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What determines supervision style? Introducing the key players



1 Introduction

The concept of supervision style has been widely discussed in the literature during the 21st century. A key distinction is whether the focus of supervision should be more upon the research tasks to be completed, or upon the development of the candidates (Murphy et al., 2007). Deuchar (2008) argues that, the acquisition of mature scientific thinking is a complex process, which includes not only the scientific learning but also personal development. In other words, the personal development needs supervision, as well. For supervisors, balancing between their professional academic role, and a personal influence for the student, is necessary (Lee, 2008). The PhD journey should end in a high level of independence, and encouraging the student on this journey is in Lee's (2008) view a key task for supervisors. The balance between professional and personal is thus expected to also change over the course of each individual PhD process.

Lee (2012), further developing a framework by Gatfield (2005) distinguishes four supervision styles with varying level of control and focus. The Functional style has low personal support and a task focus, and the supervision resembles project management. Gatfield (2005) names this style Directorial. The second style is that of Contractual or Enculturation, which has a high level of support but with a focus on the task. This supervision style would encourage the student to become a member of the disciplinary community, for example. The third style is what Gatfield (2005) calls 'Laissez-faire', but what Lee (2012) refers to as Emancipation. In this style, the control is low, and the student is encouraged to question and develop himself or herself. Finally, the Pastoral style focusses on developing a quality personal relationship (Gatfield, 2005). As mentioned before, the relationship may evolve over time in different ways (Gatfield, 2005). However, typically the process starts from a hierarchical formal relationship and shifts towards a more informal way of communication with more personal involvement towards the end of the PhD journey (Gatfield, 2005).

The student and supervisor often have different expectations of the supervisory relationship and the supervision style. Lindén et al. (2013) found that the students' aims, whether formal or personal, were not always attained in their respective mentorship programs. Notable in the study was the observation that, in general, task learning was emphasized over personal development. There was no role model learning, and this was something that the students missed (Lindén et al., 2013) Information about PhD students' perceptions of their relationship with their supervisors and feedback from students to supervisors should be used to improve the quality of the supervision (Marsh et al., 2002).

Ives and Rowley (2005) found that students who have a say in the supervisor selection, have topics close to the supervisor's expertise, and have a functional personal relationship with their supervisors, have a better chance at being satisfied with their PhD journey. Based on the study, satisfaction is even higher when supervisors are more senior and experienced, or when the student has two active supervisors (Ives and Rowley, 2005). Franke and Arvidsson (2011) distinguish between research practice-oriented and research relation-oriented supervision. The first one occurs when the PhD student and supervisor work within the same research field and have the same approach. In the latter, the PhD students' research does not have clear connection to the supervisors own research (Franke and Arvidsson (2011). In general, the capacity of the supervisors to meet the expectation of their student in terms of scientific guidance seems to be a recurrent issue (Pole et al., 1997). Moreover,

unexpected changes in the supervision team tend to cause difficulties. (Ives and Rowley, 2005).

What may play a fundamental role in the delicate supervisory relationship is the formal or informal approach towards communication and supervision practices. One example are supervisory meetings, and whether they take place in a neutral environment, such as over coffee (Hemer, 2012). Mullen (2003) found the informal supervision approach to be particularly effective for a successful PhD journey.

Finally, it is worth noting that, the PhD student might have a different relationship with the main and the co-supervisors. A recent study has identified three different joint supervision practices: the complementary, the substitutive, and the diversified (Lahenius and Ikävalko, 2014). The complementary style entails that the main and co-supervisors both have an active role, whereas the substitutive and diversified styles place emphasis on the different expertise of the main- vs. the co-supervisor (Lahenius and Ikävalko, 2014). Indeed, this interweaving of supervisory relationships will also influence the entire PhD journey (Pole, 1998).

Building on the existing research, this study investigates different supervision styles and the supervisory relationship. More specifically, the aim is to identify the different factors affecting the informality or formality of the supervision style. The two-fold research question asks *How is supervision style created, and how does it change based on the student needs?* Based on previous literature, three hypotheses are made. First, it is anticipated that the supervisory style and relationship are reflected in the communication practices. Second, the role as main or co-supervisor is expected to play a role in the style and relationship. Finally, the phase of the PhD is expected to influence the style of supervision as well as the supervisory relationship.

