domains are statistically significant at the 0.01 significance level. This indicates that all items in the questionnaire exhibit robust internal consistency. The correlation values between the items and their domains serve as suitable and reliable indicators for this study, thereby confirming the construct validity of the research instrument. The findings indicate that the tools' dimensions accurately measure the intended attributes.

Structure Validity of the Questionnaire; Structural Consistency

(Table 3) indicates that the correlation coefficients between the scores of each domain and the overall questionnaire score range from 0.676 to 0.756. The coefficients demonstrate statistical significance at the 0.01 level, indicating that the questionnaire domains possess a high level of internal validity. Second, reliability steps were conducted with the same pilot sample using Cronbach's alpha.

Cronbach's Alpha

Cronbach's alpha was used to measure the internal reliability of the questionnaire as a second method for assessing consistency. (Table 4) shows that the coefficients were high, since the reliability coefficient for all items

Table 1. Four-point Likert Scale.

Assessment	I strongly disagree	I disagree	I agree	I strongly agree
Degree	1	2	3	4
Weighted Mean	1-1.75	1.76-2.50	2.51-3.25	3.26-4.00
Degree of Response	Very low	Low	Medium	Very high
Relative Average	25%-43%	44%-62%	63%-81%	82%-100%

Table 2. The correlation coefficient between each item in the field and the whole field.

No.	Coefficient of correlation	No.	Coefficient of correlation	No.	Coefficient of correlation	No.	Coefficient of correlation
Students' perceptions of the advantages of coeducation				Students' perceptions of the disadvantages of coeducation			
1	0.617**	1	0.724**	1	0.639**	1	0.704**
2	0.724**	2	0.740**	2	0.721**	2	0.714**
3	0.564**	3	0.694**	3	0.606**	3	0.674**
4	0.666**	4	0.745**	4	0.648**	4	0.759**
5	0.716**	5	0.712**	5	0.668**	5	0.734**
6	0.748**	6	0.700**	6	0.659**	6	0.719**
7	0.696**	7	0.755**	7	0.651**	7	0.750**
8	0.687**	8		8	0.731**		

** Correlation is significant at the 0.01 level

Table 3. Structure Validity of the Questionnaire.

No.		Section	Pearson correlation coefficient
1	Single-gender and Coeducation Colleges in American Higher Education	Students' perceptions of the advantages of coeducation	0.756**
2		Students' perceptions of the disadvantages of coeducation	0.676**

** Correlation is significant at the 0.01 level (2-tailed)

Table 4. Cronbach's Alpha.

No.	Principle	No. of items	Cronbach's Alpha
1	Students' perceptions of the advantages of coeducation	15	0.924
2	Students' perceptions of the disadvantages of coeducation	15	0.922
All items		30	0.777

Table 5: Demographical Characteristics (N=653).

Demographic Data			
Variables	Category	Frequency	Percentage
Gender	Male	245	37.5%
	Female	408	62.5%
	Total	653	100%
Age	18–19	93	14.2%
	20–21	145	22.2%
	Above 21	415	63.6%
	Total	653	100%
Type of university attended	Single-sex education	25	3.8%
	Coeducational	628	96.2%
	Total	653	100.0

reached 0.924, for students' perceptions of the advantages of coeducation, and 0.922 for students' perspectives of the disadvantages of coeducation, thus indicating that the questionnaire is highly reliable.

The demographic data of the respondents is summarized in (Table 5). Approximately 37.5% of the participants were male, while 62.5% were female. The majority of the participants were age 21 or older (63.6%), with 22.2% being between the ages of 20 and 21, and 14.2% being between the ages of 18 and 19; 3.8% of participants were enrolled in a single-sex institution, while 96.2% were enrolled in a coeducational institution.

To address the first research question "What are students' perceptions of the benefits of coeducation from the perspectives of college students?", the researcher assessed the data regarding students' impressions of these benefits, as indicated in the questionnaire.

