

How to improve the research cultural environment



Chapter III: Flexibility, Temporality and Work-Life Balance

This section covers two broad themes of the literature concerned with how women in physics, and female scientists in general, address the issues emerging at the intersection of work and family. As per [GENERA Fields of Action](#), notions of flexibility and time are tied with the work-life balance (WLB), as well as care and family life. More specifically, the works reviewed in this section debate questions around WLB and the solutions that respectively facilitate or hinder the combination of caring duties with a successful career in physics for women.

1. Between laboratory work and flexibility schemes in academia

Research on flexibility addresses two tracks: the general career flexibility linked to taking breaks and returning to academia, and the more challenging provisioning of flexible work conditions for the already hired staff. While the former has to do also with retention and attrition ([Ceci, Williams 2010](#); [Williams, Ceci 2012](#)), the latter is predominantly linked to accounting for family-life goals under the constraints of working in laboratories. In other words, research on flexibility in the second realm discusses why and how women and men may request or require flexibility of scheduling and types of the tasks assigned to them. In simple terms, this is linked to either being pregnant for women, which necessitates alternative work away from the laboratories in many cases, or, revolves around having children of various ages who require parents' schedules to be aligned with their routines (school days, school schedules, pickups, vacations, etc.)

Research on academia has found that faculty work lives are characterized by a high degree of flexibility that may be conducive to more balance within work and family responsibilities (Ward & Wolf-Wendel, 2004). This flexibility theoretically allows academics to choose how to schedule their own days and to set schedules that allow additional time with children (Solomon, 2010; Ward & Wolf-Wendel, 2004), even though this is heterogeneous across different disciplines and offers varied degrees of freedoms. In general, however, academia has been said to entail a great deal of autonomy in choosing work/research topics of interest and, generally, lessening of the need to administratively relay one's schedules to a supervisor or boss (Ward, Wolf-Wendel, 2004).

Scientists may have less access to flexibility in the location of their work than other academics, as their work often must be done on-site and is tied to the work of others in the lab (Fox, 2005, Fox & Mohapatra, 2007; Ward, Wolf-Wendel, 2012). Yet, Damaske and colleagues propose, "there are flexibility benefits specific to a lab, such that a highly trained team can continue work and publish when faculty members are out of the office, or, even on leave, and, as a professor in charge of the lab, faculty members do retain a relatively high level of control over their schedule" (see also Ward & Wolf-Wendel, 2012). In certain institutions, it has been shown that faculty members with access to the "work-redesign model", increases outcomes related to gender mainstreaming and broader organizational culture (Damaske et al. 2014).

Consequently, differently conceived necessity of being flexible as an employee at a modern academia, may introduce both advantages and disadvantages for women and men in family roles. In some cases, it may allow more progressive male scientists to accommodate changing norms of fathering (Damaske, 2014), because if men feel an increased sense of devotion to family as part of their identity and anticipate that academic science does not conflict with such devotion, the structures of gender and care in academia alter. However, if demands on men's remain based on full work-devotion, then work-family conflict is likely to constitute a concern for academic scientists and be, perhaps, a growing factor for men who seek egalitarian partnerships and, effectively, get pushed away from academia.

Flexibility may sometimes be a double-edged sword, ultimately relegating women to the positions of inferiority under the premise of inclusion. This happens, among others, through reducing opportunities for travel, which may impact opportunities for collaboration and research recognition important to success in academia (Tang et al., 1999). In a study of one of the top research company employing scientists, Lewis and Humbert (2010) found inequality that originated from a theoretically gender-empowering fourth-fifths week scheme. Four day week policy, flexible work time arrangements and considerable informal flexibility are accessible to both genders, yet is practically taken exclusively by women who must cope with work-unaligned school-hours. Signing up for this "benefit" signifies a 20% cut in salary, while the workload is retained. In other words, money decreases while work becomes intensified. However, researchers noted, mothers tended to regard this practice very positively and often conceptualize it as an opportunity or a luxury, so it was neither articulated as "bad practice", nor taken on by the unions. The four day week is thus effectively a full time compressed work week but with an associated loss of salary. Although not formally made explicit, all those interviewed recognized this as an unwritten rule. They accept it because, the ideal worker is constructed as one who is constantly available and visible, conforming to a masculinist organizational culture.

2. Implications of extensive work hours for gender in academia

According to Kidnman and Jones (2008) long working hours, high pressure and work-life imbalances are common in academia. This can negatively affect productivity and worker satisfaction. In addition, researchers exploring gender equity in higher education have looked at the so-called "temporal dimension" of women's careers, considering "time-in-rank" to be one critical lens through which to assess women's and men's career discrepancies (Toren 1993; Ceci, Williams 2014; Misra et al. 2012).