This report is structured as follows. Section 2 introduces the study design with data collection and analysis processes. Section 3 discusses the findings of the study, with reference to previous literature. Finally, Section 4 outlines the key practical implications and main conclusions, along with suggestions for future research.

2 Study Design

This study utilizes a qualitative research approach and uses interviews as the primary research data. A qualitative and exploratory research strategy was selected in order to thoroughly understand the phenomenon under study. Exploratory research attempts to increase understanding and seek new insight (Saunders et al., 2007). A survey, for example, could not have captured the studied supervisory relationships with similar depth.

The primary data comprises semi-structured interviews with open-ended questions. Altogether, 24 face-to-face interviews were carried out for the purpose of the study. The interviews took place during February and March 2019 in Lund, Sweden. All interviews were attended by two members of the research team. The researchers took notes during the interviews, and 23 of the 24 interviews were also recorded for analysis purposes. The interviews varied between 22-56 minutes in length (Appendix A).

A purposive sampling strategy was utilized for the selection of informants. The research team recruited informants from their respective research networks. As all four researchers represent different fields of study within engineering and the natural sciences, this strategy allowed for a heterogeneous sample. The

heterogeneous sampling is useful for identifying empirical patterns of interest (Saunders et al., 2007). The heterogeneous backgrounds of informants provide an unbiased view. The risk for bias is further reduced by guaranteeing confidentiality, so that the informants feel safe and comfortable to speak freely. The aim was to interview a similar number of PhD students (11 interviews) and supervisors (13 interviews). Both main and co-supervisors were included, as well as PhD students at different stages of their studies. The informants belong to different faculties and institutes at Lund University. A full list of informants is withheld so as not to compromise their anonymity. Figures 1 and 2 provide some basic information about the PhD students resp. Supervisors.

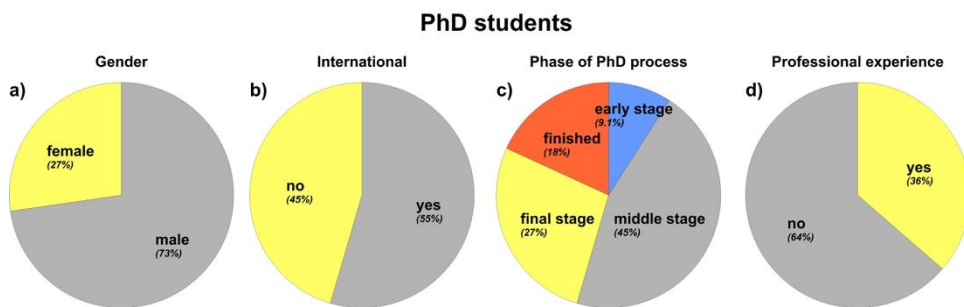


Figure 1: Information about the interviewed PhD students regarding gender (a), internationality (b), phase of the PhD process (c) and prior professional experience (d).

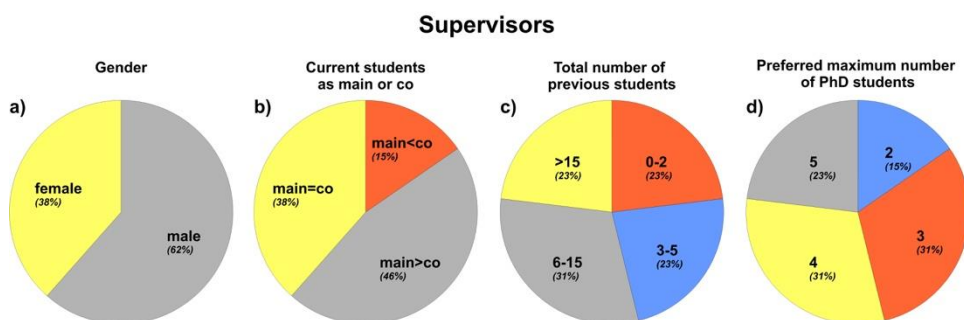


Figure 2: Information about the interviewed supervisors regarding gender (a), current PhD students as mainly supervised as main or co supervisor (b), total number of previous PhD students (c) and the preferred maximum number of PhD students (d).

