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How to share the process of graduate advising

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Abstract

This paper starts a two-part series on graduate advising that integrates concepts from adult learning, leadership, and psychology into a conceptual framework for graduate advising. A companion paper provides guidance on how to communicate effectively in graduate advising. Here, we present concepts and tools that enable advisors and graduate students to collaborate effectively and share the responsibility for the student's learning. We specifically discuss (1) how to promote learning about learning to help students make sense of their experience and identify their supervision needs; (2) how to clarify roles and address conflicts of interest between different roles; and (3) how to establish an effective, learning-centered working relationship. By making the advising process explicit, using the concepts and worksheets presented here, advisors will contribute to the training of the next generation of graduate advisors.

Key words: learning-centered environment, transformative learning, situational leadership, role theory, contract

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Introduction

Can we make the way we advise graduate students more effective, more efficient, and more rewarding for both sides? Yes we can, and the facts suggest that we must. According to the Commission on the Future of Graduate Education in the USA, graduate programs have average attrition rates of 40–50%, and even doctoral students with highly competitive scholarships show a drop-out rate of 25% (Wendler et al. 2010). Successful completion of a PhD depends largely on a close and effective working relationship between the graduate student and the advisor (Council of Graduate Schools 2010). While the seminal "Nature's guide for mentors" (Lee et al. 2007) raised awareness among scientists, few advisors have received formal training for their role (Amundsen and McAlpine 2009). Several recently published books propose best practices for graduate advising, based on qualitative research involving interviews with highly successful graduate advisors (Lee 2012), qualitative research on graduate student learning (Wisker 2012), a lifetime of personal experience (Shore 2014), or a synthesis of initiatives at participating universities (Council of Graduate Schools 2010). Here, we complement this focus on identifying best practices by developing a novel conceptual framework for graduate advising that integrates relevant concepts and models from adult learning, managerial leadership, and psychology, specifically transactional analysis (Napper and Newton 2014; Barrow and Newton 2016). We encourage advisors to share the concepts presented here with their students at suitable times in the advising process, using the worksheets provided as **Supplementary Material**.

Conceptual framework

In a recent review of the role of graduate advising, Boeren et al. (2015) identified a lack of specific conceptualization. In particular, they called for a well-defined representation of the learning process that establishes the connection between advising and the development of confidence and competence of graduate students as independent researchers and scholars, considering the range of relevant skills. In accordance with this mandate, the centerpiece of our conceptual framework is a learning model focused on the graduate student as a scientist in training, where the advisor and the student work together to develop the student's competence and confidence in all aspects of scholarly work (**Fig. 1**). This model is derived from Situational Leadership® (Blanchard et al. 1985), which has been previously considered for graduate training (Gatfield 2005; Holsinger 2008), higher education (Grow 1991), and clinical supervision (Bedford and Gehlert 2013), reflecting the recognition that supervisory style should adapt as students become more independent over the course of their program (Revelo and Loui 2016). We draw on the Situational Leadership II® model (Blanchard et al. 1985), which prescribes a sequence of four leadership styles (Directing, Coaching, Supporting, and Delegating) to match a learner's task-specific development level (Enthusiastic Beginner, Discouraged (or Disillusioned) Learner, (Capable but) Cautious Performer, and Self-reliant Achiever). Here, we replace the leader-centred perspective of the original model, where learners come in at one end and leave at the other end, by a learning-centred perspective that emphasizes the cyclical nature of learning. We further emphasize three aspects of Situational Leadership II®:

1. We focus on task-based learning, where the student builds up competence and confidence separately for each type of task and therefore, at the same time, may be a beginner in one aspect of scholarly work and quite independent in another aspect. Indeed, graduate training may be seen as a prime example of experiential learning (Kolb 2014), where the learning opportunities arise from the student's project, and the advisor supports the student in fully processing the learning. Such support is especially important to facilitate transformative learning (Stevens-Long et al. 2012), where students change their perspective on the world.

2. We consider the emotional journey as the student, for each new type of task, cycles through the four development levels. Indeed, the development from a graduate student to pre-tenure faculty and on to becoming an established scientist is characterized by the construction of identity and finding one's place in the community, and is accompanied by a range of emotional experiences (McAlpine and Amundsen 2011).