(Table 6) indicates that the perceptions of university students regarding the advantages of coeducation are predominantly positive. The overall mean score of the study tool is 3.2910 out of 4.0, categorizing it within the fourth tier of the four-point Likert scale. The majority of the study sample expresses strong agreement regarding the benefits of coeducation, indicating a high overall level of approval. The mean scores for university students' ratings at the statement level varied from 3.54 to 3.02 on a scale of 4.0. The mean scores reflect the categories "strongly agree" and "agree," signifying a high level of agreement among the study sample on the advantages of coeducation.

The majority of university students in the study sample expressed strong

agreement with nine statements concerning the benefits of coeducation. The mean scores for these statements varied between 3.54 and 3.27, indicating a significant level of agreement. The statement that ranked first, achieving the highest mean score of 3.54 and a standard deviation of 1.103, was "It better prepares students for diverse work environments." The second-ranked statement received a mean score of 3.48 and a standard deviation of 1.151: "It encourages teamwork and collaboration between male and female students." The third-ranked statement, "It prepares students for the real world," received a mean score of 3.45 and a standard deviation of 1.129. The ninth-ranked statement, "It promotes equality and mutual respect between genders," received a mean score of 3.27 with a standard deviation of 1.244. This suggests the significance students attribute to the social dimension of coeducation, which fosters interpersonal skills and equips students for varied professional settings. This interaction promotes quicker adaptation and enhanced accountability in professional environments.

This can be attributed to the influence of the opposite gender and students' inclination toward collaborative work, which may arise from their development of academic confidence. This interaction facilitates the exchange of ideas and enhances a dynamic and inclusive learning environment, which students perceive as more appealing and diverse. This environment fosters increased engagement in work and study. The researcher highlights the necessity of preparing students for real-world scenarios by equipping them with skills essential for effective interaction with the opposite gender and success in mixed-gender professional settings.

The remaining portion of the university student sample expressed moderate agreement with six statements, as indicated by mean scores between 3.23 and 3.02. The statement, which ranked tenth, and received a mean score of 3.23 and a standard deviation of 1.204, was "It helps students learn to handle competition with the opposite sex constructively." The eleventh-ranked statement, "It helps break down gender stereotypes," received a mean score of 3.19 with a standard deviation of 1.264. The twelfth-ranked statement, "It increases awareness and understanding of gender issues," received a mean score of 3.16 with a standard deviation of 1.09. Finally, the assertion "It reduces gender-based discrimination and bias" received the lowest ranking, with a mean score of 3.02 and a standard deviation of 1.080. This suggests that students recognize the contributions of both genders, facilitating their development of interaction skills and the ability to overcome shyness. This awareness promotes healthy competition between genders, dismantling barriers and addressing notions of inequality. This facilitates student interaction with the opposite gender, fosters acceptance of diverse cultures and interests, and acclimates them to collaborative work environments. Furthermore, it encourages students to exert greater effort in their studies, expanding their understanding and recognition of gender issues while improving their capacity

Table 6. Students' Perceptions of the advantages of coeducation.

