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Despite the importance of goals in educational theories, goals in master's thesis projects are rarely investigated. Therefore, this study explores how goals play a role in master's thesis supervision in terms of: defining the goals (up-component); locating where the student stands in relation to the goals (back-component); and how the student can more closely reach the goals (forward-component). Twelve supervisors and students were interviewed and the adaptive approach of supervision emerged as a recurrent theme. Applying qualitative content analysis, findings indicated that the role of goals can be described as: aiming to reach the goals (up-component) by adapting supervision strategies (forward-component), based on students' specific needs and where they stand (back-component). This was termed 'adaptivity'. Providing adaptive supervision can also involve tensions concerning the level of regulation and the severity of their critique (ranging from mild to heavy-handed). Findings are discussed in relation to other studies concerning research supervision.

Keywords: research supervision; goal; adaptivity; responsiveness; supervision strategies

Introduction

Most academic master's programmes are completed with a master's thesis project, which can be described as a research project that students undertake independently. Thesis projects differ from general coursework in terms of duration, focus, teacher–student interaction, and goals. First, the *duration* of a master's thesis project is regularly at least half a year, with a minimum weight of 15 European Credit Transfer and Accumulation System Credits (ECTS). This weight is equivalent to 420 study hours, whereas a course usually has a weight of 7.5 ECTS (210 study hours), and lasts about three months. As the student works on one research project throughout these six months, this leads to a more cyclical rather than linear supervision process because the same piece of work is discussed in each meeting. Second, the *focus* of the research that is carried out in a master's thesis project is determined by the student to a large extent, both in terms of topic and research design. Unlike most coursework assignments, this implies that both the student and the supervisor do not know beforehand what the results of the research will be. Third, the *teacher–student*

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interaction in coursework can usually be characterized as one-on-many, as usually there is one teacher and a large group of students. The common teacher–student interaction in master's thesis project work, on the other hand, can be characterized as one-on-one, although, in several places, explorations with group supervision have been described (e.g. Dysthe, Samara, and Westrheim 2006; Stracke 2010). Fourth, in coursework, there tends to be a clear distinction between assignments with a formative and a summative function. Assignments with a formative function are intended to support learning and, even though feedback can be provided, the assessment does not count towards the final grade. Summative assessments are intended to assess learning rather than to support learning and therefore these assessments do contribute to the overall grade. The master's thesis, however, has the curricular *goal* of supporting and assessing student learning at the same time. For supervisors, this means that they should support students in their learning process, but that they also need to assess the quality of the thesis in the end. This could be seen as rather complex (Todd, Bannister, and Clegg 2004).

These four characteristics to a large extent also hold for Ph.D. students working on a doctoral thesis. Therefore, we also include literature from this field of research in our literature review and our discussion of the findings. Of these four characteristics, most studies in the context of master's thesis projects and doctoral theses focus on the supervisor–student interaction (e.g. Mainhard et al. 2009; Derounian 2011; de Kleijn et al. 2012) or the students' and supervisors' general experience and evaluation of the supervision (e.g. Anderson, Day, and McLaughlin 2006, 2008; Drennan and Clarke 2009; Barnes, Williams, and Stassen 2012). Goals in master's thesis projects are rarely researched, which can be considered surprising, given the prominence of goals in several educational theories such as goal-orientation theories (e.g. VandeWalle 1997), self-regulation theories (e.g. Pintrich 2000) and feedback theories (e.g. Sadler 1989).

However, some studies do address the goals of master's thesis projects. Regarding the *type* and *nature* of goals in master's thesis projects, Anderson, Day, and McLaughlin (2006) concluded that supervisors' main goal of thesis projects is to ensure that the values of the research community guide the students' practice. From a student's perspective, they found that part-time students had three types of goals with the research projects: advancing practice, making intellectual progress with a commitment to academic standards and values, and gaining a satisfying sense of personal involvement, development, and/or challenge (Anderson, Day, and McLaughlin 2008). In doctoral supervision, several studies also focused on what the goals and outcomes of a doctorate are (e.g. Mowbray and Halse 2010; Bansel 2011; Lindèn, Ohlin and Brodin 2013). These authors all argue that the goals and thus outcomes of doctoral thesis should not be reduced to metrics and economic indicators or a set of acquired skills, but that personal aims and intellectual virtues should also be an evident part of getting a doctorate. With respect to the *importance,* in another earlier study (de Kleijn et al. 2013a), we investigated student perceptions of supervisor feedback ($N = 1016$) in the context of master's thesis projects with respect to focus, goal-relatedness, and elaboration. We found that feedback (how am I going?) and feed forward (where am I going?) were strong predictors for student satisfaction and perceived supervisor contribution to learning. Feed up (goal-setting) was also found to predict these outcome measures, yet it appeared that students perceived little feed up.

