

FOCUS: EDUCATION — CAREER ADVICE

Balancing Science and Family: Tidbits of Wisdom from Those Who've Tried It and Succeeded

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There is a notion that combining parenthood with a career in academic science is problematic, yet academic science careers can provide an outstanding career choice for professional parents because they offer extraordinary flexibility and stability. Much has been written about the paucity of women in tenure track scientific positions and the general disparity between men and women in all professions. However, the status quo is changing as more women fill the ranks of academia and male professors share childcare and household duties with spouses who hold professional positions. Although combining any career with parenthood can be challenging, parenthood should not be considered an obstacle to a successful scientific career.

At the time that I received the request to write about my personal experience combining career and family, Connecticut schools were subjected to an unprecedented number of cancelled school days due to snow fall. There was so much snow on the roof of my son's school that a structural engineer deemed it a safety hazard for fear of roof collapse. Two days of school were cancelled to allow crews to remove the

snow. This followed 7 days of school cancellation due to inclement weather. A string of unexpected days off was great fun for the kids but wreaked havoc with my teaching schedule that was in full swing. I could not find childcare on such short notice, and so I carted my children into the lecture hall over and over. My undergraduate students were all characteristically polite about it, and fortunately my children behaved like

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†Abbreviations: SDR, Survey of Doctorate Recipients.

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angels, with some assistance from iPods and a kind office assistant who delivered plates of cookies to them.

This scenario is familiar to most working parents (male or female), when both spouses are juggling career and family. While work-family balance is pertinent to men, women, professionals, and non-professionals, there are challenges unique to the sciences and, in particular, to women. To begin with, compared to their male peers, female faculty are less likely to be supported by stay-at-home partners. At the University of Michigan in 2001, for all Scientist and Engineering faculty living with a partner, women faculty were twice as likely as men to live with a partner who worked full-time. This suggests that the women faculty may have more household responsibilities than their male counterparts [1]. Similarly, a study of UC Berkeley faculty indicated that female faculty with children spend a greater number of combined hours on caregiving and household activities relative to male faculty with children (50.1 versus 32.2 hours) [2]. Given this discrepancy in household support, it is not surprising that women are at a distinct disadvantage over men when trying to attain tenure while raising a family (although this disadvantage becomes less dramatic for women who have babies more than 5 years after the PhD is obtained) [3]. While women now earn the majority of PhDs in the life sciences [4], far fewer women apply to tenure-track positions in the sciences than men [5]. Of those hired, far fewer make it to the level of full professor relative to their male counterparts, [6,7,8]. In addition to lack of household support, studies indicate that a decision to have children may contribute to the disparity in career paths between men and women. Studies using the Survey of Doctorate Recipients (SDR†) data [9] for PhD recipients in all sciences from 1979 through 2003 conclude that while single women without children achieve tenure at roughly the same levels as married men with children, married women with young children are far less likely (27 percent) than men with children to achieve tenure [3,10]. On the other hand, this same research team determined

that, among women who had earned their PhDs from 1978 to 1984, 44 percent of tenured women faculty were married with children, a more common household configuration than either married or single women without children (19 percent and 26 percent, respectively) [2].

Buried in these sobering statistics are the real life stories of a growing number of successful women who have managed to combine a demanding career in science with the rigors of raising children (refer to [11] for 64 such women). Successful women provide inspirational examples that demonstrate scientific career and family can be integrated. The common denominator doesn't seem to be how many hours they can manage to commit to the lab (or office) after childbirth or when they decide to have their first baby, but rather how passionate and focused they are about science. Mothers with careers have to choose family and work as their top two priorities, leaving little free time. This is taking into consideration that a spouse will be heavily involved in the child rearing and household responsibilities. But this is true for any professional woman, not just those in the sciences. The bottom line is that women who are passionate about science and want a career need not be scared away from pursuing a scientific career. Unfortunately, the statistics above bear out that women with PhDs in the sciences lag far behind their male counterparts in pursuing what I'll call the traditional route of a tenured faculty member. A faculty position is a fabulous job that allows freedom and flexibility, reasonably good pay, job security (after tenure), travel, and enormous day-to-day variety ranging from teaching to service to research design. As Mecky Pohlschröder, tenured professor at the University of Pennsylvania, puts it, "As faculty, we may not convey the benefits of this job well enough to our graduate students. We complain about failure to renew grants and we work long hours at times, but I have an amazing job. I love it because it enables me to apply my talents toward things that I'm passionate about in a stable setting that also grants a great deal of autonomy." Pohlschröder explains

that she can slip out to a morning or afternoon program at her son's school; she was also able to take time off when her second son required unexpected surgery. Furthermore, as a tenured professor, she has a level of job security that has become vitally relevant in these difficult economic times, and while some of Pohlschröder's colleagues in other professions or in industry have been asked to relocate, this is something that she and her family don't have to consider.

