

New Evidence of the Motherhood Penalty in French Academia: The Fertility of Women and Men in the Doctoral and Post-Doctoral Years

INTRODUCTION

Women who hold higher education degrees are known to become mother at a later age in Western countries. In France, for instance, most women are childless at the end of their education cycle [9]. The doctorate and the post-doctoral years are the extreme form of this trend. These years are also a highly competitive period of which the outcome is extremely uncertain [4]. In most western countries and all disciplines, the model of the academic recruit achieved one or several post-doc contracts and proved an ability to be internationally mobile.

Studies reveal that the model of the academic teacher or researcher is implicitly (very) masculine [14], which makes academia a “gendered institution” [1]. Girls outnumber boys in middle and higher education achievement, but they are slightly in the minority in PhD [10], and their share drops dramatically at tenure and full professorship [14]. The gender ditch starts to deepen in the doctoral and post-doctoral years [13, 16], which are a crucial period for fertility and couple settlement. Hence, the gendered differences in fertility choices of young researchers are not only data to be observed, but also a factor of the gender inequalities in the later stages of academic career.

DATA

An original online survey in French was largely circulated through academic and non-academic mailing lists and social networks. The questionnaire included a total of 180 questions for all scenarios, i.e. maximum 100 for a given profile. The 9 sections included socio-demographic data (including year of birth), research profile, couple and fertility calendar (year of birth of each child), housing, job positions in time and income, and sections were dedicated to the help received to raise children and the impact of parenthood on the working conditions. Qualitative data was also gathered: open-ended questions allowed made room for explanation of the fertility choices. 821 complete questionnaires were analysed (people living outside France and not enrolled in a French university for their PhD were excluded of the sample).

General characteristics of the sample:

The sample includes all scientific disciplines (e.g. biology, chemistry, computing science, geophysics, physics, etc.) although humanities and social sciences are over-represented: 69.2% instead of 32% in the French doctoral population (and only 22.8% STEM in the sample instead of 49% among French PhDs).

Of the 821 respondents, 629 are women (76.6%) and 192 are men (23.4%). Approximately half of the respondents are PhD students, and the other half already holds a doctorate.

Most of the respondents are in a stable relationship with a person of the other sex. 5 mothers and 2 fathers are in a same sex relationship. 92.2% of the sample is in a relationship, and the proportion is even higher among parents: 94.8% of mothers and 95.7% of fathers. The long term relationship is evaluated through the variable “your partner is the other parent of your child/children?” (94.8% answered “yes”). Parents currently in a couple usually live together (96.5%), even though some of them have separate residences (3.5% of parents in a relationship).

METHOD

The analysis followed three steps. First, a description analysis of the sample, to picture its composition. Second, an index was calculated in order to measure the level of the impact of parenthood on personal and academic life. Third, correlation tests and regressions were used to understand the factors of fertility choices and of the impact of fertility during the pre-tenure years.

HYPOTHESIS

H1: being a doctoral student has a postponing effect on the fertility calendar, for both sexes.

H2: almost no one becomes parent during the PhD.

H3: international mobility strengthens the postponing effect of the PhD.