Even though these findings provide some insights into the type and nature of goals in master's thesis projects and their potential importance, it remains unclear *how*

supervisors and students work towards reaching these goals. In order to fill this theoretical gap, the present study investigates goal-relatedness of supervision by means of examining accounts from supervisors who are indicated as successful supervisors by the deans of their faculties.

Goal-relatedness of supervision

As described above, goals play an important role in several educational theories. Following the motivational systems theory (Ford 1992), we understand goals to represent 'consequences to be achieved (or avoided), and they direct the other components of the person to try to produce those consequences (or prevent them for occurring)' (83). In the context of research supervision, these can be curricular goals (e.g. gaining knowledge and understanding; Joint Quality Initiative 2004) and/or personal goals (e.g. getting a diploma or providing policy recommendations; Ford and Nichols 1991) of the student and/or the supervisor (de Kleijn et al. 2013b). Locke and Latham (2002), summarizing 35 years of research of the literature concerning goals in education, stress that setting specific and difficult goals leads to higher performances than urging people to do their best, as specific and difficult goals focus attention, mobilize effort, and increase persistence at a task. In addition, based on the work of Carver and Scheier (2001), we assume that goals play a role on different levels which range from more local to more general goals: students and/or supervisors can have goals for a specific supervision meeting, for all supervision meetings in general, and for the master's thesis project as a whole.

Subsequently, we approach the concept of goal-relatedness from a feedback perspective by exploring the extent to which supervision supports the students in closing the gap between their current performance and the established goals. These goals can be both curricular goals and/or personal goals of the supervisor and/or the student (see also de Kleijn et al. 2013b). In this respect, Sadler (1989) explains that if the gap between a learner's current status and the goal is too small, it might not motivate the learner to put additional effort into reaching the goal. This is confirmed by Locke and Latham (2002), who found that when goals are too easy they do not lead to increased persistence. Conversely, if the gap is too large, the learner might perceive the goal as unattainable and therefore this would not encourage increased effort and persistence. Therefore, Sadler (1989, 130) suggests that 'the teacher may find it useful to negotiate the aspiration level with the student, or at least to take individual student characteristics into account'.

However, knowing the goals does not suffice in closing this gap, as closing the gap would also require the comparison of the current performance to the goals by applying standards and criteria (Sadler 1989). Similarly, closing the gap can be supported by deciding on appropriate moves or strategies to bring the current performance closer to the goal. In line with this reasoning, Hattie and Timperley (2007) addressed three comparable elements of feedback which they termed feed up (where is the learner going?/what are the goals?), feedback (how is the learner going?/how does the learner's performance relate to the goals?), and feed forward (what's next?/what steps does the learner need to take in order to more closely reach the goals?). They found that feedback should provide answers to these questions in order to promote student learning and performance. Therefore, in exploring how goal-relatedness can be described in supervision, we refer to these three information components as the up-component, the back-component, and the forward-component.

Present study

In this study, we set out to study master's thesis supervisors who are indicated as successful supervisors by the deans of their faculties, as we assumed that good supervisors have considerable knowledge about the role of goals in supervision. This will not only increase our understanding of goal-relatedness in supervision but will also enable us to provide practical suggestions for supervisors in general. Therefore, the present study addresses the following research question: *How do (locally recognized) good supervisors describe goal-relatedness in their master's thesis supervision, what are their considerations in this respect, and how is this perceived by their students?*

Methods

Participants

Fifteen supervisors, who had been indicated as successful supervisors by the deans of their faculties, were invited to participate in the present study. We opted to include supervisors from three faculties (Social and Behavioural Sciences, Geosciences, and Humanities) in a large Dutch university as the format of their master's thesis projects is similar. The Deans of the respective faculties indicated which faculty members were considered successful as supervisors. Twelve supervisors agreed to participate[1]. Each of them selected a master's student they supervised at that moment, whose supervision process they considered representative. All students agreed to participate. The participants agreed that the data would be used for scientific publication without their identities being traceable. No incentive for participation was offered. The participants were informed that participating in the study would not have any consequences in terms of student grades and supervisor evaluations as the data would not be shared with the students, supervisors, or third parties. Two supervisors and eight students were female (see Table 1). Students were between 23 and 35 years old and had taken part in 1–20 supervision meetings at the time of the interview. At the specific institute at which the study took place, teacher certification for higher education generally involves a Teacher in Higher Education certificate, which Ph.D. students and assistant professors are usually required to complete. They also completed an Advanced Teacher in Higher

Table 1.   Characteristics of participating supervisor–student dyads.

