RT. A Journal on Research Policy & Evaluation **1** (2018)
Submitted on 1 July 2017, accepted 22 December 2017, published on 1 March 2018.

Doi: 10.13130/2282-5398/8709

Supervision, Mentorship and Peer Networks: How Estonian Early Career Researchers Get (or Fail to Get) Support

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Abstract: The paper analyses issues related to supervision and support of early career researchers in Estonian academia. We use nine focus groups interviews conducted in 2015 with representatives of social sciences in order to identify early career researchers' needs with respect to support, frustrations they may experience, and resources they may have for addressing them. Our crucial contribution is the identification of wider support networks of peers and colleagues that may compensate, partially or even fully, for failures of official supervision. On the basis of our analysis we argue that support for early career researchers should take into account the resources they already possess but also recognise the importance of wider academic culture, including funding and employment patterns, and the roles of supervisors and senior researchers in ensuring successful functioning of support networks. Through analysing the conditions for the development of early career researchers – producers of knowledge – our paper contributes to social epistemology understood as analysis of specific forms of social organisation of knowledge production.

Keywords: early career; PhD student; supervision; mentorship; support network

1. Introduction

Across the world, and for a number of years now, it has been recognised that new generations of researchers are building their careers in progressively more difficult conditions and that this situation

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calls for a change – that, as a recent editorial in *Nature* stated, "Early-career researchers need fewer burdens and more support" ('Early-career researchers…' 2016).

The aim of our paper is to contribute to the discussion of some of these burdens and ways to ease them. By analysing focus group interviews conducted with early career researchers in Estonia, we identify the needs that they expect their supervisors to satisfy and the ways these expectations may be frustrated. Alongside with that, we identify alternative sources of support – support networks in a wide sense – that already exist in early career researchers' lives.

Our analysis is situated at the crossing of several themes that are actively explored in higher education research. It is recognised that PhD students and early career researchers face important challenges in their professional development (e.g., Åkerlind 2005; Laudel and Gläser 2008). It is shown that supervisors (who could be expected to support early career researchers in their development) experience increasing pressures due to the changes in higher education policy and funding (e.g., Müller 2014; Taylor 2012). Alternative forms of support, such as intellectual communities and peer networks, increasingly attract attention (e.g., Kemp et al. 2013).

Our main result is the demonstration that support networks do not just exist alongside supervision: they may be understood by early career researchers in connection with their (frustrated) expectations about supervision and they may be used to address supervision failures. While addressing failures of official support is an important task, we are convinced that recognising this resourcefulness of early career researchers is also important for providing them with the support they need and avoiding interventions that are perceived as useless.

Our analysis belongs to the tradition of social epistemology as described by Biddle (2014: 14): "[s]ome ways of organising research are conducive to the production and dissemination of knowledge, and others are not; the examination of which is which is an important project in social epistemology". In our case, we are interested in the ways the organisation of academia influences the development of independent academic researchers. Similarly to Biddle, our aim is to propose an empirically informed analysis of specific problems and to outline specific empirically testable ways to address these problems.

We believe that Estonia is a useful example for discussing the issues early career researchers face. Since the early 1990s, Estonia has gone through the change from being a part of the closed Soviet higher education and research system to becoming a member of the internationalised system, profoundly influenced by the Bologna process and characterised by an unusually high share of project funding (e.g., Eigi et al. 2014). Given the ongoing changes in higher education and research systems all over the world, learning from this experience may have relevance beyond Estonia.

2. Data and methodology

Our paper is based on the work done as a part of a larger project that focused on supporting the career tracks of female researchers in academia.[1] The consortium of four, coordinated by the Tallinn University, included the three largest public universities in Estonia (also the University of Tartu and

[1]The project "Supporting the career tracks of female researchers in the academia" was funded by Norwegian Financial Mechanism 2009–2014 (the project ran from September 2014 to January 2016). For the report (in Estonian), see Aavik (ed.) 2016.

the Tallinn University of Technology), as well as the private Estonian Business School. The overall project combined descriptive reviews of institutional hiring practices in Estonian universities and the best practices from selected UK, USA, Australian and Scandinavian universities with qualitative work mapping experiences and attitudes of female early career researchers.