The researchers jointly developed an interview protocol to allow for comparative data (Appendices B, C). A draft version of the protocol was also sent to the informants before the interview. However, open-ended interview questions typically allow for flexibility with the order and logic of questioning (Saunders et al., 2007). The protocol was therefore purposefully followed loosely, and adjusted to each informant, and their responses. During the interview, the informants were asked to provide background information about themselves and their academic careers, describe the supervision practices, and communication within the PhD supervision team.

The interview data was analyzed collectively by the research team. The analysis was based on qualitative content analysis, more specifically, an application of the so-called critical incident technique (Saunders et al., 2007), where noteworthy statements are identified from the data. This coding was conducted manually by three of the four researchers. The researchers utilized 25 initial concepts derived from existing literature as a starting point for the coding. New

concepts were added following joint discussion during the analysis process. The purpose of coding is to organize rich empirical data and allow for analytical generalization. It should be emphasized that this qualitative study does not strive for statistical generalization.

This study applies two validating methods typical to qualitative research, namely, triangulation and clarification of researcher bias (Creswell, 2013) (Creswell, 2013). Triangulation refers to the use of multiple data sources, methods, researchers or theories (Creswell, 2013). The presence of two researchers in the interviews, as well as the collaboration during analysis, provides researcher triangulation, and reduces potential researcher bias (Creswell, 2013). Moreover, the description of the qualitative data collection and analysis processes allows the reader to evaluate the transferability (Creswell, 2013). In order to further improve transparency, and the validity of the findings, illustrative quotations from the informants are provided in connection with the findings. The informants are referred to with their given IDs (PhD1-11; S1-13) in the text.

3 Findings & Discussion

This section elaborates the results from the interviews. The results highlight a variation in communication style that in line with previous research can be classified under two broader headings, namely, formal and informal communication practices.

3.1 FORMAL COMMUNICATION PRACTICES: USEFUL FOR FOLLOW-UP

In Sweden, a formal procedure exists that must be followed by all supervisors and PhD students – at least twice a year, students and supervisors must participate in a formal meeting to update the individual study plan (ISP) of the student. The outcome of this meeting will be a written document prepared by the student and reviewed by the supervisors. The document will report the status of the student's studies and any changes to the current plan. One supervisor described the ISP as *"a way of catching situations where things might fail"* - S3.

In addition to the ISP meetings, many supervisors and students schedule meetings at specific frequencies throughout the year depending on the needs and independence of the PhD student. A general consensus amongst supervisors and students alike seems to be that these scheduled meetings are both beneficial and productive. Generally, the meetings are decided upon in advance by mutual agreement. However, the student is also free to call an extra meeting if they feel that it is required. Indeed, many supervisors feel that it is the student's task to seek input from their supervisor. In some circumstances, a supervisor may also see fit to call an extra meeting. In addition to individual meetings, many supervisors also arrange group meetings on a bi-weekly or monthly basis. The supervisors and students view such meetings as an extra supervision tool, and as a way to keep everyone involved in a project informed. The importance of these meetings in facilitating contact between the students and receiving peer support was also highlighted.

Despite that a large percentage of those interviewed indicated that they participate in these more formal scheduled meetings on a fairly regular basis, very few of the informants noted that taking 'minutes' at these meetings was a requirement. Some informants did consider that having minutes was good and useful *"for the follow-up"* - S5. However, in most cases, the students were

considered responsible for their own notes and they were not required to share them with the supervisor. If documents were distributed in advance of the formal meetings, some supervisors indicated that they would make notes in these such that the student could use their notes. Ironically one supervisor stated, *"It's really perhaps more in the difficult cases that you would need it, but in those cases, the PhD student doesn't tend to take minutes"* - S8. Somewhat surprisingly, the lack of official 'minutes' had never caused any serious misunderstandings.