Dyad	Department	Supervisor gender	Supervisor position	Student gender	Student age	No. of meetings
1	GEO	M	Full professor	M	25	4
2	HUM	M	Associate prof.	M	25	1
3	SBS	M	Associate prof.	F	24	6
4	HUM	M	Associate prof.	F	24	12
5	HUM	M	Assistant prof.	M	32	2
6	GEO	M	Full professor	F	23	20
7	SBS	M	Assistant prof.	F	26	5
8	GEO	M	Assistant prof.	F	24	10
9	HUM	M	Full professor	M	35	6
10	HUM	F	Assistant prof.	F	26	4
11	SBS	M	Post-doc.	F	24	5
12	GEO	F	Assistant prof.	F	28	5

Note: GEO: Geo sciences; HUM: Humanities; SBS: Social and behavioural sciences.

Education certificate, which associate and full professors are expected to have (see also Keesen et al. 1996). In both certification programmes, generally one training session is devoted to supervising research. Additionally, a supervision course is offered, which can be taken by all supervisors if they have permission and a budget from their programme manager. It consists of four sessions, leading to an overall number of approximately 16 hours. In this course, supervisors' own concerns are addressed as well as issues related to supporting students in planning, how to build a good working relationship with the student, and so on. However, this course is taken by only small proportion of all supervisors. Therefore, it is assumed that they mostly rely on their own experience of being a student when supervising students. For each dyad, we interviewed both the student and supervisor separately immediately after a supervision meeting.

Instruments

In order to explore supervisor and student experiences of goal-relatedness of supervision in master's thesis projects, we developed an interview scheme based on the described theoretical framework (see Appendix 1). We asked participants about the goals of the master's thesis, goals of the supervision process, and goals of the most recent meeting. Questions labelled with an 'A' refer to the up-component, and accordingly questions with the labels 'B' and 'C' refer to the back- and forward-component, respectively. As supervision is an interaction between supervisor and student, we included questions about their own goals and perception of each other's goals. Also, we included questions concerning how the supervisors and students give notice of their own goals and how they notice the other's goals, as we know from studies in the field of doctoral supervision that research supervision is not a simple matter of a student following up on the objective and rational plan of action of a supervisor but, instead, is a rather chaotic process (Grant 2003). All interviews were audio-recorded and fully transcribed.

Data analyses

Initially, the first author read the interview transcripts at least five times. From these readings, a recurrent theme in the supervisor interviews, with relation to the research question, seemed to be the adaptive approach of the supervision. Therefore, the interviews were read again in order to confirm this preliminary theme as being recurrent and relevant. Indeed, in all supervisor interviews and in all but one student interview, fragments were found in which it was addressed that a supervisor handled differences between students by adapting his/her supervision to a specific student.

Subsequently, the adaptive approach of supervision (later referred to as 'adaptivity') was used as a sensitizing concept (e.g. Bowen 2006) for selecting fragments from the supervisor and student interviews. This yielded approximately 6000 words from the student interviews (±12%) and 23,400 words (±34%) from the supervisor interviews. These fragments were organized per dyad and were discussed with the third author. This discussion resulted in five categories for the supervisor interviews and two categories for the student interviews (see Table 2). The interviews were read again in relation to these categories in order to check whether all relevant fragments were included. No fragments could be selected from supervisor Mark (dyad 8). This can be explained by his indication of deliberately not providing adaptive supervision[2].

Table 2.   Categories that emerged from the interviews in relation to adaptivity.

Supervisor interviews
    Describing goal-relatedness
    Indication of adapting supervision to different students
    Indication of what kind of student a specific student is
    Indication of differences between students
    Considerations
    Indication of why (s)he supervises the student in a specific way
    Indication of the extent to which a supervisor has an interest in/knows the personal situation of
    a student
Student interviews
    Describing goal-relatedness
    Indication/example of supervisor adapting supervision to the individual student
    Indication of what a supervisor knows about the student

The selected fragments were then organized in a role-ordered matrix (Miles and Huberman 1994). Subsequently, we found that in supervisor and student accounts of adaptive supervision, a distinction could be made between general descriptions and concrete examples of adaptivity. We considered it helpful to include both in order to illustrate adaptivity comprehensively. Therefore, we made this distinction in the columns of the matrix; the rows represent the supervisor–student dyads (see Table 3). Organizing the fragments in these columns could be considered the first round of coding. The data from the student interviews were used to triangulate and complement the supervisor data (Johnson 1997). Then, the second round of coding took place, in which the first author summarized the fragments per category.

First, based on the column 'supervisor description of adaptive character of supervision', the first author described adaptivity as a way of describing the role of goals in master's thesis supervision, which was then complemented with additional information in the column 'student description of adaptivity'. Second, the columns 'supervisor concrete example of adaptivity' and 'student concrete example of adaptivity' were analysed and summarized, which led to a further exploration of the concept of adaptivity as a way of describing goal-relatedness in supervision. Lastly, the column 'supervisor consideration concerning adaptivity' was analysed and summarized in order to understand the reasoning of supervisors with respect to providing adaptive supervision. These considerations are presented in terms of two tensions in relation to the goals of a master's thesis. All the steps of the analyses were performed by the first author and in order to promote transparency every step in the analysis was extensively discussed with the third author based on which alterations were done. Also, during these discussions, the next analysis step was decided upon. In total, four of

Table 3.   Columns of the role-ordered matrix and order of analyses.