This paper builds on the results of the qualitative analysis, based on nine focus group interviews that were conducted between June and November 2015. We focused on social scientists because this disciplinary group was present in all four participating universities. The participants were invited based on their academic roles as early career researchers and PhD candidates (including some who were away from academia at the time of the interviews). Six semi-structured interviews took place in Tallinn and three in Tartu, with the participation of 24 women and 10 men. The groups themselves were arranged by gender. The female respondents were further divided into "active in academia" or "not active" groups; when selecting participants for male focus groups, we did not make this distinction. The interviews were taped, transcribed, coded and anonymised.

One of the recognised practices for supporting female early career researchers in academia is mentoring, and so this was one of the topics on which the project focused. Building on our earlier work, in this paper we aim to remain sensitive to gender differences in experience but also to use the interview material in order to understand challenges and resources for early career researchers as a social group. Accordingly, in what follows we discuss experiences and expectations of early career researchers of both genders regarding supervisory practices, mentoring, and support networks.

3. PhD studies in Estonia

In this section, we provide background for the Estonian doctoral studies system to enable a better understanding of the situation in which PhD students, early career researchers and their supervisors find themselves. Unless indicated otherwise, this section is based on the study *Doktoriõppe tulemuslikkuse analüüs* (*Analysis of the efficiency of PhD studies*) conducted as a part of the TIPS (Teadus- ja Innovatsioonipoliitika Seire Programm – The Research and Innovation Policy Monitoring Programme) in 2014 (Eamets et al. 2014).

The standard period of doctoral studies in Estonia is three or four years.[2] The form of education is structured learning: in addition to writing a doctoral dissertation, students participate in compulsory courses. There is variation among universities, but in principle there are three possibilities for a doctoral dissertation: 1) a collection of research articles with a summarising introductory article; 2) a monograph published in the university's dissertation series; 3) a monograph published as a research publication.

The main motivation for entering doctoral studies is personal interest and the possibility of self-development. Remarkably, only 8% of respondents of the TIPS study named the improvement of their opportunities on the labour market as their first motive. The probable reason for that is the fact that potential employers for PhD degree holders are academic institutions. Public and private sectors in Estonia do not value doctoral degrees much. Besides that, PhD students do not have the

[2] Ülikooliseadus § 29(2).

same social guarantees as someone in employment (for example, with respect to the parental benefits or the pension qualifying period).

It is expected that the majority of doctoral students should graduate within the standard period – for example, the financing of the universities depends on that. The actual situation, however, is worrying. Between 2010/2011 and 2015/2016, the number of drop-outs varied from 262 to 355 per academic year; the number of successful graduations varied from 190 to 250.[3] In a recent interview, a former vice-rector for research of the largest Estonian university complained that only about 29% of the PhD students of that university receive the degree within the expected time (Maidla 2016).

The main obstacle for graduating is the low doctoral allowance, which at the time of the TIPS analysis was approximately 40% of the average salary in Estonia. This means the need to work simultaneously with the studies and the work appeared to be the main impediment to academic progress. It is easier to advance in PhD studies if the student has the opportunity to work in a research project related to the PhD topic. Not all PhD students have this opportunity, however, as the Estonian research funding system is extremely project-based (Masso and Ukrainski 2009). As a result, not all supervisors have project funding, which PhD students in an earlier study considered a problem of supervision (Puura et al. 2004, 51).

Similarly to the 2004 study, the TIPS study uncovered problems with supervision, such as the formal assignment of supervisors and the lack of supervision skills, even incompetency.

4. General expectations about supervision and mentoring

There is little doubt that supervision is important for PhD students and early career researchers. Good supervision and mentorship (often used synonymously) have been shown to play a role in PhD students' and early career researchers' productivity, professional confidence and self-efficacy (e.g., Hemmings 2012; Scaffidi and Berman 2011; Sinclair et al. 2014); as well as in preventing their emotional exhaustion (e.g., Hunter and Devine 2016), burnout (e.g., Cornér et al. 2017), attrition (e.g., Litalien and Guay 2015), and delays in graduation (e.g., van de Schoot et al. 2013). To add to the understanding of supervision at the beginning of academic career, in this section we map the general expectations of the interviewed PhD students and early career researchers concerning supervisors and mentors.

