

**Fostering Academic  
and Social Engagement:**  
*An Investigation  
into the Effects of  
All-Girls Education  
in the Transition  
to University*

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Principal Investigator  
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*Fostering Academic and Social Engagement: An Investigation into the Effects of All-Girls Education in the Transition to University* analyzes the effects of attending girls' schools on students' transition to university.

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# Fostering Academic and Social Engagement: *An Investigation into the Effects of All-Girls Education in the Transition to University*

Tiffani Riggers-Piehl, Ph.D., Principal Investigator  
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The 2009 report, *Women Graduates of Single-Sex and Coeducational High Schools: Differences in their Characteristics and the Transition to College*, by Dr. Linda J. Sax and colleagues, identified several areas in which all-girls education appeared to “produce favorable outcomes for female students” as they entered university (p.9). Using data collected in 2005 from the Higher Education Research Institute (HERI) at the University of California, Los Angeles (UCLA), the study showed that when compared to their coeducated peers, graduates of girls’ high schools had increased academic engagement; higher academic self-confidence, particularly in their math and science abilities; and greater political engagement. When reflecting on those results, we wondered: what differences would exist between girls’ school graduates and their coeducated peers with data collected ten years later?

The present report provides valuable insight into the experiences of students at all-girls schools, specifically relating to their academic skills and engagement, science confidence, community engagement, cultural competency, and political engagement. Commissioned by the National Coalition of Girls’ Schools (NCGS), it follows the model of Sax et al. (2009), employing similar methodology and using data from HERI’s Freshman Survey, a national survey of students preparing to enter their first year of university. Collected in 2016, the dataset includes responses from 5,888 female incoming students, 1,134 of whom graduated from 105 independent all-girls high schools. In this report, we examine academic and social characteristics of these students and use multilevel modeling to understand how students’ demographic characteristics (e.g. race/ethnicity, parent education, and family income) and high school characteristics (e.g. student-teacher ratio, enrollment size, etc.) account for differences between the two groups. Considering the recommendations and following in the footsteps of previous research of its kind, this study identifies benefits and outcomes of all-girls schooling.

# Key Findings

## DESCRIPTIVE RESULTS

When comparing data between graduates from all-girls schools and those from coeducational schools, we identified over 80 statistically significant differences ( $p < .05$ ). The results describe girls' school graduates who are academically engaged, confident in their science abilities, interested in political engagement, and who have high levels of cultural competency. In keeping with prior research, where differences occurred, the majority favored graduates of all-girls schools.

The following section highlights the most notable findings:

### **Stronger Academic Skills**

Alumnae from all-girls schools demonstrate stronger academic skills as measured in terms of habits of mind, which are a set of traits and behaviors associated with academic success:

- Girls' school graduates are more likely than their coeducated peers to say they frequently "sought alternative solutions to a problem" (53 percent to 48 percent). Additionally, girls' school alumnae are more likely than their peers to say they frequently "sought out solutions to a problem and explained it to others" (68 percent to 64 percent).
- Emphasizing their ability to learn independently, alumnae of all-girls schools more frequently explore topics on their own, even when not required, compared to their coeducated peers (44 percent to 39 percent).
- More than two-thirds (68 percent) of graduates from all-girls schools self report frequently supporting their arguments with logic, compared to just under two-thirds (61 percent) of coeducational school graduates.
- Providing additional evidence of important traits for academic success, about 40 percent of graduates from all-girls schools categorize their critical thinking ability as "somewhat strong" or a "major" strength compared to just over a third (37 percent) of coeducational school graduates.

*"Girls' school graduates are more likely than their coeducated peers to say they frequently 'sought alternative solutions to a problem.'"*

## Greater Academic Engagement

Graduates of all-girls schools are more academically engaged than their coeducational peers, as measured by survey questions asking about studying and tutoring other students, and time spent on homework:

- Girls' school graduates are more likely to spend time learning with their peers. Specifically, alumnae of girls' schools are more likely than coeducational school graduates to say they frequently tutored other students (22 percent to 15 percent) and frequently studied with other students (55 percent to 49 percent).
- Emphasizing their academic engagement and supporting findings related to their stronger academic skills, alumnae from girls' schools report spending more time on homework than their coeducated peers. In particular, girls' school graduates are more likely than their peers to indicate spending 11 or more hours on homework per week (42 percent to 37 percent).