Describing goal-relatedness
    Supervisor description of adaptivity (general)
    Student description of adaptivity (general)
    Supervisor concrete example of adaptivity
    Student concrete example of adaptivity
Considerations
    Supervisor consideration concerning adaptivity

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these discussion sessions were held. To increase validity, the relationship between the results and the theoretical framework were explicitly discussed with the second author. Also, the translations of the interview excerpts that are presented in the results section were checked by an educator in bilingual teacher education programme. All names used in the result section are pseudonyms.

Results

Describing goal-relatedness: adaptivity

In the master's thesis projects, the supervisors do not have different goals for different students, but the way in which they try to reach these goals varies as students differ from each other. This is, for instance, illustrated by supervisor Harry:

> In that respect, these are kinds of meta-goals. And in fact, I have applied them to every thesis and student as long as I have been doing this work. You colour each of them individually within a project, for a student or for a dyad. One [student] takes it up better than the other, one can handle criticism better than the other, one works more independently than the other, so you adapt it to the person. […] But the main goal remains the same. (Supervisor Harry, dyad 3)

Supervisors thus do not differentiate the up-component per student on the level of the thesis as a whole. Several supervisors, when they were asked how they saw the main goals of the master's thesis and of supervision in general, explicitly addressed that they adapt their supervision to their perception of the needs of each specific student. In other words, adaptivity is mainly about shaping the forward-component based on the back-component. For instance, in the following excerpt, supervisor Steve indicates that he aims for students to learn from the project and he explains how he tries to support that:

> You see, there are formal goals, but what I find very important for a master's thesis project is that students make progress. That I really feel that they are learning. So I always try to … for instance what I do is, the feedback that I give, I try to adjust it to my estimation of a student's level. I try to give feedback in a way that I feel they learn maximally from this. (Supervisor Steve, dyad 11)

Supervisor Tom uses a chameleon metaphor to explain the goal of his supervision:

> Well, I think you have to realize, as a supervisor I show chameleon-like behaviour. You see, Parker is a bright student, he understands it. But he is somewhat easy-going, so I show a certain type of supervision behaviour. When I have a less bright student in front of me, I show rather different supervision behaviour. (Supervisor Tom, dyad 1)

Interestingly, when asked about what he thought his student expected of him, supervisor Otto said:

> (short silence) What does she expect from me? Ehm … I find it hard to identify that. Ehm … because my frame of reference is actually what I provide myself. So I don't have that many ideas about what the student expects from me, other than what I think I should give the student. […] I could not think of anything else actually, ehm … Yeah I think someone expects wisdom and experience from me, hahaha. Anything else, I don't think I would be willing to give. (Supervisor Otto, dyad 6)

We consider this approach to indicate a crucial element of adaptivity as a way of describing goal-relatedness: it is not just adapting supervision to the *expectations* of

the students in order to make the student happy but adapting the supervision to what the supervisor thinks a student *needs in order to reach the goals* (learn and progress). This indicates how goals play a role in supervision. Otto is rather clear that he thinks he knows best what a student needs, irrespective of what the student would prefer. This is supported by Otto's other fragments, in which it becomes clear that he adapts his supervision (e.g. severity of their critique, ranging from mild to heavy-handed) to what he thinks a student can handle.

Several student interviews confirmed the adaptive approach of the supervision that appeared from the supervisor interviews. For instance, student Patrick, when asked about how he gives notice of his goals, said:

> He listens carefully to the needs, so to speak. I do have the idea that he senses what kind of student I am, and he does provide me with the opportunity to indicate that myself. (Student Patrick, dyad 5)

Student Rachelle also indicated that she thinks her supervisor uses different supervision strategies for different students:

> Because she also tells me: 'Well, it is running very smoothly with you. It is just a whole different kind of conversation than I have with other students'.
>
> So then I notice that with other students she might be more supervising and motivating and with me she just doesn't have to do that. (*Researcher: She uses other strategies?*) She just uses a different tool box then. (Student Rachelle, dyad 10)

Concrete examples of adaptivity to describe goal-relatedness

Most supervisors, in one or more instances, mentioned specific support of a specific student. Three supervisors indicated that they adapted the *severity of their critique* (i.e. is it mild or heavy-handed) to their goals or the students' goals. For instance, supervisor Otto indicated:

> I think she had the goal of: 'Well this [version] could be sufficient'. […] I did take that into account in that sense, because I know Andrea comes across as a very tough girl who is socially very intelligent. But I just know about her that she is vulnerable too. […] So I do pay extra attention during such a meeting whether eh, what one gives in terms of critical remarks is not too strong. (Supervisor Otto, dyad 6)