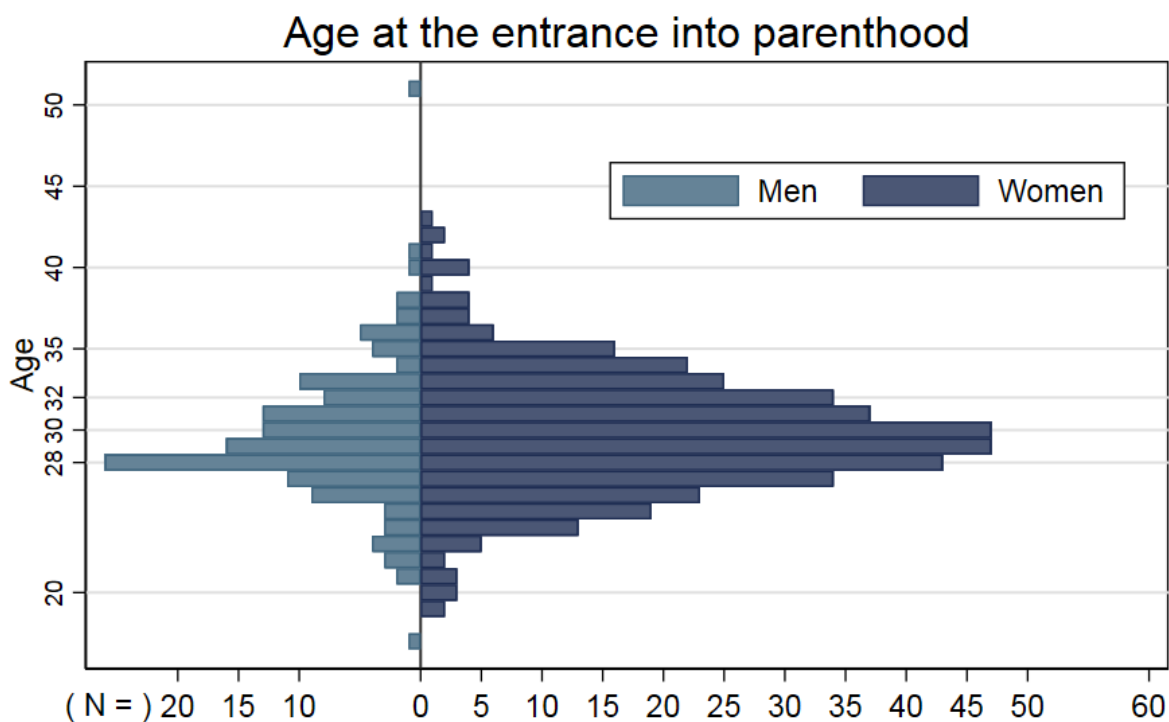
H4: parenthood has a negative impact on academic belonging and on material conditions of research, especially for women

RESULTS

H1: the mean age of first parenthood is high and approximately the same for fathers (29.5 y.o) and mothers (29.8 y.o). This result is striking, as it differs drastically from the French general population, in which women become mothers approximately 2 years earlier than men. 49 childless people (9.4% of women and 12.5% of men) answered “me or my partner is currently pregnant”. They were included in the “parents” category and the year of the survey was used as a proxy of the date of birth (data was collected in June).

The mean age of first fatherhood is similar to the one of the general French male population. There is no significant postponing effect of the PhD on the age of first fatherhood.

Female respondents become mothers approximately 2 years later than the general French female population [9]. Pursuing longer studies in a doctoral program has a postponing effect on the fertility calendar of women, but not of men.



H2: 66% of the respondents are parents. A large majority of them became parent before ending their PhD. The mean age of the first birth during the PhD is lower for men than for women, which makes the doctoral population very atypical.

	Women		Men	
	Mean age at first childbirth	%	Mean age at first childbirth	%
<i>Before PhD</i>	27.1	18.8%	28,2	24.1%
<i>During the PhD</i>	29.5	58.5%	29,1	55.3%
<i>After the PhD</i>	32.4	22.7%	32,5	20.6%
ALL	29.8	100.0%	29.5	100.0%

More men (24.1%) than women (18.8%) became parent before starting their PhD. One possible interpretation is that it is less difficult for a man to combine the demands of a family life and academic

research, than it is for a woman. The societal and individual expectations towards motherhood are indeed more difficult to meet [6, 12].

Most non-parents answered “I am currently trying to have a child” or “I plan to have a child in the future” (74.5% of women, 80.0% of men).

Many respondents explained their fertility plans in an open-ended field. Some women say they prefer to wait the end of the PhD or being in a permanent position (which is accessible earlier in France than in most countries) before having a child. Other women express a different opinion: to them, it is not a question of preferences, since in their opinion being a non-tenured researcher was purely incompatible with a pregnancy and/or parenthood.