3.2 INFORMAL COMMUNICATION PRACTICES: THE DOOR IS ALWAYS OPEN

The majority of the supervisors that were interviewed for this study described their communication practices as ad hoc, and stated that their *"door is always open"* - S9. One senior academic motivated their open-door policy as follows: *"When I prioritize all my tasks, the first priority is the PhD students."* - S5. Another one motivated their open-door policy with *"You can always give them a feedback for a few minutes"* - S8.

Naturally, an "open-door policy" is only relevant for those situations where a student and supervisor are sitting relatively close to one another such that the supervisor(s) and student will meet each other almost daily. Interestingly, integration of these ad hoc meetings in the daily agenda seems to be mostly unplanned. Very few supervisors indicated that they allocate time for ad hoc supervision in their own calendars. From the student's perspective, the majority describe co-location as a definite benefit and most appreciate an open-door policy and use it regularly.

Another type of ad hoc practice touched upon in this study was spontaneous lunch or coffee meetings. Whilst some supervisors and students may take the occasional lunch or coffee together with a larger group of colleagues, this was not always intended for informal supervision where all attention is focused on the work of the PhD student. In fact, such occasions are more an opportunity for social interaction that contributes to relationship building, rather than supervision.

For many supervisors, ad hoc supervision seems to be considered as a normal and acceptable way to supervise a student. However, our study indicates that this practice is not necessarily always the choice of the supervisor but due to an unofficial departmental policy. As one supervisor phrased it: *"We have like an open-door attitude here"* - S3, indicating that the policy was not a personal one. However, despite the fact that most supervisors seemed to be fine with the policy, some also acknowledge that they experience ad hoc supervision as a disturbance. One subject mused that ad hoc supervision *"works fine to a point [...] but there comes a time when this is no longer always working and the ad hoc becomes basically all you are doing the whole day"* - S10. In cases when the supervisor discussed being overwhelmed by the open-door practice, they did so with a certain tone in their voice that indicated guilt or disappointment, potentially toward a top-down enforced policy that did not suit their personal preferences.

The supervisors handle the disturbance from ad hoc in different ways. They might practice limited ad hoc supervision, with, for example, introducing *"do not disturb times"* - S11, simply closing the door, or booking time for productive work in their calendars. *"I've put in 'meetings' in the calendar so that no one books it."* - S12. However, students do not always heed the 'do not disturb' signs. It is worth noting that the students interviewed in this study made no comment

regarding 'do not disturb'-times of any of their supervisors. Thus, it would seem that such a 'limited' open-door policy might not affect the student so much. From the student perspective, whilst most are appreciative of the possibility of drop-in, they are also sometimes critical about this. *"Sometimes the ad hoc meetings can be a little dragged out."* – PhD12. Some students clearly indicated that they *"would like to have more structure"* – PhD10 in the meetings. Some even stated that at times they feel disturbed when their supervisor drops into their office unannounced.

3.3 FRAMEWORK FOR SUPERVISION STYLE

For the purpose of presenting the identified factors influencing the supervision style, a framework adapted from Gatfield (2005) and Lee (2012) is utilized. This adaptation of the framework relates the different supervision styles to informal and formal communication practices, as well as to different levels of personal investment to the supervisory relationship (see Figure 3).

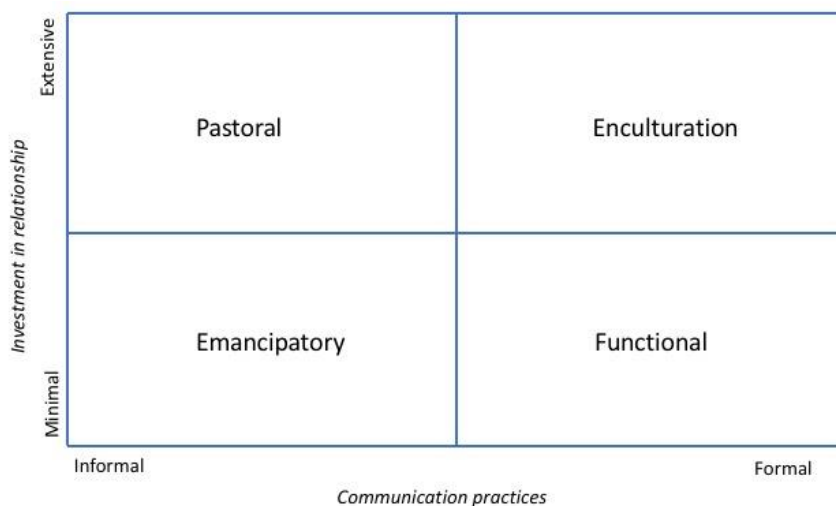


Figure 3 Framework for supervision style (adapted from Gatfield, 2005 and Lee, 2008)

