

# The Challenges of Co-Education

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I'm going to speak to what I see as some of the challenges to gender equality that co-education in the United States faces today. Full disclosure: I have seen a lot of blatant sexism in co-educational institutions: when I was in college in the late 60s a friend at Carnegie Tech was told by a male professor that he had never taught a woman and wasn't going to start, find another class, in the late 70s one of my students a small liberal arts college, attempted to get help from a professor and was told that she didn't really need to understand math because she was so pretty she would probably get a job as a stewardess. In 1981, I was hired at Mount Holyoke where I have taught for 36 years. The college was the first of the seven sisters colleges to admit women. Before Mount Holyoke I had taught at several comparable small liberal arts college that were co-ed. From the day I arrived on campus, it was completely apparent that far from my previous experiences, gender equality was assumed, expected, and promoted. Calling oneself a feminist was just plain normal at Mount Holyoke, whereas at my previous institutions it had branded me as a wild radical. I realize that it is 2017

and not 1981 and hopefully, some of the blatant sexism I saw in coeducational contexts then is rare or nonexistent today, but we need to be vigilant and investigate the challenges to gender equality that co-education poses. I'm going to focus a bit on STEM disciplines because that is the most obvious place where there are inequities between men and women.

1. Women are viewed as less competent than men by their peers. A large scale study of introductory biology classes (Grunspan, Eddy, & Brownell) asked students several times over the course of the semester to nominate other students in the class who understood the material especially well. Males were more likely to be nominated and the gender gap grew over the course of the semester. You might think, "well, maybe males just do better, or maybe males are more outspoken, answer questions more" (actually there is some truth to that), but even when outspokenness and grades were taken into account, although female students did not show any gender bias, male students showed a strong bias toward nominating males. Celebrities were always male.
2. Bias of professors- (Moss-Racusin et. Al, 2012)- science professors in Research universities were asked to rate a potential lab manager who had just graduated as a science major. Only the name of the applicant

was changed so that half of them rated a female applicant and the other half rated a male applicant. With the exact same qualifications, the male was rated more competent, deserving of a higher starting salary, and the professor imagined providing less mentoring for this potential lab manager who hoped to go on to grad school. BTW, both male and female professors.

So, we might ask, “How does this matter?” The perceptions of peers and professors potentially affect women in various ways. They can undermine self-confidence, feelings of self-efficacy, sense of belonging and identification with science—all of which are shown to differ between male and female science students. One study of math students, for example, showed that over the semester all of the students felt a decreased sense of belonging, but women felt it even less than did men. It matters because a higher sense of belonging in a calculus course is related to the intent to pursue higher courses. We also know that stereotype threat, being subject to a stereotype (as women are when they are perceived as less competent, leads to a decrement in performance and to leaving the field or not entering to begin with. We

did a quick and dirty study to compare the percentage of women who major in physics and chemistry at 15 women's colleges and 15 matching coeducational colleges. Unfortunately, we only have complete information from 7 women's and 5 coed, but those are suggestive. In 5 of the 7 women's colleges, over 1% of the women were graduating with physics majors (one it was 5%) whereas in the coed colleges, only one had over 1% of women graduating with a physics major. Of the 19 schools that reported how many women were graduating as physics majors, three elite women's colleges (Mount Holyoke, Smith & Bryn Mawr) account for 41 out of 67 of them (61%). Likewise, from the 12 colleges for which I had information about chemistry majors, the same three women's colleges accounted for 43 out of 64 of them (67%). These statistics at least suggest that women's colleges might be more friendly places for women who want to major in science.

Beyond young women's feelings, are the potential losses of opportunities if professors do not see them as equally worthy of their time as their male students. I was particularly struck by the finding in that lab manager study that the professors imagined less mentoring of

the female graduate. One study sent fictitious emails to professors requesting a 10 minute face- to- face meeting in a week to talk about the doctoral program. The emails varied the names of the sender to indicate different genders and ethnic backgrounds. White males were more likely than women and men of color to be granted interviews, to even receive an email response from the professor, and among those who did receive a response, responses to the white males were significantly faster. I don't know of any study that has looked at who gets summer research internships in science, but I do know that every summer, xxx women undergraduates at Mount Holyoke is paid to stay and do research, an experience that definitely gives a boost to their scientific careers. I wonder how many women get those opportunities at coeducational schools.

3. And what about role models? We compared the percentage of tenure track and tenured women professors in 13 women's colleges and 13 matched coeducational colleges. gender breakdown among professors of physics and chemistry. For physics, in 9 cases the women's colleges had a higher percentage of female faculty members, whereas in 4 cases the coed school did. Also, if you just look at the total number of women

faculty members, 36% of the physics profs at women's colleges are women, 29% of the physics profs at coed schools are. Turning to chemistry, when we compared the matches, 11 of the women's colleges had a higher percentage of women than their matched coed school while only 2 of the coed schools exceeded their women's college match. Moreover, 43 out of the 80 chemistry profs at women's colleges were women. That's a majority (54%), whereas only 35% (35 out of 66) of the chemistry professors at coed matches were women.

At women's colleges, female role models are ubiquitous. I don't have the data but I'll bet the number of famous, accomplished women speaking on campus far exceeds those who are invited to coed campus. We did do a check on graduation speakers this past spring at our 13 matched colleges. In all 13 women's colleges, a prominent woman was the graduation speaker (from Hillary Rodham Clinton here at Wellesley to Dolores Huerta, a famous Civil Rights and labor activist who co-founded the org that became the United farm workers, to Anne M. Burke, an Illinois Supreme Court justice, to Oprah Winfrey who gave

graduation addresses at both Smith College and Agnes Scott. At the 13 coed colleges, there were only three female speakers.

4. Finally, for students. What is the campus social life like? Women at co-educational institutions do more drinking than at single-sex, and more drinking that they feel pressured into doing. I think the culture of sexual violence that exists at many US coed institutions is also an impediment to gender equality, but I think someone else is going to talk about that.

When we think about the relation between co-education and gender equality, we have to think not only about the students, but about women faculty. What are co-educational institutions like for them?

1. We have already seen that in chemistry and physics, women professors are likely to have more female colleagues, and live in a less male-dominated world.
2. A relatively recent study compared four highly rated women's colleges and 23 comparable coeducational colleges and found more salary and position equity at the women's colleges. In three out of four of those women's colleges, at least 45% of their tenure track appointments were held by women, whereas at the coeducational

colleges only 59% met that standard. The average percentage of tenured women at the women's colleges was 49%, compared to 35% at the coed schools. Although neither group reached full parity when it came to salary, the women's colleges came closer with women earning 96% of what males earned at the same rank, compared to 91.2% at the coed schools. And finally despite numerous studies showing that it takes women a longer time to be promoted than men in US colleges and universities. My student, Beier Yao and I did a systematic study at Mount Holyoke and found no significant difference between men and women in the average number of years between receiving tenure and promotion to full professor.

3. So, we can see that co-educational institutions are not doing all they could to promote gender equity. It is not simply at the institutional level that there are problems. Male students are not just biased against their female peers, they are biased against their female professors. Amy Bugs did a study in which she had male and female actors gave identical physics lectures. The students who heard them answered 15 questions which were summed to give one score. The female students gave a slightly higher rating to the female



lecturer, but the male students gave vastly higher ratings to the male  
profs. Both male and female students rated the male higher on  
stereotypical male attributes “solid grasp of the material” “good with  
the equipment” but the bias was much greater for male students.

Co-educational institutions have a lot to learn from women’s college.