The temporal dimensions showcases that there are significant sex differences in hours worked and lifestyle preferences (Ferriman et al. 2009; Winslow 2010). In addition, these have pronounced gender stratifications over time. Halpern et al. (2007), for example, rely on a survey to infer that intellectually talented men in their mid-30s are on average more career focused, work longer hours, and, more importantly, are willing to work longer hours than women of the same age. Conversely, women report a preference for a more balanced life approach with regard to career, family, and friends (see also Misra et al 2012; Webb et al., 2002). The authors argue that if these sex differences continue over a sustained career timeline, women's additional family responsibilities may help explain some of the underrepresentation of women in science careers (Halpern et al. 2007; Eccles 1994). Eventually, it translates to the profound absence of women at the highest levels of various professional careers. In Halpern terms, "if men remain more career focused and spend more hours working, for whatever the reasons, then, in all likelihood, men will accomplish more than their female counterparts". While here the explanation seems to cease at the level of shallow obviousness, it is clear that structural temporal factors operate in a much more subtle manner (Blickenstaff 2005). Despite the increasing proportion of women in academe, "significant disparities [are] still present by rank and discipline", which means

that as academic rank and prestige increases so too does the percentage of men in comparison to women.

Coincidentally, the structural factors coincide with preferences, as grant funding and periods of award are also generic and - at first glance - gender-neutral. However, non-accounting for temporal constraints of family work in science results in marginalization and precarization of young female scientists, who are often not chosen due to the fear of them not being able to complete work on time as a result of becoming a mother. Same temporally-construed risks are not voiced with regard to men. This is reiterated in the study of work/family conflict by Greenhaus and Beutell (1985). Time-based conflict occurs when time pressures from one role make it impossible to fulfill expectations of another role and experiences of work/family conflict have been found to be positively associated with the number of hours worked per week (ibid). It has been estimated that the average academician works approximately 55 hours per week, which is a much larger than standard 40-hour schedule (see also O'Laughlin, Bischoff 2005). Academics in STEM work substantially longer hours than averages and often extend their hours late into the night (Ecklund & Lincoln, 2011; Wang et al., 2012). Damaske et al. (2014) focus on, male faculty in all academic disciplines, who reportedly work 54.8 hours a week, which signals working over 11 hours more per week than the 43.1 hours averaged by all employed men, and over additional weekly 9 hours when compared to the 46 hours averaged by male professionals or managers (Jacobs, 2004).

The rigid regulations commonly specify a review period that an academic must conform to, yet little focus is placed on the fact that crucial steps for earning tenure, winning a mid-career grant or completing a middle-step degree (habilitation/docenture, etc) coincides with the time of starting families or raising young children. In a time-paradox, "individuals facing tenure review must demonstrate high levels of competence and research productivity in the earliest years of their academic career to avoid losing their jobs" (O'Laughlin, Bischoff 2005:83).

Regardless of the earlier prognosis on the envisioned evolution and impact of e-technology for work environment, Currie and Eveline examined the effects of virtualization of a post-industrial economy and academe for scientists in Australia (2011: 533-534). The authors found that the current climate fails to meet its initial goals of allowing for the work to be done anytime and anywhere, as many academics are tied to their equipment and needed on-site. The time-bind of academic/work and family life has been actually said to worsen, as working conditions progressively called for work that is extended and intensified into private life with longer working hours and generally faster-paced environment. Academics with young children using e-technologies claimed that they had trouble to establish boundaries between work and family, pushed administrative duties to overtime, and, effectively, negatively contributed to family life.

On the same matter of family challenges, Townsend (2002) noted that as long as women remain the primary child care and household managers, they will disproportionately feel the impact of longer work hours, particularly when they are in dual-career relationships. Both men and women in partnerships where partners worked 45 or more hours weekly each, considered themselves significantly less successful in balancing work and family. Upon earning tenure, academics report a reduction of work hours lasting only for mere two years (Jacobs 2004). In other words, dual-academic couples are vulnerable to significant effects of managing overtime and long work hours.