3. We propose that the model be shared between the advisor and the graduate student so that supervision is not something that happens to a student but is openly discussed and negotiated. This is likely to promote student agency: a sense that students have the power to bring about change and shape their own lives in the context of their graduate program and career. It also prepares the ground for negotiated agency, where students develop their own intentions and negotiate with their advisor, committee, etc. how to pursue them (Jazvac-Martek et al. 2011). By openly sharing the learning-centered supervisory model, making the process of graduate advising explicit, and involving students in the assessment of their current supervisory needs, students get trained to develop their "Inner Advisor" and acquire leadership skills in the process (Blanchard et al. 1985). A further training opportunity arises when advisors guide graduate students on their role as mentors of undergraduate research students.

Such collaboration requires a good advisor–graduate student relationship. To provide guidance on how to establish an effective working relationship, we draw on two concepts from transactional analysis: role theory (Schmid 2008) and contracting (Napper and Newton 2014), which refers to the development of common ground for an effective working relationship. Once an initial working

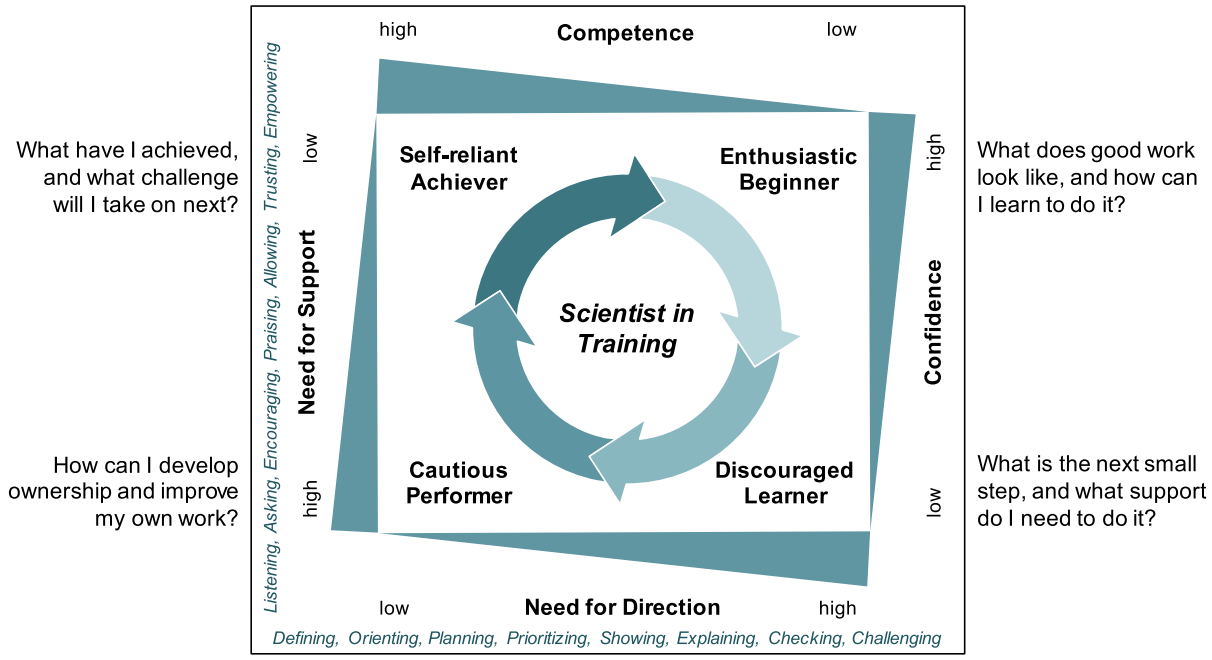

Fig. 1. Learning-centered adaptation of the Situational Leadership II® model. As the student cycles through four stages of learning for each new task, the advisor promotes the building of the student's competence and confidence through a combination of directive and supportive behaviors (Blanchard et al. 1985, see text). Triangles indicate how levels of competence and confidence change through the learning process and how the specific needs for direction and support change accordingly. Stage-specific learning questions support the application of this collaborative learning model for graduate advising.

relationship is established, the focus shifts to day-to-day interactions. According to O'Meara et al. (2013), human factors, and specifically the emotional competencies of advisors and graduate students that are displayed in day-to-day interactions, may be a main contributor to completion. The companion paper draws on further concepts from transactional analysis to explain underlying psychological processes and promote effective communication.

