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Doctoral supervisors' and supervisees' perceptions on supervisory support and frequency of supervision – Do they match?

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ABSTRACT

Supervisory relationship is a highly significant driver of doctoral experience. However, empirical studies exploring the alignment between supervisors' and supervisees' perceptions of good doctoral supervision is lacking. A total of 768 doctoral candidates and 561 doctoral supervisors from a multi-field research-intensive university participated in the study. Data were collected with the doctoral experience survey and the supervisory experience survey, and qualitatively and quantitatively analysed. The results showed that both doctoral candidates and the supervisors described informational, emotional, instrumental, and co-constructive support as the primary characteristics of high-quality supervision. However, some differences also existed. Perceptions regarding frequency of supervision are well aligned, although supervisors report supervising slightly more than candidates report receiving it. The results highlight the importance of promoting the alignment between doctoral candidates' and supervisors' perceptions of quality and quantity of supervision, as it fosters study progress, reduces the risk of candidates discontinuing their PhD and increases satisfaction.

KEYWORDS

Doctoral experience; social support; frequency of supervision; doctoral candidates; supervisors

Introduction

It has been suggested that a functional supervisory relationship is a driver for positive doctoral experience and degree completion (Mainhard et al., 2009; McAlpine & Norton, 2006; Sverdluk et al., 2018; Zhao et al., 2007). Supervision has been shown to contribute to doctoral candidates' satisfaction with their studying, the time to candidacy, study progress and study related wellbeing (e.g. Ives & Rowley, 2005; Mainhard et al., 2009; van Tienoven et al., 2022; Zhao et al., 2007). Problems in the supervisory relationship can increase the risk of lack of progress, attrition, and negative mental states (Castelló et al., 2017; Egan et al., 2009; McAlpine et al., 2012) whereas a functional relationship has been shown to enhance a positive doctoral experience, timely completion, and employment after earning the degree (McAlpine & McKinnon, 2013). Even though there is a strong

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body of literature on doctoral supervision, most studies have been small scale qualitative studies and/or have explored doctoral supervision either from the doctoral candidates or supervisor's perspective (e.g. Corcelles-Seuba et al., 2022; González-Ocampo & Castelló, 2019; Jairam & Kahl, 2012). The number of empirical studies exploring supervision simultaneously from the perspective of both the supervisors and the supervisees are still limited in number (e.g. Murphy et al., 2007; Pyhältö et al., 2015) and have focused on specific aspects of supervision such as co-supervision (Olmos-López & Sunderland, 2017). We aim to contribute to bridging the gap in the literature by exploring the alignment between doctoral supervisors' and supervisees' perceptions of good doctoral supervision by using survey data collected from doctoral candidates and supervisors from a research-intensive university in the global north.

Social support in supervisory relationship

High-quality supervision has been characterised by constructive feedback, emotional support (Vekkaila et al., 2016), precise and timely feedback, frequent meetings (Latona & Browne, 2001; Martinsuo & Turkulainen, 2011; Wao & Onwuegbuzie, 2011), support for socialisation in the scholarly community, and disciplinary knowledge practices (Heath, 2002). Supervisory support (Cohen et al., 2000) refers to the social resources that doctoral candidates recognise as being available and provided for them by their supervisors. While support from peers, post-doc and senior members of the research community is important, supervisor(s) provide the primary source of support for doctoral candidates (Cornér et al., 2018; De Clercq et al., 2019; Sverdlik et al., 2018). Accordingly, access to supervisory support, including frequent supervisory meetings (Latona & Browne, 2001; Martinsuo & Turkulainen, 2011; Wao & Onwuegbuzie, 2011), can be considered to be a basic precondition for a good supervision.

Candidates also need a range of types of social support to overcome the challenges faced during their doctorate. Supervisory support involves four complementary components: informational, emotional, instrumental, and co-constructional support (Vekkaila et al., 2016; see also seminal work on social support by Cobb, 1976; House, 1981). Informational support is characterised by information such as advice, feedback, affirmation, and suggestions that enable a doctoral student to cope with the problems faced when they are studying. Emotional support (sometimes also referred as pastoral care (e.g. Hradsky et al., 2022; Lee, 2008)), is characterised by empathy, trust, listening, caring, and belonging to a scholarly community (Vekkaila et al., 2016), and such support allows a candidate to cope with and overcome emotional and motivational challenges faced on their doctoral journey. Writing funding applications, recommendations, facilitating the allocation of sufficient time to doctoral research or ensuring that there is a fair division of labour within a research group, can be understood as instrumental support that will directly help a doctoral candidate to cope with the challenges of research work (Löfström & Pyhältö, 2015). Co-constructional support involves collaborative thinking and shared knowledge creation (Vekkaila et al., 2016).