3.4 THE EMANCIPATORY: IT'S A LEARNING EXPERIENCE

The interviews suggest no clear emancipation of the PhD student at a particular phase of the PhD process, but rather this was stated to depend on the individual student. However, there was a tendency that the student needs more guidance in the beginning and becomes more independent after the first paper. With that said, one supervisor interestingly noted that students typically need a lot of encouragement in the middle of their PhD journey, after the second paper. This is partly in agreement with the findings of Gatfield (2005), which stated that the guidance and relationship have to be dynamic over time.

While the final phases of the PhD journey require less guidance, the supervision continues, scientific discussion with the student was said to increase towards the end of their PhD journey. As one supervisor stated: *"I have to be more critical in the end"*- S5. The students were expected and also noted to take ownership

of their research topic in the final phases. *“One of the coolest things about supervision is when a person changes over their PhD. Those are four extremely important years.”* – S10. Other students were described as being very independent and wanting to lead their projects from the very beginning. One supervisor made the valid point that PhD students are already adults when they enter their PhD journey, and many have prior professional experience outside academia before the start of their studies.

The interviewed students certainly acknowledged the above referenced learning curve in their own PhD journey, as one student nicely put it in words: *“It has been a learning experience”* – PhD11. Furthermore, the students mentioned the same shift in the nature of the communication as the supervisors. *“All these opportunities to meet your supervisor were there from the beginning. What has changed is the topic”* – PhD9. It is worth noting that, the students also showed commendable proactiveness with regard to the guidance and supervision that they received. One student had contacted experts outside their supervisory team for advice regarding the use of a method. Another one had asked a researcher from outside the research group to join their supervisory team.

3.5 THE PASTORAL: MORE PERSONAL

Changes in the supervision team due to personal issues such as illness or parental leave were discovered to be very dramatic events for the affected students. This agrees with the findings of Ives and Rowley (2005) about the discontinuity of supervision, and how it can negatively affect the PhD studies. The interviewed students described how changes like retirement or parental leave would change the supervisory relationship, and how the relationship with a new or substituting supervisor was not as close: *“I did go out a lot with my former supervisor, the one who retired. We had often lunch together [...] it was more personal”* – PhD10. These changes in the supervision team were not seen as equally dramatic from the supervisor perspective.

The supervisors had a general sense of responsibility toward handling non-scientific or personal issues of their students. The mental wellbeing of the students was the concern of many, and particularly the main supervisors felt obliged to regularly check how the students were feeling. One supervisor had sent their student to the healthcare center for work-related stress, and the student had received help and been very grateful afterwards. In addition, international students were specifically mentioned as a group that requires more support in practical non-scientific issues, such as, visas.

One supervisor discussed a case where the student: *“used personal issues to try to explain why they hadn’t done anything... and I didn’t really know how to deal with that.”* – S6. After noticing this pattern in the behavior of the student, the supervisor first discussed it with the other supervisor. However, the other supervisor was unwilling to take the issue up with the student, despite the lack of progress in the student’s work. The interviewed supervisor found the situation very challenging and ended up eventually resigning from the supervision team.

Another noteworthy issue discovered in the interviews, is the supervision of PhD students who are on the autism spectrum. One of the interviewed supervisors had experience with such students and discussed one case in particular. This student’s thought process was very linear, which meant that

they had difficulties adapting to unexpected events, such as failed experiments. They also had a very forward way of expressing themselves, which had led to the previous supervisor being offended, and reaching out to another for assistance. In such a situation: *“You have to be much thicker skinned [working with persons on the spectrum]”* - S12. The supervisor emphasized that the student in question was very talented, and a hard worker, but needed more support when facing difficulties.

