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Similar or different?

Researcher community and supervisory support experiences among Danish and Finnish social sciences and humanities PhD students

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Abstract

Purpose – This paper aims to explore the support experiences of 381 PhD students within the humanities and social sciences from three research-intensive universities in Denmark ($n = 145$) and Finland ($n = 236$). The study investigates the cross-cultural variation in the researcher community support and supervisory support experiences, factors associated with their support experienced and the perceived support fit.

Design/methodology/approach – The study used a mixed methods design, both quantitative analyses and qualitative analyses (open-ended descriptions) were used.

Findings – The results showed that students in both Danish and Finnish programs emphasized researcher community support over supervisory support. The Danish students, however, reported slightly higher levels of researcher community support and experienced lower levels of friction than their Finnish counter partners. The results also indicated that the only form of support in which the students expressed more matched support than mismatched support was informational support.

Practical implications – The results imply investing in a stronger integration of PhD students into the research community is beneficial for the students' progress. Building network-based and collaborative learning activities that enhance both instrumental and emotional support and a collective form of supervision could be further developed. The possibility of PhD student integration in the scholarly community is likely to lead to more efficient use of financial and intellectual resources in academia and society more broadly.

Originality/value – This study offer a unique contribution on doctoral students' academic and socialization experiences in terms of explicating the sources of support, support forms and support fit among



Danish and Finnish doctoral students. Both invariants and socio-culturally embedded aspects of support experience among the students were detected.

Keywords Supervisory support, Doctoral students, Support fit, Social support, Researcher community support

Paper type Research paper

Introduction

Previous research on doctoral supervision and researcher community identified social support as a key determinant of the doctoral journey (Ali and Kohun, 2007; Gardner, 2007, 2008; Jairam and Kahl, 2012; Martinsuo and Turkulainen, 2011; Zhau *et al.*, 2007; Weidmann and Stein, 2003). For instance, supervisory support in terms of constructive feedback and encouragement (Vekkaila, Virtanen, Taina and Pyhälö, 2016) has been shown to have a positive influence on students' persistence (Ives and Rowley, 2005). Positive relationships with academic staff and peers have also been shown to contribute to student resilience (Hoskins and Goldberg, 2005).

How researcher community and supervisory support contributes to doctoral success is always affected by the broader socio-cultural context of the doctoral education and hence can vary between countries (Jones, 2013). The national and institutional contexts highly influence doctoral education and understandings of the PhD (Wisker and Robinson, 2012; Wisker *et al.*, 2017; Bengtson, 2016b; Manathunga, 2005; Gardner and Mendoza, 2010; McAlpine and Norton, 2006). Accordingly, such social support is highly diverse and relative to institutional, educational, and pedagogical contexts (Jones, 2013). Yet, we know surprisingly little about cross-cultural variation in PhD students' support experiences. Given the importance of the connection between social support and doctoral students' success, there is a need to gain a better understanding of the similarities and differences between students with the same disciplinary background in different cultural contexts. Moreover, as research into the PhD and doctoral education to a large extent is dominated by the US and UK-contexts, a dire need of research coming from other regions and national contexts exists. This study focuses on the perceptions of doctoral students in Denmark and Finland related to researcher community and supervisory support, specifically the different support forms, the support fit and different attributes associated with the experienced support.

Prior literature gives a strong insight into American and UK-countries policies, educational systems and the role of doctoral education. At the same time, our knowledge of doctoral students' experiences of social support in doctoral education in the Nordic countries is scarce. Therefore, more knowledge on the function of supervisory and researcher community support and comparative differences between the Nordic countries are needed. As a region, the Nordic countries are of particular interest since they provide distinctive environments with a strong emphasis on developing higher education (Nordic Council of Ministers, 2018). In these countries, national strategies for doctoral education are not as fixed and determined as in the UK and USA, so there is still room for maneuverment, negotiations and positioning struggles (Andres *et al.*, 2015).

There is also a strong emphasis on equality of opportunity in educational policy (Isopahkala-Bouret *et al.*, 2018). In both Denmark and Finland, doctoral education is free of charge; the countries produce a similar number of PhD degrees annually and have weighted citation impacts that fall above the world average (NordForsk Policy Briefs, 2011). At the same time, they differ on important aspects, including different paths into doctoral education, international mobility and scholarship funding (Andres *et al.*, 2015; Kyvik and Trede, 1998). These distinctions make Denmark and Finland relevant for cross-national

comparison; they are similar to the extent comparison makes sense, and different to the extent that holds promise for research (see more detailed description Context [Box 1](#)).

The researcher community and supervisory support model

Social support comprises the resources perceived to be available and provided to doctoral students – including supervision (teams), mentoring schemes, feedback systems and peer groups – by their institutional and educational environment. The resources available includes both formal and informal relationships within the researcher community, with peers, supervisors, other staff members, and even professional networks beyond the institution ([Vekkaila et al., 2016](#); [Pyhältö et al., 2017](#); [Gardner and Mendoza, 2010](#); [Boud and Lee, 2005](#); [Wisker et al., 2017](#); [Bengtson, 2016a](#)). Drawing on the Researcher Community and Supervisory Support – model ([Pyhältö, 2018](#)), distinction between the four complementary elements of the support can be made:

- (1) support source;
- (2) support form;
- (3) support fit; and
- (4) support dynamics, each of the elements consisting of several dimensions ([Figure 1](#)).

In this study, we apply the model by considering three of the four elements:

- (1) the different sources as distinctions between supervisor(s) and the researcher communities;
- (2) the characteristics between different form of support (informational, emotional, instrumental); and
- (3) the support fit referring to match or mismatch between the support needed and received ([Figure 1](#)).

