

Working conditions and career ambitions and possibilities between Ph.D. students. Myths or Realities about 'gendered' Ph.D. students?

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Abstract:

The paper sum up some of the findings from a survey among one thousand Danish Ph.D. students (all enrolled 1997). In order to discuss 'myths or realities' about 'gendered' Ph.D. students, the point of departure for discussing is some major conclusions about gender in an official Danish report on Ph.D. students and a Norwegian investigation of same-gender in graduate supervision. I want to indicate how easily statements turn into a continuing reproduction of myths about especially, female Ph.D. students.

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Introduction

I've conducted a survey among one thousand Ph.D. students (all enrolled 1997 at Danish Universities) aiming to understand how working conditions, choice of subject studied, experiences with supervisors, Ph.D. courses and so on influences on the chances of becoming a permanent researcher. The survey is part of a larger project named "Gender in the Academic Organisation" in which we analyse which mechanisms and process in Academia that produce and reproduce gender imbalances. In Denmark only one fifth of the permanent research staff at universities are female. The aim is both to collect (new) data, and to analyse and discuss former investigations and myths about gender and research.

It is not possible to describe and analyse the data material in one paper. Therefore I concentrate on a few aspects chosen with respect to the latest official report about Ph.D. students in Denmark in mind. In the report the importance or significance of gender is stressed in the following statements:

- More female Ph.D. students worked on a Ph.D. project recommended or formulated by a senior researcher.
- Female Ph.D. students find teachers appeals of importance.
- More men than women go abroad, but family obligations influence both men and women's stay abroad.
- In medicine more men than women made corrections in their Ph.D. thesis after permission from the panel of examiners.
- Women often write their Ph.D. on time. But more female breadwinners do not finish on time.

- More women get employed in the public sector where as more men get employed abroad (The Danish Research Training Council 1999).

These major standpoints may easily turn into conclusions stating that female Ph.D. students (and researchers) are dependent, need to be encouraged, have their career troubled by the family and choose a job in the gender-friendly state apparatus. Where as the male Ph.D. students do the right thing by going abroad and make corrections if necessary in their thesis.

In an article entitled "Same-gender relationships in graduate supervision" the Norwegian author Smeby concludes that gender matters especially for female graduate students. However, he also writes "the higher the proportion of female faculty members in a department, the stronger the same-gender tendency is among male students and faculty members." (Smeby 2000: 64). He underlines as well that there is no simple explanation to the phenomena, but since he close the article by writing: "Raising the number of female faculty members seems, therefore, not to be sufficient to develop a more gender friendly climate." I would like to pay attention to the relation between supervisor and Ph.D. student as well.

I won't dispute the results of the survey in the official report or of the Norwegian data, but since some myths about gender and research seem to be reproduced, I would like to discuss different possible explanations and consequences of the conclusions drawn from the data. I will both use my own data and include explanations from other investigations as well. Overall my discussion will circle around 'myths or realities' about gendered Ph.D. students.

A report and an article

The results in the report from The Danish Research Training Council are based on a survey conducted as part of an evaluation of the Danish Ph.D. education. All persons obtaining a Ph.D. degree in 1997 or 1998 were asked to fill in a questionnaire. The questions asked consider the enrolment, design of the project, stay abroad, own teaching experiences, supervision, publishing, time used, financial situation, gender, age and breadwinner obligations and questions about present employment.

The general conclusion is that the Ph.D. students are satisfied with their education and the most significant and important aspect of the process is supervision. However, there are differences between research fields and gender, as well as age and family responsibilities influence the process.

The Norwegian article is about supervision of graduate students including both master and Ph.D. students. The reason why I find it relevant to include in a discussion about Ph.D. students is twofold. Firstly, the relationship between female Ph.D. students and their supervisor is stressed in the Danish report. Secondly, it is often assumed that women do not apply for a research position without being encouraged, but at the same time do not think they get the support needed (Teigen & Tvede 1993).

In the article it is concluded that it is important for female students to have a female supervisor, and it is more important in natural science than in humanities and social sciences. Whereas there is a "male scepticism towards feministic female supervisors in the humanities and social sciences, towards the growing proportions of female students and faculty" (Smeby 2000: 63), which shows in male-male preferences in supervision in these fields.

I will discuss the first two statements under the headline, Dependent or independent? In the discussion I include supervision. The next two statements are discussed under the headline, The Male-way? Lastly, under the headline 'A troubling family?' I primarily discuss the statement about female breadwinners.