Even though the expectations concerning supervisors vary to a great extent, the supervisor's status in universities is clearly defined and the necessary academic qualifications are described in the regulations. Supervision may belong to the description of an academic position or it may be an extra activity regulated by a specific agreement. The success rate of supervision is measured by the number of on-time defences and this serves as an important evaluation criterion in the application process for academic positions.

When our interviewees described the ideal supervisor, they insisted above all upon her/his research qualifications – the supervisor must be an internationally renowned researcher. He or she must have a solid list of publications in high-ranking international journals; he or she must have a broad cooperation network both in the area of theory and in the area of application. The supervisor

[3] HaridusSilm (http://www.haridussilm.ee/). Accessed 13.11.17.

should be a leader in a research field, a successful fundraiser and he or she should enthusiastically invite early career researchers to participate in projects. The supervisor must have excellent practical, administrative and teaching skills.

In addition, the supervisor should be able to transfer the skills to his or her students; he or she should be able to teach how to become a good scientist and a good teacher. The teaching process should progress step by step via involvement in teaching, research, and administration. The supervisor should assist in article writing, he or she should recommend journals for submitting manuscripts, give feedback to papers, provide the student with constructive criticism and, if needed, put some pressure on the student or help to avoid or alleviate crises. The supervisor's duty is to introduce the PhD student to international cooperation networks and to encourage presentations at international conferences.

When it comes to actual supervisors, their ability to promptly react to PhD students' questions, as well as their skill of formulating a research theme in an interdisciplinary field so that it is acceptable to all participating groups were especially appreciated. In all focus groups, the promise of a workplace and cooperation opportunities, adequate feedback and inclusion into international networks were emphasised as important.

The role of the mentor is both non-regulated officially and less clear for the interviewees. In many cases, the supervisory approach and the corresponding problems experienced lead to the construction of the image of mentor who mitigates those problems. Using the term "image" is more appropriate here than for example that of "role model", because "mentor" tends not to have concrete content and the meaning of this term is clarified only during the interview. Accordingly, the interviewees' views of the role and tasks of a mentor varied to a great extent.

The hypothetical case a male interviewee presented provides an example of such a construction. It concerns a disagreement between the supervisor and the PhD student that leads to the discussion whether to invite the second supervisor or to find a different supervisor.

> *M1: I see mentor as separate from supervisor. In my opinion, it would be best if there were such a person for the PhD students at the department, […] who is not oneself a supervisor but is such a person from whom you get unbiased advice if you want to change your supervisor, or if you have two supervisors and you have a conflict in theory.*

The majority of the interviewees considered the mentor an unofficial advisor who might be an excellent expert in a specialist field helping to fill in the gaps that the supervisor has not been able to address. The need for a mentor may be invoked when the supervisor does not have the necessary competence in a specific part of the research project or there is a disagreement between the supervisor and the PhD student. The mentor may also be someone who helps the novice to survive in the workplace culture by advising on organisational matters. So, the mentor may help in practical, organisational aspects of research work, related to administration, planning, paperwork, etc. Sometimes a mentor is needed as an informal advisor and motivator who discusses the mentee's ideas and provides psychological support.

Often, those who considered the role of the mentor important described the ideal state of affairs when the mentor and the supervisor are the same person. These roles may in fact coincide, especially in the case of a long-term cooperation that continues after the PhD defence. A member of a research group at any position in the academic hierarchy might act as a mentor, but the mentor might also be a close cooperation partner from abroad.

In addition to these general expectations, the following section spells out some specific forms of supervision and frustrations associated with them.

5. General expectations about supervision and mentoring

The interviews revealed a whole range of specific satisfied and dissatisfied expectations towards supervising. All four academic institutions that participated in the study face some problems with supervision. They were mentioned by both male and female interviewees, first year PhD students as well as post-doc researchers, those who were still active in academia as well as those who had left. Describing an analytical abstraction of the modes of supervision and their shortcomings is an opportunity to understand what patterns of support are dominant in Estonian higher education system as well as to analyse their systemic problems.