Doctoral candidates have been shown to emphasise their supervisor(s) as the primary source of informational and instrumental support (e.g. Cornér et al., 2018; Woolderink et al., 2015), whereas emotional support from them is less frequently reported (Cornér et al., 2018). Yet there is evidence that those doctoral candidates who receive both

emotional and informational support from their supervisors were also more satisfied overall with the supervision (Pyhältö et al., 2012). Interestingly, doctoral candidates have rarely reported co-constructive support but experienced it has been perceived as being highly engaging and empowering by the candidates. A reason for lack of engagement in such a support form might be that the doctoral candidates hold a perception that they need to make it by themselves to show their quality as autonomous researchers, and hence they do not seek opportunities for co-construction. Some other supervisors may share the view as well. Consequently, doctoral candidates do not learn how to engage in co-constructive support. This further indicates that more collaborative knowledge sharing environments enhancing co-constructive support are needed (Malfroy, 2005; Vekkaila et al., 2016).

Alignment between supervisors' and supervisees perceptions on supervision

To be effective supervisory support must be aligned with the support need i.e. the support provided should advance the candidates' ability to cope with the challenges they face. Matched support is characterised by being available and beneficial with the purposes of the doctoral students while mismatched support is often portrayed by dissatisfaction or the lack of needed support (Vekkaila et al., 2016). Matched support, in terms of being both accessible and aligned to candidates' needs has been shown to contribute to study progress, to reduce the risk of candidates dropping out and increased satisfaction (Martinsuo & Turkulainen, 2011; Pyhältö et al., 2015). For example, access to frequent supervision i.e. meetings at least one a month, have been shown to be one of the key determinants of degree completion and seem to reduce candidates' risk of dropping out (Pyhältö et al., 2015; Seeber & Horta, 2021; Shin et al., 2018). Furthermore, fit regarding frequency of supervision has been shown to be related to overall satisfaction with doctoral education (Pyhältö et al., 2015). Unfortunately, well fitted support cannot be taken for granted. For example, candidates have repeatedly reported feeling discomfort with the style of their supervisors' support, or their incongruence (Devos et al., 2016). Furthermore, Cornér et al. (2018) showed that while both Danish and Finnish doctoral candidates reported informational supervisory support to be well matched, they perceived instrumental and emotional support more often to be mismatched. Insufficient feedback and lack of support during the doctorate has been shown to be related to an increased risk of mental illness (Levecque et al., 2017). Accordingly, a lack of support combined with overly high demands may generate severe psychological costs, resulting in burnout and finally lead to discontinuing the doctoral studies (Lovitts, 2001; Pyhältö et al., 2015). To sum up, the results of prior studies imply that the match between the support needed and provided plays a central role in the doctoral experience (Moxham et al., 2013; Pyhältö et al., 2015).

The aim of the study

The aim of the study was to understand the alignment between the doctoral candidates' and their supervisors' perceptions of good supervision and the frequency of supervision.

Also, the interrelationship between the frequency of supervision, thesis format, satisfaction with the supervision, drop-out intention, and study progress was explored.

The following research questions were addressed:

- (1) What alignment is there between the doctoral candidates' and supervisors' perceptions of good supervision?
- (2) Do the doctoral candidates' and supervisors' perceptions of the frequency of supervision differ from each other? And are the perceptions related to the form of thesis or study status (i.e. full-time/part-time)?
- (3) Is the doctoral candidates' perception of the frequency of supervision related to their satisfaction with the supervision, drop-out intentions, and the progress of their doctoral studies?