In the closing section I discuss which myths should be preserved and which should not. And questions for further research, such as need to take subject/ research field into account.

1. Dependent or independent?

In Denmark you can obtain a Ph.D. grant in several ways. At some institutions you can choose to write a Ph.D. thesis instead of your master thesis. In many cases one applies for a vacant Ph.D. position or a grant from the Research Councils, mostly the applications include a project proposal formulated by the applicant. It is also possible to apply for a Ph.D. position within a specific Research Project or even a specific Ph.D. project, then the applicant mostly emphasise her or his qualifications.

In the Danish report it is emphasised that Ph.D. students in humanities and social science to a large extent formulate their own project (two out of three), whereas students in other research areas either collaborate with others or have their project formulated by a senior researcher (only one fifth has formulated their own project). More women than men work on a project formulated by a senior (DRT 1999). Unfortunately, there are no data showing the distribution of gender according to research area or the exact figures for men and women.

Other investigations come up with similar results. A Norwegian study showed that doctoral projects more often were individual in the humanities and social sciences while in medicine and science more projects are organised as part of a group (Teigen & Tvede 1993: 114). These data were not gender divided, but indicates that in general research is conducted on an individual basis in humanities and social sciences whereas the other fields to a larger extent work in research teams (DCRT 1999: 26 and Teigen & Tvede 1993).

My survey data show on a general level the same tendency (see table one). A larger amount of male Ph.D. students formulated their own project whereas a larger amount of female Ph.D. students applied for fulfilling a project already worked out. There are not remarkable gender differences when it comes to formulating a project within a specific research project or when the project has been formulated in collaboration with a senior researcher. Do one look into the institution employing the Ph.D. students then it is more common for Ph.D. students to formulate a project on their own at universities and other institutions of higher education. At sector research institutions and in private companies, more than half of the Ph.D. students have applied for a Ph.D. project in a certain field or for a specific project.

Specific traditions in each research field contribute to some extent to some of the gender differences, since there is more female Ph.D. students in especially medicine and agriculture, and in both fields it's more common to apply on an already worked

out project. For example in agriculture approximately one out of three apply on a project already worked out and less than one third formulate their own project (DCRT 1999).

It is strength to be able to join a research team both in relation to the context (i.e. being able to formulate a project in a specific area) and to collaborate in praxis. I.e. the DCRT-report could as well have turned the formulation around and emphasised that few men apply for a Ph.D. project formulated by senior researchers or in collaboration with them.

Table one. Who formulated the Ph.D. project related to research field (Own data, Ph.D.'s enrolled 1997)?

	Formulated own project	Formulated a project in a specific area	Applied for a ready project	Formulated in collaboration with senior	Other	Total
Humanities						
Female	51 79.7%	8 12.1%	1 1.6%	3 4.7%	1 1.6%	64
Male	41 85.4%	4 8.3%	1 2.1%	2 4.2%	--	48
All	92 82.1%	12 10.7%	2 2.1%	5 4.5%	1 0.9%	112
Social Sciences						
Female	19 70.4%	6 22.2%	1 3.7%	1 3.7%	--	27
Male	38 88.4%	3 7.0%	--	1 2.3%	1 2.3%	43
All	57 81.4%	9 12.2%	1 1.4%	2 2.9%	1 1.4%	70
Science						
Female	21 27.6%	13 17.1%	19 25.0%	19 25.0%	4 5.3%	76
Male	60 54.1%	12 10.8%	21 18.9%	16 14.4%	2 1.8%	111
All	81 43.3%	25 13.4%	40 21.4%	35 18.7%	6 3.2%	187
Medicine						
Female	37 41.1%	5 5.6%	27 30.0%	17 18.9%	4 4.4%	90
Male	43 55.1%	9 11.5%	12 15.4%	12 15.4%	2 2.6%	78
All	81 47.9%	14 8.3%	39 23.1%	29 17.2%	6 3.6%	169
Agriculture, veterinary						
Female	6 23.1%	6 23.1%	12 46.2%	--	2 7.7%	26