Our interviews identify three modes of supervising that are meaningful for early career researchers:

1) commenting on the written text;
2) involving in/introducing to the local research culture;
3) creating a loyalty relationship.

Commenting texts

The scope of the activities of commenting and giving critical feedback can be very wide, from assessing only the final version to more complex tutoring that also involves guidance how to create different parts of a scientific paper and how to turn the original idea into a product that accords with disciplinary rules and good practice.

It is clear that receiving critical and constructive feedback to one's ideas and papers is a very important factor in PhD studies. Certainly, there are those whom this tutoring style suits perfectly – there were such examples also among our respondents.

In general, however, many critical remarks were made about the "commenting a written text" supervision style or, to be precise, about supervision that is limited to just this function. With this supervising style, extremely high level of autonomy is expected from doctoral students. The assumption of relative independence of doctoral students leaves them essentially alone. The supervisee could be left for a long period (even for years) without substantive feedback, leading to the situation where intellectual and life lows can last longer, which in turn decreases the effectiveness of doctoral studies.

Another danger of the "commenting" style is the lack of social pressure. Such kind of tutoring neither needs nor promotes co-working, which in turn makes the student's ability to maintain self-discipline and motivation crucial. When the PhD student has a full-time job elsewhere (which is rather typical), maintaining the focus on the activity that does not provide sufficient reward or is not accompanied by social monitoring is difficult. As one of the female interviewees who had left studies put it,

> *F2 (not active): My supervisor told me rather at the beginning that s/he is not a pusher. And, well, maybe that was what I needed a bit more.*

The need for moral and psychological support came out in many interviews with female respondents. One interviewee described how the supervisor, through his/her own activities, even exacerbates the psychological crisis:

> *F1 (active): How often I have seen those crying doctoral students over the years … We have all probably seen them. And actually, how the supervisors have left them alone.*

In the focus groups conducted with men, the importance of psychological support was not emphasised. However, relatedly, there were references to the need for a person or group who would encourage the progress of the doctoral student.

Introducing to research

In addition to critical commenting, many focus group respondents felt the need to be involved in actual research practice**:**

> *F3 (not active): But […] the PhD students who are involved in the supervisor's research group, and whom the supervisor teaches also how to grow into a scientist while writing the thesis; […] how to write grant applications, how and where to go to conferences, which kind of scientific articles are necessary and where it would be wise to submit them. This side is missing.*

The supervising style that accentuates involvement in actual research practice is very effective.

However, as the interviewees recognise, it places high demands on the supervisor and reduces the number of potential supervisors. For example, the expectation that the supervisor will lead the doctoral student into the disciplinary community and introduce the student to so-called important people presumes that s/he has an internationally recognised professional reputation. The supervisor's experience must also remain relevant. For example, the interviewees expressed the doubt whether a social scientist over a certain age can be a successful role model in current academic reality.

> *F4 (active): If they had something, they had something from a socialist time somewhere. They knew how to get cheap vodka in Arkhangelsk ... if you go to a conference, but it was not anything of use in this new society.*

Moreover, such supervision style is extremely resource-intensive – particularly for the supervisor. Given the fact that supervision is not highly rewarded in the Estonian higher education system and is seen as a by-product (even if the importance of culture guidance is recognised in principle), the actual practice depends to a large extent on the will and possibilities of the specific supervisor. The possibilities, on the other hand, vary depending on the research field (the availability of grants, traditions of collaboration etc.), which means that doctoral students are in an unequal position.

When choosing the supervisor, the applicant for PhD studies is essentially involved in a lottery, the main prize of which is a place in a financially secure research team – especially good if it is an internationally funded project with a high level of research, international feedback, and networking guaranteed.

In addition to the inexperience of the student first choosing the supervisor, the odds in this lottery may be further worsened by some aspects of the Estonian academic system that, paradoxically, may make it attractive in the first place. The interviewees generally positively emphasise the possibility to choose the research topic according to one's personal interests. However, several problems might stem from that, since the student may not be able to evaluate the feasibility of the task undertaken, including the competence of one's supervisor for the specific project and the relevance of the topic to the interests of research community.