Transactional analysis (Berne 1961, 1964; Napper and Newton 2014; Barrow and Newton 2016) is a theory of inter-personal communication, development, growth, and change that is based on a belief in everyone's capability to learn and their potential for change. The key to its success is a consistent framework of concepts that are easy to understand and that can be directly applied to increase personal and professional effectiveness. Simply put, Situational Leadership® can help identify *what* may be needed in a given situation, whereas Transactional Analysis can provide guidance as to *how* to go about it so that our actions are likely to have a constructive effect.

Promote learning about learning

How can we help graduate students to make sense of their learning experience and take ownership and responsibility for their learning? This section (1) discusses how to facilitate deeper types of learning, and (2) presents a collaborative learning model for graduate advising that takes into account the emotional reality of students as they develop competence and confidence in their scientific abilities. Worksheet A (**Supplementary Material**) helps advisors and students to assess collaboratively a student's current supervision needs and thus share the responsibility for the student's learning.

Facilitate student learning

In a nutshell, the goal of science graduate training is for the student to become an independent scientist. This goes beyond adding specific knowledge and skills to a student's repertoire (Hay 1995; **Table 1**). Graduate degree-level expectations typically make reference to developing judgment, responsibility, autonomy, ethical behavior, and an appreciation of the limitations of one's own work and of the discipline. Such learning outcomes require deeper learning, which is known as transformative learning (Mezirow 1997; Schroeder 2004). Transformative learning outcomes of graduate students include advanced stages of cognitive development, new capacity for emotional experience and conceptions of self, and more reflective professional practice, and thus involve cognitive, personal, and behavioral changes (Stevens-Long et al. 2012).

As illustrated with the case study in **Box 1**, transformative learning requires us to let go of beliefs about ourselves as it changes our perspective on the world (*frame of reference*): the set of assumptions through which we understand our experiences and that shape and limit our expectations, perceptions, thoughts, and feelings (Clarke 1988; Mezirow 1997). Changes in behavior thus result from changing our perspective on the world. Each student's (and advisor's) learning journey will be unique, and the advisor's role is not to teach but to facilitate learning. We tend to resist experiences that challenge the way we see ourselves (Rogers 1969; Weimer 2013), and we may experience a sense of loss (Kloss 1994). Hence, it is important to create a learning environment that stimulates students to change their perspective on the world and provides the safety for them to do so. Rather than sharing knowledge, the advisor engages in active listening and supports students in working through it themselves (Hay 1995; **Table 1**). This requires a trusting relationship between a student and an advisor (Taylor 2000; Council of Graduate Schools 2010).

Table 1. Advisor's role in facilitating different levels of student learning, adapted from Hay (1995).

Students' learning challenge	Advisors' role
Acquiring knowledge and skills	**Sharing expertise**
• Learning the various concepts, skills and approaches: learning how to do things. • This adds new options to the repertoire without challenging beliefs or old ways of thinking.	• Advisors are subject specialists. • Advisors act as clearing house: help to identify resources (specialists, training opportunities, etc.).
Changing perspective on the world	**Active listening**
• Students make transitions that involve a deeper level: learning to do things differently. • This requires students to let go of beliefs about themselves, of old ways of thinking or doing things. • This requires students to leave their comfort zone.	• Advisors support students in opening up their perspective on the world and making changes to it. • Advisors offer a supportive environment and focus on active listening to help students move into deeper learning. • Advisors refrain from analyzing the problem on behalf of the students: they must work it through themselves.
Learning to learn	**Sharing the advising process**
• This is the deepest level of learning. • The students change their perspective and are aware of the process.	• Advisors and students play an equal part in analyzing what is happening, and they work in partnership to increase the students' learning. • Advisors share with students the framework of advising and are also willing to apply alternative approaches if students prefer. • Advisors are willing to learn from the students too.

Box 1. Case study.