Male	9 39.1%	6 26.1%	3 13.0%	2 8.7%	3 13.0%	23
All	15 30.6%	12 24.5%	15 30.6%	2 4.1%	5 10.2%	49
Technology Female	6 33.3%	3 16.7%	7 38.9%	1 5.6%	1 5.6%	18
Male	48 53.9%	7 7.9%	20 22.5%	12 13.5%	2 2.2%	89
All	54 50.5%	10 9.3%	27 25.2%	13 12.1%	3 2.8%	107
Total	140 46.5%	41 13.6%	67 22.3%	41 13.6%	12 4.0%	301
Female	239 61.0%	41 10.5%	57 14.5%	45 11.5%	10 2.6%	392
Male	380 54.8%	82 11.8%	124 17.9%	86 12.4%	22 3.2%	693
All						

Encouragement

More women than men found it of importance that a senior researcher encouraged them to apply for a Ph.D. grant (40% women compared to 30% of the men) according to the Report from The Danish Council on Research Training (DCRT 1999).

In my survey I did not ask of the importance of an encouragement, but "who if any had encouraged you to apply for a Ph.D. grant?" Approximately the same amount of women and men were encourage to apply either by their master-thesis supervisor or other researchers. But women as such got more requests from other colleagues, co-students, family and others compared to men.

In a Swedish study conducted among Ph.D. students at the University of Umeaa more men than women were encouraged to apply for a Ph.D. grant (Molin & Åsell 1995: 8).

Table two. Who encouraged you to apply for a Ph.D. grant? (Own data, Ph.D.'s enrolled 1997).

	Women N %	Men N %	Total N %
Supervisor	131 41,9%	171 42,0%	303 42,0%
Other senior researchers	108 34,5%	131 32,2%	239 33,1%
Colleagues from former			

work	44 14,1%	34 8,4%	78 10,8%
Other students	31 9,9%	32 7,9%	63 8,7%
Others	34 10,9%	28 6,9%	62 8,6%
Family	11 3,5%	5 1,2%	16 2,2%
	313	407	721

The variation in figures from different surveys indicate that the question asked influence the answer as one thing, but also that support and encouragement seem to be of importance for both men and women as another thing. However, differences in traditions at all levels (such as individual, institutional, departmental, research subject and research field and so on) may also influence the figures. In general it seem more usual to encourage a student to apply for a Ph.D. grant in science and technology than in other fields. Whereas in humanities and social science female students seem to get more encouragement than their male colleagues, while the opposite is the case in medicine and agriculture as well as in technology. The picture of the lonely rider/ hero, who all by himself discover that his presence is needed, seem to be of less importance to day (if it ever has been practised).

Supervision

Supervision is one of the most important aspects during the Ph.D. training. This is underlined in the official report as well as in other investigations. Many circumstances influence supervision both the gender composition of supervisor - supervised, the research environment, the quality of feedback from supervisor and so on. It seems as if Ph.D. students with bad experiences blame the supervisor and vice versa. But it would be too simplistic to put it this way. Here I will focus on the gender composition of supervisor - supervised and the Ph.D. student's satisfaction with supervision.

Table three. Gender composition of supervisor - supervised (Own data, Ph.D. students enrolled 1997)

	Female	Male	Total
One or more male supervisors	67.2%	85.0%	77.2%
Male and female supervisors	21.1%	10.8%	15.3%
One or more female supervisors	11.2%	4%	7.1%

Total	99.5%	99.8%	99.6%
N=	313	307	620

There seem to be a same-gender relationship both for female and male Ph.D. students. Many more female Ph.D. students than male have a female supervisor, whereas many more of the male Ph.D. students have a male supervisor.

In this respect the figures correspond with the results in the Norwegian investigation (Smeby 2000). The same goes for figures for students writing their master thesis in political science at the University of Copenhagen. Here 30% of the female students had a female supervisor, whereas only 19% male had a female supervisor.

Before drawing any conclusions from the figures I find it relevant to include data about the supervisor's title and the students gender. At the master thesis level, more male students than female students 'go to the top'. 31% of the men have a professor or docent as supervisor, while 17% of the women have. At the Ph.D. level you see the same tendency. More men have a professor as their supervisor, and more women than men have a supervisor, which is not part of the hierarchy in higher education, especially in medicine.

These figures might lead you to the conclusion that male students act more strategic than their female counterparts, since they chose supervisors which supposedly could guide the young fellows right to heart of research. But I think you need to take the subjects studies into account as well. Maybe it is not a matter of same-gender in supervision, but a question of 'same-subject' interest. Unfortunately, this cannot be settled with the existing data.