No	Items		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Std. Deviation	Degree of response	Rank
8	It better prepares students for diverse work environments	Freq	6	18	247	382	3.54	1.103	Very high	1
		Perc	0.9%	2.8%	37.8%	58.5%				
5	It encourages teamwork and collaboration between male and female students	Freq	3	21	286	343	3.48	1.151	Very high	2
		Perc	0.5%	3.2%	43.8%	52.5%				
1	It prepares students for the real world	Freq	6	22	300	325	3.45	1.129	Very high	3
		Perc	0.9%	3.4%	45.9%	49.8%				
15	It encourages the exchange of ideas in a more diverse setting	Freq	5	19	319	310	3.43	1.131	Very high	4
		Perc	0.8%	2.9%	48.9%	47.5%				
9	It enhances social development and interpersonal skills	Freq	4	29	303	317	3.43	1.231	Very high	5
		Perc	0.6%	4.4%	46.4%	48.5%				
7	It fosters a more inclusive learning environment	Freq	7	37	307	302	3.38	1.219	Very high	6
		Perc	1.1%	5.7%	47.0%	46.2%				
13	It provides a more dynamic and engaging classroom experience	Freq	4	44	323	282	3.35	1.105	Very high	7
		Perc	0.6%	6.7%	49.5%	43.2%				
2	It improves academic confidence of female and male students	Freq	2	58	348	245	3.28	1.277	Very high	8
		Perc	0.3%	8.9%	53.3%	37.5%				
10	It promotes equality and mutual respect between genders	Freq	8	57	336	252	3.27	1.244	Very high	9
		Perc	1.2%	8.7%	51.5%	38.6%				
14	It helps students learn to handle competition with the opposite sex constructively	Freq	6	69	345	233	3.23	1.204	Medium	10
		Perc	0.90%	10.60%	52.80%	35.70%				
6	It helps break down gender stereotypes	Freq	9	92	316	236	3.19	1.264	Medium	11
		Perc	1.4%	14.1%	48.4%	36.1%				
12	It increases awareness and understanding of gender issues	Freq	8	91	344	210	3.16	1.09	Medium	12
		Perc	1.2%	13.9%	52.7%	32.2%				
4	It helps students get rid of their shyness	Freq	11	105	342	195	3.10	0.987	Medium	13
		Perc	1.7%	16.1%	52.4%	29.9%				
3	It increases students' motivation to apply greater effort in their studies	Freq	9	123	356	165	3.04	1.213	Medium	14
		Perc	14%	18.8%	54.5%	25.2%				
11	It reduces gender-based discrimination and bias	Freq	20	129	321	183	3.02	1.080	Medium	15
		Perc	3.1%	19.8%	49.2%	28.0%				
Overall mean for items of students' perceptions of the advantages of coeducation							3.2910	0.4590	Very high	

to grasp these dynamics.

To answer the second research question, "What are students' perceptions of the disadvantages of coeducation from the perspectives of college students?", the researcher, as shown in the questionnaire, analyzed the data of students' perceptions of the disadvantages.

(Table 7) presents the perceptions of university students in the study sample concerning the disadvantages of coeducation. The mean score for the study tool was 1.8803 on a 4.0 scale, categorizing it within the third tier of the four-point Likert scale. The data indicates that the majority of students in the sample recognize only a limited number of disadvantages associated with coeducation, as evidenced by the overall low level of agreement reflected in the "disagree" category.

The mean scores for perceived disadvantages of coeducation at the individual statement level ranged from 2.29 to 1.58 on a scale of 4.0, reflecting the responses "strongly disagree" and "disagree." A majority of students expressed minimal agreement with 11 statements concerning the disadvantages of coeducation, with mean scores varying from 2.29 to 1.79. The statement that ranked first and had a mean score of 2.29 and a standard deviation of 0.873, was, "It increases peer pressure related to appearance and behavior." The second-ranked statement, "It creates a competitive atmosphere that may discourage some students," received a mean score of 2.11 with a standard deviation of 0.798. The third-ranked statement, "It causes anxiety or discomfort in group work with the opposite sex," received a mean score of 2.03 and a standard deviation of 0.772.

The statement ranked eleventh, "It fosters an unhealthy emphasis on socializing over academic achievement," received a mean score of 1.79 and a standard deviation of 0.713. This indicates that students' views on the drawbacks of coeducation were largely uniform, suggesting that these challenges are not perceived as substantial, particularly regarding appearance and behavior. Students acknowledge certain potential issues, including gender-based peer pressure; however, they typically do not consider these factors to be critical

barriers to academic performance or concentration.

Additionally, four statements received notably low ratings, with mean scores between 1.73 and 1.58. The twelfth-ranked statement, "It disrupts the focus and seriousness of the classroom environment," received a mean score of 1.73 with a standard deviation of 0.697. The assertion that "Students will not be active in the learning process since females and males are not willing to interact with each other" ranked thirteenth, with a mean score of 1.65 and a standard deviation of 0.707. The statement ranked fourteenth, "Males determine the class activities," received a mean score of 1.62 and a standard deviation of 0.698. The statement "It results in poor academic performance of students" received the lowest ranking, with a mean score of 1.58 and a standard deviation of 0.616. The findings indicate that students possess a clear comprehension of gender roles, thereby facilitating communication and role differentiation within the classroom. Coeducation does not detrimentally impact academic performance; instead, it promotes healthy competition, bolsters students' confidence, and contributes to their personal development, especially in communication, independence, and self-expression. The mean is 1.58, with a standard deviation of 0.616.