3. Balancing work and family: the significance of gender for caring obligations

As already suggested, WLB policies and instruments are the most popular gender-equality promoting

tool across the RPOs surveyed for the European Commission's research. Work-life balance measures, which were largely understood as defining and adhering to parental leave systems and flexible working arrangements, were prevalent (see also Rosser, Lane 2002; O'Laughlin, Bischoff, 2005; [Ivie, Ephraim 2011](#), [Ivie, Tesfaye 2012](#) Ivie et al. 2015, Fox, 2005; Fox et al. 2011; Kinman, Jones 2008). According to EC survey, in 26 out of the 37 countries in the survey, more than half of the responding RPOs had such measures in place in 2013. In all but two countries, at least a third of responding organizations had introduced work-life balance schemes.

When listing explanations of women's underrepresentation in all science-related fields, [Ceci, Williams \(2010\)](#) address fertility choices and home-balance issues as the third prime set of causes. They argue that math-intensive fields experience an exacerbation of the missing gender ratios balance due to the fact that the number of women in these disciplines is smaller to begin with. Even more problematic is the fact that progressively each level of attainment from undergraduate, to graduate education, to tenure-track appointment, witnesses growing attrition.

In part, the imbalance can be explained by Ferriman and colleagues' (2009) claim that on the top math/science graduate students and the profoundly gifted, in which they suggest that employment preferences, life values, and personal views are not concurrent among this category's members, even though they are commonly universalized and assumed to be alike. Further, the authors draw attention to developmental changes and gender differences, first during the phase of emerging adulthood and, then, upon a transition to parenthood for those who opt into having children.

O'Laughlin and Bischoff's study (2005) of over 260 full-time academics in tenure-track positions and with at least one child under the age of 16, sheds light on the salient issues within work/family balance and conflicts. Aside for the time-bind conflicts resulting from the overly excessive numbers of hours worked, academics are also prone to strain-based and behaviour-based conflicts. Strain-based conflict occurs when the stress of one role impacts one's performance in another role, as are the academics who are expected to fulfill multiple role demands within the work setting (e.g. teaching, research, service, consultation, etc.) (ibid: 80; see also Currie, Eveline, 2011). Behaviour-based conflicts occur when behaviours expected in one role are incompatible with behaviours expected in another role. It has to be mentioned that although academic positions generally have the advantage of a flexible work schedule, this flexibility also incurs costs of bringing work home and performing certain tasks in free times - in the evenings or during the weekend. Furthermore, working at home may create behaviour-based conflict, as the focus and energy needed to fulfill work expectations is likely to conflict with demands for attention from children and/or spouses. In turn, overload and stress related to work/family conflict translate to individual health risks and depression as well as business costs of poor morale, decreased productivity, absenteeism, and turnover (Duxbury & Higgins, 1994), or, for a career in academia, could mean lower quality job performance, denial of tenure or promotion, etc.

The results of a global survey of 15 000 physicists worldwide, deployed by the American Institute of Physics, shed light on female scientists home-life burdens. Although many respondents report that chores are shared equally, women are more likely than men to report that they do more of the housework than their spouses or partners. That result holds even if only households in which both partners are employed are taken into account ([Ivie, Tesfaye 2012](#): 49). Global data suggests that male physicists commonly find themselves married to someone who either does not work outside of the home, or, alternatively, earns less money than they do, thus being nominated to shouldering care responsibilities. When family responsibilities do affect physicists' careers, they are more likely to affect women than men because "when push comes to shove and somebody needs to care for a sick child or family member, it makes economic sense for the partner who makes less money to take on that responsibility. And for most men, that partner is someone else" (ibid.: 49). Clearly, this points to lesser reporting of work/family conflicts for men. The findings have been confirmed and/or expanded

upon in various studies on women in science (e.g. Ecklund et al. 2012; Fox, 2005, 2010; Mason et al 2013; Whittington 2011; Xie, Shauman, 2003).

In most interviews conducted for a large-scale international project on women in science, Godfroy-Genin (2009) found that family has been depicted as an obstacle to success in STEM research. The perception was that family undermines productivity and commitment, as full availability required by “good” researcher was unattainable to mothers. Beyond the objective impact and the double workload that family creates for many women researchers, family representations translated to divergent gender-research expectations.

Conversely, “top women” in STEM often described family (including broader family, e.g. uncles, aunts, sisters, brothers, parents) and social networks (e.g. friends, colleagues) as the most important support in their career, almost never as a burden (Godfroy, Genin 2009). All top women described very supportive parents and very supportive husbands or partners (Husu and Koskinen, 2008). Three main reasons to explain positive experiences of family life among top female scientists in PROMETEA project were:

- good organisation thanks to family support, existing facilities or an opportunity to hire help;
- good timing in combining career and family (many women had children early, some of them when they were students);
- a no-stress approach to family concerns (women said they were not too perfectionist in household management and focused on the essential rather than on details without any bad conscience (Godfroy, Genin 2009).