In addition to the problems on the student's side, more advanced female early career researchers emphasised the insecure situation of supervisors themselves in project-based funding conditions.

> *F5 (active): Well, considering this project-based general situation, you can never rule out that you must go at one point. […] We have international curricula and at the same time, if there is such a teaching workload, how do you manage to raise your own research indicators? ... There will be someone who has not had that research ... the burden of teaching and has completely different indicators.*

So, even more advanced researchers' opportunities are lotteries, because the re-election for the post, the continuation of project funding, or a new grant are not guaranteed. This cannot but have an impact on researchers as supervisors as well.

Cultivating loyalty

A consideration that might motivate the supervisor to contribute to supervision with his or her time may be the perception of supervision as a mutually beneficial relationship of loyalty (or even dependence). Behaviours based on loyalty were often described in the interviews. At the same time, the object of loyalty in an academic institution is not always clear: it can be either the supervisor as a person or the institution more broadly. What the university expects from the student and what the student expects from the university is mediated by the supervisor. From the student's perspective, the tasks performed for the university (local academic community) are performed for the supervisor as well, especially when the supervisor profits from them (co-authored presentations and papers produced as a part of the student's studies are an example).

The supervisor's task is to provide the PhD student with academic environment, a place in the research group, and funding; at best, also a job before or a promotion after the graduation. According to a rather widespread view, whether it becomes a reality depends simply on the supervisor's will.

> *F6 (active): If this person [supervisor] makes an effort for the sake of her/his being there … there always will be a job […].*

The supervisee is in his or her turn supposed to show gratitude, which means that applying for a position at another university or changing the supervisor becomes fraught. Graduating late, after the end of the standard period of study, is supposed to cause guilt.

Thus, understanding the supervision relationship as that of loyalty involves serious disadvantages. It may lead the PhD student to spending most of the time on extracurricular activities, so that there is not enough time for the completion of the thesis. The responsibility for academic progress is divided between the PhD student and the supervisor and it might happen that the former does not receive the expected guidance from the supervisor and fails to maintain the focus on the thesis.

> *F7 (active): […] all professors very much like to say, "I've got a cold today, could you go and give the lecture for me". It is all so great, we are all happy that I can do that, but focusing on my OWN thing, this was cancelled.*

As the discussion in this section has shown, PhD students and early career researchers' expectations about supervision are often frustrated. Not infrequently, the reasons for that are not so much a personal failure on the supervisor's part as systematic phenomena caused by specific forms of supervision taking place in the specific context of the Estonian higher education system. However, alongside with supervision, other sources of support have been identified in the interviews. The next section discusses them.

6. Support networks

The aim of this section is to discuss how early career researchers understand the meaning of support networks in academia and what their expectations concerning them are. By support we primarily mean that provided by academic colleagues. It does not include support networks outside academia, such as family etc. Neither does it include official support structures at universities, such as administrative staff.

In the interviews, we distinguish between three types of networks but their borders are not fixed and they can overlap.

International networks

One of the concepts that plays an important role in different interviews concerns international collaborative and publishing networks. Forming such networks is one of the main areas where early career scholars expected to get help from their supervisors – the supervisor is to show the way into the international professional world.

> *F11 (not active): Since we went together to many international conferences of our field, my supervisor […] introduced me to all possible circles. […] all young ones were taken from one important guru to another.*

Helping to find right contacts can compensate for the fact that the supervisor him/herself is not a specialist in that specific field; being included into international networks can be helpful in finding a suitable co-supervisor.

> *M2: But there are various possibilities to get support, especially for going abroad and finding people, who are working on similar topics. This compensates the matter quite well.*

As mentioned earlier, the need for an external supervisor may stem from the combination of the ideal of academic freedom with the limited size of the Estonian research community. Many of the interviewees who had had an additional foreign supervisor explained the need for an expert from abroad as Estonia simply lacks experts in specific fields.