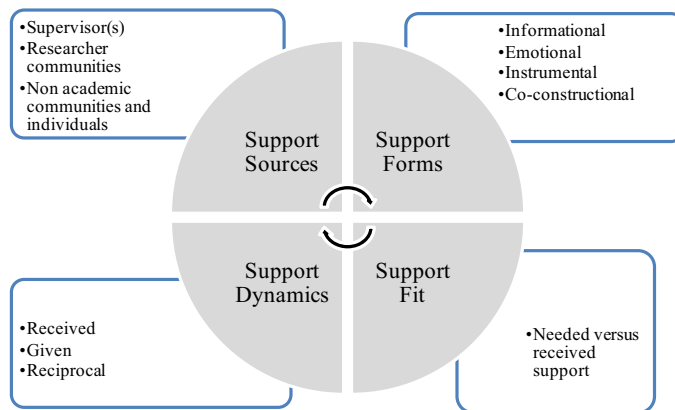


Figure 1.
The researcher community and supervisory support model

Notes: The model is based on empirical evidence and provides in parallel a conceptual tool for illustrating the socially embedded doctoral student experience and an empirical instrument for clarifying the dynamics of researcher community and supervisory interaction
Source: Pyhältö (2018)

Support sources

Supervisors, and other members of the doctoral student's immediate researcher community often provide the primary source of social support (Pyhältö *et al.*, 2009, 2015, Vekkaïla *et al.*, 2016). Recent research has shown that students benefit from having the opportunity to use several and varying sources of supervisory support (Cornér *et al.*, 2017). For example, the support of peers, other academics, professional networks, and family and friends are important when facing problems in doctoral studies (Wisker *et al.*, 2017; McAlpine and Amundsen, 2011). In addition, a high degree of integration into the researcher community increases the likelihood of doctoral degree completion (Hermann *et al.*, 2014; Jairam and Kahl, 2012; Wao and Onwuegbuzie, 2011). Supervisors often provide access to resources, professional networks, expertise and learning opportunities, which are of critical importance to the student (Pearson and Brew, 2002). There is evidence that doctoral students often expect supervisors to provide primary sources of informational and emotional support, while supervisors emphasize the importance of instrumental support such as improving the student's financial stability (Gardner, 2009; Pyhältö *et al.*, 2012a, 2012b, 2015; Vekkaïla *et al.*, 2016).

Support forms

Social support, as shown, is a meta-construct comprised of three complementary components: *emotional*, *informational* and *instrumental* forms of social support (Cobb, 1976; House, 1981). *Emotional support* refers to empathy, trust, listening, caring, esteem and belonging to a network of researcher community and with mutual obligation, whereas *informational support* is characterized by information, such as advice, feedback, affirmation and suggestions that enables a doctoral student to cope with the problems faced during their studies (Vekkaïla *et al.*, 2016). Providing *instrumental support*, such as writing recommendations to foundations, facilitating sufficient time allocated to the doctoral research, or ensuring that there is a fair division of labour within a research group, directly helps a doctoral student to cope with the challenges of research work (Löfström and Pyhältö, 2015).

Our previous study showed that those students who received emotional and informational support from their supervisors and from the researcher community and those who experienced equal treatment in the community were more satisfied with their supervision than their less fortunate counterparts (Cornér *et al.*, 2017). A recent Finnish study indicated that while the majority of doctoral students receive sufficient support, about one-fifth of their peers experience reduced levels of researcher community and supervisory support and increased levels of friction (Peltonen *et al.*, 2017). The reduced support, perceived by the doctoral students, was further associated with increased risk of developing burnout, reduced research engagement and satisfaction with supervision and suffering from increased risk of attrition (Peltonen *et al.*, 2017). Moreover, collective forms of supervision and a high degree of integration into the researcher community have been found to be associated with a reduced risk of burnout (Cornér *et al.*, 2017). The students acknowledged and valued the support they received from the researcher community, hence, highlighting the importance of developing networks in their field, institution (Cornér *et al.*, 2017), and both nationally and internationally (Dysthe *et al.*, 2006; Pyhältö *et al.*, 2015).

However, there is some evidence implying that Finnish doctoral students do not fully use the potential of international collaboration such international conferences or they participated in international courses and summer schools (Pyhältö *et al.*, 2016). Yet, those students who studied full-time, carried out article based dissertations and engaged in research group activities were more likely to have international experience. Moreover, Finnish doctoral

students typically reported challenges related to instrumental support such as structures and resources, including an unsure financial situation and heavy bureaucracy of the doctoral programme, short-term doctoral student posts, the weak position of grant researchers at the university and unsecure future career prospects at the university after earning a PhD (Pyhältö *et al.*, 2015).

Unlike their Finnish counterparts, Danish doctoral students are required to study abroad for a semester (see section Similarities and differences in the national doctoral educational systems). Over half of students claim that studying abroad is vital to the improvement and enhanced research quality of their research project (Hermann *et al.*, 2017). Even though Danish doctoral students are satisfied overall with the support received from their supervisors and peers, and feel well integrated into the research environment, many students (somewhat paradoxically) still feel loneliness and anxiety about forming their academic identity, and later, their professional identity (Hermann *et al.*, 2017). Accordingly, a variety of networks, including informal support outside the academia may provide a central resource for the doctoral journey by strengthening doctoral students' wellbeing and reducing the risk for experiences of burnout during the doctoral journey (Cornér *et al.*, 2017; Bengtson, 2016b; Hopwood, 2010). In turn, reduced support both within academia and outside, and an overly competitive atmosphere among peers may weaken the engagement of doctoral students in their research (Jairam and Kahl, 2012).

Support fit

The availability of social support is important, but not sufficient for ensuring a positive doctoral experience. The fit between support needed and provided plays a central role in the doctoral experience (Pyhältö *et al.*, 2015). The provided support should promote the ability to cope with particular problems, which means that for the provided support being effective, it should also matched (Cohen and McKay, 1984; Helgesson and Gottlieb, 2000). Moreover, the social support should also be appropriate. The reciprocity of interaction, and the roles of the giver and the receiver of the support are important determinants of supportive behaviour; they are therefore useful in assessing whether social support from a specific giver has a positive impact on the receiver (Cohen and Syme, 1985).