Satisfaction with supervision

In general the major part of the Ph.D. students find their supervision satisfactory. In the DCTR-report two out of three Ph.D. students found the quality of the supervision 'good' or 'excellent'. 13% found the quality of the supervision 'less good' or 'bad' (DCRT 1999). In my questionnaire three out of four find the supervision 'excellent' or 'satisfactory'. Whereas one out four thinks the supervision is 'bad' or they do not receive any supervision at all. It is mostly male supervisors who do not offer any supervision. There is a small predominance of males being satisfied with the supervision compared to the amount of women. And women tend to be more satisfied with female supervisors than of the males.

It is not necessarily the gender of the supervisor, which influence the quality of supervision. In a Norwegian study based on in-depth interview the conclusion was that supervision is very important, but it is not possible to trace significant gender relations. To some extent female students find the women supervisors are too demanding. And female students experience conflicts as something personal, where as male students see a conflict as an academic dispute (Teigen & Tvede 1993).

Including the findings referred to and the fact that the Norwegian study of same-gender in supervision is based on numbers only makes it difficult to understand how Smeby can write that more female supervisors assumable have a feministic approach that makes male students sceptical.

Table four. Satisfaction with supervision crossed with supervisor's gender (Own data, Ph.D.'s enrolled 1997).

	Satisfied	Not satisfied	No supervision
One male supervisor	60 70.6%	18 21.2%	4 4.7%
Female	122 80.2%	22 14.5%	4 2.6%
Male			
One female supervisor	15 83.3%	1 5.6%	
Female	6 60.0%	3 30.0%	
Male			
Two or more male s.	91 73.4%	26 21.0%	1 0.8%
Female	149 77.2%	31 16.1%	4 2.1%
Male			
Two or more female s.	10 66.6%	3 20.0%	
Female	6 100%	--	1 2.3%
Male			
Both male and female s.	51 77.3%	14 21.2%	
Female	33 76.7%	8 18.6%	
Male			
Total	227. 73.7%	62. 20.1%	5. 1.6%
Female		65. 16.0%	9. 2.2%
Male	316. 78.0%	127 17.8%	14 2.0%
All	543 76.0%		

Gender is not the most important thing, but the quality of the relationship between supervisor and Ph.D. student is essential. The content and needs varies from person to person. A challenge for supervisors is to secure a high academic level as well as being aware of personal qualities.

2. The Male-way?

A reform of the Danish Ph.D. education in 1993 emphasised that Ph.D. students should go abroad during the study. The numbers of Ph.D. students staying at a foreign university is increasing. In total more than half of the men went abroad (54%) and 39% of the women. In some research areas more people go abroad than in others (humanities and social sciences has a lot of students going to foreign countries, where as few in medicine does). And more students without children go abroad than students with family obligation (DCRT 1999).

In my survey the same tendencies can be found (here, I asked whether they had been abroad or not, some might still go). More men (46%) than women (40%) went abroad for at least one month, but the gender difference is not as remarkable as in DCRT's figures. One explanation to this could be that it becomes more and more common to go abroad and part of the Ph.D. students in the DCRT investigation has started before it became more common. Another thing is that there is a connection between age and going abroad. The older the Ph.D. students are the more unlikely it is that people go abroad and that goes for both men and women.

What one could ask is whether going abroad should be such an important indicator in valuing a Ph.D. study? Since integration in the research environment as such also seems to be of importance, then one might ask if that would be a way to go as well, i.e. improve the research environments at Danish universities attracting foreign senior researchers as well?

More men made corrections in their Ph.D. thesis than women. It seems to be valued positive in the DCRT-report. Maybe the rest, i.e. the women were cleverer and more careful at first and did not need to change anything? I do not have other data, which can qualify the discussion.

There seem to be a tendency to make some kind of behaviour more 'correct' than others, i.e. going abroad and making corrections. Whereas one might ask if all Ph.D. projects and training should be standardised and progress in the same manner?

3. A troubling family?

The family is often blamed to be an obstacle for women to become researchers. Women chose the family instead of a career, or women do not publish as much as men because of the family is some of the statements. But what are myths and what are realities? In the DRTC's report it is underlined that in general women write their thesis on time, but female breadwinners use more time than others.