I believe that no one should opt out of this traditional, tenure-track route merely because they fear combining the demands of the job with those of raising a family; however, some women prefer to pursue different options. Fortunately, there are ample opportunities to put scientific training to use aside from following the traditional route. In fact, the majority of professional women (in all fields) choose to veer off the traditional trajectory pursued by most male colleagues [10,12]; articles in the *New York Times* suggest that this may be by choice, not because women feel pushed out of the Ivory Tower [13,14]. Furthermore, analysis of the SDR data indicated that women who take a non-traditional path are roughly half as likely to divorce than women who hold a tenure-track position [2]. In the end, the decision of how to balance career and family is a very personal one with myriad possible solutions. As scientists, we are trained to think creatively, and we must do the same when it comes to managing integration of family and career. Of the many women who have successfully integrated the two, each has a unique story of navigation through ups and downs and their viewpoints sometimes differ. Nevertheless, much insight can be gained from observing other successful women scientists.

Michele Swanson (Yale College '82), to the surprise and perhaps chagrin of her thesis advisor, was determined not to wait until her career was established before having children. Now at the age of 51, she is a full professor at the University of Michigan Medical School with two children who are recent or nearly college graduates. She makes a strong case for starting a family during graduate school if you can manage

financially and if your spouse is on board. She argues that, after the preliminary exam and course work, a graduate student is focused solely on his or her research project, unlike faculty members who must juggle a full calendar of commitments such as research, grant-writing, teaching, travel, and university service. Like graduate students, postdoctoral fellows have few commitments other than their research project but are generally pressured by the "clock" of a research fellowship. On the other hand, Aurora Esquela-Kerscher, an assistant professor at Eastern Virginia Medical School, chose to have her first child as a postdoctoral fellow because she felt that this was one of the least stressful time periods in her career. She was finished with coursework but didn't yet have to face the pressure of attaining grants to keep an entire laboratory running, although she did receive a postdoctoral fellowship prior to having her first child. She feels the biggest downside is that, as a postdoc, "this is the time to really push things out and establish yourself as an independent researcher." The decreased work schedule can cut into productivity. Swanson feels that a slightly longer graduate training period (due to the demands of a young child) is more easily accommodated and less noticeable in the long run than at any other point in a scientific career. Now at the stage of her career when she has more opportunities to travel and contribute to her field (e.g., executive boards for professional societies, journals, and conferences), she is free to do so since her children are independent. Swanson stresses that it takes determination, sacrifice, and some creative childcare arrangements to raise a family during these cash-strapped years. Swanson's husband, also an academic, took a prominent role in the childcare, and Swanson partnered with a fellow scientist-mother to share a nanny during the pre-school years. By staggering their work schedules, the Swansons initially cared for their children during all but 5 hours of the day, when a personal friend and young mother cared for their daughter. When their son arrived, a shared nanny provided 8 hours of in-home care. These solutions allowed

Swanson and her husband to spend significant time with their children while helping to reduce the costs of childcare. As their children reached the teenage years and became too old for an after-school nanny, the Swansons again adopted this staggered work schedule so that the children would not be home alone after school. Swanson notes that the window between graduate school and postdoctoral work provides an opportunity to stay at home full-time with the children if finances permit. "Thesis advisors don't care when their graduates start their postdoc, and postdoc advisors just want to know when to have a bench and salary line ready. Another advantage is the time it provides final manuscripts to work through the publication pipeline, which strengthens postdoc fellowship applications." Finally, Swanson believes it is imperative that the research advisor, if not totally on board, is at least not hostile to the idea. Although Swanson's thesis advisor, Fred Winston at Harvard, was initially skeptical and might have preferred that she defer starting a family, he was respectful of her decision. Ultimately, she demonstrated to him that a motivated woman could complete a PhD and start a family at the same time.

While there are advantages of starting a family early, this may not be practical financially or when a woman is simply not ready to take on the responsibilities of being a parent. Shubha Tole met her partner during her second year of graduate school at the California Institute of Technology. She could have started her family during graduate school but felt unprepared to do so, both emotionally and in terms of coping with balancing research and motherhood. While she was certain she wanted children, for her it was clear that parenthood would be much more enjoyable once her scientific career was relatively established, or at least in a more manageable stage. This is a sentiment echoed by many women who delay starting a family until after attaining a tenure-track position. Carol Kumamoto, a professor at Tufts University School of Medicine, felt that after she had pursued her own personal dreams and "accomplished a few things,"

she was ready for children. Tole had the first of two children at the age of 35, three years after starting her own lab (the first vertebrate lab at the Tata Institute of Fundamental Research, India). The second came when she was 38. She feels that there are two huge benefits to postponing having children. First, the increased salary enables one to afford more support for childcare and general household maintenance. Second, she believes that as a faculty member she has a more flexible daily schedule than she did as a graduate student and postdoctoral fellow, when progress depended on fully focused experimental time at the bench. She can schedule meetings to suit her family obligations, and she doesn't have to worry about setbacks with her research for the unexpected emergencies that every parent faces. Stopping an experiment for a sick child could have caused a 3-week setback as a graduate student or postdoctoral fellow if the work depended on timed-pregnant mice, for example. A faculty member can work at home on many tasks, whereas a graduate student needs to be in the lab at the bench, she explains. Tole spent 2 hours per day during her maternity leave working on manuscripts for two of her lab's early publications and could even hold lab meetings at her house, which is walking distance from her lab. (Swanson and Pohlschröder also live within walking distance of their labs, an arrangement that all three view as key.) Tole and others admit that one of the greatest considerations of delaying parenthood is the risk of decreased fertility. In addition, Kumamoto points out that travel becomes more difficult once children enter the picture. She decided to eliminate most work-related travel once she had children, at a time when others at her stage were actively traveling. This can lead to a feeling of disconnection from the field.

