

## **Innate Differences?**

### **A Look at the Disparities Between Men and Women in Academia**

Over the past several decades, women and men have become equal in educational opportunities in the sciences. Women earn a higher percentage of bachelor's degrees in science and engineering than men, with 56% of these degrees going to women in 2001. In 1994, women received 52% of these degrees. Similarly, in 2001, women earned nearly 40% of science and engineering doctoral degrees, an increase from 1994, when women received 30% of these degrees (NSF). Despite these gains, disparities continue to exist in the percentages of female science and engineering professors. According to the National Science Foundation, in 2001, women only comprised 28% of all full-time science faculty at four-year colleges and universities. Studies have suggested this discrepancy exists because of the rigid structure of academia. These studies insinuate that this rigidity forces women to choose between work and family. I contend that the disparities exist because of the rigidity of academia, but also because of the lack of support for having a family. In this paper, I also suggest some solutions toward solving this problem.

Even Harvard President Lawrence Summers has recognized these disparities. However, instead of attempting to fix the situation, he decided to address why these discrepancies exist, albeit unsuccessfully. He said women are not as interested as men in making the sacrifices required by high-powered jobs, men may have more "intrinsic aptitude" for high-level science and mathematics and discrimination may affect women negatively (Ripley 52). Summer is correct in stating that discrimination affects women in academia. However, I argue that women are show just as much interest as men in science but the tenure-track produces obstacles that cause many women to not pursue these positions. By falsely claiming women lack the "intrinsic aptitude" for the sciences and mathematics, Summers is only contributing to the problem. Perhaps Summers wanted to provoke the country into making changes in the tenure-track. Or perhaps comments like these cause the demographics of tenured positions at universities across the country to remain stagnant.

One of the reasons Summers says women are not equally represented in academia is because there are innate differences between the ability of men and women in the sciences. So, are there gender differences in brain structure that result in these disparities? Recently, the Women in Science and Engineering Leadership Institute at the University of Wisconsin-Madison held a panel exploring what the research really says about the abilities of women. Here, Assistant Professor Paul Whalen of the Department of Psychiatry spoke of the research on brain structure. The studies that show men and women have different brain structure examine around

twenty images, not enough to come to a real conclusion. This causes skewed data, misrepresenting any possible findings. A study must use a larger pool of subject, around a hundred, to represent all possibilities. However, proposals that plan to study greater than twenty subjects do not receive any funding because of the cost. Thus, no real conclusions can be made from these data findings. Whalen also emphasized that when three percent of the brain scan is different between two images, it must be remembered that 97% is exactly the same. No real conclusions can be made from any brain imaging studies discussing the differences between men and women.

Secondly, Summers mentioned mathematical ability differences between men and women. Mathematical ability is generally associated with scientific ability. Professor Caitilyn Allen of the Plant Pathology and Women's Studies Departments spoke of these potential differences at a panel sponsored by Women in Science and Engineering at the University of Wisconsin-Madison. It is true that for the past 33 years, males have scored 35 points better than females on the SAT Math Exam. However, the boys that do take this exam are a more select group than the girls, generally coming from more upper class backgrounds. After adjusting for differences in background, women's scores gained 25 points (Burton). This leaves only an eight point difference, out of an 800 point exam. Additionally, there is a smaller gender gap on the ACT, only a 0.2 point difference between the averages on the 36 point exam (Allen). Both of these differences probably become statistically insignificant when standard deviations are taken into account. This shows that there are minimal differences in the math, and therefore science, abilities of males and females. It also shows that background differences are the cause of differences in scores.

Some may argue that the lack of women science professors is due to differences in research productivity. In the past, this argument has been used to justify women's lower rank, salary and tenure rates. However, these justifications are the results of skewed data, thus providing an inaccurate description of the performance of the majority of faculty (Fox 89). According to one report (Land of Plenty) while women do publish less than men, their publications tend to be more noteworthy and on average, acquire more citations than publications from male faculty. In fact, a study by Long found that a paper by a female biochemist was cited 1.5 times more often than a paper by a male (173). Thus, one cannot use the argument that women are less productive than men in not granting them tenure.

So, if there are no real differences between the abilities of men and women, what is the cause of the disparities at the academic level? This is where Summers is correct, women are the result of some discrimination when it comes to academia. The rigid nature of the profession causes some women to choose between family and career. In fact, 21.3% of women mention family demands as a career obstacle in comparison to 2.8% of men (Trower). Those who do choose a career in academia while having a family face numerous hardships. The structure of academia makes it difficult to do both, though it can be done.