A female PhD student: “I am 28, almost 29, I still live like a student (shared housing, on a tight budget, etc.). Therefore, there is no room for a child.” Another female PhD Student, 28 y.o.: “Impossible to manage a pregnancy and motherhood with the PhD then the long years of job applications, because of the financial, material, and psychological precariousness it implies.”

H3: International mobility is cited as an obstacle to parenthood, in the qualitative material. Even though in a stable relationship, some couples live in separate countries because of the post-doctoral contracts opportunities. This is reported as a reason for delaying the project of having a child.

Woman, 29, PhD in fluids mechanics: “[I intend to have a child but only later, because of] two factors, first my relationship is too young (I’ve only been a few months with my boyfriend), and also the fact of not having a permanent position and the plan to do a post-doc abroad in the near future”.

H4: The first evidence of difficulties to combine parenthood and a doctoral research is interruption: 12 respondents abandoned their PhD (1.5% of the sample). More specifically: all 12 are women, and all of these women have a child. Abandon represents 3% of the mothers in the sample.

Other results also validate H4. The evaluation of the impact of parenthood is multivariate. Up to 7 negative impacts were reported (no father reported more than 5 of them). 2 mothers and 3 fathers reported only positive impact of parenthood. Cases of positive impact of motherhood do exist.

18.2% of mothers and 36.2% of fathers reported no impact of parenthood on their academic life. The intensity of the impact is not equality distributed among men and women. 81.3% of mothers and 61.7% of fathers report at least 1 negative impact of parenthood. But the asymmetry is even stronger: 46.1% of mothers report more than 2 negative impacts, when only 28.4% of fathers do.

The proportion of fathers professionally affected by parenthood is far from null, but it is also far from the proportion of women in the same situation. Three variables are particularly telling:

- Q° “Do you have some time to do research work?” Mothers: 75% yes / Fathers: 85,5% yes
- Q° “Do you feel distressed?” A “Often, more than my partner”: Mothers = 49% / Fathers = 20%
- Q° “Who babysits when there is a problem?” A “Me”: Mothers = 56% / Fathers = 35%

Qualitative material confirms the asymmetry: only women report comments such as “you should have waited.”

Discussion

The results confirm that the doctoral and post-doc years do not fit well in a linear life-cycle frame of path to adulthood [5]. Men and women in PhD seem to delay their entrance in parenthood, but rarely after the age of 30. PhD student do not fit in the canonical path to adulthood framework, as they often have children before finishing their education. Considering that the doctorate and post-doc are often a funded period (even not always completely), this atypical population does not really contradict the “procreative norm” [2] of waiting for “the right moment” (i.e being in a stable relationship with an income).

Many respondents clearly state that the probability to become a full-time researcher or tenure academic is very uncertain and the competition for jobs is harsh [4]. Motherhood is not always a handicap in the academic race, but motherhood penalty does exist, whereas there is no consistent fatherhood penalty [7, 11]. Becoming a father has been observed as a professional advantage [8], as young fathers are seen as more responsible and thus more reliable workers.

Conclusion and further developments

Young researchers are a non-typical population. Gender differences are striking. But there are different profiles among women, which is compatible with the existing literature [3, 15], since the demographic variables are not sufficient to explain this diversity. These results shed new light on the fact that many women but few men quit the academic competition after the PhD [13]. Usually, the family friendly policies of academic institutions are designed for the stable staff (tenure track or permanent contracts), which means that the gendered impact of children and job uncertainty of the pursuit of an academic career is ill if not addressed [6, 12]. This research is still in its preliminary exploitation phase. As for the next steps, the survey team would like to develop a sequence analysis to learn more about the links between socio-economic background, income and job status sequences during PhD and post-doc years, and the fertility choices. Regressions will also test the socio-economic determinants of fertility choices and calendar. In the end, this survey on one of the largest young researchers existing sample brings original and decisive data on the fertility choices and on the impact of parenthood in the PhD and non-tenure period.

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