As an excellent undergraduate student, Gray was admitted to a direct-entry PhD program. While he had won an important scholarship, Gray brought little research experience, not having done an honors thesis. The advisor Dr. Beta, a thriving assistant professor, allowed Gray to pursue his own project idea, and since the initial scholarship had expired, Beta has been paying for Gray's research assistantship. The comprehensive exam with the defense of the research plan has been postponed multiple times.

Beta and the PhD advisory committee wonder about the contrast between the student's book-smart intelligence and the difficulty to stick with a problem and work it through with rigorous critical thinking. It seems that at every committee meeting, they are discussing a completely new project. They are concerned that Gray may not be able to finish the project within the expected timeframe.

Gray does not understand what is required to succeed in this situation. He finds the advisor and the committee hard to please, as they would criticize anything he proposed but not offer solutions. Gray does not feel supported by them and considers taking the research project to a different professor who would show more interest in the topic.

Two concepts may be helpful for understanding this example: transformative learning and situational leadership. Gray seems unwilling to let go of beliefs about himself to learn, i.e., he resists changing his perspective on the world. A trusting relationship with the advisor is an important prerequisite to facilitate the student's learning. Gray may profit from learning about learning, having a share in the advising process, and thus taking ownership and responsibility for the learning.

Gray seems to be stuck at a beginner stage when it comes to developing a research plan. While he is enthusiastic about his project, he has not yet developed the critical thinking to ensure that the methodology allows a rigorous testing of the hypothesis. When faced with criticism, he responds by changing the research question. Gray may require help in understanding what is expected and why, and guidance on how to work through a problem. Identifying the relevant tasks (using Worksheet A in the **Supplementary Material**) and contrasting a self-assessment of the current learning stage regarding each task with the advisor's assessment may help him move along.

Entering the Discouraged Learner stage is characterized by a loss of confidence. Gray may be worried about his lack of progress, afraid of admitting a lack of important skills, and unsure how to acquire these skills. It may be helpful for him to learn that feeling discouraged is part of the process and sharing the learning model (Worksheet A in the **Supplementary Material**) will help Gray make sense of the experience. Beta's challenge as advisor will be to provide a supportive environment and gently guide the student through the process of identifying the next small steps and addressing them. Even though the advisor has reason to be impatient, any sort of pressure or judgment is unlikely to produce the desired outcome at this stage.

Other students in the group need to understand Beta's advising approach to realize that the temporarily intensive collaboration is not a sign of preferential treatment but a response to the student's current needs, and that Beta is prepared to treat them with similar attention when necessary.

The emphasis in graduate advising is thus not on teaching but on the student's learning. Typically, a student and an advisor work with learning opportunities that are not designed by the advisor, but emerge from the student's research project (Ramsey and Fitzgibbons 2005). The experiential learning model (Kolb 2014) proposes that we don't learn from experience itself but from reflecting on our experience. The advisor thus helps the student identify learning opportunities and supports the student's processing of significant learning (see companion paper). Recent research has identified common learning thresholds that are encountered by graduate students across disciplines (Kiley and Wisker 2009; Wisker 2012).

Yet, a deeper level is learning to learn (**Table 1**), where the student changes their perspective on the world and is aware of the process (Hay 1995). Ideally, a student and an advisor create a learning-centered environment (Ramsey and Fitzgibbons 2005; Boud and Molloy 2013) where they work in partnership, though in different roles, to increase the student's learning. The advisor shares the framework of advising with the student, and both are adapting to each other. Advisors thus are learners, too, and may need to change their own perspective on the world.

Share the framework of advising

Sharing the advising process requires a clear idea of what that process is. Some advisors see themselves as primarily "hands-on" or "hands-off", whereas others observe that every student is different and thus are constantly adapting their advising, which makes it difficult to generalize. The Situational Leadership II® model (Blanchard et al. 1985; Northouse 2015) is a managerial leadership model that is ideally suited for sharing the framework of advising with the student. **Figure 1** shows a learning-centered view of the Situational Leadership II® model that has been adapted to graduate advising by shifting the perspective from the advisor as a leader to the student as a scientist in training. While the original model refers to "commitment" as a combination of confidence and motivation, this conceptualization is ambiguous (Graeff 1997), and we thus refer to "confidence" directly.