3.6 THE ENCULTURATION: JOIN THE DINNER, LEAVE BEFORE THE PARTY

The interviewed supervisors had varying views about forming a personal relationship with the student. Many were of the opinion that social activities, such as, after works and conference dinners, or even field work were important for relationship building, as e.g. Hemer (2012) also suggests. These activities were thought to remove the unnecessary hierarchy from the relationship. Some argued that building a good supervisory relationship would be difficult without social activities: *“I think developing the relationship is the key, absolutely the key, so you definitely need to do that in the beginning... And those activities I have considered advising.”* - S2. Relationship building was generally considered important for the students’ willingness to share, and, for openness.

Despite a general openness to personal relationships, only one supervisor had recently invited students to dinner with spouses, and only one student reported visiting their supervisor’s home. Most students did regularly participate in social activities organized by the department or research group. Conference trips and field work offered other opportunities for social interaction outside the office. Most students appreciated this opportunity: *“I liked the fact that I had the opportunity to meet them as persons”* – PhD9. Nonetheless, one of the interviewed students disclosed that, they did not participate in social activities due to their own personal preferences: *“After conference there’s usually a dinner and the others go out drinking and things like that, but I usually don’t”* – PhD1. The student in question did not feel that this had affected the supervision they received in any way.

Meanwhile, some supervisors wanted to keep a very distinct separation of professional and social, and did not think a personal relationship with the student would even be appropriate. One supervisor stated that: *“With the PhD students, I don’t really think I should have that type of contact”* - S8. Others were not as strict, but did view participating in social activities as a balance. One strategy mentioned by the more experienced supervisors was staying for the early stages of the social gathering, but leaving early enough to give the students space. *“There’s a certain point of the night after which you can’t carry on with the students”* - S12. The more senior supervisors had also advised their junior colleagues about this unspoken rule.

3.7 THE FUNCTIONAL: SEEING THE WHOLE THING

A general consensus prevailed about the usefulness of co-supervision, among both student and supervisors. This finding is supported by e.g. Lindén (1999) and Kobayashi et al. (2015). Furthermore, the interviewed students could readily describe the role that each of their supervisors played in their PhD process. More often than not, the co-supervisors would come from different disciplines, or support the use of a certain theory or method. Supervisors also viewed their roles as complementary, and saw that co-supervision is “a

possibility for the student to get a second opinion” - S10. Additionally, as one supervisor very eloquently put it: “More eyes see more things” - S5.

Another way to examine the supervisory roles, is to reflect on the more formal status of the main supervisor. From the student and co-supervisor point of views, this sometimes translated into the main supervisor “only” having an administrative or practical role. In the worst-case scenario, the co-supervisor felt like they did all the work, while all the credit went to the main supervisor. However, supervisors with more experience in main supervision felt that the main supervisor indeed has main responsibility, and is most knowledgeable of the overall PhD process: *“I’m the one with the best overlook - S8.* With that said, as many as three students reported that their main and co-supervisor had switched roles as soon as the co-supervisor received their docent title - even within days. This would indicate that the main supervisor selection is indeed sometimes due to administrative reasons, as it is dependent on the docent title.

Due to the administrative responsibility, some main supervisors felt they could not be as relaxed or free with the students as the co-supervisors. One interviewed main supervisor argued that: *“As a co-supervisor you can do mentoring, as a main supervisor you cannot” - S12.*

4 Conclusions and future research

This study set out explore how supervision style is created, and specifically, which factors influence the style. The three hypotheses held only to an extent. Although the supervision practices clearly influence the supervisory relationship, informal or formal communication practices do not equal informal or formal supervisory relationship. In other words, there were cases where the relationship was personal, even though the practice was rather formal, and vice versa. Furthermore, neither formal nor informal is practiced as such, but rather a ‘mix’ of the two. This ‘mix’ depends on investment in personal relationship, individual student needs, and the supervisor role, particularly the role as a main or co-supervisor. Additionally, some level of formality is enforced through top-down policies, such as the updating of the individual study plan. The main supervisor was noted to be most often responsible for formalities. However, as discussed before, this does not automatically result in a more formal relationship with the main supervisor. Finally, while the interviews revealed a general tendency towards emancipation of the PhD student during their PhD journey, there was a clear consensus that this is highly dependent on the student.