Doctoral education in the case university

The case university, ranked among the top 100 in the world, is one of the 13 Finnish research-intensive universities, producing about 500 PhD graduates each year. The doctoral policies here align with the national guidelines. The 4900 doctoral candidates belong to one of the four doctoral schools (the Doctoral School in Environmental, Food and Biological Sciences; the Doctoral School in Health Sciences, the Doctoral School in Humanities and Social Sciences, and the Doctoral School in Natural Sciences). The eligibility criteria for a doctorate include having completed a Finnish second-cycle master's degree or comparable foreign degree and demonstrating academic language proficiency either in Finnish, Swedish or English. The application must include a research proposal and a study plan. One must also have a 'commitment to supervise' letter from one or two supervisors if accepted. Typically, at least one of the prospective supervisors will be a full professor with a permanent position. Accordingly, research and study plan must be developed prior to applying for the study right. Once, the study right is granted the target time for completion is four to five years studying full-time, however the average time for completion is five to six years (Pyhältö et al., 2022), but the right to complete the degree is valid for life. Research is launched at the start of the doctorate, with a limited amount of complementary course work (typically 40 ECTS, European Credit Transfer and Accumulation System) based on the personal study plan. Accordingly, doctoral education is highly individualised, and the typical mode of supervision applied is one-to-many, i.e. each PhD candidate has a team of two or more supervisors. The doctoral dissertation can be either an article compilation (typically three published articles in peer-reviewed journals and a summary) or a monograph. The thesis examination proceeds in three stages: first, two external examiners are appointed by the faculty to pre-examine the dissertation; second, if approved, a public defence follows the pre-examination: and finally, the faculty grants the doctoral degree. There, are no tuition fees, but doctoral candidates need to cover their own living expenses.

Table 1. Discipline, study status and form of dissertation.

	Doctoral candidates		Supervisors	
	<i>n</i>	%	<i>n</i>	%
Discipline				
Humanities and social sciences	370	49	180	38
Natural sciences	106	14	85	18
Health sciences	209	28	129	27
Environmental, food and biological sciences	64	9	77	16
Candidates'/supervisees' study status				
Full-time	467	62	372	68
Part-time	286	38	179	32
Candidates'/supervisees' form of dissertation a				
Monograph	161	21%	98	18%
Article based dissertation	581	77%	456	82%

Note. ^aThe proportion of 'I don't know' answers: 2% (*n* = 12).

Participants

The participants in the study comprised 768 doctoral candidates (502 women, 67%; 234 men, 31%; 18 non-binary, 2%) and 561 doctoral supervisors (275 women, 50%; 266 men, 49%; 6 non-binary, 1%) from a large multi-field research-intensive university in Finland. The response rate of the doctoral candidates was 17% (*N* = 4433) and 16% (*N* = 3492) for the supervisors. The typical age of the participating doctoral candidates was 30–34 years, and 40–44 for the supervisors. The participant distribution was representative of the doctoral candidate and doctoral supervisor populations in the case university. In terms of gender distribution, the supervisor data represented the population well, but women were slightly overrepresented in the doctoral candidate data. Of the candidates, 62% reported studying full-time and 38% part-time. Similarly, about a third of the supervisors reported supervising part-time candidates. Most of the candidates reported doing an article-based dissertation (77%). Similarly, most of the supervisors reported that their supervisees typically wrote an article-based dissertation (82%) (see [Table 1](#)).

Data

Two separate data sets collected in 2021 were used in the study. For this study, the data sets were combined so that we were able to compare the supervisors' and the doctoral candidates' perceptions of good supervision. The data from doctoral candidates were collected between April and May 2021 by using a modified version of the cross-cultural doctoral experience survey (C-DES) validated in previous studies (Pyhältö et al., 2016; see also C-DES manual Pyhältö et al., 2018). The data from doctoral supervisors were collected between August and September 2021 by using a modified version of supervisory experience survey validated in previous studies (Pyhältö et al., 2015). Both data sets were collected via online surveys available in Finnish, Swedish and English. The links to the surveys were sent via email to the participants by using the Doctoral Schools' mailing lists. All the participants were informed about the study before the data collection. No identifying information or incentives were used and participation in the study was voluntary.

In Finland, an ethics review is required when research involves intervention in the physical integrity of research participants; deviates from the principle of informed consent; involves participants under the age of 15 being studied without parental consent;

exposes participants to exceptionally strong stimuli; risks causing long-term mental harm beyond that encountered in normal life; or signifies a security risk to subjects (Finnish National Board on Research Integrity, 2019). None of these conditions affected this study.