## Higher Science Self-Confidence

In addition to being more academically engaged and demonstrating stronger habits of mind, graduates from girls' schools indicate higher levels of self-confidence in their science-related skills compared to graduates from coeducational schools:

- Girls' school graduates report greater confidence in their ability to use technical science skills such as tools, instruments, and techniques, with 46 percent reporting "very confident" or "absolutely confident" compared to 42 percent of coeducational school graduates.
- Over half of the girls' school alumnae surveyed were "very confident" or "absolutely confident" in their understanding of scientific concepts compared to just under half of coeducational school graduates (52 percent to 48 percent).
- When asked questions related to developing and performing research, girls' school alumnae demonstrate greater confidence in their ability to generate a research question, with 45 percent indicating "very confident" or "absolutely confident" compared to 41 percent of their coeducated peers.

*"Girls' school graduates report greater confidence in their ability to use technical science skills such as tools, instruments, and techniques."*

- Providing additional evidence of their strong science orientation, 60 percent of graduates from girls' schools indicate greater confidence in their ability to explain the results of a study, compared to just over half (56 percent) of coeducational school graduates marking "very confident" or "absolutely confident."
- Over half of the girls' school alumnae also report being "very confident" or "absolutely confident" they could determine how to collect appropriate data compared to less than half of their coeducated peers (51 percent to 46 percent).

### **Stronger Community Involvement**

Graduates from girls' schools are more active in volunteerism and more interested in community development compared to graduates of coeducational schools:

- Highlighting their desire to care for the environment, over a third of girls' school graduates report it is "very important" or "essential" they become involved in environmentally minded programs in the future (36 percent to 31 percent).
- Demonstrating an interest in future community engagement, graduates from all-girls schools are more likely than their coeducated peers to have a goal of participating in a community action program (50 percent to 42 percent marking "very important" or "essential").
- Notably, alumnae of all-girls schools indicate more frequent participation in volunteer work in the past year compared to their peers (52 percent to 47 percent marking "frequently").

### **Higher Levels of Cultural Competency**

Alumnae of girls' schools feel more prepared to work and live in a diverse society compared to their coeducated counterparts. In particular, they demonstrate gains over coeducational school peers regarding their desire to understand and work with diverse people:

- Almost 60 percent of girls' school graduates hold "helping to promote racial understanding" as a "very important" or "essential" goal, compared to just half of coeducational school graduates (59 percent to 50 percent).

*"Almost 60% of girls' school graduates hold 'helping to promote racial understanding' as a 'very important' or 'essential' goal, compared to 50% of coeducational school graduates."*

- Graduates of girls' schools are more likely to count their "tolerance of others with different beliefs" and "ability to work cooperatively with diverse people" as "somewhat strong" or a "major" strength compared to their coeducated peers (50 percent to 45 percent, and 62 percent to 56 percent, respectively).
- Providing further evidence of their ability to actively participate in a diverse society, three-quarters of girls' school alumnae report "improving my understanding of other countries and cultures" as a "very important" or "essential" goal, compared to alumnae of coeducational schools (75 percent to 70 percent).

### ***Increased Political Engagement***

Graduates of all-girls schools are more interested in political involvement than their peers from coeducational settings:

- Students who attended all-girls schools are more likely to plan to vote in local, state, or national elections than their coeducated peers (74 percent to 69 percent).
- Considering their political aspirations, graduates from all-girls schools are more likely to rate "keep up to date with political affairs" and "influence the political structure" as "very important" or "essential" goals (54 percent to 47 percent, and 27 percent to 23 percent, respectively).
- As further evidence of their political engagement, girls' school alumnae are more likely than their coeducated peers to have publicly communicated their opinion about a cause in the past year (61 percent to 55 percent).