Matched support is typically characterized by the doctoral student's satisfaction with the support and in line with the student's needs, such as receiving encouragement when feeling anxiety about doctoral studies. Mismatched support, in turn, is often characterized by dissatisfaction or the lack of needed support, such as the supervisory style of the supervisor. Recently, Pyhältö *et al.* (2015) showed that fit between doctoral students and supervisors' perceptions about the quality and quantity of supervisory support contributed to student progress. Receiving social support has been related to an engaging doctoral experience and, whereas, a lack of support and poor feedback have been associated with increased risk of experiencing burnout (Vekkaila *et al.*, 2016). Accordingly, a lack of support combined with overly high demands may generate severe psychological costs, resulting in burnout and even dropping out (Pyhältö *et al.*, 2015; Lovitts, 2001).

Understanding the anatomy of social support in doctoral education, the available researcher community and supervisory support, and a doctoral student's unique experiences with such support is highly embedded in institutional and national contexts. This need calls for cross-cultural studies.

Aim

The aim of this article is to explore the cross-cultural variation in the researcher community support and supervisory support experiences by comparing Danish and

Finnish Social Science and Humanities PhD students' experiences, factors associated with their support, and the perceived support fit. The following research questions were addressed:

- RQ1.* What kinds of differences and similarities can be detected between Danish and Finnish doctoral students' researcher community support and supervisory support experiences?
- RQ2.* What background variables (dissertation format, researcher group status, study status, dropout intentions and international research activities) are associated with doctoral students' experiences of researcher community and supervisory support?
- RQ3.* What differences and similarities among dissertation format, researcher group status, study status, dropout intentions and international research activities can be detected between Danish and Finnish doctoral students'?
- RQ4.* What forms of support do Danish and Finnish doctoral students report?
- RQ5.* How do Danish and Finnish doctoral students perceive the support fit?

Similarities and differences in the national doctoral educational systems

The educational systems in Denmark and Finland, including doctoral education, are rooted in the similar socio-cultural background emphasising a strong well-fare society and the equality of opportunity for all citizens (Isopahkala-Bouret *et al.*, 2018). Moreover, to an extent, the countries share similar doctoral education policies and profiles. For instance, in 2014, 378 Danish PhD students graduated per one million inhabitants, while the Finnish production was 369 PhD graduates per one million inhabitants (Danish Ministry of Higher Education and Science, 2016). Both the Finnish universities and the Danish universities weighted citation impacts that fell above the world average (NordForsk Policy Briefs, 2011). In addition, among Nordic countries, Finland (19.8 per cent) and Denmark (22.3 per cent) are similar in terms of publication productivity (NordForsk Policy Briefs, 2011). While the literature show many similarities, there are also a number of differences across the Nordic countries which make beneficial to share common cross cultural experiences and explore more about comparisons between the countries. There are, for example, two paths into doctoral education in Denmark, while there is only one in Finland. Only universities can award a PhD in Finland. In the Content Box 1, we illustrate the similarities and differences in the two national contexts.

Doctoral education both in Denmark and Finland is less structured and is more research- and teaching orientated than the fixed, framed and course worked based model in the USA (Andres *et al.*, 2015). The basic structures of doctoral education in Finland and Denmark are similar: both countries are committed to the Bologna process, and there are no tuition fees (Andres *et al.*, 2015).

In Denmark, there are two paths into doctoral education. The first model, the 4 + 4 model, includes a master's degree two years into the programme, followed by a two-year dissertation period. Students are perceived as such, though they are paid by the university to undertake their doctoral studies. The more traditional second model is the 5 + 3, in which the applicant already has obtained the master's degree and then applied for a three-year PhD. In this model, their status is that of staff members. Applications to enter doctoral studies are assessed by the Graduate School.

Context Box 1. Similarities and differences between the Danish and Finnish doctoral education systems

Similarities:

- Both countries focus on the equality aspect in their educational systems.
- Both systems emphasize on independent, individual research aimed at original contribution to scientific knowledge
- Both the Finnish and the Danish universities had between the years 2005-2009 weighted citation impacts that fell above the world average.
- No tuition fees according to the Bologna Process agreement
- Various funding. Students fund their doctoral study process by fixed funded doctoral positions or by various funding opportunities including long or short term grants, project funding by companies etc.
- Structured PhD program with courses on specific research transferrable skills
- Universities cooperate with other PhD programs internationally in the form of Summer schools, and researcher exchanges.
- The supervisor team consists of a minimum of two supervisors.
- The PhD dissertation can be submitted as a monograph or as an article-based dissertation.

Differences:

- Only universities (but not polytechnics, also called Universities of Applied Science) can award a PhD in Finland.
- Going on a research exchange is voluntary for Finnish doctoral students and compulsory for Danish students.
- Some variation in publication requirements, both on a national level and between disciplines. In Denmark, the article based dissertation usually contains 4 published articles. In Finland, three to five articles have to be published by the time of dissertation submission and the doctoral student has to be the first author in the majority of the publications.
- The duration of the PhD-programme averages 3 years in Denmark and 5 years in Finland.
- In Finland, PhD students have the option to become a member of the university or of the student union.

The similarities and differences between the Danish and Finnish doctoral education systems are based on sources from The [Danish Ministry of Higher Education and Science \(2016\)](#), [NordForsk Policy Briefs \(2011\)](#); Official Statistics of Finland (OSF).

Danish doctoral students spend one semester abroad at a university or in an international research context. Doctoral students taking part in the 5 + 3 model are not always solely funded by their university or by national research grants. They can often be co-funded by private companies, organizations, or university colleges (the former professional schools). The supervisor team consists of a minimum of two supervisors, a main supervisor and one or two co-supervisors. The PhD dissertation can be submitted as a monograph or as an article-based dissertation. An article-based dissertation consists of four peer-reviewed journal articles.

In Finland, students can apply to undertake doctoral education after they complete the master's degree. The applications are, typically assessed by the research board of the doctoral school. Worth noting is that in Finland, the term "postgraduate studies" usually

refers to doctoral studies, or studies after the master's degree. There is no extensive course work, and the doctoral research is launched at the very beginning of the studies. In parallel to writing the doctoral thesis, the doctoral student completes compulsory coursework and takes part in courses, seminars and conferences (from 40 to 60 units in the European Credit Transfer and Accumulation System, ECTS), depending on the discipline. Students usually attend research seminars every semester throughout the doctoral process. The research seminars offer opportunities for doctoral students to present their research; the students receive and give feedback with peers. The research seminar groups are organized by a professor, usually according to specific disciplines.