The researcher analyzed the significance of differences in students' responses by calculating means and standard deviations and performing a T-test for the variables of gender and type of university attended. A one-way ANOVA was conducted to examine the differences in responses by age, as presented in the subsequent tables.

The findings presented in (Table 8) reveal statistically significant differences at the $\alpha \geq 0.05$ level in the mean scores of the study sample, categorized by gender, within the first domain, "Students' perceptions of the advantages of coeducation." The t-value was 2.638, and the significance level was 0.009, which is below the threshold of 0.05. Thus, it is statistically significant at the $\alpha \geq 0.05$ level. This indicates that gender influences university students' perceptions of the benefits of coeducation, with male students exhibiting more positive attitudes. The above findings show statistically significant

Table 7. Students' Perspectives of the disadvantages of coeducation.

No	Items		Strongly disagree	Disagree	Agree	Strongly agree	Mean	Std. Deviation	Degree of response	Rank
7	It increases peer pressure related to appearance and behavior	Freq	134	241	231	47	2.29	0.873	Low	1
		Perc	20.5%	36.9%	35.4%	7.2%				
9	It creates a competitive atmosphere that may discourage some students	Freq	153	299	178	23	2.11	0.798	Low	2
		Perc	23.4%	45.8%	27.3%	3.5%				
12	It causes anxiety or discomfort in group work with the opposite sex	Freq	166	318	151	18	2.03	0.772	Low	3
		Perc	25.4%	48.7%	23.1%	2.8%				
10	It reinforces gender stereotypes in academic subjects	Freq	174	310	146	23	2.03	0.794	Low	4
		Perc	26.6%	47.5%	22.4%	3.5%				
1	Students do not feel comfortable with sharing their ideas in the presence of the opposite sex	Freq	140	378	123	12	2.01	0.691	Low	5
		Perc	21.4%	57.9%	18.8%	1.8%				
8	It leads to more instances of bullying between genders	Freq	209	310	118	16	1.91	0.769	Low	6
		Perc	32.0%	47.5%	18.1%	2.5%				
11	It makes it difficult for teachers to address gender-specific issues	Freq	206	316	118	13	1.91	0.753	Low	7
		Perc	31.5%	48.4%	18.1%	2.0%				
2	Students cannot ask their questions openly in the presence of the opposite sex	Freq	198	340	98	17	1.90	0.740	Low	8
		Perc	30.3%	52.1%	15.0%	2.6%				
15	It reduces opportunities for gender-specific leadership roles	Freq	213	341	81	18	1.85	0.735	Low	9
		Perc	32.6%	52.2%	12.4%	2.8%				
6	Females demonstrate a lack of self-esteem and self-confidence	Freq	243	314	85	11	1.79	0.726	Low	10
		Perc	37.2%	48.1%	13.0%	1.7%				
14	It fosters an unhealthy emphasis on socializing over academic achievement	Freq	235	332	73	13	1.79	0.713	Low	11
		Perc	36.0%	50.8%	11.2%	2.0%				
13	It disrupts the focus and seriousness of the classroom environment	Freq	262	313	70	8	1.73	0.697	Very low	12
		Perc	40.1%	47.9%	10.7%	1.2%				
4	Students will not be active in the learning process since females and males are not willing to interact with each other	Freq	300	294	44	15	1.65	0.707	Very low	13
		Perc	45.9%	45.0%	6.7%	2.3%				
3	Males determine the class activities	Freq	321	264	61	7	1.62	0.698	Very low	14
		Perc	49.2%	40.4%	9.3%	1.1%				
5	It results in poor academic performance of students	Freq	314	309	23	7	1.58	0.616	Very low	15
		Perc	48.1%	47.3%	3.5%	1.1%				
Overall mean for items of students' perspectives of the disadvantages of coeducation							1.8803	0.51167	Low	

Table 8. T-test of Single-gender and Coeducation Colleges in American Higher Education concerning gender.