Overall, family was rarely constructed by interviewees as an “impediment” to conducting research in STEM. Indeed, the picture of work and family life offered was less conflicted than it is often represented to be for professional women in general and academic women in particular (Armenti, 2004; O’Laughlin & Bischoff, 2005; Ceci, Williams 2014). Some women relied on family to do the “boundary work” they could no longer do for themselves. The “inflexible” or non-negotiable nature of family responsibilities— rather than being represented as conflicting with research commitments—was offered by several women as their only available “break” on otherwise relentless work demands (Ceci, Williams, 2014: 54).

The salient impact of WLB issue was already evident for physics graduate students. Similarly, Dabney and Tai (2013) illuminate the female physicists' experiences of conflict in achieving balance within their graduate school experiences and personal lives. The lack of balance/imbalance directly shapes the outlook of their future careers and possible career choices. Women individually reported that graduate school often causes feelings of guilt and that maintaining a life outside of graduate school can lead to a feeling of hindered progress. Being in a masculinist culture, women found themselves with inadequate peer social skills. In the end, the repeated need and search for balance in their lives engenders future careers choices, which concerned a perceived lack of time outside of school, lack of time for family, a need for support, and further reflection on the importance of a balance between one's life and their career. Some respondents have therefore already indicated that they would rather have a career more based on teaching or working for the government, in order to maintain a better work-life balance. According to Dabney and Tai (2013: 010115-7), “it is feelings like this that often contribute to the lack of females within tenured physics academic positions”.

In fact, Desrochers, Hilton, and Larwood (2002) tested hypotheses related to three different perspectives of work/family conflict in predicting role strain among 100 business professors with preadolescent-aged children. As argued by O’Laughlin and Bischoff (2005: 82), they unveiled “partial support for the role strain perspective (time commitment to work predicted greater role strain), the role balance perspective (strong commitment to parenting identity, but not work identity, predicted

lower levels of role strain), and the identity conflict perspective (time commitment to work predicted greater role strain for parents with high identity commitments to both work and parenting)". Regrettably, much research on academics and WLB remains anecdotal and, although parental status has not been found to be related to productivity (Cole & Zuckerman, 1987; Sax, Hagedorn, Arredondo, & DiCrisi, in press; Sonnert & Holton, 1996), research (e.g., Milkie & Peltola, 1999) suggests that the experience of balancing family and career may be very different for women versus men. Cole and Zuckerman (1987) found that women scientists were more likely to report giving up discretionary time and flexibility to balance family and job responsibilities. Duxbury and Higgins (1994) also found that working mothers spent less time in leisure activities than did fathers.

O'Laughlin and Bischoff's MANOVA project revealed a gender effect regarding work/family balance, work stress and levels of workplace support for family: women respondents had slightly elevated levels of both academic stress, and family stress. For women, available institutional support was insufficient (2005: 95). Looking at temporal division of household chores and workplace obligations, considerable time reported by women academicians was devoted to child care and household tasks ranged from 59% (cleaning) to 67% (laundry), whereas the average percentage of time reported by men academicians ranged from 27% (laundry) to 49% (cooking). According to O'Laughlin and Bischoff, satisfaction with day care was a significant predictor in alleviating family-related stress for men, yet not for women, pointing to the fact that men were more commonly relying on their non-academic female partner to contribute and organize care (ibid). Spousal support of one's academic endeavors was crucial for women but not for men (Grant et al. 2000).

Recently, some efforts have been made to expand the STEM research on WLB to cover relationships between men and women rather than solely female burdens (Damaske et al. 2014, see also Fox et al. 2011). By conducting in-depth interviews with men across different ranks in biology and physics at prestigious US universities, Damaske and colleagues created a four-pronged typology of academic science men, namely: forgoing children, egalitarian partners, neo-traditional dual-earners, and traditional breadwinners. The male scientists remain strong in terms of devotion to their work, but increasingly also hope for egalitarian relationships, which they nevertheless frame as reducing their devotion to work. The majority of men reported that the all-consuming nature of academic science starkly impedes their chances for adhering to the changing fatherhood norms. Increasingly, home life is not solely the concern of women, but is becoming a shared concern between women and men, and universities are often not structured to support men in this role (Lundquist et al., 2012; Damaske et al. 2014; Jacobs, Winslow 2004).

