Keeping many capable scientists off the tenure track is the belief -- quite justified, in Ceci and Williams’s view -- that motherhood makes career success in scientific academia much more difficult.

Women now receive half of life science doctorates and nearly a third of doctorates in math, providing an ample supply of females with the credentials for science, technology, engineering, and mathematics faculty posts. Crucially, however, female Ph.D.s apply for those jobs at a substantially lower rate than comparable men.

What makes academic careers less attractive to qualified female scientists? The “single most important factor in explaining women’s underrepresentation [is] a desire for children and family life,” write Stephen Ceci (http://www.human.cornell.edu/bio.cfm?netid=sjc9) and Wendy Williams (http://www.human.cornell.edu/bio.cfm?netid=wmw5), co-directors of Cornell University’s National Institutes of Health-funded Institute for Women in Science (http://www.human.cornell.edu/hd/ciws.cfm) in the current American Scientist (http://www.americanscientist.org/issues/feature/2012/2/when-scientists-choose-motherhood). As Ceci told Science Careers in a joint interview with Williams, average differences in subject matter preferences between the two sexes -- a variation also supported by the work of other researchers (http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2010_12_03/caredit.a1000117) -- influence the percentages of men and women who receive Ph.D.s in various fields. Men are likelier than women to favor work involving “symbolic manipulations and inanimate objects,” he says, while women on average prefer fields related to living things.

Across all fields, however, the “choice to become a mother” exerts an effect on academic careers “so remarkable that it eclipses other factors,” the article states. Keeping many capable scientists off the tenure track is the belief -- quite justified, in Ceci and Williams’s view -- that motherhood makes career success in scientific academia much more difficult. “Childless women,” they write, “are paid, promoted and rewarded equivalently to their male peers (and in some analyses at even higher rates.)” In plotting their careers, women without maternal intentions “show decision-making comparable to men.” But mothers, especially those with young children -- and even women planning on motherhood -- are “far more likely to move out of the research-professor pipeline…. No other factor can account for as much leakage of women....”

Reducing that leakage, Ceci says, will require substantial “culture change.” Universities have tried various policies to
become more family-friendly, but a “range of adjustments to the tenure process” is needed, the article states. Given the realities of the current academic job market, the outlook for this happening is less than promising.

Timing is everything

This view angers some academics, Ceci says, especially those “still wedded to the idea that women’s woeful condition is due to discrimination.” He and Williams both well remember the blatant gender bias that used to reign in the academy and certainly don’t deny its formerly tremendous role. But, says Williams, “the reality of the ’60s, ’70s, ’80s and ’90s is different from the reality of today.” Search committees now feel “pressure to hire women,” who in fact now “have an advantage” in landing interviews and offers, she notes. In the most heavily masculine fields, female hires “get high salaries and can name their own terms,” Ceci adds.

For many of the young women now choosing a career, the big issue is not bias but “timing,” Williams says -- specifically, the overlap of the crucial pre-tenure period with their prime reproductive years, a conflict severely complicated by “the antiquated policies and procedures in the academy, [which] demands that women come out of getting a Ph.D. and a postdoc and spend the next 8 years in single-minded pursuit of tenure.” Because of this clash, a disproportionate number of academic women “end up childless,” she explains. “If you never cared about having kids, you could say, ‘So what?’” But for women who “want children desperately, putting it off for 8 or 10 years and then trying to get pregnant at 39 and not succeeding” -- a scenario she has seen play out for “at least a dozen” friends -- is “a source of major regret.” And those academic women who do become mothers are twice as likely as male colleagues to report regret about having fewer children than they wanted.

The conflict between professional advancement and parenthood is especially harsh for women in fields that consider a postdoc de rigueur because of the additional years before one can even apply for a faculty post. Grad students and postdocs witnessing the struggles of tenure-seeking professors therefore often weigh the risks and conclude, “I don’t want to wait. I’ll just take a part-time adjunct job now and have kids when I’m 32 [and] try to get back [in] the game later on,” Williams continues.