With regard to external influences, it was clear that co-location enables informal, ad hoc supervision. For those cases where supervisor(s) and student are not located close to one another, ad hoc supervision practices are not possible. Another external factor was identified during the course of the study, namely, real or perceived departmental level policies. This top-down influence, whilst not explicitly stated was implied by several interviewed supervisors struggling with the so-called open door policy. The general impression from this study is that, many departments strive to have an informal ad hoc supervision practice with “barrierless” access to the supervisor. Consequently, most supervisors adhere to such a policy. Nonetheless, this approach might not always be the first choice of the supervisor themselves. Further investigation

into the role of top-down policies in supervision style and supervisory relationships is a suggested topic for future research.

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Appendix A: Conducted interviews

ID	Interview length (min.)	Number of researchers present
PhD1	38	2
PhD2	22	2
PhD3	26	2
PhD4	28	2
PhD5	22	2
PhD6	45	2
PhD7	38	2
PhD8	43	2
PhD9	38	2
PhD10	22	2
PhD11	36	2
S1	33	2
S2	48	2
S3	40	2
S4	38	2
S5	33	2
S6	45	2
S7	27	2
S0	45	2
S9	49	2
S10	56	2
S11	29	2
S12	34	2
S13	36	2

Appendix B: Interview protocol for PhD students

Which phase of the PhD process are you in at the moment?

How many supervisors do you have? Is someone from industry involved?

Tell us about how (Emails? Meetings? Lunch? Group meetings? Ad-hoc 'Drop-ins) and how often (Daily? Weekly? Monthly? Quarterly?) you communicate with your main supervisor? Has this changed during the course of your PhD?

Tell us about how (Emails? Meetings? Lunch? Group meetings? Ad-hoc 'Drop-ins) and how often (Daily? Weekly? Monthly? Quarterly?) you communicate with your co-supervisor(s)? Has this changed during the course of your PhD?

Would you prefer a different communication method / frequency to better meet your needs? Do you find your meetings productive?

What is the main contribution from each of your supervisors to your PhD work/training?

Do you work in the same facilities/lab/perform field-work with your main and co-supervisors?

What do you do if something unexpected happens that you would like to discuss right away, outside the scheduled meetings? Walk us through the process.

Do you ever meet your main or co-supervisor(s) outside work hours? Could give us an example?

Do your supervisors ever have different views related to your PhD studies? Do you have an example of such a situation?

Appendix C: Interview protocol for supervisors

How many PhD students are you currently supervising?

Tell us about how (Emails? Meetings? Lunch? Group meetings? Ad-hoc 'Drop-ins) and how often (Daily? Weekly? Monthly? Quarterly?) you communicate with your PhD student(s)? Has this changed during the course of the PhD?

Based on how you practice communication with PhD students, what do you consider is the maximum number of PhD students that you can have as supervisor?

How many co-supervisors are you working with? Is someone from industry involved?

Tell us about how (Emails? Meetings? Lunch? Group meetings? Ad-hoc 'Drop-ins) and how often (Daily? Weekly? Monthly? Quarterly?) you communicate with your co-supervisor(s)?

If you have experience as both main and co-supervisor, which role do you prefer? Why?

Do you work in the same facilities/lab/perform field-work with your students and co-supervisors?

Do you tend to factor in a certain amount of time that you anticipate will be taken up for un-scheduled 'ad hoc' discussions with your students? If yes, how many hours per month would you estimate per student?

Do you ever meet your student or co-supervisor(s) outside work hours? Could you give us an example?

In general, have you had the experience that your students also come to you about non-scientific (personal) issues?

Do you sometimes meet your fellow supervisors without the student present in order to discuss issues related to the PhD process? Do you aim to ensure that all supervisors are "on the same page" before an official meeting with the student?