4. Scientists having children: a gender barrier impossible to alleviate?

Fertility - seen both as a biological process and as a lifestyle choice - has been continuously named a salient issue for women's lacking progress in physics and adjacent disciplines. Women who have become physicists report that one of the major obstacles in their path on the way was the expectation that they would also be the primary caregiver for their children (Ivie et al. 2001; Ivie et al. 2002; Ivie et al. 2013; Ceci, Williams, 2009; Ward, Wolf-Wender 2004; Fox 2005; Whittington 2011).

In the global survey of physicists, women were more likely than men to say that becoming a parent significantly affected their work in various way by an almost two-to-one margin (Ivie, Tesfaye 2012:49). This meant that women were likely to alter their schedules, spend less time at work, as well as become more efficient at their jobs. Those findings echo results from the first two IUPAP surveys, in which women physicists reported that having children forced them to complete their tasks quicker in order to leave laboratory or office in time to pick up young children from child care. The majority of employers have not been reported to accommodate a change to family's situation of a scientist, as

the workloads remained unmodified. Still, women were found to be given less challenging work than men following having children.

AIP's analysis of the two earlier surveys showed that when women compared themselves with others who had completed their final degrees at about the same time, women with children were more likely to report relatively slow career progress. In the third survey, it was further made clear that women with children observed their careers progressing more slowly than those of their male and childless colleagues. Fathers noted no such effects. In sum, the results also show the dampening effect of having children on women's but not men's careers (Ivie, Tesfaye 2012: 70). The results were applicable to physicists across the world, regardless of their age, employment sector, and their country's level of economic development (see also Wolfinger et al., 2012).

Ceci, Williams (2010) break this general claim down and state that there is a stark discrepancy in how having children early on in one's career exerts considerably more pressure on pre-tenure woman than men. What is more, it has been examined that men and women pursuing careers in academia delay parenthood until after securing their first stable academic position (Blinn & Ryan, 1990). This also holds for male faculty, who similarly delay childbearing until after tenure (Drago et al., 2006). What is crucial as well is that faculty working in the STEM fields take paternity and maternity leave at much lower rates than other academics (Lundquist et al., 2012), regardless of gender.

Authors also point to a systemic flaw in that the tenure system strongly discourages and disincentives women from childbearing and procreation. Mason, Goulden (2004) recall that there is an entanglement between cultural expectations surrounding care and academic women's career outcomes. More specifically, a belief which requires women to take most of the child care and household responsibilities, can be linked to the fact that scientists who are mothers are 29% less likely to enter tenure-track positions than women without children. It is these disincentives that ultimately explain why it is oftentimes women (and not men) in the academic research who remain childless (Ceci, Williams 2010, Ecklund et al. 2011). In the global survey, more women, particularly those in senior positions, deliberately chose not to marry or not to have children so that they could focus on physics (Ivie, Tesfaye 2012:53). In the aforementioned study by Fox (2005), the predominant pattern of family composition for women scientists is that of 'no children', found among 52% of women (compared with 21% of men).

Interestingly, however, “the productivity of women with preschool children is higher than that of women without children or those with school-aged children. In pursuing factors that may be associated with this anomalous pattern, women scientists who have preschool children show signs of being a socially selective group in marriage and family patterns, research interests, and allocations of time” (see also Fox, 2005; Fox et al. 2011). As a consequence, there is no clear recommendation on if and how the support for boosting productivity for scientists-mothers should be promoted. At the same time, women who are full professors are much less likely to be married with children than men who are full professors (Mason, Goulden 2004; see also Majcher 2008).

For Fox, the important shift in research on productivity and gender relates to accounting for variability beyond married/unmarried and childless/with children (2005: 145). More specifically, women in subsequent marriages have higher productivity than women in first marriages. This relates to their greater likelihood to be married to another scientist; and being married to a scientist apparently increases work satisfaction. Simultaneously, potential difficulties related to combining parenthood and academia may be lessened by personal factors such as spousal support and adequate child care arrangements (Mason, Goulden 2004). Valian (1998) discovered that women in full-time, tenure-track positions may be those who have found satisfactory child care, whereas women who have not found solutions may be in part-time or non-tenure-track positions.

“The baby penalty” in academia is further explored by Mason et al. (2013) and Wolfinger et al. (2010), as the authors attempt to matrix the features and complexities behind women in science being less likely to acquire stable positions when they have children. Once again, it is reiterated that both men (with or without children) and childless women have higher chances of success in academic career, which is seen as discouraging women from pursuing graduate degrees and becoming faculty members in the sciences. The authors include recommendations for addressing these inequalities such as entitlements, rather than special accommodations, like tenure-clock stoppage and parental leave, that are available to both men and women.