In my investigation the population has not finished their thesis yet, in stead different questions can be used in the discussion. Firstly, the Ph.D. students were asked whether the family influenced their stay abroad. The same percentage between male

and female's answered yes. Secondly, half of the Ph.d. students do not have children. There is a small difference between male and female parents, since a number of women are single parent. Thirdly, the most remarkable difference is the spouses. Women are in general older than the male Ph.D. students as well as the female's spouses are elder. Every fifth female Ph.d. student has a spouse who is into research in one way or another. Whereas only every tenth male Ph.D. students has a spouse who's a student, Ph.D. student or researcher. This might indicate that while men live in 1 1/2-career families, women live in double career families, which might influence the women's possibilities at work. But a Norwegian investigation indicates that a spouse, who do research might be both a problem due to an ongoing 'fight' about the hegemony in the family and the spouse might as well be supportive in relation to research. In the Norwegian study there is a reference to another Norwegian study, which indicates that female researcher only publish less than their male counterparts, when their children are under the age of ten. And furthermore both men and women stress that a family can be a burden at some stages writing a Ph.D. thesis.

Table five. Family constellation (Own data, Ph.D.s enrolled 1997)

	Women	Men	Total
	N %	N %	N %
Single without children	53 16,9%	90 22,1%	144 20,0%
Single parent	8 2,6%	3 0,7%	11 1,5%
Single with joint custody	1 0,3%	1 0,2%	2 0,3%
Cohabitant without children	101 32,3%	121 29,7%	222 30,8%
Cohabitant with children	142 45,4%	180 44,2%	322 44,7%
Other constellations	8 2,5%	12 2,9%	20 2,8%
Total	313 100%	407 100%	721 100%

Table six. Spouses' occupation (Own data, Ph.D.s enrolled 1997)

	Women	Men	Total
	N %	N %	N %
Master student	12 3,8%	77 18,9%	89 12,3%
Ph.d. student	26 8,3%	30 7,4%	56 7,8%
Unemployed/ part time work	8 2,6%	38 9,3%	46 6,4%
Researcher, full time	38 12,1%	11 2,7%	49 6,8%
Other full time job	141 45,0%	127 31,2%	268 37,2%
Other	18 5,8%	25 6,1%	43 6,0%
Unanswered	70 22,4%	99 24,3%	170 23,5%
Total	313 100%	407 100%	721 100%

It would be too quick to jump to the conclusion that the family is a burden for women only. In some situations the family might slow the speed of females production a little, but in the long run men and women's publishing would equalize. And the DCTR report also state that as such more women than men finish their Ph.D. on time. Therefore one should be careful to conclude that the family as such is an obstacle for female researchers. Maybe it would be more appropriate to set up working conditions in research suitable for both men and women with a family.

Final discussion

I have summed up some of the points made in the paper below in order to figure out what are myths about especially female Ph.D. students that seem to be reproduced over and over again, and what are realities?

	Myth	Reality
Independent or dependent?	<p>Female Ph.D. students are dependent of encouragement from senior researchers and need them to formulate a project.</p> <p>Same gender in supervision is especially important for women.</p>	<p>More male students than females formulate their own project.</p> <p>You find difference between research fields, which can explain some of the gender differences.</p> <p>Both men and women acknowledge support and encouragement from seniors.</p> <p>Same gender in supervision is equally important for men and women.</p>
The male way?	<p>Women cannot go abroad as required.</p>	<p>More men go abroad than women, but the gap become smaller (especially comparing men and women of the same age), and there are major differences between research fields.</p>
The troubling family?	<p>The family is an obstacle for women in order to make a research career.</p>	<p>Family obligations slow down women's publishing while kids are less than ten.</p> <p>Men live en 1 1/2 career families, whereas women tend to live en double-career families, it is not necessarily an obstacle.</p>

Women do not seem to be more dependent or independent researchers than men. There are some gender differences, but also variations in traditions in different research fields, which should be taken into account as well. And for further research it would be relevant to figure out whether there are differences according to subjects and departments as well.

One should also emphasis the ability to cooperate with others. In some research field more projects are made on an individual basis, but in others fields projects are only conducted in groups. These very fundamental ways of doing research do not necessarily turn the single researcher into a more or less dependent person. Therefore, for further research one should deal with the organisational principle of

the research in different fields and even make qualitative studies of the culture in single departments.

A little provocatively, I made up the headline 'The male way?' I would stress that there is not one way from a master degree to a research position, neither a male nor a female way. On the contrary, tendencies to formalise and standardize the Ph.D. education not only in Denmark, but also supposedly in the world as such, might be questioned.