For Finnish students, going abroad is voluntary, with the aim of enhancing the research project during the doctoral studies. A doctoral thesis in Finland can be completed either in the form of a monograph (book format) or as a series of articles that includes a summary (Finland's Council of State, 2004). The article-based thesis consists of three to five peer-reviewed journal articles and a summary. Currently, the dominant thesis format is completion of articles (Pyhältö *et al.*, 2011). At many universities, the policy for doctoral education requires at least two supervisors. Typical funding sources are grants from foundations, project funding, doctoral student posts from the university, and work outside the university (Pyhältö *et al.*, 2011; Cornér and Lindholm, 2013). A description of doctoral education in Finland is available in Pyhältö *et al.* (2012a, 2012b).

Methods

Participants

A total of 381 doctoral students from one research-focused university in Denmark ($n = 145$) and two research-intensive universities in Finland ($n = 236$) participated in the study. Participants represented the social sciences and humanities. The sample, in both national contexts, represented quite well the population of doctoral students enrolled in social sciences and humanities year 2015. The sample in Denmark represented 28 per cent in comparison to the whole population (27 per cent) (Aarhus Annual report, 2015). The representativeness of the Finnish sample was 12.5 per cent compared to 11 per cent for the whole population (Educational Statistics Finland, 2018; Pyhältö *et al.*, 2016).

Their mean age was 36.5 years, and a majority (71.9 per cent) of the participants were female. The majority (56.6 per cent) were compiling an article-based dissertation, and over one-third of them (38.9 per cent) were writing their doctoral thesis in the form of a monograph. About two-thirds of the students (65.6 per cent) were conducting their doctoral studies full time. Doctoral students were at different phases of their doctoral studies: 11.6 per cent were at the beginning; 44.6 per cent were in the middle stage; and 43.8 per cent were in the last third of their studies. The doctoral students typically funded their studies through doctoral scholarship (30.9 per cent), personal grants (28.2 per cent) or through a doctoral student post in the doctoral program/faculty (16.0 per cent). The rest (24.9 per cent) of the doctoral students had no funding at the moment, worked outside of university or funded their studies through some other means (e.g. loans).

Measures

The data were collected by e-mail through an online survey in 2015 for both Finnish and Danish PhD students. Data were collected by email through a *Doctoral Experience* survey (Pyhältö *et al.*, 2009, 2015). The survey instrument has been used and developed since 2006 and validated in several contexts, both in national (Pyhältö *et al.*, 2016) and international research projects (Pyhältö *et al.*, 2017). The *Doctoral Experience* survey included Likert-type statements and open-ended questions. The survey themes were the thesis process,

supervision, doctoral studies and background questions. In Finland, the survey was in available in Finnish, Swedish and English, and in Denmark, in English. The survey was sent to all registered social science and humanities PhD students at the three case universities. Before data collection, the survey was validated with a pilot study comprising 100 doctoral students in educational sciences at another Finnish university.

In this study, the *supervisory support scale* (10 items, e.g. "I receive encouragement and personal attention from my supervisors."), *researcher community support* (8 items, e.g. "I feel accepted by my research community.") and *destructive friction* (8 items e.g. "I feel that my supervisor has exploited my thoughts or products in an unfair way.") were used (Pyhälö *et al.*, 2015) (Table I).

The meaning of destructive friction is characterised by exploitation of doctoral students' ideas and doctoral students' experiences of bullying or unfair treatment (Peltonen *et al.*, 2017). All the scales were measured using a seven-point scale (1 = unsatisfied/strongly disagree, 7 = completely satisfied/fully agree). Key experiences of doctoral progress were explored with two open-ended questions: *Doing doctoral research entails different kind of events and turning points, both positive and negative. The most positive event or experience from the beginning of my doctoral journey until now was when [please note when this happened]. The most negative event or experience from the beginning of my doctoral journey until now was when [please note when this happened].* In addition, the *dissertation format* (monograph/article compilation), *study status* (full-time/part-time), *dropout intentions* (one item: yes/no), *research group status* (alone/in a group/both), and *engagement in international research collaboration* (total 3 items) were explored. It took 15 to 20 minutes to complete the survey. All the participants received written information about the project and gave their consent to participate according to the research ethics clearance procedures in the respective jurisdictions.

Analysis

The study used a convergent mixed methods design (Creswell and Clark, 2011) to explore cross-cultural variations in researcher community and supervisory support and associated attributes.

Quantitative analysis

To explore the underlying factor structure of the supervisory and researcher community support scales, a series of exploratory factor analyses (EFA) using the ML (maximum likelihood) extraction method with both varimax and direct oblimin rotations were conducted. Subsequently, separate EFA models using the Danish and Finnish sub-samples were created with the same scales to examine differences in factorial structures between nationalities. The results suggested that three factors in supervisory and researcher community support scale (*researcher community support*, *supervisory support* and *destructive friction*), explaining 45.13 per cent of the variance, should be retained. The relationship between the supervisory and researcher community support and other variables were examined with a series of independent sample *t*-tests, one-way analysis of variance with subsequent post hoc tests and chi-square tests.

Qualitative analysis

Open-ended descriptions of the key experiences were qualitatively content analysed (Miles and Huberman, 1994; Saldana, 2016; Brinkman and Kvale, 2014). The analysis entailed three complementary phases. During the first phase, all the positive and negative key experiences in which PhD student described interactions within the academic community were coded into two exclusive *researcher community interaction* and *supervisory interaction* categories. After this, the experiences were coded into three general support categories based on the