> *F8 (active): And then we simply decided, we took the strategic decision and found a supervisor from abroad. Recognised international expert and … from Finland, Jyväskylä, and to be honest, this was the best decision that could have been taken.*

A foreign supervisor might also be an important factor in the growth of one's academic capital and the development of one's career.

In addition to supervision, being introduced into networks can be useful also for finding an authentic, non-formal mentor.

> *M4: And one […] smart person said that […] if you go around and socialise with people, you will get a mentor someday.*

Not helping the PhD student in getting integrated into such professional networks might give rise to criticism and frustration – even when the supervisor is highly esteemed. One may recognise that it may be more of a personal incapability than unwillingness, but in any case it shows that the supervisor is unsuitable to fulfil the role. (While discussing this shortcoming, the interviewees also pointed out that it is not only the behaviour, but also the person – the supervisor needs to be a recognised international authority who can open doors into the academic world.)

> *F6 (active): […] I have insisted that if someone is not willing to do these things, then […] let's send those people who really look where everyone is sitting [at the conference dinner table], so that when we need to talk to the Poles about a great idea that we could work on together, then you sit next to the Poles and arrange matters throughout the dinner and the collaboration is settled by the next day. There is no such international scale thinking and this limits local, especially PhD students', topics.*

In this case, the student has to create this kind of a network on her own and this can cause discontent (although one of the interviewees said that she did not feel the lack of the supervisor's support in this matter). One can thus see the interplay of expectations with respect to supervision and the ways disappointments may be compensated: the student may accept the lack of expertise concerning a specific topic but not the lack of standing in international community or willingness to help to establish connections for addressing the gaps in the supervisor's expertise.

Local institutional networks

One's network can be conceived in a somewhat broader way: in addition to professional connections, it can also involve more general information exchange, support, and collegiality. These cases are often local personal connections; networks of this kind neither exclude nor replace international professional networks.

> *F5 (active): If we work together in an institute or chair, it would be normal that people would exchange information, invite, and inspire etc. That it wouldn't be only the student-supervisor relationship; that it could be […] everyday life as well, normal, collegial relations.*

Importantly, the existence of such a support network does not depend on the supervisor alone – rather, it depends on the practices and traditions of the academic unit. Even so, the supervisor may play an important role in helping the early career researcher to establish a more permanent relation with the unit – for example, by offering a position in a grant project or a course of lectures to present.

Wide collegial networks

One of the most inclusive definitions of support network comes from the interviewee who at the same time most forcefully stressed her independence in creating this network. According to her, such a network emerges naturally by the time of starting a PhD programme.

> *F7 (not active): I cannot imagine a single department at least on the example of the Tallinn University or the University of Tartu where ... where a PhD student could be so isolated that they would have no such support network that would support them for example. They simply cannot not have one. Because they HAVE TO work together with others.*

According to the interviewee, such a network includes professors both at the home institution and in the places where one has spent time studying abroad. Equally importantly, it also includes one's academic peers, colleagues "in the same office" at the same stage of studies or career or those slightly ahead. The inclusion of one's local peers in the network may be especially important in rapidly changing conditions. As the quote about the Soviet-era experience of supervisors in section 5 shows, one of the themes in the interviews is that the academic staff of older generation received their education and began their career in very different conditions; accordingly, they may be unable to help in the new academic situation.

The next quote further widens the notion of support, showing that it may also include practical help such as babysitting.

> *F7 (not active): […] I don't know, we have babysat other PhD students' children readily, they were left to us here in the office and the child stayed here for as long as someone was giving a lecture or attending one.*

Having this kind of wide-ranging support network makes the existence of a dedicated mentor position unnecessary, even ridiculous and patronising for someone who is mature enough academically and personally:

> *F7 (not active): […] you do not need a separate designated mentor who has a sign in front saying "I will now take your hand and we will have coffee here together and I will tell you that being a PhD student is a great thing after all".*

As this quote suggests, ignoring such already existing networks may feel like an underestimation of the PhD student's experience and maturity and may provoke resistance when some generic form of mentorship is offered.