In addition, supervisor Ingrid adapts the severity of her critique to what she thinks the goal of her student is, and offers her student more rather than less strong criticism:

> But I always have had the idea that she wanted to pick up as much as possible, not only regarding the new literature and the literature related to urban geography, but also the analyses of interviews. […] I do have the idea that I should be sharper with her than with other students […] Yes I am more critical with her and I also try to make sure that I have some extra literature or ehm, that I tell her something about qualitative research methods for instance, or that I give her a book to read. (Supervisor Ingrid, dyad 12)

In addition, several supervisors indicated that for their specific student, they were *more regulating in terms of content or process* as they thought the student would otherwise fail to reach the standards for a master's thesis:

I think Parker is one of the more easy-going ones. And that means that if you do not push him, then he can be such a dreamer and, above all, do many other interesting things. […] So for him I always have set strict deadlines. And he then says: 'Well can't I do it a bit later?' […] and then I call out: 'No you can't, you should just work a bit harder!' (Supervisor Tom, dyad 1)

Nena is a student who is not that gifted, [Someone] who already in her bachelor programme experienced troubles to really focus on the study material. Someone that really needs a guiding hand, otherwise nothing will happen. (Supervisor Walter, dyad 4)

Several concrete examples of adaptivity were also described in the student interviews. For instance, several students indicated that their supervisor explicitly asked for certain information, which they then used to shape their supervision, such as: 'What are your pitfalls*?*', 'How are you doing?', 'What are the good and weak points [of your work], do you think?' This shows how supervisors collect information about where the student is (back-component) in order to provide adapted support (forward-component). Also, students commented that supervisors sometimes explicitly described the characteristics that they observed among their students (back-component; 'You're so creative'; 'You tend to stray off in your writing'; 'I think that is typically you, because I have read that several times now') to underpin their suggestions for improvement (forward-component). Lastly, some students indicated that their supervisor was able to adapt the supervision to their specific needs, as the supervisor already knew him/her. For instance:

I have known Smit for a long time by now, from my first year in college, because he then already taught courses I took. And he has supervised my bachelor's thesis as well, so he knows me very well and he knows exactly what my pitfalls are. (Student Nena, dyad 4)

Supervisors' considerations concerning adaptivity

We found that in order to provide adaptive supervision, in some instances, supervisors have potentially conflicting considerations. We summarize these considerations in terms of two tensions that are related to the previously mentioned concrete examples of adaptivity: severity of critique and level of supervisor regulation.

The first tension concerns situations in which a student is barely able to reach the goals of a master's thesis project, and therefore would require more regulation from the supervisor than the supervisor deems appropriate in light of the goals. For instance, supervisor Walter supervised a student whom he doubted had the ability to complete the thesis, but he found it difficult to give her a fail:

I don't think she can do it. So we'll see. I wonder whether she can do it. […] Nena is a problem child for someone like me. That little engine has got to be running and if that doesn't work I am done talking. I can't do anything because I won't do it for her. And then you'll have such a student who after six years still has not … that's very irritating. On the other hand, you can't just give someone a passing grade when actually it is not satisfactory. Those are very difficult considerations. (Supervisor Walter, dyad 4)

Interestingly, student Nena also seems to address this tension when she said the following:

I think that he finds that he supervises me too much, that he sees me too often. But on the other hand, he knows that that is what I need. (Student Nena, dyad 4)

Comparably, supervisor Sandy also described that in some situations, she helps students more than she would want to, as otherwise these students will not reach the goals:

> Unfortunately, there are situations which necessitate that you, as a supervisor, act in a very steering way to make sure that there is at least some outcome. Also, because meanwhile they have come this far into the programme, that, specifically related to the master it hardly ever happens that you say: 'You know, this is not going to work'. You cannot just … In that case at some earlier point a mistake had been made. Either someone has passed the bachelor's programme undeservedly, or the admission interview hasn't been critical enough. Therefore at a certain point, if someone gets there, then you go out of your way to guide him to the finish. (Supervisor Sandy, dyad 10)

The second tension concerns the supervisors' notion that students 'need' critical comments in order to reach the goals on the one hand, but on the other hand, it involves the consideration of how critical the comments can be without undermining a student's motivation. Earlier we already saw that supervisor Otto took into account whether his comments were too heavy, but he immediately added the following:

> By the way, that should never be overdone, that consideration. Otherwise no one will ever get better, but you have to keep it in mind. (Supervisor Otto, dyad 6)

This indicates that he thinks that failing to provide enough critical comments would be a detriment to the learning process. Also, supervisor Walter struggled with how critical his comments could be:

> But you can address someone in such a way that he just gets discouraged and doesn't do anything anymore, so that is difficult … not [to be] sour or strict, but try to encourage. It is very difficult to find that balance. (Supervisor Walter, dyad 4)

Several supervisors connected this consideration to the extent to which they would become concerned with the personal situation of a student. For instance, the following supervisor argued that he was afraid that a relationship that was too personal would jeopardize the objectivity of his judgement:
    But I'm not, I'm not like eh I will put my hand on your shoulder and ask how you are.