The scale	Items included	α	Mean (SD)
Supervisory support	I feel that my supervisors are interested in my opinions. I receive encouragement and personal attention from my supervisors. I feel that my supervisors appreciate my work. I feel that I am treated with respect. I can negotiate about central choices regarding my dissertation with my supervisors. My supervisors treat the doctoral students in a fair way. My supervisors express critical comments on my research in a friendly manner. I often receive constructive criticism. My supervisors encourage me to explore alternative viewpoints in my research. I have been left without supervision at some point during my doctoral studies.*	0.92	5.40 (1.25)
Researcher community support	I feel that the other members of my researcher community appreciate my work. I feel accepted by my researcher community. My expertise is put to use in the researcher community. I feel like an outsider in my own researcher community. I receive encouragement and support from the other doctoral students. My supervisors encourage doctoral students to collaborate with each other. If my supervisors cannot advise me I am usually left without help. I can influence matters concerning doctoral education in my researcher community	0.83	4.56 (1.20)
Destructive friction	I have learned to hide viewpoints that differ from those of my supervisors My dissertation reflects the choices of my supervisors rather than my own choices. The relationships between doctoral students are marked by competition. I can openly discuss any problems related to my doctoral education with my supervisors. I can tell my supervisor if a personal matter affects my work with the dissertation. I have been bullied during my doctoral education. My supervisor favours some of the doctoral students. I feel that my supervisor has exploited my thoughts or products in an unfair way.	0.73	2.35 (0.93)

Notes: Cronbach's alpha (α), Mean and Standards Deviations (SD); 1= unsatisfied/strongly disagree, 7 = completely satisfied/fully agree

Table I.
Items included in the supervisory-support scale, researcher-community support and destructive frictions

form of support described in the episode: *Emotional support*, entailing descriptions of encouragement, trust, showing interest and a sense of belonging, or a lack/need of them; *Informational support*, including informative advice, expertise, guidance, feedback related to research work and thesis contents, etc., or a lack/need of them; and *Instrumental support*, comprising support in time allocation, providing materials, data, equipment, funding, networks, collaborators, courses, etc., or a lack/need of them, depending on the primary form of support described in the event. Finally, all the experiences were further coded into two exclusive categories based on the support fit described: *matched support*, including

descriptions of satisfactory support and the form of support that was provided, and *mismatched support*, entailing descriptions of provided unsatisfactory support or lack of support in the key experiences. The differences between the cross-national contexts on support fit were examined with chi-square tests.

Results

Differences and similarities between Danish and Finnish doctoral students' researcher community support and supervisory support experiences

On average, both Danish and Finnish PhD students reported receiving high levels of researcher community and supervisory support and they experienced low levels of friction. There were no statistically significant differences in the supervisory support experienced between the Danish and Finnish PhD students. However, Danish students reported slightly higher levels of researcher community support ($M = 4.74, SD = 1.22$) and lower levels of experienced friction ($M = 2.14, SD = 0.90$) than their Finnish counterparts. The differences were statistically significant (Table II). Further analyses also revealed that the Finnish doctoral students working full time experienced slightly more [$t(159) = 2.50, p < 0.05$] researcher community support than Finnish students working part time. For the Danish students, there was no statistically significant difference between study status groups.

Table II. Researcher community, supervisory support and friction, dissertation format, research group status, study-status, attrition intentions and engagement in international research collaboration

Variables	DK		FI		Chi-square/ <i>t</i> statistic
	M	SD	M	SD	
Researcher community support	4.74	1.22	4.46	1.18	$t = -2.08^*$
Supervisory support	5.56	1.27	5.30	1.24	
Frictions	2.14	0.90	2.50	0.93	$t = 3.44^{**}$
	<i>n</i>	(%)	<i>n</i>	(%)	
<i>Dissertation format</i>					$\chi^2 = 5.91^*$
Monograph	64	48.9	72	35.5	
Summary of articles	67	51.1	131	64.5	
<i>Study status</i>					$\chi^2 = 39.66^{**}$
Full-time	122	84.7	107	52.2	
Part-time	22	15.3	98	47.8	
<i>Research group status</i>					
Alone	116	81.7	161	76.3	
Group	7	6.8	10	10.2	
Both	19	13.4	40	35.3	
<i>Drop-out intentions</i>					
Yes	36	25.4	63	31.0	
No	106	74.6	140	69.0	
<i>International research collaboration</i>					$\chi^2 = 4.26^*$
Yes	39	27.5	38	18.2	
No	103	72.5	171	81.8	$\chi^2 = 20.45^{**}$
Co-authoring with international researchers	39	27.5	38	18.2	$\chi^2 = 100.42^{**}$
Participating in international courses	96	67.6	90	43.1	
Researcher exchange	75	52.8	12	5.8	

Notes: * $p < 0.05$; ** $p < 0.001$

The relationship between other variables and doctoral students' experiences of the supervisory and researcher community support

The results suggest, in addition, that a number of variables were related to experienced researcher community support. Those doctoral students undertaking an article-based dissertation experienced more researcher community support than the students preparing a monograph [$t(231.22) = -3.92, p < 0.001$]. Moreover, the students who worked mainly in a team or as much on their own as in a team experienced more researcher community support than students working mainly on their own ($p < 0.001$ and $p < 0.01$). Also, those working full time experienced slightly more researcher community support than students working part time [$t(328) = 3.42, p < 0.01$]. Hence, study status (full-time students), researcher group status (mainly teamwork) and the form of theses (article based thesis) were associated to doctoral students' experiences of researcher community support.

As expected, students who had considered dropping out experienced less supervisory support [$t(146.59) = -4.52, p < 0.001$], researcher community support [$t(325) = -4.54, p < 0.001$] and more friction [$t(319) = 3.83, p < 0.05$] than students who had not considered dropping out. Students who had co-authored with international authors experienced slightly more [$t(331) = 2.80, p < 0.01$] researcher community support than those who had not. Other variables measuring international research activities (participation in international courses or summer schools, presenting at international conferences and participation in researcher exchange) were not related to doctoral students' experiences of the supervisory and researcher community support.