“Lo and behold, they find out that in the academy that is not tolerated,” she says. “Applications from women who’ve taken time off to have a couple of kids, even if they were brilliant scholars, ... are never seriously considered. I see repeatedly that you simply can’t re-enter [the tenure track] after getting a Ph.D. and then taking time off for children.” A study by Mary Ann Mason and Marc Goulden of the University of California, Berkeley, corroborates this observation. “The largest leak in the pipeline between receipt of the Ph.D. and tenure occurs before obtaining the first position,” they write. “This leak is disproportionately composed of women who have early babies…. There [is] very little re-entry into the pipeline.”

“The dominant culture [believes that] these [applicants] are not committed to science,” Ceci warns. “Unless it’s hidden by calling it a postdoc,” any substantial hiatus in a woman’s CV can irreparably damage her career, he says. He knows of advisors who “call a friend and say, ‘Can she hang out in your lab? It won’t cost you anything and she’ll help you publish.’ That way … she can say she was on a postdoc.”

Adapting to change

“There’s really no a priori reason why it has to be that way. It’s just how things are done,” Williams laments. Other professions have had to adapt to the advent of women, and some have managed the change a good deal more successfully than academic science has so far.

A physician I’ll call Tom recalls that when he finished medical school in the late 1960s, his class was almost entirely male. When he joined a private pediatrics practice in the early 1970s, his two partners there were both men. Today, as the senior member of that practice, he is one of two men among five physicians.

The changes he has witnessed in medical practice are vast, from the days when his pediatrician father made house calls equipped only with his black doctor’s bag to today’s high-tech office, like the one where Tom and his colleagues record case notes and write prescriptions on tablet computers. Tom says, however, that some of the biggest changes happened not
because of technology or scientific advances, but because, for a couple of decades now, the great majority of the young doctors entering pediatrics have been women. These board-certified specialists refused to accept the working conditions that the formerly all-male profession considered normal. Practices seeking to attract top talent had to make adjustments to accommodate the needs of a new kind of colleague.

The main issue for female pediatricians is not timing, but time, Tom says — specifically, the long hours, unpredictability, and constant interruptions to family life that were customary when pediatricians had wives to manage their homes and families. Pediatrics involves a lot of after-hours phone calls from anxious parents. In the days of the all-male practice, Tom and his partners were on call every third night and every third weekend and would meet patients after hours at the office or the hospital. They also visited hospitalized patients daily, further lengthening their work hours.

But female pediatricians demanded manageable, predictable schedules without nighttime excursions. Today, the members of private practices like Tom’s still take turns answering evening and weekend calls, he says, but now they refer patients needing immediate attention to an after-hours clinic or the hospital. They cut out the daily hospital visits by turning the care of hospitalized patients over to hospital-based pediatricians. Tom’s practice still provides high-quality care, he believes, and his female partners are all “excellent physicians; very well-trained.”

It’s a good model. The medical profession, however, operates in a labor market drastically different from academic science. Unlike academia, which produces a large oversupply of Ph.D.s, organized medicine has long controlled the number of new entrants to protect career opportunities. As a result, only three percent of the pediatricians finishing residency in 2010 reported having no job lined up, according to survey data (http://www.aap.org/en-us/professional-resources/Research/pediatrician-surveys/Pages/Graduating-Resident-Survey-Trend-Data.aspx?nfstatus=401&nftoken=00000000-0000-0000-0000-000000000000&nfstatusdescription=ERROR%3a+No+local+token) from the American Academy of Pediatrics. Another result: “Women in medicine have kids at a much higher rate” than tenure-track academics, Ceci says. That’s because a hiatus does little damage to the career of a physician in private practice, according to Harvard economists Claudia Goldin and Lawrence Katz (http://workplaceflexibility.org/images/uploads/program_papers/goldin_-_the_career_cost_of_family.pdf).

Quite the opposite, of course, is true for academic scientists. With numerous applicants for every opening — hundreds, typically — university departments need consider only those who meet their exact specifications. This creates little incentive to change. But as the current research highlighting preferences strongly suggests, if universities really want to attract more women to academic science careers, they probably have to find a way to end the prevailing taboo against time off for family matters, among other changes. Substantially greater numbers of women are likely to opt for careers on the tenure track only when they, like female pediatricians, see those changes happening, Ceci and Williams believe.

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