7. Network failures and possibilities to improve networks

Importantly, there are some indications in the interviews that one cannot take the existence of support network for granted in all cases. This interviewee stressed that she had belonged in the system for a long time and it might have put her in a privileged position:

> *F7 (not active): I believe that this is in fact different depending on whether you come from the street and on the conditions of fair, fair competition or whether you already are in the system so that you are already known.*

So, a "person from the street", someone who enters a PhD programme from a different university, cannot be expected to have a comparable network already in place and may therefore be at a disadvantage.

Other early career researchers in a disadvantaged position may be identified, including those who have to be physically away from their academic unit, for example, due to studies or work abroad. One of the researchers interviewed was included in a research group but lost the connection because she was away from Estonia at that time. International mobility may thus interfere with the creation of certain types of support networks even if it can at the same type help with others.

The question how to make networks work for someone who is currently failed by them therefore naturally arises. In addition to that, many interviewees discussed how support networks may be facilitated. As previously described, when it comes to establishing networks, there is an expectation that the supervisor plays an important role in the creation of international networks. In the words of one of the interviewees, the supervisor's role should be to keep the network "as wide as possible". In the case of local and peer networks, the focus tends to be on the university practices and organisation.

In some cases, the emergence of such a local peer network may to some degree be seen as a natural consequence of going through PhD studies. However, it is also observed that the emergence of helpful peer relations could be facilitated by purposefully organised seminars that involve all PhD students of a university. The interviewees suggested that contacts between different specialties may play a positive role in advancing one's work, for example, thanks to feedback; later an interviewee also mentioned the exchange of information concerning grants, universities to choose for study abroad and personal experience of writing. These seminars may also provide opportunities for collaboration and inspiration. Even more generally, such seminars could foster a feeling of belonging to a specific group – early career researchers, "the future makers", – and thus serve as a source of psychological support and validation.

If a system of such events already exists at the university, the early career researchers appreciated it and evaluated its influence as positive. They described how it fulfils some traditional functions of the supervisor, such as providing feedback to papers. It also plays an important motivational role. Persons involved in these networks are "like mentors or something like that" for each other.

> *M5: Thinking about my own university I like that what really matters is not money or necessarily that some hard-working supervisor is next to you all the time but rather that there emerge like certain relatively non-formal groups where people discuss things together and sympathise with each other to a certain degree.*

Ultimately, such peer mentors may be more important than the supervisor, especially if one's supervisor is incapable or unwilling to provide all necessary help. One of the interviewees even suggested that one supervisor could not fulfil all those functions in principle.

Correspondingly, the lack of such opportunities for cooperation and communication between PhD students might be seen with regret.

The interviews suggest that measures facilitating communication between early stage researchers, including PhD students, within the university may be very productive. Importantly, the success of such measures does not depend to such a large degree on the individual supervisor.

8. Discussion and conclusion

As the interviews show, the needs of Estonian early career researchers are not limited to instruction with the sole aim of a timely thesis defence. They also need support when acquiring skills of writing and publication; applying for grants; selecting conferences and universities to visit; and establishing professional contacts.

One contribution of our paper is an addition to the line of research that analyses the qualities of good supervision from the point of view of PhD students and early career researchers (e.g., Ali et al. 2016; Bui 2014; Woolderink et al. 2015). As the overview of the supervisor's influence on the supervisee's well-being and academic progress at the beginning of section 4 shows, understanding what makes supervision good and how it may fail is important. Thanks to using semi-structured face-to-face interviews, we are able to present a richer picture of students' and early career researchers' expectations and their experience of their fulfilment or frustration. We also show how the notion of ideal mentorship is constructed as a response to these experiences.

This part of the analysis suggests that developing a wider understanding of the duties of the supervisor and the competencies necessary for them remains important. However, it is also important to recognise the limitations within which supervisors themselves operate. Wider conditions in academia, especially funding and evaluation, need to be taken into account (e.g., Eigi et al. 2014).