For each new task, such as developing a research plan, data collection, analysis, presenting, writing of manuscript, publishing, or moving on, the student cycles through the four stages (*development levels*) of Enthusiastic Beginner, Discouraged Learner, Cautious Performer, and Self-reliant Achiever. Along this progression, levels of competence and confidence change in predictable ways, and the student's needs for direction and support change accordingly (**Fig. 1**). Note that a student may at the same time be a Self-reliant Achiever in keeping up with literature, a Cautious Performer with respect to data collection, a Discouraged Learner when it comes to statistical data analysis, and an Enthusiastic Beginner in terms of getting published. In our experience, many students find the model to be an accurate representation of their experiences that enables them to manage themselves (develop the "Inner Advisor") and to recognize that the ultimate goal for each task is to become self-reliant.

Simply put, the advisor helps the student to develop competence and confidence in the many aspects of scientific research (Boeren et al. 2015). Directive behaviors (e.g., defining, orienting, showing how, planning, and giving feedback) are geared to developing competence, and supportive behaviors (e.g., listening, asking, encouraging, and praising) help build confidence. Rather than advocating a single best leadership style, the model recommends adapting the amount of direction and support to the student's changing needs depending on their learning stage for each task.

The main challenges change with the stages; **Fig. 1** and Worksheet A (**Supplementary Material**) provide stage-specific learning questions. The Enthusiastic Beginner has to find out first what is expected and how things are done: "What does good work look like, and how can I learn to do it?" The Discouraged Learner may be overwhelmed by the magnitude of the task and the skills that are to be acquired. Here, it is important to break it down into small, manageable steps (*chunking*):

"What is the next small step, and what support do I need to do it?" The challenge of the Cautious Performer is to become more independent and trust their own judgment: "How can I develop ownership and improve my own work?" The Self-reliant Achiever may use the confidence developed through previous, successful learning experiences to identify and take on new tasks: "What have I achieved, and what challenge will I take on next?"

The Situational Leadership II® model suggests that beginners typically require much direction. Some advisors may disagree and argue that incoming PhD students should be given the freedom to define their research topic (Gatfield 2005). However, a novice scientist requires introduction to the standards and expectations of the field and guidance on the process of doing research—all this can be provided without limiting the student's research topic. On the other hand, incoming students who bring considerable research experience from an undergraduate or Master's thesis may already be at an advanced learning stage regarding the development of their research plan.

We have experienced that some students and advisors may have strong objections to the term "Discouraged Learner". As Enthusiastic Beginners, we don't like to hear that we may soon feel discouraged, and the emotional experience may vary greatly between students and situations. Other students find that the term "Discouraged Learner" exactly captures what they are experiencing; the model describes their emotional reality, and it helps them realize that feeling disheartened sometimes may be part of the process and is not necessarily a sign of personal deficiency.

This stage has the risk for students to get lost, and they may literally disappear. The advisor may need to seek contact and engage in active listening, making sure to offer a supportive, nonjudgmental environment. When students are ready, the advisor may help them break down the daunting task into small steps, ensure that they are confident that they can do the next step and are committed to completing it within an agreed-upon deadline, and then follow-up on completion and offer positive reinforcement through authentic praise and appreciation.

The shift from a Discouraged Learner to a Cautious Performer is subtle, and we propose that making the shift explicit may speed up the process. The advisor may make a conscious effort to become less "hands-on" and lead the student to be more independent (*scaffolding*), e.g., by shifting from providing specific feedback to asking learning questions. It is important that the student understands what this new challenge involves, has permission to take ownership, and is not afraid of making mistakes along the way. Cautious Performers still require high levels of support, encouragement, and appreciation to help develop confidence in their own abilities.

Finally, a Self-reliant Achiever is easily taken for granted, and the students themselves often take what they have already learned for granted. We can help them recognize and celebrate their achievements. Students may require help with reflecting on what they have learned, identifying what strategies worked for them, and drawing on the positive experience as a resource for future learning (Jackson and McKergow 2007; Kluger and Nir 2009). In our experience, many students feel proud if they are asked to help train other students based on their individual strengths. Students at this stage may also require encouragement to identify and take on new challenges. The same student may be a Self-reliant Achiever with respect to the writing of manuscripts and a Discouraged Learner when it comes to finding a postdoc or nonacademic position.