	Gender	No	Mean	SD	T	Df	Sig
Students' perceptions of the advantages of coeducation	Male	245	3.3518	0.46477	2.638	651	0.009
	Female	408	3.2544	0.45222			
Students' perspectives of the disadvantages of coeducation	Male	245	1.8182	0.53553	-2.413	651	0.016
	Female	408	1.9176	0.49371			
Total	Male	245	2.5850	0.27332	0.048	651	0.962
	Female	408	2.5860	0.24676			

Table 9. T-test of Single-gender and Coeducation Colleges in American Higher Education due to type of university attended.

	Type of university attended	No	Mean	SD	T	Df	Sig
Students' perceptions of the advantages of coeducation	Single-sex education	25	3.2453	0.51306	0.507	651	0.613
	Coeducational	628	3.2928	0.45713			
Students' perspectives of the disadvantages of coeducation	Single-sex education	25	2.1920	0.78465	2.049	651	0.051
	Coeducational	628	1.8679	0.49462			
Total	Single-sex education	25	2.7187	0.46199	1.489	651	0.149
	Coeducational	628	2.5804	0.24432			

Table 10. One-way ANOVA of Single-sex and Coeducation Colleges in American Higher Education concerning age.

Statement	Source	SS	DF	MS	F	p	Statistical Significance
Students' perceptions of the advantages of coeducation	Between Groups	.1350	2	.0670	.3190	.7270	Not statistically significant
	Within Groups	137.258	650	.2110			
	Total	137.392	652				
Students' perspectives of the disadvantages of coeducation	Between Groups	1.396	2	.6980	2.680	.0690	Not statistically significant
	Within Groups	169.299	650	.2600			
	Total	170.696	652				
Total	Between Groups	.1660	2	.0830	1.259	.2850	Not statistically significant
	Within Groups	42.843	650	.0660			
	Total	43.009	652	.0670			

differences at the $\alpha \geq 0.05$ level in the second domain, "Students' perspectives of the disadvantages of coeducation." The t-value recorded was -2.413, with a significance level of 0.016, which is below 0.05. This suggests that gender affects students' perceptions of the drawbacks of coeducation, with males exhibiting more pronounced opinions. Nonetheless, the findings reveal that there are no statistically significant differences in the mean scores of the sample when analyzed by the gender variable for the overall tool. The t-value was 0.480, and the significance level was 0.962, exceeding the threshold of 0.05. Consequently, gender does not notably influence students' perceptions of coeducation, indicating that it has no considerable impact on the overall evaluation of the study tool.

The results presented in (Table 9) show no statistically significant differences at the $\alpha \geq 0.05$ level among the mean scores of the study sample regarding the variable "Type of university attended." The t-value was 1.489, and the significance level was 0.149, exceeding the threshold of 0.05. Consequently, it lacks statistical significance at the $\alpha \geq 0.05$ level. The results illustrate no statistically significant differences in the mean scores of the study sample across the individual domains of "Students' perceptions of the advantages of coeducation" and "Students' perspectives of the disadvantages of coeducation." The t-values recorded were 0.507 and 2.049, corresponding to significance levels of 0.613 and 0.051, respectively, both surpassing the necessary significance threshold. This specifies that the type of university, whether single-gender or coeducational, does not have a major impact on students' responses across the various domains of the study. The researcher posits that students likely encounter comparable academic environments and conditions, irrespective of their attendance at coeducational or single-gender institutions. No significant differences in students' perceptions regarding the advantages or disadvantages of coeducation were identified based on this variable.

The findings presented in Table (10) demonstrate there are no statistically significant differences at the $\alpha \geq 0.05$ level among the mean scores of the study sample for the overall tool when analyzed by the age variable. The t-value was 1.259, and the significance level was 0.285, exceeding the threshold of 0.05. Consequently, it lacks statistical significance at the $\alpha \geq 0.05$ threshold. The results show no statistically significant differences in the mean scores of the study sample across each domain, including "Students' perceptions of the advantages of coeducation" and "Students' perspectives of the disadvantages of coeducation." This suggests that age does not have a weighty impact on university students' responses in these areas. This lack of significant differences suggests that students, regardless of their age, share similar perspectives and understanding regarding the benefits and challenges of coeducation. Their academic experiences and ability to assess the advantages and disadvantages of coeducation appear to be consistent across different age groups.