Lastly, I discussed whether the family is troubling women only. The data seem to indicate that it is too simplistic to focus on the troubling family as a female problem. Men with a family do in some context face the same problems as women, for example when going abroad. Differences are due to the fact that more women than men live in double-career families, whereas men live in 1 1/2-career families. The point of departure for negotiation is different in the two types of families. There might be both positive and negative aspects to it. Living with another researcher might be supportive. Again, families differs in many ways, and my major point is that one should not draw conclusions based on a combination of woman + family. In further studies it could be most helpful to develop some types of families, in order to get a better grasp of the phenomenon and its consequences in relation to research.

To sum up some of the points made in the paper, I would emphasise that one should be careful with drawing biased conclusions about women and research and about men and research as well.

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When I go through all questions at a general level, i.e. look into the results as such, for men and for women, relatively few questions come up with significant gender differences. Therefore, an ideal would be to divide the material according to research field and discipline as well as gender. Unfortunately, I am not able to do that for the whole material due to lack of time. I discuss some of the results, which indicate gender differences in my material and compare the results with other investigations.

My main objective is to discuss which aspects one should take into account when explaining gender imbalance in research.

Assumptions

1. Supervision at all levels are assumed to be of importance for a student's choice of a research career (choice of subject, satisfaction with supervision and choice of supervisor: Do female choose a female supervisor due to her sex or due to academic interest (faglig interesse)?

2. Motivation for applying for a Ph.D. grant is not assumed to differ according to gender.

3. The conditions for being a Ph.D. student influence the experience.

(better sentence, about three best and worst things about ph.d.)

4. Male Ph.D. students seem to be at 'fast tracks' to a research career compared to female Ph.D. students (choose between more disciplines, occupied at universities and in areas with more money, more grants).

5. The specific construction of a Ph.D. student's family is important according to the hegemony of negotiation in the family. (familie/typer?)

Former research

I won't go into details with previous research as such, but sum up some of the latest research results and statements in official reports about gender and Ph.D. students in Denmark.

In Denmark 'The Danish Research Training Council' publish an annual report summing up the situation of Ph.D. students as such. Gender is included as a variable. In the latest report from 1999 covering data from 1997 and 1998 gender are mentioned in relation to:

* More female Ph.D. students worked on a Ph.D. project recommended or formulated by a senior researcher.

* Female Ph.D. students find teachers' appeals of importance.

* More men than women go abroad, but family obligations influence both men and women's stay abroad.

- Women often write their Ph.D. on time. But women breadwinners do not finish on time.

- More women get employed in the public sector where as more men get employed abroad.

"De ph.d. uddannede 1997 og 1998".

(Need to take alder into account).

In the report some myths about female Ph.D. students and researchers are reproduced. Women are dependent, need to be encouraged and are linked to the family forever.

In general there is not much research about the Ph.D. students working conditions and career possibilities. In a newly published book about the recruitment of Ph.D. students it is assumed that children makes a difference for researchers (Reisby 1999: 24). There is also a reference to earlier investigations in which it is stated that more women have considered a career as a researcher, but few of them succeed (Reisby 1999: 23).

Some results

2. Motivation for applying for at Ph.D. grant is not assumed to differ according to gender.

In a Norwegian study of Ph.D. students a number of reasons for becoming a researcher is listed (Teigen & Tvede 1993: 28ff). One is that a student chose rationally between rival jobs; another that research is a call and I would add, one could chose by accident /chance.

The Norwegian results indicate that both women and men become Ph.D. students because they have an academic interest in their research field, i.e. research is a call. Major difference is not between genders but between disciplines. In humanities and social sciences the interest for becoming a researchers does not show until writing the master thesis. In natural science the students take an interest in research earlier (same difference is found in Reisby et.al. 1999).

In the Ph.D. survey a question posed were:

Why have you chosen a Ph.D. study? (q. 13).