Differences and similarities across the national contexts in different background variables

In a cross-cultural setting, the results showed that the majority of Danish and Finnish doctoral students were undertaking article-based dissertations, and reported working primarily alone on their doctoral dissertations. Article-based dissertations [$\chi^2(1, 334) = 5.91, p < 0.05$] were slightly more common among the Finnish PhD students than among the Danish ones. Danish doctoral students were more likely to work full-time on their doctoral research than their Finnish counterparts [$\chi^2(1, 349) = 39.66, p < 0.001$]. They also had more experience engaging in international research collaborations including co-authoring with international researchers [$\chi^2(1, 351) = 4.26, p < 0.05$], participating in international courses ($\chi^2(1, 351) = 20.45, p < 0.001$) and researcher exchange [$\chi^2(1, 350) = 100.42, p < 0.001$] than the Finnish doctoral students did. Over half of the Danish participants reported that they had spent time abroad during their doctoral studies (52.8 per cent), while a small proportion (5.8 per cent) of the Finnish doctoral students described how they had benefitted from an international research exchange period. There were no statistically significant differences between the Danish and Finnish PhD students in research group status or drop-out intentions (Table II).

Danish and Finnish doctoral students' perceptions of different forms of support in their key experiences

Both Danish and Finnish doctoral students emphasized researcher community support ($f = 419/73$ per cent) over supervisory support ($f = 153/27$ per cent) in their key experiences (Table III). The Danish students reported a higher number of key experiences related to support from the researcher community ($f = 179/81$ per cent) and a lower frequency of supervisory support incidents ($f = 43/19$ per cent) than their Finnish counterparts ($f = 240/69$ per cent; $f = 110/31$ per cent). The key experiences related to the researcher community support typically involved informal support and feedback of their own research team, peers and other members of the scholarly community as well as interaction and

Variables	DK students f (%)	FI students f (%)	Total
<i>Source of support</i>			
Researcher community support	179 (81)	240 (69)	419 (73)
Supervisory support	43 (19)	110 (31)	153 (27)
Total	222 (100)	350 (100)	572 (100)
<i>Form of support</i>			
Emotional support	63 (29)	95 (27)	158 (28)
Informational support	76 (34)	102 (29)	178 (31)
Instrumental support	83 (37)	153 (44)	236 (41)
Total	222 (100)	350 (100)	572 (100)

Notes: The symbol “f” and the numbers refer to the frequency with which the different kinds of episode were reported; Researcher community support (f = 419) and Supervisory support (f = 153). Form of social support: Emotional support (f = 158), Informational support (f = 178) and Instrumental support (f = 236)

Table III.
Source of support

cooperation with international researchers. The main supervisor and/or co-supervisors constituted the source of supervisory support.

Instrumental support (f = 236/41 per cent), including experiences and issues on funding, time allocated to doctoral research, materials, equipment, network support and a fair division of work and duties within a research group were most frequently reported by the doctoral students. A doctoral student from Denmark illustrated the issue as follows:

I published a book as the editor with another PhD student. We got a lot of support from our research program, which resulted in a seminar and a publication of the seminar. It was a long process, but it was a very educational process for me, and I guess I believe more in myself after we succeeded (in all of the aspects: getting support from colleagues, organizing the seminar, receiving funding, preparing the articles).

Informational support was also frequently described. About a third of the students' key experiences (f = 178/31 per cent) were associated with support regarding, for example, advice on the thesis work, and feedback on the writing process. Informational support included affirmation and suggestions and help to navigate the organization and institutional set-up that enables a doctoral student to cope with the problems they face during their study process. A Finnish doctoral student shared:

I got feedback from the members in my research group on my own idea. The idea was mine. The members of the research group didn't reflect upon the matter in the same way and I got encouragement to bring out and write about my idea in a future article.

Doctoral students reported incidents related to emotional support least frequently (f = 158/28 per cent). *Emotional support* entailed descriptions of trust, empathy and caring, listening and showing interest, approval and a sense of belonging.

When writing my master's thesis my supervisor saw my abilities. Against all odds, a highly skilled professor believed in my opportunities. I got a lot of devotional energy from that fact. (Finnish doctoral student)

Danish students reported slightly more informational support (f = 76/34 per cent), and emotional support (f = 63/29 per cent) than their colleagues from Finland (informational support f = 102/29 per cent, emotional support f = 95/27 per cent), while the Finnish doctoral students stressed instrumental support (f = 153/44 per cent) more often than the Danish doctoral students did (f = 83/37 per cent) (Table III).

Danish and Finnish doctoral students' perceptions of support fit in the key experiences

Further investigation showed that in half of the incidents, matched support was reported ($f = 284/49.6$ per cent) and, whereas in the other half of the incidents, mismatched support ($f = 288/50.4$ per cent) were described by the doctoral students. Matched support incidents were characterized by satisfaction with the support, whereas mismatched support incidents were characterized by dissatisfaction or a lack of support. The only form of support in which the students reported higher frequency of matched support than mismatched support was informational support ($f = 108/38$ per cent). Doctoral students typically stated that the informational support provided in the form of expertise, guidance and feedback related to research work and thesis contents being available, helped them to stay on track in their study process. More mismatched ($f = 132/46$ per cent), than matched instrumental support incidents ($f = 104/37$ per cent), including dissatisfaction with time, funding, courses, materials, data, equipment, networks and collaborators, were reported. Also, mismatched emotional support ($f = 86/30$ per cent), entailing a lack of encouragement and trust, showing no interest and the lack sense of belonging were more frequently reported (Table IV) than matched emotional support ($f = 72/25$ per cent).

The results implied that the Danish students reported slightly more matched support ($f = 114/51$ per cent), than the Finnish students ($f = 170/49$ per cent) (Table V).

Further investigations on support fit revealed that in most of the reported key experiences, matched informational support was available to both the Danish ($f = 48/63$ per

Support fit	Forms of support		Total
	Matched support	Mismatched	
Emotional support	$n = 72$	$n = 86$	158
	46%	54%	100%
	25%	30%	55%
Informational support	$n = 108$	$n = 70$	178
	60%	40%	100%
	38%	24%	55%
Instrumental support	$n = 104$	$n = 132$	236
	44%	56%	100%
	37%	46%	83%
Total	284	288	572
	100%	100%	100%
	49.6%	50.4%	100%

Table IV.
Support fit in the key
experiences

Form of support	Matched	DK		Matched	FI	
		Mismatched	Total		Mismatched	Total
Emotional support	$n = 26$	$n = 37$	63	$n = 46$	$n = 49$	95
	41%	59%	100%	48%	52%	100%
	23%	34%	57%	27%	27%	54%
Informational support	$n = 48$	$n = 28$	76	$n = 60$	$n = 42$	102
	63%	37%	100%	59%	41%	100%
	42%	26%	68%	35%	23%	58%
Instrumental support	$n = 40$	$n = 43$	83	$n = 64$	$n = 89$	153
	48%	52%	100%	42%	58%	100%
	35%	40%	75%	38%	49%	87%
Total	114	108	222	170	180	350
	100%	100%	100%	100%	100%	100%

Table V.
Support fit in the key
experiences for
Danish and Finnish
doctoral students

cent) and to the Finnish doctoral students ($f = 60/59$ per cent). A Danish participant described the feedback and help regarding the research work as follows:

I talked to my supervisor after worrying about where things were going and found out that things were going as could be expected. This was important to me because, before that I had a lot of worries and now I feel relieved.