My personal story is slightly different. As far back as graduate school, the notion that I did not want to follow a traditional path was percolating in my head. I had my first child during a postdoctoral fellowship at Harvard, but when my husband received an offer for a faculty position at Yale, I de-

cided to use the move as an opportunity to re-evaluate my priorities. Although I loved my research years and was fortunate to work with talented individuals who were also my closest friends, I did not want to miss a minute of that first critical year of my son's life. In what was a most difficult decision, I decided not to return to work. At the time, mindful of the expectations for academic scientists, I believed that this would end my career. This was not the case. I now believe that as long as you are determined, have built a track record of accomplishment, and earned the respect of your colleagues, there will always be opportunities.

Full-time parenting is a challenge for those of us who are used to what I call "ticking boxes." At the end of a day, I love to check off all of the things that I've accomplished. As any parent knows, days spent at home with a young child cannot be accounted for with any standard metric, and the lack of intellectual stimulation can be defeating. But in my heart of hearts, I knew that I could not hand over this important task to anyone else, and I continued to stay at home full-time until my son was 2 years old. By this time, I was thoroughly enjoying parenthood (perhaps sleeping through the night had something to do with my improved outlook), but I missed science and yearned for some intellectual stimulation. I sought out and accepted a small teaching position at Yale. It was the perfect fit; I prepared lectures and tended to student e-mails late into the evening and during my son's naps, and I was a fully engaged parent at all other times. I hired a babysitter for the few hours per week that I needed to be in the classroom. This made for very long days, but my work as both mother and lecturer was so fulfilling that I didn't mind.

After my daughter was born and both children started school, I again reassessed my priorities and gradually accepted more responsibilities at work to fill the hours that my children were in school. The early days required enormous focus and self-discipline, and I still often work late into the evenings after my children have gone to bed, but this is true for most professional women. As with

all professional mothers, career and family are most important to me, and the proportion of time I spend on them reflects it; there is time for little else. It's all about priorities.

I should point out that the position of part-time lecturer was not advertised, nor was I aware of any precedent for such a position in the sciences. However, I knew what I wanted, and I pursued my goal. Relentlessly. I wrote letters to all of the post-secondary education institutions in the area, and I talked about my desire in every conversation with fellow scientists. I turned down less than ideal opportunities, each time reiterating my desired position. Once you become a parent, time becomes a most valuable commodity; I was not willing to spend it in a job that didn't interest me. It pays to be creative and assertive to secure the position you envision as perfect, even if this position has not existed in the past. I learned this lesson when I was pregnant with my first child. I met a woman who, in our initial conversation, mentioned that she was a lawyer but worked only part-time after the birth of her children. I recognized the name of her prestigious law firm and conveyed surprise that a part-time position was an option. She replied, "It wasn't an option; I had to make it happen." This is the crux of what being a female scientist with children means. It means pushing doors open, knowing what you want, and making it happen. It means having the confidence in your self-worth to ask for what you need.

While the individual journey of each mother-scientist is unique, these women generally share several traits, keys for a successful work-family balance:

- First and foremost, they have supportive spouses whose expectations for household duties, child rearing, and career commitment are compatible with theirs. As Helene Andrews-Polymenis, associate professor at Texas A&M put it, "I absolutely could not do this without [my husband] giving 50 percent, and frequently 100 percent. There is no way to overstate the importance of this."

- They are all extraordinarily focused and passionate about what they are doing. They place family and career among their highest priorities and adjust their lives to excel at both, usually at the expense of personal free time or other activities that they deem less fulfilling.

- They lower expectations or hire help with the chores to ensure that time spent at home equates to quality time with the family.

- They recognize and accept that they cannot give 100 percent to both career and family at the same time. This seems obvious, but can be a stumbling block for many women. Kumamoto describes, “. . . talking with other moms who stayed at home thinking, ‘I want to be everything they are.’ Then I would come to work, get involved in something and think, ‘I want to do everything like I did before.’ Obviously, both things are not possible.”

- Many have used their influence to advocate for other women and make their departments and universities places that are more hospitable for other women. Many advise other women to assess whether a department is supportive or hostile toward women with children before accepting a position. Successful women want other talented women to succeed, so seek out advice from these women.

Although I’ve focused on the plight of the female scientist, this issue affects the growing number of scientist spouses (male or female) who assume primary childcare responsibilities and those who share childcare equally with their working spouse. It seems that these “50-50” partnerships are key for women to advance. As more men contribute to the child rearing and as women continue to fill the ranks of academia, a younger generation will hopefully envision a career in science as completely compatible with motherhood.

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