Clarify roles

A great piece of advice for graduate advisors is "to be partial to the student and impartial about the student's work" (The Rackham School of Graduate Studies 2015). This highlights that advisors interact with their graduate students in multiple roles that should not be confused (Lechuga 2011).

This section encourages advisors and students to clarify the roles within which they interact, as confusion of roles may lead to conflict. Worksheet B (**Supplementary Material**) helps the advisor and the student resolve conflicting interests between different roles.

Acknowledge your roles

The terms graduate advisor, supervisor, and mentor are often used synonymously depending on the institution. In the following, we will use "advisor" as the general term, and "Supervisor" and "Mentor" (with capital letters) to refer to specific roles of an advisor with respect to the student (Baker et al. 2014).

The advisor and the student interact in multiple roles (**Table 2**, Worksheet B in the **Supplementary Material**), and a better understanding of these roles can help them collaborate effectively. A role is a coherent system of thoughts, feelings, behavior, perspective on reality, and the accompanying relationships with other people in their corresponding roles (Schmid 2008). For instance, a student in the Mentee role may consider the uncertainty of an academic career (perspective on reality), doubt their ability to build a successful career (thoughts), and feel anxious about the future (feelings), which may lead the student to withdraw or engage in extracurricular activities instead of their work (behavior).

Table 2. Typical roles and main responsibilities of advisors and graduate students.

Student's roles and responsibilities	Advisor's roles and responsibilities
Mentee	**Mentor**
• Plan, develop, and pursue a career. • Develop career skills and professional network. • Personal development.	• Promote development of knowledge and skills. • Promote personal development. • Provide support.
MSc or PhD student	**Supervisor**
• Acquire knowledge of discipline. • Meet program requirements. • Complete program within timeframe.	• Adhere to program regulations. • Help student fulfill program requirements. • Protect student. • Write letters of recommendation.
Researcher	**Principal investigator**
• Develop research skills. • Plan, carry out and publish research. • Collaborate with project partners or team.	• Define scope of research. • Set milestones and make sure they are met. • Provide resources and oversee budget.
Teaching assistant	**Course instructor**
• Develop teaching and mentoring skills. • Teach tutorials or lab sections. • Mark student assignments or exams. • Be a mentor to undergraduate students in the lab.	• Train and evaluate teaching assistants (TAs). • Oversee teaching and marking by TAs. • Arbitrate disputes between students and TAs.

The advisor in the Supervisor role may be upset about this behavior (feelings), concerned about completion time (thoughts) given limited funding (perspective on reality), and confront the student (behavior) while in the Mentor role failing to recognize the problem, as the student has only completed two years of a four-year program (perspective on reality) and need not yet worry about the next career step (thoughts). The advisor and the student in their different roles are thus likely to experience the same situation differently. Such differences are inherent to the situation and should not be taken personally.

The advisor and the student each have several additional private, professional, organizational, or community roles where they interact with other people outside their advisor–student relationship (Worksheet B in the **Supplementary Material**). Juggling these multiple roles can lead to complications. For example, the advisor may be running late from a frustrating meeting, while the student may be worried about a financial shortage. Both are likely to bring some thoughts and emotions to their meeting that have little to do with their working relationship. Typically, we are unaware of this kind of "role contamination" (Schmid 2008; Worksheet B in the **Supplementary Material**). To let go of contaminating roles with their thoughts and feelings that are unrelated to the present meeting, sometimes it is best to voice and thus acknowledge them (Schmid 2008).

Address conflicts of interest

On the other hand, we may experience a conflict of interest between multiple roles that we hold, which can lead to "role confusion" (Schmid 2008) unless we explicitly address the conflicting interests. For instance, a student may tell her advisor that she is pregnant. The advisor may have a number of thoughts running through their head: What does this mean for the student (Mentor)? What will this mean for the completion of the thesis (Supervisor)? How will this affect external project deadlines and the research budget (Principal Investigator)? These are legitimate questions and concerns that need to be addressed in due course. However, rather than voicing them all at once, it may be better to put on one "hat" at a time. In our experience, it is often best to start with the Mentor's hat: putting everything else aside, congratulations to the student are in order.