Women in science are generally aware of the “baby penalty” and Ecklund and colleagues found that, as a result, they are willing to forsake academic careers (2011). Female scientists at top universities not only have fewer children than their male colleagues but also are more likely to say that, due to the science career, they have fewer children than they want. Yet having fewer children than desired has a greater impact on men's life satisfaction. According to Ecklund et al, one in four female graduate student and one in five postdoctoral fellows is considering a career outside science altogether in order to fulfill procreation plans. What is more, those who stay are doing it with a caveat that they will have fewer children than desired, or, otherwise, they leave.

Having children is clearly a life-course-persistent phenomenon, as even the tenure-track women with children are twice as likely as men to say they had fewer children than originally desired (Mason, Goulden 2004). In another study, having children was one factor associated with less engagement in mathematical and science careers for women but not for men (Xie, Schauman, 2003). Lewis and Humbert (2010) add that women who embarked on a science-career typically experience numerous “attrition points”, especially after the maternity leave and hardened re-entry, but also at mid-career, when women leave upon failing to achieve the career progression experienced by their male colleagues (Hewlett et al., 2008).

Similarly, in a study based on a survey and case-research with women holding posts at prestigious academic institutions, Probert (2005) revealed a group of women who are permanently stuck just below the glass-ceiling. The findings qualitatively confirmed quantitative surveys failing to provide evidence that discrimination or bias in appointments, promotions and workloads were significant enough to explain men's domination at the senior levels. Conversely, significant gender differences with respect to certain kinds of human capital (e.g. educational: the effect of a PhD-granting institution), yet mainly found a quite particular explanation for the failure of women to progress in the form of demographic challenges unaccounted for before. These encompassed high rates of separation and divorce, far higher general rates of partnering among men than women, as well as the impact of older children's needs. This perspective suggests that family issues do not cease to be important after the procreation is completed and children grew, but rather permeate the lives of female and male staff in academia in a profound and gender-differentiated manner (Probert, 2005).

Contradictory evidence of gender and parenting is somewhat provided by studies on academic and scientist fathers. Academic men also have fewer children than other professionals, such as physicians and attorneys (Wolfinger et al. 2010). Once they have children, fathers may be less likely than mothers to take advantage of work-family policies because of cultural expectations that such policies are meant for mothers rather than fathers (Lundquist et al 2012). While most studies find fewer work penalties for having children affecting fathers, other research suggests that this bias may be because, unlike mothers, academic fathers are expected not to take advantage of universities' work-family policies (Descombe et al. 2014; Drago et al., 2006). Having a child under the age of six significantly increases reported experiences of work-family conflict for scientist fathers (Fox, 2005; Fox et al., 2011).

In sum, the gender disproportion of “motherhood penalty” is two-fold: not only is it more common for

male academic scientists to have children than for female scientists, but also men with children are more likely to be tenured than women with children (Ceci, Williams 2010) Reiterating the importance of the gender/attrition matrix, newly matriculated PhDs applying for coveted jobs are less commonly women, and then, throughout all career steps, women are more likely to cease their career-track in academic research in STEM for family reasons. The above “leaky pipeline”, as mentioned, persists across the life-course and professional path (Lewis, Humbert, 2010; Probert 2005).

5. Conclusions and Recommendations

- Thinking about career pathways on a temporal axis should be adjusted to account for the process of family formation and raising children:
 - Ceci and Williams (2009) review the strategies that women take to counter the fertility penalty and reflect upon a more structural need for stopping the tenure clocks for family formation. Moreover, it has been suggested that adjustments should be made to incorporate a possibility of smoothly continuing professional involvement on a part-time basis, as well as to allow for a later transition back to full-time posts (see also [EC 2010](#)).
 - Various Gender Equity Committees have further suggested that the length of times permitted for individuals for early-career stages to work on and apply for grants should systematically accommodate family processes. Moreover, the funding and finance schemes must be sensitive and responsive to the needs of child-rearing, for instance by including no-cost grant extensions, supplements to hire additional staff to maintain momentum during family leaves, as well as options to reduce research and teaching responsibilities for women with newborns. Further, the funding mechanisms should enable grants for retooling after leaves of absence (Ceci, Williams, 2011)
 - More comparative and wide-scoped research is needed on the differing life-course issues within the scholarly careers of men and women, since it is possible that traditional timing of hiring, tenure, and promotion effectively denies society and science the contributions of talented women.
 - Future research must acknowledge that the majority of studies on female productivity and family reconciliation in academe are conducted among women who have survived a rigorous and demanding process of scrutiny, selection, and evaluation in science. This way, the sampling is biased and fails to recognize the family/gender/imbalance/inflexibility and temporal causes of leavers ([Mason, Goulden 2004](#): 146). Research on those prone to attrition and those who left is necessary, ideally taking on a longitudinal perspective.
- An approach to family (and family policy) should be revised to include dual-career couples' logic and incorporation of men's family roles:
 - Promotion of dual-career couples by co-hiring partners and/or spouses is recommended (Ceci, Williams 2011; Ceci et al. 2009; O'Laughlin, Bischoff 2005). A study of 276 couples in which at least one spouse worked for a university found that men whose wives worked at the same university reported greater family success and less spill-over of home/work stress realms (Sweet & Moen, 2002).
 - Spousal support for career is an influence that must be addressed at a family level rather than institutional level (O'Laughlin, Bischoff 2005)
 - Quality day care services and departmental support for balancing work/family demands are two factors that should be easily addressed by most institutions. Ideally, childcare provisions should be provided on-site by the workplace, thus being conducive to the nature of academic career (O'Laughlin, Bischoff 2005; Ecklund et al., 2011). Academic institutions could help to reduce work/family stress among faculty, thereby improving job performance, by ensuring the availability of quality day care services. Less is known