Danish students' perceptions of mismatched support were most frequently in the form of emotional support ($f = 37/59$ per cent). Doctoral students described their disappointment and feelings of uncertainty for the future. A Danish doctoral student described such an experience in following way:

I started losing interest in my research. I could not see how anyone was ever going to care. I found that I was stressed by the ever-changing requirements. Furthermore, things started to look more and more grim for our future careers at the university. I began to feel very downhearted. I started to question why I was doing my research and for whom. Was I actually doing myself a disfavour continuing, as the jobs I thought I wanted weren't there, and the jobs outside university wouldn't care about whether I had a PhD or not.

Finnish students, on the other hand, reported the highest number of mismatched support in instrumental support ($f = 89/58$ per cent). They reported, for example, lack of support in academic leadership, the accelerating competition for funding and short-time scholarships. A Finnish doctoral student described insufficient instrumental support in the following way:

I did not get a doctoral position (though I applied for it) two years in a row. I was shortlisted both times. I understood that my own plans could be ruined by an opinion of only one reviewer, I felt deeply vexed.

The Finnish doctoral students expressed most frequently that the informational support was provided and it was matched with their expectations. Matched informational support composed of advice and recommendations on research design and processes and feedback on written work for the doctoral students:

I understood how fascinating it is to discuss your own research theme and that at the same time, you are able to listen to the other seminar participants' comments on your common subject. In addition, it is really captivating to hear more about the research focus of your peers. I finally understood that I am a member of a doctoral students' researcher community and that made me happy. (Finnish doctoral student).

In summary, the differences between the cross-national contexts on students' perceptions of the relationship between needed versus provided support in the key experiences varied. Both groups reported most matched support in informational support. The Danish students, however, perceived more mismatched support in emotional support and the Finnish students expressed more incidents of mismatched instrumental support (Figure 2).

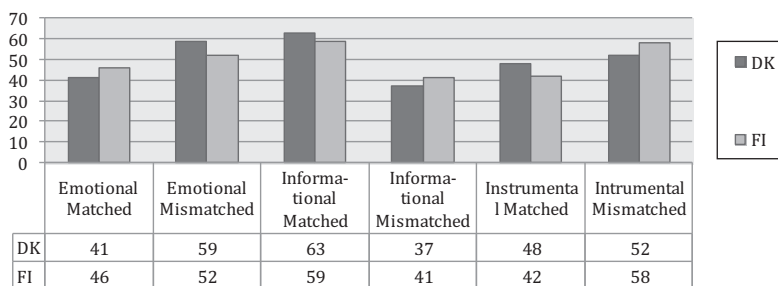


Figure 2.
Support fit in the key experiences for Danish (DK) and Finnish (FI) doctoral students (%)

Accordingly, further analyses showed that there were no statistically significant differences between the Finnish and Danish students' perceptions of the relation between needed versus provided support in the key experiences.

Discussion

This cross-cultural study examined the variations in Danish and Finnish human science doctoral students' experiences of researcher community and supervisory support, the forms of support and the match or mismatch for the provided support. To our knowledge, no previous studies have explored such differences in the levels of support experienced, and forms and perceived fit of that support across Nordic countries. Both similarities and differences were detected in the social support experiences of Danish and Finnish doctoral students, indicating that although the basic anatomy of the researcher community and supervisory support was similar between students, variation in experienced support forms and fit also occurred between Denmark and Finland.

The results showed that both Danish and Finnish doctoral students reported high levels of researcher community and supervisory support and low levels of friction. However, Danish students reported slightly more researcher community support and lower levels of friction than the Finnish doctoral students. Studying full-time, working in research teams and conducting article based dissertations was associated with higher levels of received researcher community support. Further, when comparing differences and similarities across the national contexts, the results reveal differences in thesis form and study status. The Finnish students conducted slightly more article based dissertations, than their peers, while the Danish doctoral students were more likely to work full-time on their doctoral research than their Finnish counterparts. Moreover, doctoral students in Denmark reported more experiences in engaging in international research collaborations, such as co-authoring with international collaborators; participating in international PhD courses; and taking part in more international research exchanges than their Finnish colleagues. In fact, over a half of the Danish participants reported that they had spent time abroad during their doctoral studies, while only a small proportion of the Finnish doctoral students described such experiences. This difference reflects the fact that Danish doctoral students are required to travel on an exchange period for six months abroad during their PhD studies (Andres *et al.*, 2015). Therefore, doctoral students in Denmark have better opportunities to cultivate support from the international researcher community. Accordingly, a majority of the Danish students with exchange experience have reported that the experience enhanced the quality of their research (Hermann *et al.*, 2017). Hence, the Danish students benefited from the scheduled and obligatory international researcher exchange period in their doctoral programs, providing more opportunities for wider range of sources of support and larger networks in their field. The findings further imply that it is beneficial for doctoral students to receive social support not only from the supervisor and their own research team, but also from extended, new, unforeseen environments and the international researcher community. This conclusion is also supported by previous research (Cornér *et al.*, 2017; Dysthe *et al.*, 2006; Pyhältö *et al.*, 2015) highlighting the importance of expanding social support for doctoral students for them to develop networks in their field, both nationally and internationally.