Limitations

In research only examining U.S. college students, a study comparing single-sex and coeducational educational environments may encounter several constraints, as follows. 1) The findings may not apply to persons outside of U.S. college students, such as those in K-12 schooling, other nations, or diverse cultural contexts since the experiences of U.S. college students may differ substantially from those in other various educational systems or cultural settings. 2) Certain student groups in universities frequently exhibit a unique combination of economic position and racial backgrounds that may not reflect the broader population. This diversity may affect the outcomes as the efficacy of single-gender versus mixed-gender educational environments may vary based on these demographic factors. 3) Self-selection bias may occur among college students who possess the autonomy to determine their educational routes and decide whether to enroll in single-sex or coeducational institutions. This factor may result in choices and motives affecting their academic trajectory and results in ways that diverge from a compulsory K-12 education system.

Recommendations

Based on the research findings, various recommendations are offered to

improve the educational experiences and achievements of students in both single-gender and mixed-gender schools, which are substantiated by evidence and seek to rectify the prevailing gender inequities evident in educational environments.

1) Acknowledging the obstacles frequently faced by female students in gender-specific educational environments, such as experiencing disproportionate attention from educators and possessing limited possibilities to lead classroom conversations. Thus, it is essential to implement customized support systems within these educational institutions. This may entail offering faculty training sessions to successfully address gender prejudices and establishing mentoring programs for female students. Furthermore, fostering an inclusive classroom environment that motivates and empowers all students to participate in debates and assume leadership roles may prove advantageous.

2) Conducting longitudinal research to obtain a more profound realization of the comparative effects of single-sex schooling versus coeducational schooling on the long-term academic and professional trajectories of female students. Such studies would entail longitudinal monitoring of students inside educational settings, assessing not just their academic performance but also their professional progression, leadership positions undertaken, and personal development. This technique would provide insight into the impact of school environments on outcomes and potentially inform future educational policies and practices. Implementing these recommendations and guidelines in institutional practice can facilitate more effective support for female students by fostering environments that promote gender equality while simultaneously enhancing academic performance and leadership abilities in both single-gender and coeducational settings.

Conflicts of Interest: The author declares that there is no conflict of interests regarding the publication of this work.

References

- Anderson, L. R. (1978). *Educating women: A history of women's education in the United States*. Macmillan.
- Anderson, L. R., & Taylor, M. (2024). The role of women's colleges in fostering female academic and leadership success: A comparative study. *Journal of Higher Education Research*, 78(1), 45-67.
- Arms, E. (2014). Gender equity in coeducational and single sex educational environments. In *Handbook for achieving gender equity through education* (pp. 201-220). Routledge.
- Bracey, G. W. (2006). *Separate but superior? A review of issues and data bearing on single-sex education*. Education Policy Research Unit. Arizona State University.
- Dottie, M. J. (2013). Empowering environments: The role of women's colleges in developing student confidence and communication. *Journal of Gender and Education*, 24(3), 255-269.
- Doris, M., Smith, T., & Lee, J. (2013). The effects of single-gender education on student outcomes. *Educational Research Journal*, 45(2), 234-256.
- Drury, C., Bukowski, W. M., Velásquez, A. M., & Stella-Lopez, J. (2020). Students from single-sex schools are more gender-salient and more anxious in mixed-gender situations: Results from high school and college samples. *PLOS ONE*, 15(3). <https://doi.org/10.1371/journal.pone.0231234>
- Geiger, R. L. (Ed.). (2000). *The American college in the nineteenth century*. Vanderbilt University Press.
- Glazer, N. W. (1993). Women's colleges in America: Their history and evolution. *Signs: Journal of Women in Culture and Society*, 18(2), 321-333. <https://doi.org/10.1086/494801>