- about boosting academic productivity of women with children (Fox 2005).
- Including the perspective of men/fathers as integral to couples'/woman's success (Lundkvist et al. 2012; Damaske et al.2014). Scholars believe that academic men's desire to partake in family life have practical implications for the social reproduction of masculinity within academic science: the full professors who are more likely to be traditional men are also the ones who are the mentors and advisors to a younger cohort of neo-traditional and egalitarian men. Further, men in science need to receive trainings as they play key roles in hiring, retention, and promotion decisions. The authors suggest that “if science does not change to accommodate family life for both men and women, and if advisers do not adapt to accommodate changing notions of masculinity among young men in science, then the academic science pipeline may begin to leak young men as well as young women, increasing the overall loss of talent in academic science” (Damaske et al. 2014: 498).
 - Mentoring programs—for both men and women—need to incorporate the matters of family life reconciliations and balance more explicitly (Ecklund 2011).
 - Administrators must be provided with sensitivity training in work/family issues to increase both departmental and institutional support; faculty should make greater use of the flexible nature of academic positions without guilt or fears over negative evaluation (O'Laughlin, Bischoff 2005).
 - Individually selectable solutions around flexible work should be offered:
 - For Lewis and Humbert (2010), one strategy for countering attrition associated with the transition to and practice of motherhood, is the development of flexible working arrangements (FWAs) or work-life balance policies designed to enable women (and in principle at least, men) to combine career and family.
 - FWAs and autonomy in academia could be promoted, as agency over one's schedule was found elsewhere to increase a sense of control, reduce work/family stress, and improvement of life quality for mothers and fathers (Hill et al. 2013). However, looking beyond SET organizations, the authors argue that there is much evidence of a widespread implementation gap between well-meant and well-drafted policy and the execution of practices and powers in this respect (Lewis, 1997, 2001; Gambles et al., 2006; Damaske et al. 2014). In specifics, policies are often undermined by non-supportive managers (Lewis et al., 2009) and gendered workplace cultures (Haas and Hwang, 2007). Further, mechanisms may be counter-productive and unjust towards employees, as the forth-fifths week practice demonstrated (Lewis, Humbert, 2010).
 - Women reported support towards schemes enabling active researchers to “buy themselves out” of classroom teaching from time to time, but interestingly, several high profile researchers who were no longer required to spend very much time in the classroom did not necessarily see this as a benefit, either for themselves or for the students (Devin, Morrison, 2011: 52). Thus, it can be inferred that schemes of this kind should be allowed on the personal choice basis rather than unequivocally deployed to all female staff. Promotion of a “work-redesign model”: a type of flexibility “purposefully developed by work organizations in response to the work-family challenges of employees, in which employees need not ask for “accommodations” for their work-family needs, but, instead, are afforded increased general autonomy and schedule control” (Damaske et al. 2014; Perlow, Kelly, 2014).

Examples of good practices:

KIT (Germany). The establishment of children's day care centres for employees with a total of 215 children's day care places for children between 3 months and school entry age. The KIT also offers emergency care to help in cases of temporary need for child care

(<http://www.familienportal.kit.edu/english/94.php>).

Swiss National Science Foundation (Switzerland). Running a specific return program (Marie Heim-Vogtlin) aimed at female doctoral students and postdocs in Switzerland who had to interrupt or reduce their research activities due to family commitments. The grant includes the salary of the grantee for up to two years and, in addition, it can cover a portion of the research costs as well as childcare costs. It is possible to work part-time

(<http://www.snf.ch/en/funding/careers/mhv-grants/Pages/default.aspx#Statistics>).