The central contribution of our paper is the identification of wider support networks of early career researchers. The interviewees describe the networks they develop when working together in academia, providing everything from discussions to help with issues of daily life. In addition, academic events such as PhD seminars emerge as a source of feedback, information, and support. It is increasingly recognised in higher education research that distributed forms of mentorship and support among peers, as well as relationships in PhD students and early career researchers' lives in general are important for their professional development and personal well-being (e.g., Anderson et al. 2013; Baker and Pifer 2011; Bottoms et al. 2013). Our paper is also a contribution to the literature on this topic.

Many of the papers that discuss the importance of supervision and mentorship, as introduced at the beginning of section 4, also mention the importance of support from peers, other members of the faculty and various networks in which the student may be a participant. The central result of our analysis is to demonstrate that these two forms of support are not just two factors operating in parallel but are in interaction with each other. Networks may be seen as a solution to specific failures of supervision; one's reflection on the role of networks is responsive to one's expectations about supervision and experience of it. The focus on connections between supervision and support networks also distinguishes our paper from the papers on networks and peer support that approach them as an addition or replacement for mentoring rather than supervision, as the common notion of peer mentoring suggests.

By bringing forward the importance of networks, our paper supports proposals that see helping early career researchers to establish multiple relationships with peer "mentors" as possibly more important than investing into individual supervisor-supervisee relationships. De Janasz and

Sullivan (2004) build on studies of changing career trajectories in order to argue that the traditional dyadic model of mentoring should be replaced with a network of multiple mentors, helping with different aspects of academic careers at different career stages. From this point of view, support networks are not the second best; they may be the best for addressing the needs of early career researchers in new and changing conditions.

Some of the interviews suggest that such support networks may emerge naturally among early career peers. Moreover, we have shown that ignoring the existence of such networks may be counterproductive, as generic help offers may seem irrelevant. We suggest that not just attempts to improve supervision or to introduce official mentors but all attempts to improve support for PhD students and early career researchers, including various support groups, should be sensitive to the potential audience's experience of the already existing support networks. Otherwise, candidates for inclusion in support initiatives may be excluded or alienated.

At the same time, although we believe in the importance of acknowledging early career researchers' independence, there are several considerations to support the involvement of supervisors and university administration.

First, there is still the expectation that the supervisor's duty is to help with information and contacts, especially international contacts, ensuring that support networks are wide and varied and are not limited to early career researchers' local peers.

Second, as the interviewees recognised, outsiders may be at a disadvantage when it comes to spontaneously emerging networks. Given the importance attached to academic mobility, leaving such early career researchers without organised support would be an example of an unfair burden on them.

Third, peer seminars and other opportunities have to be organised. This organisation involves practical matters, such as coordinating schedules. Equally importantly, this organisation needs to involve clear communication. A study of early career networks has demonstrated that some of the factors that make support from such a network desirable, such as heavy workloads, also interfere with the utilisation of the network, as overworked researchers may feel that they do not have time to take part (Price et al. 2015). As a remedy, clarity in communicating obligations and benefits of participation is important (Thomas et al. 2015).

Finally, recognising the issue of workloads of early career researchers and supervisors attracts attention to the wider culture and financial conditions of academic work. Accordingly, organising appropriate support for early career researchers should involve not just administrative decisions but also higher level decision about employment and funding.

It has been argued that in order to support early-career researchers, "self-help" should be replaced with approaches that involve academics at all levels and form a daily part of academic life (Foote 2010, 9). In our paper, we have used interview material in order to show where and how such approaches could be applied, stressing the need for clarity about early career researchers' needs and for awareness of the possibilities for addressing them. In doing so, we have contributed to the social epistemology project of understanding conditions for the production of knowledge – in our case, through understanding the production of those who produce knowledge.

9. Acknowledgments

This study was supported by the Estonian Ministry of Education and Research (IUT 20-5), by the European Union via the European Regional Development Fund (Centre of Excellence in Estonian Studies), and by the Estonian Research Council (PUT 732), as well as by the Norwegian Financial

Mechanism "Mainstreaming Gender Equality and Promoting Work-Life Balance". We would like to thank our colleagues in the project "Supporting the career tracks of female researchers in the academia" and the participants in the project's focus group interviews. We are also grateful to the anonymous reviewers for helpful feedback.

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