Both similarities and differences in the forms of support experienced and in the perceived support fit were detected between the countries. Instrumental support was the most frequently reported by both Danish and Finnish doctoral students. However, the Finnish doctoral students reported more frequent mismatched instrumental support in the key experiences than Danish students did. A reason for this might be that the Finnish students

were more likely to study part-time and not have adequate support on every day, practical matters or they lacked sufficient financial support to study full-time. The result is partly aligned with results in Denmark showing that the lack of support in practical matters can cause delays in studies (Hermann *et al.*, 2014).

Both Danish and Finnish students reported incidents related to emotional support the least frequently. It is possible that the doctoral students receive emotional support from their supervisors and the researcher community less often, resulting less descriptions of this form of support. One explanation for the finding can be that it is a challenge for supervisors to identify when their students need emotional support and how to provide it. Yet, it has been showed that emotional support provided by supervisors', peers and senior researchers', particularly encouragement, interest and trust were valued by Finnish STEM PhD students (Vekkaila, *et al.*, 2016) and boosted their sense of competence and self-efficacy as researchers and promoted their resilience (Vekkaila *et al.*, 2016). Our study indicated that the only form of support in which the students expressed more matched support than mismatched support was in the form of informational support. Such support was reported to be received from the supervisors, and peer groups such as research seminars that offered doctoral students useful arena for developing their critical thinking, to learn from each other and, also, in managing uncertainty. Furthermore, the result regarding students' emphases on matched informational support, can also be explained by an emphasis on a research orientated doctoral education in Denmark and Finland. Supervisors are probably more familiar with recognizing students' needs and questions regarding the research process and providing students with informational support. Our results aligned with recent findings in which it was shown that students' expectations of primary forms of support are informational support (Hermann *et al.*, 2014; Pyhältö *et al.*, 2012a, 2012b, 2015; Vekkaila *et al.*, 2016).

In sum, our study identified similarities and differences in a cross cultural context. Some of the similarities and differences can be attributed into the structure of doctoral education in Denmark and Finland. First, no statistically significant differences were detected between the Finnish and Danish students' perceptions of the relation between needed versus provided support in key experiences. One explanation might be that doctoral education in both countries aims at original contribution to scientific knowledge, and the main source of supervisory support, in general two supervisors, is similar in both contexts. The students in both countries seem to be enculturated into the supervisory practice of receiving the main support from their primary supervisors. Second, a mandatory exchange period abroad is compulsory for Danish doctoral students resulting more international experience, than the Finnish students had. Danish students also reported more researcher community support than Finnish students and, in addition, they reported working full-time to a greater extent than the Finnish ones. Hence, the Danish structure enables both the compulsory exchange period abroad and more opportunities to conduct studies full-time, which might provide more opportunities to seek and hence receive support both from the local researcher community and from the international community. Third, Finnish students reported working part-time more often than the Danish ones, which might be why these students reported more often mismatched instrumental support such time allocation and funding opportunities. This finding extends recent results on Finnish doctoral students by showing that full-time students receive more frequent support than part-time students and, accordingly, that more frequent support relates to lower levels of friction and higher levels of student satisfaction (Cornér *et al.*, 2017; Pyhältö *et al.*, 2015). Hence,

some of our findings on the differences in Denmark and Finland can be attributed to the characteristics of doctoral education in the given country (The Danish Ministry of Higher Education and Science, 2016; NordForsk Policy Briefs, 2011).

Our results showed, however, the importance of supervisory support and community support and the importance of this across socio-cultural contexts. Depending on the context, social support is received in various forms with different emphasis in the forms, though the disciplinary context was the same. Our study confirmed earlier research on social support in doctoral education by demonstrating that it is crucial for PhD students to receive support from the institutional and international researcher community (Ali and Kohun, 2007; Gardner, 2007, 2008; Jairam and Kahl, 2012; Martinsuo and Turkulainen, 2011; Zhou *et al.*, 2007; Weidmann and Stein, 2003). Offering satisfactory social support for PhD students is vital to degree completion (Castello *et al.*, 2017; Jairam and Kahl, 2012; Lovitts, 2001), as both Danish and Finnish doctoral students' dropout intentions were associated with reduced social support and more friction. According to Lovitts (2001), the crucial factor parallel to student success is the possibility of integration in the research environment (Lovitts, 2001).

Implications for developing doctoral education

This study provides evidence that seemingly similar national contexts hold significant differences in social support and institutional strategies at the PhD education. From a developmental point of view, results imply investing in a stronger integration of PhD students into the research environment is beneficial for the students' progress. Also, building network-based activities and collaborative learning activities that enhance both instrumental and emotional support and a collective form of supervision could be further developed. Doctoral students, on one hand, can be taught to identify the kind of support they need in various circumstances. They can also be trained in where to find the right kind of support and to benefit from a variety of sources that may serve several purposes. The research seminars, where the students both receive and give feedback to each other particularly in the Finnish context, may serve as one example of this. Finally, it is important that the students actively offer help to others and that they try to find solutions for the challenges they meet, in a collaborative way. Accordingly, as Löfström and Pyhältö (2015) point out, doctoral students have a responsibility and opportunity to take an active stance in their own study process (Löfström and Pyhältö, 2015). Hence, building a shared understanding of the perceived challenges and resources between supervisors and doctoral students calls for dialogue between them, which at its best, promotes doctoral students' satisfaction with their studies and supervision (Pyhältö *et al.*, 2012a, 2012b; Vehviläinen and Löfström, 2014).

Limitations of the study

While this study supported some of the other research linked to doctoral students' experiences of researcher community and supervisory support, the forms and support-fit, it shared certain methodological shortcomings common to the field as a whole. Because of the cross-sectional design, it was not possible to discern causal relationships. The results drew on doctoral students' experiences in two disciplines, social sciences and humanities, and, therefore, the results cannot be generalized to all disciplines. Further, a generalization on cross-cultural differences should also be done with caution. To gain a broader picture of the national variations of the support systems, doctoral experiences from different disciplines or using longitudinal approaches could be investigated in future research. To improve our understanding of what support forms are the most beneficial for graduate students for the particular purposes in achieving their goals, investigations about the views on social

support as a key regulator in the doctoral process of supervisors and other actors in the researcher community need to be explored.

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