> That empathy thing. I don't do it. I find it a bit, it distracts. After all this process concerns content matter. […] Well I'm afraid that too much subjectivities are included in my judgment. […] So I see it as a factual thing. And I have to be able to say those things and therefore it should not be mingled with subjectivities. That's why I want to keep a distance. (Supervisor Otto, dyad 6)

It seems as if Otto experiences that the power in an informal relation with a student is different from the power in the formal relationship. And he fears that the informal relation might affect his power in the formal relation with the student and thus would jeopardize his role as assessor and responsibility as gatekeeper. Interestingly, supervisor John indicated that he finds it important to have a personal relationship, but he also acknowledged the danger of not being able to provide critical comments:

> What I would like to say is that I find, […] the personal relation is always very important, that you can get along with each other. […] I always try, well not personal, well actually it is personal, that the distance between student and teacher is not too large. I like being

close. […] On the other hand, it brings the danger of not being able to be critical enough, or strict enough. That also holds true for trying to put things in terms of advice, suggestions, rather than in terms of rejection, severe sharp criticism. (Supervisor John, dyad 9)

Indeed, the different approaches of Otto and John with respect to being personally involved with a student are also reflected in the interviews of their students:

But he just does what a supervisor has to do in my opinion. You see I have my friends for the real support. And he just takes care of the input concerning the content that I can use. And it is not that he is more supportive to me, that he spares me. (Student Amy, dyad 6)

I just love it! I am really having so much fun. He is very accessible, that makes it pleasant. Also the fact that we can talk about all kinds of useless and useful things, creates an atmosphere in which I feel very much at ease. (Student Jerry, dyad 9)

Discussion

Concerning the *nature* of goal-relatedness in supervision, we introduced the concept of adaptivity to describe the adaptation to what students need in the eyes of the supervisor, given their performance and possibly other characteristics, in order to meet the goals of a master's thesis project. Adaptivity is not about adapting to just any students' preferences and wishes, as the academic standards and curricular goals are the same for all students; rather, adaptivity concerns the supervisor's approach towards having the student meet these goals. However, as suggested by Halse and Malfroy (2010), adaptive supervision does require some sort of interest in the student and his/her situation in order to adapt the supervision accordingly. However, to establish goal-relatedness in supervision, the involvement with the student should have a function in the context of the learning process or improvement of the product. In doing so, supervisors not only adapt their supervision to their own goals but also to what they perceive as the student's goals. We found that these supervisors adapt to their own or to students' goals by, for instance, adjusting the extent to which they tell the student directly and explicitly what to do and the severity of their critique ranging from mild to heavy-handed. To achieve this, from the student interviews, we learned that these supervisors collect information about the students and about how they are doing, for instance, concerning their perception of the student's pitfalls and the quality of their work. In other words, they collect information in order to have a clear view on the back-component, or where the student stands. Consequently, to underpin their adaptive support or forward-component, they sometimes explicitly described a student's characteristics that they observed. Also, the fact that supervisor and student already knew each other before the master's thesis project started could facilitate this back- and forward-component.

The fact that adaptivity was a recurrent theme in all but one of the twelve interviews with supervisors, who had a local reputation of being successful, suggests the relevance of this concept. As these supervisors shared the adaptive approach to supervision, we suggest that adaptivity might be a desirable strategy. Interestingly, in other studies in which research supervisors were interviewed, one of the shared themes was that supervisors were responsive to the students as people as well as receptive to their circumstances (Anderson, Day, and McLaughlin 2006), that supervisors varied the level and type of support from student to student (Todd, Smith, and Bannister 2006), and that research supervision included being interested in the students and responsive to their needs (Halse and Malfroy 2010). The findings of McClurés (2005) study on

Chinese laboratory-based research students in an overseas environment during the first 6 to 18 months of their candidature corroborate that students require different supervisory relationships with their supervisor in order to stay on track, ranging from highly dependent to highly autonomous. In addition, based on student interviews, Derounian (2011) found that a supervisor's responsiveness and receptiveness in providing feedback and their willingness to negotiate was in the top three of most important characteristics of a research supervisor. Also, based on the use of student vignettes, Deuchar (2008) found that in doctoral education, problems could arise when the supervision did not meet the students' needs. He concluded that the best working relationship would emerge when a supervisor is flexible, responsive to the students' needs in a person-centred way, with open communication, and a frank exchange of views. Also, Pilcher (2011), based on interviews with 31 Math and Computer Science supervisors, did point out that the master's dissertation is an elusive chameleon in the sense that it can be matched to the needs of any master's student.