A mixed methods approach was applied in the present study (e.g. Creswell & Plano Clark, 2018). The doctoral candidates' and the supervisors' perception of good supervision were explored with open-ended questions: The candidates were asked to 'Give an example about a good supervision situation you have experienced' and the supervisors 'What constitutes good supervision in your view?'. Both, the doctoral candidates, and supervisors had the opportunity to describe their experiences in their own words and without word limits. Furthermore, doctoral candidates' experiences of the frequency of supervision were explored with the item 'How often do you receive supervision?' and supervisors 'On average, how often do you supervise (both in-person and online) your individual doctoral candidate?'. Moreover, candidates' satisfaction with supervision was measured with the item 'Are you satisfied with your supervision?' with 1-to-7-point Likert scale (1=strongly disagree ...7=fully agree). In addition, background variables were addressed: doctoral candidates' and supervisors' gender, and doctoral candidates' and supervisees' study status (full-time versus part-time) and dissertation format (monograph versus article-based dissertation) were explored. Furthermore, candidates' enrolment year and estimated graduation year were addressed. Candidates' consideration of interrupting their doctoral studies was measured with the item 'Have you considered discontinuing your doctoral studies? (yes/no).

Analysis

Qualitative analysis

To achieve an optimal understanding, the perceptions of doctoral candidates and supervisors about high-quality supervision, the open-ended answers were qualitatively content analysed (e.g. Drisko & Maschi, 2015; Elo & Kyngäs, 2007) using an abductive strategy (e.g. Chamberlain, 2006; Timmermans & Tavory, 2012). Doctoral candidates' and supervisors' answers regarding good supervision were separately coded into the following four exclusive categories: 1) *Informational support*, including advice, guidance and feedback on doctoral research, studies, professional development, or career. Contributing to doctoral research e.g. through co-authoring, providing regular meetings, intellectual investment in doctoral' candidate's work were also part of this category; 2) *Emotional support*, including acknowledgement, encouragement, motivating, creating emotionally positive, confidential and warm atmosphere, fostering a sense of belonging, caring, being friendly; 3) *Instrumental support*, including writing recommendations, enhancing access to the organisational/project resources, facilities, library, research infrastructure, funding, office, time allocated to conducting doctoral research, access to project data; and 4) *Co-constructional support*, including creating new ideas, knowledge, methods or research-innovations together. The categories derived from the content analysis were validated by the research group at the end of each analysis phase (e.g. Miles & Huberman, 1994).

Quantitative analysis

The quantitative analyses were conducted with IBM SPSS Statistics 28. Chi-Squared tests were used to analyse the differences between the doctoral candidates' and supervisors' perceptions of the frequency of supervision, and differences in perceptions of frequency

of supervision based on candidates' thesis format and study status. The associations between the doctoral candidates' perceptions about the frequency of supervision and the progress of their doctoral studying and satisfaction with supervision were analysed using independent samples t-tests, and Chi-squared test were used to explore the inter-relationships between the perceptions of frequency of supervision and drop-out intentions.

Results

Doctoral candidates and supervisors' perspectives of good supervision

In general, both doctoral candidates and the supervisors described *informational support*, *emotional support*, *instrumental support*, and *co-constructional support* as the primary characteristics of high-quality supervision (See Figure 1.). Informational support such as supervisory commitment, frequent meetings and being available, giving practical help and advice concerning the research topic and research methods, planning the research, and reporting on it were emphasised as the central qualities of good supervision by the doctoral candidates. In turn, supervisors described frequent meetings, being present for the candidates, helping them with their research by giving useful advice concerning research topics, designs, methods, analysis, and reporting from the results and research as the core of informational support. They also emphasised doctoral candidates' own responsibility and the reciprocal nature of supervision regarding the informational support, whereas doctoral candidates did not. Accordingly, supervisors acknowledged supervisees as a key resource for creating knowledge.