	Women	Men	Total
	N %	N %	N %
Academic interest	279 89,1%	366 89,9%	646 89,6%
Encouraged by others	151 48,2%	175 43,0%	326 45,2%
Part of the career	133 42,5%	187 45,9%	321 44,5%
Flexible working conditions	78 24,9%	153 37,6%	231 32,0%
Research environment	55 17,6%	69 17,0%	124 17,2%
Alternative to	55 17,6%	40 9,8%	95 13,2%

unemployment	34 10,9%	35 8,6%	69 9,6%
Other things	6 1,9%	13 3,2%	19 2,6%
The pay			
I alt	313	407	721

Academic interest is the most important reason for Danish Ph.D. students to apply for a grant in the first place, this go for both men and women. The most striking gender differences are that relatively more women than men chose a Ph.D. study instead of unemployment, and that more men than women emphasize flexible working conditions (it is often argued to be a reason for women to apply in order to combine work and family).

4. Male Ph.D. students seem to be at 'fast tracks' to a research career compared to female Ph.D. students (chose between more disciplines, occupied at universities and in areas with more money, more grants).

Men have mentors during as students, and as ph.d. students,

1. Supervision at all levels are assumed to be of importance for a students choice of a research career (choice of subject, satisfaction with supervision and choice of supervisor: Do female chose a female supervisor due to her sex or due to academic interest (faglig interesse)?

Former research:

In general it is assumed that a mentor can be of great importance for a career in any branch this goes for research as well. However, there are investigations indicating that female only apply when encouraged, but also a Swedish study showing that more men than women were ask to apply. Other studies indicate that male students get the most attention (Teigen & Tvede 1993). All results may be correctly.

Ph.D. study:

Who may have encouraged you to apply for a Ph.D. grant? (sp. 14)

	Women N %	Men N %	Total N %
Supervisor, master thesis	131 41,9%	171 42,0%	303 42,0%

Other researchers/ teachers	108 34,5%	131 32,2%	239 33,1%
Colleagues at former workplace	44 14,1%	34 8,4%	78 10,8%
Other students	31 9,9%	32 7,9%	63 8,7%
Other people	34 10,9%	28 6,9%	62 8,6%
Family	11 3,5%	5 1,2%	16 2,2%
	313	407	721

In general both women and men have been encouraged by their supervisor. The major gender difference is that women to a larger extent than men have been encouraged as such.

Gender of supervisor in master thesis and gender of Ph.D. student Crosstabulation

		Gender		Total	
		Women	Men		
Gender of supervisor	Woman	Count	59	20	79
		% within gender of supervisor	74,7%	25,3%	100,0%
		% within gender	25,0%	6,5%	14,5%
		% of Total	10,9%	3,7%	14,5%
	Man	Count	177	287	464
		% within gender of supervisor	38,1%	61,9%	100,0%
		% within gender	75,0%	93,5%	85,5%
		% of Total	32,6%	52,9%	85,5%
Total		Count	236	307	543
		% within gender of supervisor	43,5%	56,5%	100,0%
		% within gender	100,0%	100,0%	100,0%
		% of Total	43,5%	56,5%	100,0%

Ph.d. vejledning (sp. 30)

Hvordan bliver du vejledt?	Kvinder	Mænd	Total
	N %	N %	N %
To eller flere mandlige vejledere	125 40,0%	193 47,4%	319 44,2%
Mandlig vejleder	85 27,2%	153 37,6%	238 33,0%
Både kvindelig og mandlig vejleder	66 21,1%	44 10,8%	110 15,3%
Kvindelig vejleder	20 6,4%	10 2,5%	30 4,2%
To eller flere kvindelige vejledere	15 4,8%	6 1,5%	21 2,9%
Har ingen vejleder	--	1 0,2%	1 0,1%
Ubesvaret	2 0,6%	--	2 0,3%
	313 100%	407 100%	721 100%

Over tre fjerdedele af alle ph.d. studerende bliver vejledt af en eller flere mænd. Det svarer nogenlunde til mændenes andel af den samlede fastansatte forskerskare. De kvindelige ph.d. studerende får i højere grad end deres mandlige kollegaer vejledning af kvinder. (14.8% af mændene er i kontakt med en kvindelig vejleder, mens tallet for kvinderne er 32.8%, gns. er 22,2%).

In some studies there have been a tendency to divide the population of researchers into women and men. In some analysis a division between disciplines such as science, medicine, humanities and social sciences have been used. However, my main assumption is that you need to know how money is distributed according to research field, discipline and subject studied before it is relevant to explain gender similarities and differences.

Fra Godt Begyndt I kap. 13. Hvad der er om køn / kvinder.