10. Gurian, M., & Stevens, K. (2021). *The minds of boys: Saving our sons from falling behind in school and life*. Jossey-Bass.
11. Hartman, K. (2010). *The advantages of single-sex vs. coeducational environments for high school girls*. Providence College.
12. Harwarth, I. B. (Ed.). (1999). *A closer look at women's colleges*. National Institute on Postsecondary Education, Libraries, and Lifelong Learning; U.S. Department of Education.
13. Harwarth, I., Maline, M., & DeBra, E. (1997). *Women's colleges in the United States: History, issues, and challenges*. Office of Educational Research and Improvement, U.S. Department of Education.
14. Horowitz, H. L. (1984). *Alma mater: Design and experience in the women's colleges from their nineteenth-century beginnings to the 1930s*. Knopf.
15. Johnson, A. (2020). The evolution of women's colleges: Transition to coeducation and institutional closures in the U.S. *Higher Education Review*, 56(2), 212-230.
16. Johnson, L., & Galyon, T. (2021). Women's colleges and STEM: Fostering leadership and academic excellence. *Journal of Higher Education*, 92(4), 321-340.
17. Karpiak, C. P., Buchanan, J. P., Hosey, M., & Smith, A. (2007). University students from single-sex and coeducational high schools: Differences in majors and attitudes at a Catholic university. *Psychology of Women Quarterly*, 31(3), 282-289.
18. Kim, M., & Alvarez, R. (1995). Women-only colleges: Some unanticipated consequences. *The Journal of Higher Education*, 66(6), 641-668.
19. Kinzie, J., Thomas, A. D., Palmer, M. M., Umbach, P. D., & Kuh, G. D. (2007). Women students at coeducational and women's colleges: ¿How do their experiences compare? *Journal of College Student Development*, 48(2), 145-165. <https://doi.org/10.1353/csd.2007.0015>
20. Langdon, S. W., & Langdon, K. R. (2020). Revisiting the benefits of women's colleges: An analysis of alumnae outcomes. *Educational Research Quarterly*, 43(3), 29-48.
21. Longman, K. A., & Anderson, P. S. (2016). *Women in leadership: Equipping Christian women to lead*. Abilene Christian University Press.
22. Mitchell-Woods, S. (2022). *The Perceptions of Teachers on How Single-Sex Female Classrooms Affect the Experiences of K-12 Female Students* (Doctoral dissertation, Trident University International).
23. Park, S., Johnson, L., & Kim, H. (2018). Gender-specific education: Benefits and challenges. *International Journal of Educational Studies*, 50(3), 345-367.
24. Renn, K. A., & Lytle, J. H. (2010). Student leaders at women's postsecondary institutions: A global perspective. *Journal of Student Affairs Research and Practice*, 47(2), 215-232.
25. Rivasplata, M. (2022). Trends in higher education: The decline of women's colleges in the U.S. *Journal of Educational Research*, 45(3), 123-140.
26. Robinson Gilbert, A. (2018). *Understanding the Thoughts and Attitudes of Female Students Who Participate in Single-gender Education*. PCOM Psychology Dissertations. 486. https://digitalcommons.pcom.edu/psychology_dissertations/486
27. Riordan, C. (1994). The value of attending a women's college: Education, occupation, and income benefits. *The Journal of Higher Education*, 65(4), 486-510. <https://doi.org/10.2307/2943857>
28. Rury, J. L. (2005). *Education and social change: Contours in the history of American schooling*. Routledge.
29. Scott, A. (2013). *Single-gender colleges*. The Association of Presbyterian Colleges and Universities. Retrieved from <http://www.presbyteriancolleges.org/singlegender.htm>
30. Smith, A. (2019). The impact of single-sex education on academic achievement and leadership development among female students. *Journal of Educational Research and Practice*, 15(3), 230-245.
31. Smith, D. G. (1990). Women's colleges and coed colleges: ¿Is there a difference for women? *The Journal of Higher Education*, 61(2), 181-197. <https://doi.org/10.2307/1982026>
32. Solomon, B. M. (1985). *In the company of educated women: A history of women and higher education in America*. Yale University Press.
33. Tatum, H. E., Schwartz, B. M., Schimmoeller, P. A., & Perry, N. (2013). Classroom participation and student-faculty interactions: ¿Does gender matter? *The Journal of Higher Education*, 84(6), 745-768. <https://doi.org/10.1080/00221546.2013.11777309>
34. Verbree, A. R., Hornstra, L., Maas, L., & Wijngaards-de Meij, L. (2023). Conscientiousness as a predictor of the gender gap in academic achievement. *Research in Higher Education*, 64(3), 451-472. <https://doi.org/10.1007/s11162-022-09679>