'Guiding the supervisee to find solutions themselves and to develop as a researcher. Not giving ready solutions or commanding'. Supervisor/Informational support

'Clear and timely. Limited to working with scientific text and supporting the research process'. Supervisor/Informational support

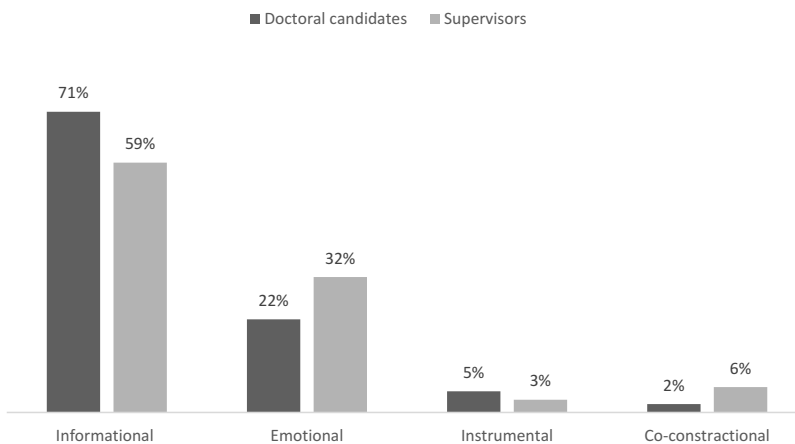


Figure 1. Doctoral candidates and supervisors' perceptions about good supervision.

'My supervisor and the graduate students they supervise, meet every other week. At the meeting, we explain what we have done, get feedback and we can ask for advice. Supervisors are also available on the discussion platform of the work community'. Doctoral candidate/
Informational support

Also, *emotional support* from the supervisor, including encouragement, constructive feedback, promoting the candidate's active agency and caring for candidates' wellbeing and progress, were considered to be important by both the candidates and the supervisors.

'My supervisor supports and encourages my work and always takes care of my ability to cope. His support is always positive, which helps me to continue my studies'. Doctoral candidate/
Emotional support

'A good supervisor understands what a student needs, sometimes it is a good talk, sometimes encouragement, sometimes gentle pressure and sometimes patience ... so the student can achieve top quality with some joy' Supervisor/Emotional support

Supervisors and candidates rarely described *instrumental support* such as providing research facilities or writing recommendations, helping with funding, providing access to research facilities were rarely described as a core characteristic of high-quality supervision. Similarly, *co-constructional support*, including creating new ideas, knowledge, methods, research-innovations together or brainstorming were rarely described as key feature of good supervision by either the supervisors or the candidates. Yet when it was reported, it was experienced as being highly engaging by the candidates.

'When they read through my grant application and gave feedback so I would have better chances to get funding'. Doctoral candidate/Instrumental support

'I would like to add that the supervisor makes sure that the work can be completed. Enables funding, work tools, cooperation with other groups'. Supervisor/Instrumental support

'My usual approach to supervision is that it is a collaboration between myself and the candidate'. Supervisor/Co-constructional support

'When we create something new together' Doctoral candidate/Co-constructional support

'Also, all the "brain storming" between me and my supervisor (+other research group members) have been very good sessions!' Doctoral candidate/Co-constructional support

Doctoral candidates and supervisors' perceptions of good supervision were well aligned, though the support forms were reflected from slightly different perspectives. Supervisors emphasised supervisees' agency, responsibilities, and the reciprocal nature of supervision much more than the supervisees. Supervisees on the other hand highlighted the basic pre-conditions of supervision such as frequent meetings, providing time, responding to emails and being available for the candidate, as part of the informational support. Overall, doctoral candidates' and supervisors' perceptions were similar. However, the results also imply that doctoral candidates emphasised informational support more than the supervisors, whereas the supervisors highlighted the role of emotional support as part of good supervision more. Furthermore, no statistical differences regarding the social support forms between the candidates from different doctoral schools were detected.

Table 2. Frequency of supervision.