We thus see that other studies have suggested the value of an adaptive approach to supervision, even though they use different terms such as responsiveness. Nevertheless, other than concluding that it is a shared practice among some supervisors, to the best of our knowledge, no study has specifically addressed this issue of responsiveness or adaptivity empirically, nor has it been described as a process that is related to the goals during supervision. However, some scholars did indicate that supervisors change their supervision strategies as students' research projects progress, such as being more steering at the start and end and being less steering in between (Anderson, Day, and McLaughlin 2006). As adaptivity implies adapting to individual students' needs, it entails more than adapting the supervision based on the phase in the research project.

In addition, our findings show that providing adaptive supervision can bring about *conflicting considerations* for supervisors that can lead to tensions. As such, adaptivity may not be as straightforward as it may seem at first glance. A first tension was the consideration of how critical supervisors' comments can be. Critical comments should have the intention of making clear that strong improvement is needed in order to reach the goals, but without diminishing the student's motivation as that would be counterproductive. In other words, this tension reflects Sadler's (1989) consideration of estimating whether a student will perceive overcoming the gap between their current and desired performance as attainable and necessary. This might be influenced, among other things, by students' self-efficacy and the importance that the students attach to a goal (Locke and Latham 2002). A second tension concerned the extent to which supervisors can and want to regulate the students who are in fact too weak to reach the goals of their master's thesis project without this regulation. This is related to the goals of a master's thesis project and the degree to which students are supposed to be able to finish their projects independently. This suggests that working independently might be another important goal of the master's thesis, or at least a precondition for its completion. But it is also related to the boundaries of the supervisor's responsibility and power. A comparable tension was found by Anderson, Day, and McLaughlin (2006), who recognized that supervisors have both a personal commitment to the student and a commitment as a gatekeeper of academic standards. Also, in the context of doctoral education, this struggle with how to use, maintain or let go power in the supervision relationship is often documented (Delamont, Parry, and Atkinson 1998) and attempted to transform into new metaphors that help making the process more enjoyable, strengthening, and complete-able (Bartlett and Mercer 2000).

Limitations and future research

When interpreting the findings of the present study, it is important to bear in mind several elements of its design. For instance, even though adaptivity seemed to be shared by these (locally recognized) good supervisors, our data did not allow for an analysis of whether the students of these supervisors learned more and completed master's theses of higher quality than students of other supervisors. We hope this will be taken up in future investigations concerning research supervision. In line with this, this study only addressed self-reported supervision strategies and considerations rather than actual supervisor behaviour. In future research, it would be interesting to match such self-reports with observational data. Still, the student data did confirm the supervisors' self-reports to a high extent as the students identified the adaptive approach of the supervision. Also, only supervisors who were locally recognized as successful by the deans of their faculty participated in this study (following Anderson, Day, and McLaughlin 2006). This sampling affords a holistic perspective on what good supervision is (Anderson) by incorporating a local weighing of different criteria (e.g. completion in time, good evaluations, etc.). This entailed that supervisors were selected for different reasons. Unfortunately, the deans did not inform us of their reasons, which implies that supervisors selected according to different criteria might have a different understanding of goal-related supervision. Future research using this sampling procedure should include explicating the reasons for selecting good supervisors. Moreover, in the light of this purposeful sampling, it cannot be ruled out that adaptivity is only an attribute of good supervisors. For future research, it would be interesting to investigate whether adaptivity is indeed a supervision strategy that is shared by most good supervisors and/or to what extent novice supervisors, for instance, provide adaptive supervision.

In addition to these design-related issues, it is important to note that even though adaptivity is clearly presented in relation to 'the goals', it is not necessarily evident what these goals are as they can refer to both personal and/or curricular goals of the supervisors themselves or their perception of the students' goals (see also de Kleijn et al. 2013b). Therefore, adaptivity in master's thesis supervision might be more complex than it first appears. In line with this, the conflicting considerations indicate that providing adaptive supervision is not always easy and straightforward. Therefore, future studies could further explore the concept of adaptivity in research supervision by addressing what it is that supervisors *do* and *do not* adapt to and specifically what other strategies they have for adapting, besides adjusting the level of regulation and the severity of the critique. This has been addressed in a follow-up study (de Kleijn et al. 2014). Also, in the current study, our sample was too small to investigate how adaptivity develops over time when supervisors have had more meetings with their students. Therefore, future research might investigate how adaptivity between a supervisor and student develops over time, and whether the supervision is or can be more adaptive as time progresses and as the supervisor and student get to know each other better. Also, as literature on supervisor training and learning is growing, it might also be interesting for future studies to investigate how supervisors can be supported in learning to be adaptive (e.g. Emilsson and Johnsson 2007; Halse 2011; Kiley 2011) and vice versa whether supervisors who have had more training in supervision are also more adaptive in their supervision.