Joanneum Research (Austria). Implements an option called “Papa Weeks” - during the first three months of fatherhood, the brand-new fathers may request up to two weeks of paid leave. Since the introduction of this unique opportunity in 2010, it has been used by 45 fathers, 13 of whom also subsequently took paternity leave

(<https://www.joanneum.at/en/get-to-know-us/corporate-social-responsibility/peoplejr.html>) .

University of Warwick (United Kingdom). Warwick Conference Support Awards - staff can apply for contribution to child-care costs associated with conference attendance.

National University of Ireland, Galway (Ireland). It has a radical gender equality plan includes measures to fund support for women returning from maternity leave, which would allow their departments to “buy out” staff from teaching and free them to concentrate on re-establishing their research.

University of Cork (Ireland). As part of GENOVATE project and its survey results, a cross University working group on maternity/family leave was established. It has been tasked with developing a Code of Practice on Managing Maternity & Family Leave (for review by the reporting and monitoring mechanism proposed to be established within “Annual Strategic Plan 2015/16” in order to combat women being at the “sympathy of colleagues” when returning from maternity leaves).

University of Glasgow (United Kingdom). Maternity Leave Toolkit and forum which include steps to foster academic men's involvement in family life; Parent Buddy Network assists working parents at University in securing childcare through collective efforts.

Genomic Regulation Centre (Spain). The Gender Balance Committee of the Genomic Regulation Centre (CRG), functions at Spanish biomedical research institute of excellence since 2013. In 2014, the Committee initiated a mentoring programme geared towards young postdoctoral researchers, and, since 2015, it offers a support grant to CRG women scientists with family responsibilities which provides them with extra financial support (salary top-up of 400 € / month net, for one year). It is granted to excellent women scientists, hired at CRG as a PhD student or Post-doc, and mother of at least one child at the time of starting the grant.

<http://www.crg.eu/en/content/about-us-women-science/woss-women-scientists-support-grant>

University of Luxemburg (Luxemburg). Convention to improve the reconciliation between family-life and research: The aim is to “enable full-time employees who are parents of young children (up to 4 years of age) working as researchers and teachers at the University of Luxembourg to optimise and reconcile child education and scientific activity in a manner complementary to the existing legal maternity leave and parental leave. As stated: “after the legal maternity leave (2-3 months), a full-time working parent may reduce his/her teaching activity to 20%.” This applies to full-time teachers and researchers until the children commence pre-school.

http://www.en.uni.lu/content/download/63636/804188/file/Convention%20family_research%20UL.pdf.

5.1. New EIGE Toolbox of WLB Practices (2015)

Sparked by European Commission's Strategy for equality between women and men, The European Institute for Gender Equality (EIGE) commissioned a study on good WLB practices across the EU member states. Based on expert research of national data listing 93 good practices, 26 example ideas were initially identified and then narrowed to 13 by a range of stakeholders. The Good practices were collected under three thematic areas, as detailed further below:

- Self-regulation:

Employer-based or social partners-based self-regulation measures include:

- employer policies and initiatives designed to promote women's participation in the workforce
- issues around retaining working parents
- innovative forms of work organisation linked to reconciliation measures and flexible working time
- gender equality-oriented employer initiatives to promote men's involvement in parental leave and in sharing care responsibilities
- company-level agreements between the social partners and individually negotiated arrangements between workers and their managers to facilitate the reconciliation of work, family and private life.
- Awareness-raising:

Initiatives and campaigns to promote reconciliation of work, family and private life and are recognized to be the most effective means of communicating information, also to the general public. These include campaigns promoting:

- increased women's access to and participation in the labour market
- the wider involvement of men in care and family life
- promoting changes in company culture through work organisation
- flexible working hours and reconciliation of work, family and private life in public and private organizations.
- Benchmarking:

Understood as comparison of one organization's practices against those of others, aimed at identifying standards or good practices for better company performance. The initiatives/practices encompassed in the area of 'benchmarking in the field of reconciliation' span:

- competition between companies/organisations for family-friendly or equal opportunity awards
- certification of companies in relation to gender equality and family-friendly measures at the workplace
- sustainability index to evaluate, rank and improve the performance of enterprises including gender equality and work-family balance criteria
- gender equality audits; annual contests and awards that recognize outstanding practice in equality and diversity at work, etc ([EIGE 2015](#)).



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Last update: **2019/10/22 14:57**