Frequency of supervision	Doctoral candidates		Supervisors	
	<i>n</i>	%	<i>N</i>	%
Daily	18	2	23	4
Weekly	195	26	240	43
Once a month	250	34	173	31
Once every two months	136	18	93	17
Once every six months	88	12	24	4
Less frequently	54	7	3	1
Total	741	99	556	100

Frequency of supervision – supervisors and doctoral candidates' views

The supervisors and the doctoral candidates' perceptions of frequency of supervision meetings varied from taking place daily to less than every six months (see Table 2). The candidates most typically reported receiving supervision monthly (34%), while the supervisors reported their doctoral candidates typically received supervision weekly (43%). The reported frequency of supervision differed between the doctoral candidates and the supervisors ($\chi^2(5, N = 1297) = 84.90, p < .001$). The supervisors more often reported supervising an individual candidate weekly (43%) compared to the candidates' perceptions (26%). In addition, the candidates more often reported receiving supervision less frequently than every six months (7%), while only 1% of supervisors reported the frequency of supervising an individual candidate as being rarely.

The results showed that the candidates who were preparing their doctoral dissertation as a summary of articles reported receiving supervision at least once a month more typically than those working on the monograph dissertation format ($\chi^2(1, N = 720) = 68.21, p < .001$). Similar differences were evident among supervisors: the supervisors whose supervisees were working on the summary of articles dissertation format, were more likely to supervise their candidates at least once a month compared to the supervisors whose supervisees wrote monographs ($\chi^2(1, N = 552) = 99.75, p < .001$). Furthermore, full-time candidates typically received supervision more frequently than those who worked part-time ($\chi^2(1, N = 730) = 26.74, p < .001$). The supervisors whose supervisees were conducting their doctoral research full-time were more likely to supervise their candidates at least once a month than those supervisors, who supervised part-time candidates ($\chi^2(1, N = 548) = 74.69, p < .001$).

The results showed that candidates who received frequent supervision (at least once in a month, $n = 458$), were less likely to consider dropping out ($\chi^2(1, N = 734) = 4.83, p < .05$). Frequent supervision was also associated with timely completion of the doctorate. The candidates who received frequent supervision thought that they would complete their doctoral degree sooner ($m = 4.92, sd = 2.65$) than their counterparts who received supervision less frequently ($m = 7.22, sd = 5.22$) ($t = -6.48, df = 321, p < .001$). In addition, they were more satisfied with supervision ($m = 5.80, sd = 1.40$) than candidates who perceived receiving supervision less than once a month ($m = 4.59, sd = 1.79$) ($t = 9.58, df = 473, p < .001$).

Discussion

The aim of the study was to understand the alignment between doctoral candidates' and supervisors' perceptions of good supervision, and their experiences of the frequency of supervision from a multidisciplinary research-intensive university. The results showed that both supervisors and doctoral candidates identified the informational, emotional, instrumental, and co-constructional support as elements of good supervision, confirming prior findings (e.g. Cornér et al., 2018; Pyhältö et al., 2015; Vekkaila et al., 2016). The result indicates that supervisors and supervisees had a shared understanding on the basic ingredients of good supervision. Both the candidates and supervisors emphasised informational and emotional support as being key characteristics of high-quality supervision. However, some differences also existed. Although, both supervisors and candidates most often highlighted the significance of informational support, the candidates seemed to do so more compared to the supervisors. They also emphasised the basic pre-conditions of supervision as part of informational support. On the other hand, supervisors tended to emphasise the role of emotional support more than the candidates. The discrepancy may indicate that doctoral candidates do not expect to receive emotional support from their supervisors and asking for it might feel difficult, as it could be interpreted as indication on incompetence. Also, we have previously showed that candidates often perceive the emotional support from supervisors being misaligned with their needs (Cornér et al., 2018). The findings highlight the need for the supervisors to understand the candidates' emotional support needs. Yet, further studies are needed on to what extent supervisors see supervision as a space for emotional support. Supervisors and supervisees perceived dynamics of supervisory relationship a bit differently: supervisors emphasised the reciprocal nature of the supervisory relationship, whereas the doctoral candidates emphasised the importance of support received from the supervisor(s). This may indicate that the supervisees perceive their role to be less active in supervisory interaction compared to supervisors. Contrary to prior research, supervisees and supervisors rarely described instrumental as a primary ingredient of high-quality supervisory support (Cornér et al., 2018; Pyhältö et al., 2015; Woolderink et al., 2015). Our results further showed that co-constructional support (although only rarely described) was experienced as being highly engaging by the candidates. The result indicates that co-constructional support is an underutilised resource in doctoral supervision. Although, the results suggest that doctoral candidates' and supervisors' perceptions regarding good supervision seem to be well aligned, the dynamic of good supervision appears to be less reciprocal from the candidates' viewpoint than their supervisors' viewpoint. This might indicate that in terms of the dynamic, the perceptions are less aligned. Furthermore, most of the candidates reported receiving supervision once a month or more frequently (62%). This result is comforting as prior research has shown that access to frequent supervision i.e. meetings at least one a month impacts positively on degree completion and reduces the risk of discontinuation (Seeber & Horta, 2021; Shin et al., 2018). However, the candidates perceived that they received supervision less frequently than the supervisors reported giving it. This mismatch might be due to a lack of overlap, as it might be that the candidates who participated in the study were not being supervised by the supervisors who responded. However, a complementary explanation for the finding might be that the supervisors and candidates have a different understanding of what constitutes supervision. Supervisees might