Why does this matter anyway? Science is all about having new and exciting hypotheses and questions. A more diverse group of scientists will study a more diverse range of topics, creating more varied hypotheses. For example, primatology has benefited immensely from the contributions of women researchers, like Jane Goodall and Dian Fossey (Sonnert 36). Additionally, it has been found that the percentage of women faculty correlates positively with both male and female students' learning and student retention rates (Sandler 9). By having an equal mix of men and women, science as a whole will benefit.

To understand why the tenure-track creates strain on the lives of those pursuing it, an explanation of the process is necessary. The tenure-track starts after graduate school with receiving a postdoctoral fellowship in an academic lab. Lasting for approximately two to six years, this fellowship allows for the researcher to work under a faculty member while conducting an independent research project. During the last summer and fall of this fellowship, one applies for tenure-track positions at colleges and universities. This is a time consuming endeavor because unique research proposals must be made, between one and three per application. She will be an assistant professor for approximately five years, before she goes up for tenure. This involves traveling across the country presenting her research at research universities, especially where experts in her field work. The experts in this area will have to evaluate if they feel this candidate should be granted tenure based on her research. Factors that affect if tenure is granted are: recognition of the researcher internationally in his or her field, quality of his or her established, well-funded program, number of publications and excellence in teaching undergraduates and mentoring graduate students (Blackwell). If the researcher is granted tenure, she now has the title of full professor and enjoys a great deal of job security. If she is not granted tenure, she must leave the university and try to find a new position.

Because the tenure-track process is so time consuming, having a child during the process creates even more stress for the female researcher. In fact, Mason and Goulden, found that having a child within five years ("early baby") of receiving a Ph.D. affected the tenure rates of women. Men experienced higher tenure rates in the sciences than women with early babies, 77% versus 53%, respectively (89). This suggests that having a baby affects decisions women make about their careers, assuming women carry more responsibilities in child rearing. They also found that women who waited to have a baby five years after receiving a Ph.D. had higher tenure rates than women who had early babies, at 71% (90). Additionally, women with children were the least likely to secure a tenure-track position, whereas men with children younger than six were the most likely to secure a tenure-track position (90-91). Having a baby within five years of receiving a Ph.D. occurs at the same time as critical events in the tenure-track process, such as completing a postdoctoral fellowship, applying for assistant professor positions and continuing to publish. These are the most fertile years for a woman, but at the same time, women are expected to be most productive. Having a baby during these critical years can cause some women to leave the tenure-track for a position outside of academia.

Because the tenure-track and fertile years for women coincide, many women have reservations about pursuing tenure-track positions. In fact, at the California Institute of Technology, one half of the women faculty is dissatisfied with the process, compared with just 19% of men (HHMI). A recent study conducted by The Project on Faculty Appointments found that female graduate students are more likely to choose a non-tenure-track position than their male counterparts (Trower). The stress women feel by having children and still wanting to be involved in science force many into non-tenure-track positions or forced out of academia altogether to industry. These positions offer more flexibility in juggling family and career because the hours are more like traditional jobs. It has been found that women are more than twice as likely than men to hold non-tenure-track positions than men among scientists in general (Vetter). However, this results in academia losing many qualified potential faculty members. Why should females be forced to choose between family and a tenure-track position?

In addition to disparities in the numbers of men and women involved in academia, the pay for men and women also differs. In 2000, women, on average, earned \$10,300 and \$12,895 less than men in public and private institutions, respectively (Trower). However, this statistic can be misleading since it is true more men than women hold senior faculty positions than women and as a result are paid more. Nevertheless, disparities in pay do exist at the assistant professor level, though not so extreme. For example, a study by Women in Higher Education Roundtable found that men assistant professor at colleges and universities in the Northwest United States made \$50,196 whereas female assistant professors only made \$45,637. Although this statistic is less startling, it does show that the salary gap persists even with newly hired faculty, a trend that must discontinue for academia to make any progress.

To alleviate this problem, universities need to allow women to stop the tenure clock to have children. In this past, this has been considered taboo and a reason not to appoint a woman as a full professor. However, some still feel that although many universities have adopted policies that allow time off from the tenure-track, this is not enough. Just because the institution offers a break from the tenure clock does not mean that women will take advantage of it. For example, at the nine University of California campuses, thirty-nine percent of women did not stop the tenure clock for fear of hurting their career. At the University of Michigan, Ann Arbor, one woman said “Had I stopped the tenure clock, I would have been viewed as weak by my senior colleagues” (Bhattacharjee 2032). Additionally, a 2001 study among full-time faculty at two and four year institutions found that seventy percent of tenured and tenure-track faculty felt that taking leave after the birth of a child would be damaging to their career (Perna 549). Princeton, in an effort to lessen the stigma attached to accepting a tenure extension made the extension automatic (Rimer). Other institutions need to follow Princeton’s lead so that more women can complete the tenure-track.