Forskerakademiets *De ph.d.-uddannede 1997 og 1998* giver enkelte oplysninger om forskelle mellem mandlige og kvindelige Ph.D.-studerende. Blandt konklusionerne er, at mænd er mere tilbøjelige end kvinder til at inkorporere et længere udlandsophold i et Ph.D.-forløb. For begge køn medfører et forsørgeransvar, at ønsker om længerevarende studieophold i udlandet mindskes.

Forskerakademiets *Data om dansk forskeruddannelse 1999* giver tal for kvinders procentvise andel af nyindskrevne Ph.D.-studerende fordelt på hovedområder. I 1998 var 40% af alle nyoptagne Ph.D.-studerende kvinder, men andelen svingede fra 52% for humaniora til 24% for de tekniske videnskaber. Generelt er andelen af kvindelige Ph.D.-studerende lidt lavere end andelen af kvindelige kandidatstuderende.

Panelet anbefaler, at universiteterne gennemfører et målrettet arbejde for at identificere og fjerne de barrierer, der gør det vanskeligt for kvinder at påbegynde og gennemføre Ph.D.-uddannelser.

Own Ph.D. survey, data frequencies split into women and men.

Background

- higher percentage of women than men have answered the questionnaire (total 73%, women 82% and men 66%)
- men are younger than women entering a Ph.D. study. More women have employment experiences before starting on a Ph. D.
- female Ph.D. students have more often had a female supervisor writing their master thesis than male students (25% women, 7% men) (goes for political studies survey as well). And male students have more often a supervisor from the permanent staff (see gender comments p. 11-12).
- An academic /scientific interest in a subject is most important choosing to apply for a Ph.D. grant. More females chose the Ph.D. instead of unemployment, whereas more male than female chose a Ph.D. due to flexible working conditions (normally regarded as women's reason).
- Female Ph.D. students do more often apply for a Ph.D. grant by request than male.

Ph.D. education

- Female and male Ph.D. students are unequally represented in research fields and subjects. Five out of ten subjects have the highest amount of both women and men. But men have obtained grants in many more subjects than women.
- More male Ph.D. students are employed at a university where as more female Ph.D. students write their PhD. at sector institutions or private companies. More women have a project with an experimental or empirical element.
- More male students indicate that their project is in the core of the department's prestigious research.
- Questions about supervision, satisfaction with supervision and content, researcher/ student, publications. (More female Ph.D. students have a female supervisor).
- Three best/ worst thing related to the education as a Ph.D.: Best for women, academic interest, independent work conditions, flexibility: Best for men: freedom, academic interest, learning and challenges. Worst for women: solitude (loneliness) and isolation, dissatisfaction with supervision and too little time for the project. Worst for men: badly pay, solitude (loneliness) and isolation and dissatisfaction with supervision.

Working conditions

- More male Ph.D. students than female get attention from other colleagues (reading their papers, discuss the project and offer of a job and financial support).
- Different characterization of daily working environment, more women find it isolating.
- Researchers gains recognition by: publishing, being competent in the field and demonstrate successful research and results. However, women place huge work effort and sociability before successful results.
- Non-recognition is seen as bad work ethics, no involvement, selfish behaviour and no publication.

Future

- More women than men have not decided about the future (more men want a job at a university).
- More men than women emphasize pay as an important aspect when choosing a future job.

Family background

- Men are in general younger than the female Ph.D. students in the sample.
- More women are engaged with a researcher (1/5), whereas 1/10 of the men's spouse has a research related job. More women are married to men in full time work. Women live in double career families whereas men live in 1 1/2-career-families.
- No major differences according to children.

Major points from the Norwegian investigation:

1. Motivation for a research career
2. The relationship between ph.d. student and supervisor
3. The importance of the organisational principle of the research (individual project or part of a research group)
4. The relationship between research and family life.

Assumptions

1. Inspiring supervision at master thesis level is of importance for women's choice of a research career. Therefore, it is assumed that the relationship between ph.d. student and supervisor is of importance.
2. Phase of life is of more importance for women than for men (overlap between small children and demands for qualifications)
3. Not obvious why less female researchers apply for permanent chairs.

My main aim is to discuss the explanatory power of one the one hand subject and money and on the other hand gender. Since a basic assumption about the research system as such (at least in Denmark) is that the distribution of money between different research fields influence the gender composition of research staff. (Not that other factors do not influence the gender balance as well, but a money is a fundamental aspect which should be taken into account).

References

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