consider only one-to-one meetings as supervision, whereas supervisors might see supervision more broadly as including seminars, research group meetings and other networking as part of supervision. Thus, supervisors should verbalise supervisory activities more, to enhance the fit between the perceptions and manage the candidates' expectations. Finally, the results showed that full-time candidates and those writing article-based thesis received supervision more often compared to those candidates working part-time and writing monographs. Thus, we suggest that special attention should be paid to the candidates that are working part-time and writing a monograph to enhance their doctoral experience. The results highlight the importance of promoting the alignment between doctoral candidates' and supervisors' perceptions of quality and quantity of supervision, as it fosters study progress, reduced risk of dropout and increased satisfaction.

The findings provide several directions for further research. First, it would be important to investigate whether the doctoral candidates are able to utilise the support that they receive from their supervisors and the scholarly community i.e. does the support available match the support needed. Secondly perceptions of when and what kind of support doctoral candidates need during their doctorate should be explored to develop supervisory training further. Finally, we propose that future studies regarding supervision and doctoral education and their development, should incorporate more broadly both candidates' and supervisors' perspectives as they may differ from each other.

Methodological reflections

This study has some methodological strengths and limitations that should be considered. A major strength of the study is that it explored the fit in supervisors' and supervisees' views of good supervision and frequency of supervision with comparable measures by using data collected from both groups from the same institution. The response rates for both groups of participants were quite low. However, regardless of the low response rate, in terms of age and disciplinary distribution, the doctoral candidates were a good representation of the whole doctoral candidate population at the case university. However, we were not able to match the supervisors with their own supervisees because we wanted to protect the anonymity of the respondents. Therefore, one should be cautious in drawing conclusions about the supervisory relationship between the participants. Instead, the results reflect the fit in the perceptions at the more general institutional level. Measures used in the study can be considered to have been reliable. We used a cross-sectional design in this study, and hence, causal conclusions or conclusions about development of the perceptions cannot be drawn.

Practical implications

The findings have several implications in developing doctoral education. As supervisory support plays a key role in doctoral experience and degree completion (Mainhard et al., 2009; McAlpine & Norton, 2006; Zhao et al., 2007) doctoral candidates' experiences of social support should be monitored regularly at the university level. This would also make it possible to identify those candidates who are at higher risk of extending their studying or even discontinuing and proactively responding to their support needs. However, it should be stated that the monitoring should be based on

university or program level, rather than at the level of single supervisory relationship. And thus the supervisory development actions should also focus on university and program levels. In terms of supervisory development, it would be highly beneficial for supervisors to understand the importance of the quality and quantity of supervision, to provide high quality and appropriate supervision. In addition, supervisors should start to acknowledge that supervisees and supervisors might have different views regarding the roles and responsibilities of supervision. Thus, the role of joint discussion and collective agreement between supervisee and supervisor is highly important. Furthermore, it could be beneficial to emphasise the importance of the responsibilities of both supervisors and candidates even more than already in the official induction of the candidates. This could help to manage the candidates' expectations and also spread the knowledge of the importance of joint agreement. Furthermore, it should be noted that building a good supervisory relationship and providing social support does not only rest on supervisors' shoulders. Rather the relationship should be reciprocal, so that it is also doctoral candidates' duty to learn to provide social support to others, take responsibility for their own progress and to foster the supervisory relationship.

Disclosure statement

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