On top of changing the requirements for faculty members, institutions must provide support for these faculty members. For example, universities should provide subsidized child care for all tenure-track and tenured faculty. These child care facilities should be located on or

nearby campus, to provide the maximum amount of convenience. For example, Iowa State University provides on site child-care for faculty and employees on a sliding scale of fees (Rosser 141). This situation places the least amount of stress as possible on the researcher, allowing more time to be spent on research and teaching.

In an effort to help both men and women assistant professor through the tenure process, The California Institute of Technology has adopted a mentoring program. Jessica Hollenbeck, a postdoctoral fellow at the University of Wisconsin-Madison feels that women must take the time to mentor young women about their possibilities in science. Mentoring has also proved important in keeping undergraduate women in the sciences (Phelan 419). However, because of the number of committees tenured faculty must serve on, this should be a duty that is taken seriously by the department. Thus, it should be in replacement of serving on another committee instead of just being added onto the list.

Currently, institutions require faculty members to serve on a certain number of committees. These committees are involved in helping the dean hire new faculty, graduate admissions, and providing “visionary guidance” to the department regarding the future of the program (Blackwell). Also, a certain amount of outreach to the community is required. These committees are important to the program and university as a whole, but really it shows how much the institutions require of their faculty. Faculty members can still remain viable to the department without serving on three or more committees. Universities should decide which committees are of the utmost importance and focus most of their attention on those. Extraneous committees waste the time of the faculty member, taking time away from actual science. Alleviating the strain produced by serving on these committees has the possibility of increasing the productivity of the researcher. This would benefit male and female faculty members.

Some (Mason and Goulden) have advocated for the creation of part-time positions. However, these are not entirely feasible in the sciences. Lab space is always a premium in academic settings. Providing part-time faculty with a lab without requiring teaching responsibilities would create considerable tension within a department. This could be a suitable option for one or two semesters immediately following the birth of a child. Additionally, in the past, some faculty have shared a position. In this situation, they have one lab, do the same research, share a salary and receive tenure together. Today, this is not practiced as commonly, but remains an option.

It must be noted that the National Science Foundation (NSF) has programs meant to specifically address the underrepresentation of women in the sciences. For example, Graduate Fellowships for Women encouraged women to remain in graduate school and complete the Ph.D. by providing support for individual women and their individual research in science and engineering (Rosser 24). Career Advancement Awards, later called Professional Opportunities for Women in the Research and Education, focused on advancing the careers of individual women by providing funds for individual research (Rosser 25). These programs are just two

examples of how NSF is trying to retain more women in the sciences. It is attitudes like these that will help to advance women in the sciences.

It must be noted that having a family is not all counterproductive for women. Children provide great joy for their parents and this should not be compromised. According to Caitilyn Allen, a Professor in Plant Pathology and Women's Studies at the University of Wisconsin-Madison, having children makes women more productive overall. Because they have to adhere strictly to a schedule to spend time with their family, these women tend to be more efficient in scheduling their daily tasks. It should also be realized that academia has the potential to be one of the best careers for women. Because the hours can, and should, be flexible, women who have the support system can enjoy some benefits those in other professions do not have. For example, a tenured faculty member can take time off in the afternoon to bring their child to the doctor or dentist, if necessary. The advantages of this profession have the possibility to outweighing the disadvantages, but only after changes are made.

Additionally, professors are able to enjoy being their own boss; a perk not all careers offer. It is this benefit that allows the researcher to ask the questions in which he or she is interested. For many, it is all about the pursuit of knowledge, hoping for great results. In addition, many men and women enjoy training and inspiring young people in the sciences: sharing the joy of new discoveries.

To women in science, many obstacles can prevent them from taking tenure-track positions at research universities. These include the pressures in having a family and career simultaneously. Changes must be made so that more women do pursue the tenure-track. Academia loses many smart women to non-tenure-track positions or industry every year because the changes are not being made quickly enough. These changes include subsidizing child care for tenure-track and tenured faculty and allowing people to pause the tenure-track to have children and take care of their family. The tenure track was built for white males years ago. It is time for institutions and the system overall to realize this model is outdated and change is necessary for progress to continue.

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