*"Graduates from all-girls schools are more likely to rate 'keep up to date with political affairs' as a 'very important' or 'essential' goal."*

## RESULTS OF MULTILEVEL ANALYSES

The descriptive analysis revealed more than 80 ways in which graduates of all-girls and coeducational schools differed. Some of the differences could perhaps be explained by student-level and school-level characteristics, such as parent education, family income, school size, school affiliation (e.g. religious or non-sectarian), or urbanicity, rather than by school gender composition alone. Identifying which differences persist after accounting for students' background and school characteristics provides even stronger evidence for the ways in which all-girls schools contribute unique benefits and opportunities to their students.

*“Alumnae of all-girls schools are more likely to consider themselves critical thinkers and to score higher on measures of academic habits of mind.”*

The second phase of analysis used multilevel modeling to reveal ways that girls' school graduates are more academically engaged and interested in political and social engagement than their female peers from coeducational schools. Specifically, after controlling for students' personal and school characteristics, alumnae of all-girls schools are more likely to consider themselves critical thinkers and to score higher on measures of academic habits of mind, demonstrate stronger study habits such as tutoring and studying with others, and show higher levels of science self-confidence. They are also more likely to demonstrate a stronger community orientation and desire for civic engagement. Finally, girls' school graduates are more likely to be involved in political activities, to demonstrate social and political agency, and to be supportive of societal improvements, compared to their female counterparts who graduated from coeducational schools.

# Conclusions

The findings identify several key areas in which all-girls schools are distinctively preparing their students for success in college and beyond. Based on the data reported in this study, we can conclude that when compared to their female peers at coeducational schools, girls' school graduates:

- **Have stronger academic skills**
- **Are more academically engaged**
- **Demonstrate higher science self-confidence**
- **Express stronger community involvement**
- **Display higher levels of cultural competency**
- **Exhibit increased political engagement**

These characteristics reveal a consistent portrait of girls' school graduates who are more engaged academically and socially than their coeducated peers, findings which align with the profile outlined by Dr. Sax and her colleagues in 2009. Though some of the findings may appear modest, these statistically significant results demonstrate differences in areas of critical importance in the twenty-first century for women as they enter university and beyond, thus emphasizing the contribution of all-girls schooling for women's success.

These findings also lend support for future investigations, suggesting more questions to be asked, including:

How are the educational benefits of all-girls schools imparted to students? What other factors might be at work in girls' schools to provide these benefits, such as inventive pedagogies, co-curricular opportunities, or institutional mission? How might the results differ by school control or religious affiliation? With these questions and the results presented herein, the present study aims to further the discussion on the benefits of all-girls schooling, as well as provide a road map for future research to continue expanding our understanding of the topic and to inform the ongoing dialogue about the role of all-girls schools in student success.

*“These characteristics reveal a consistent portrait of girls' school graduates who are more engaged academically and socially than their coeducated peers.”*

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## ABOUT THE AUTHOR

Dr. Tiffani Riggers-Piehl is an Assistant Professor of Higher Education at University of Missouri, Kansas City, having previously served in multiple functional areas in academic and student affairs at Baylor University (TX), University of California, Los Angeles (UCLA), New York University, and Greenville University (IL). She earned her Ph.D. at UCLA, where she researched college student spirituality and student-faculty interactions as well as gender in STEM. Her dissertation, "Enhancing Classrooms and Conversations: How Interactions with Faculty Predict Change in Students' Spirituality in College" identifies ways that faculty can be more involved in students' meaning-making and spiritual development. She was a contributing author of the 2009 report "Women Graduates of Single-Sex and Coeducational High Schools: Differences in their Characteristics and the Transition to College" by Dr. Linda Sax and colleagues. Dr. Riggers-Piehl's research has been featured in the Teacher's College Record, Research in Higher Education, Religion and Education, and the Journal of College and Character. She is currently Associate Editor for the Journal of College and Character, having previously served as the "Spirituality on Campus" column editor. Her scholarly interests include examining the college experience and outcomes of college – including religion, spirituality, and moral development in higher education; faculty development; and fostering collaboration in the academy. Dr. Riggers-Piehl is a member of the American Educational Research Association (AERA) and the Association for the Study of Higher Education (ASHE).

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$f(x)$

a)  $f(x)+2$

b)  $y = -f(x)$

c)  $y = f(x-2)$

d)  $y = f(x+3)$

e)  $y = 2f(x)$

f)  $y = f(-x)$

g)  $y = f\left(\frac{1}{3}x\right)$