Concerning the generalizability of our findings, it might be expected that comparable processes are in play in other contexts in which adults are learning through

interaction, such as mentoring, guided learning, and coaching. Indeed, adaptivity is in line with the core principle of andragogy (Holton, Swanson, and Naquin 2001) which stress that supporting adult learners includes collaboratively setting the learning objectives, diagnosing the learning needs and evaluating the learning outcomes in relation to these objectives, and providing responsive support during the process. However, a difference between these contexts and master's thesis supervision is that the latter has curricular goals, whereas the goals in the other contexts are less clear and definite (e.g. Billett 2001). Similarly, adult learning is characterized by intrinsic motivation and life-centred objectives (Knowles, Holton, and Swanson 2011), which may not apply to all students in master programmes.

Implications

Even though the findings of this study are exploratory in nature, they do suggest that adaptivity can be a way of describing goal-relatedness in supervision that is useful for students and universities as a whole. Therefore, it could be implied that it is important for supervisors to monitor different students' needs in the light of the goals and adapt the supervision accordingly. For students, this means the importance of providing their supervisor with the information that is needed to deliver adaptive supervision. This way, students can also contribute to an adaptive supervision process. Lastly, the conflicting considerations that were found indicate the complexity of providing adaptive supervision. Therefore, it is important that supervisors have support in dealing with this complexity. This support could be supplied, for example, by means of workshops, training sessions, or peer groups.

Conclusion

With this study, we aimed to provide insights into how locally recognized good master's thesis supervisors describe goal-relatedness in master's thesis supervision and how this is perceived by their students. We conceptualized goal-relatedness of supervision by means of three components that are needed to reach a goal (Sadler 1989) and, based on Hattie and Timperley (2007), we referred to these as the up-component, the back-component, and the forward-component. In conclusion, our findings suggest that most supervisors aim to supervise all students in such a way that students reach the goals of learning and complete a master's thesis of sufficient to high quality (up-component). In order to do so, they provide supervision that is adapted to what they think a student in a specific situation (back-component) would need in order to reach these goals (forward-component), in terms of regulation and critical comments. This way of describing goal-relatedness in supervision was conceptualized as adaptivity. Several students recognized this adaptivity and indicated that supervisors sometimes ask for information or make an observed student characteristic explicit (back-component) in order to underpin their suggestions (forward-component). However, we also found that providing adaptive supervision can lead to tensions that are related to the supervision strategies used, in terms of both the level of supervisor regulation and the severity of critique (forward-component). In addition, tension is associated with the extent to which supervisors can/want to provide this regulation and criticism and the extent to which students need/can handle this with respect to reaching their goals. Sadler (1989) already hinted in this direction when he argued that teachers could take individual characteristics of students into account and discuss students'

aspiration levels. As such, our findings shed new light on the nature of adaptivity in relation to goals and the concurrent considerations of supervisors.

Notes

1. One of the supervisors was a post-doctoral researcher, 5 were assistant professors, 3 were associate professors, and 3 were full professors (see also Goldsmith, Komlos, and Gold 2010).
2. This supervisor said: 'You can say you have to empathize with the one who is in front of you and you have to make knowledge available on their/his/her level, whatever. And then I think "no". […] As a student you have to deal with different kinds of teachers and supervisors and it is up to you to get what you need'.

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Appendix 1. Interview scheme for exploring the role of goals in master's thesis supervision.

	Own/self-perspective	Other perspective
Goals of the master's thesis	1A. What is your goal for the master's thesis project?	1A. What do you think is your student's/supervisor's goal for the master's thesis project?
	(C) Do you indicate this in the supervision meetings?[a]	(C) How are you aware of that?[a]
	If yes, how? Was that also the case in this supervision meeting?[a]	Did you notice it in this specific meeting? If yes, how?[a]
	2A. How is this master's thesis project going so far according to you?	2A. How do you think this master's thesis project is going so far according to your student/supervisor?
	3B. To what extent has your goal for the master's thesis project been reached up until now?	3B'. To what extent do you think your student's/supervisor's goal has been reached up until now?
Goals of the supervision	4A. What is the goal of the supervision for you?	4A'. What do you think is your student's/supervisor's goal for the supervision?
	5B. To what extent has the goal of the supervision been reached up until now?	5B'. To what extent do you think your student's/supervisor's goal of the supervision has been reached up until this point?
Goals of the specific meeting	6A. What was your goal for this supervision meeting?	6A'. What do you think was the goal your student's/supervisor's goal for this supervision meeting?
	7B. Has that goal of this supervision meeting been reached?	7B'. To what extent do you think your student's/supervisor's goal for this supervision meeting was reached?
	If yes: Could you tell me more about that?	
	If no: Why do you think this is?	

[a]These follow-up questions were also used for all other questions.