The above examples illustrate some more general points that can facilitate communication and help prevent conflict between the advisor and the graduate student: (1) *Mind the power gap!* While the advisor may not notice the power imbalance, the student will always be aware of it; in our experience, the hierarchy looks flatter from above than from below. (2) *Be present in the here and now*. Before each meeting, it is advisable to ask ourselves what is our role, and to leave our other roles (those unrelated to the meeting)—and the thoughts and feelings pertaining to them—out of the room. (3) *Be clear about which hat to put on*. If there are conflicting interests between the roles in which the advisor interacts with the student, it is best to be transparent about it by explaining each perspective separately (i.e., putting on one hat at a time) and only then naming potential conflicts (Worksheet B in the **Supplementary Material**). (4) *If a student is in distress, we suggest putting on the Mentor's hat first*. A student may face difficult periods of adjustment due to family, health, or other reasons, which may result in delays in their work. Supporting the student as a Mentor first will enable them to also consider the side effects and potential conflicts of interest, to evaluate options, and to find solutions. (5) *Help students sort out their roles*. In our experience, beginning graduate students in particular are often overwhelmed by the demands of their own multiple roles, and they appreciate guidance on how to keep on top of things and set priorities (time management).

Establish a collaborative working relationship

We can't "manage" others, we can only manage ourselves and our (professional) relationships. The initial meetings set the tone for how a student and an advisor will share responsibility for their working relationship and for the student's learning toward becoming an independent scientist (Johnson 2014).

We can always come back and discuss additional issues as they arise. However, a student who initially settles into a "recipient" rather than a "collaborative" role may later have difficulties in developing initiative, ownership, and self-motivation. Ideally, graduate students develop *agency*, which refers to a sense of empowerment (O'Meara et al. 2013) and engage in *negotiated agency*, where they focus on their intentions and negotiate with others as to how to pursue them (Jazvac-Martek et al. 2011). This section starts with (1) highlighting the importance for advisors to become aware of their assumptions and to be attuned to the needs and preferences of their students, who may have been socialized very differently. It further discusses (2) what to address during initial meetings, (3) how to discuss mutual expectations as a basis for an effective working relationship, and (4) how to consider the larger context of a lab group or graduate program. Worksheet C (**Supplementary Material**) helps the advisor and the student in developing an initial agreement on the goals and ground rules for their working relationship.

Accommodate diversity

In today's multigenerational and diverse academic world, it is especially important to get a new advisor–graduate student relationship off to a good start. We can no longer assume that what worked well for us will work well for our students, or that we share the same knowledge and expectations. *Expect your students to be different from yourself and from each other*. How we have been socialized shapes our values, expectations of ourselves and of others, and assumptions about what are "common knowledge" or "appropriate behaviors". Students may simply not know what is expected from them, and thus it is important for advisors to clearly state and explain their expectations and provide immediate feedback (Eckleberry-Hunt and Tucciarone 2011).

Many graduate students today prefer to work with advisors who are approachable, supportive, good communicators, and good motivators (Epstein and Howe 2006). They may seek a close relationship with their advisor, similar to the role of a parent, where they feel that the advisor cares about them and they are recognized and appreciated as individuals (Epstein and Howe 2006). Nevertheless, it is important to distinguish between professional and personal relationships and to maintain clear boundaries: it is a good thing to be on friendly terms and create a collegial atmosphere; however, advisors

Table 3. Issues to discuss at the professional and practical levels, modified from The Rackham School of Graduate Studies (2015).

Professional level (what and how)	Practical level (when and where)
Goals: Ask the student to develop a work plan with short- and long-term goals and a timeline. Make sure the student's work plan meets program requirements and is feasible.	Funding: Explain how the student is funded, when the funding will expire and what will happen thereafter.
Drafts: Explain your expectations of what first drafts should look like before they are submitted to you.	Meetings: Agree on frequency of meetings and the responsibilities of the student in arranging and taking the lead in meetings. Alert students if your availability will be limited by upcoming periods of travel, sabbatical, or administrative duties.
Intellectual property: Clarify who owns the data that will be collected, and who will have access to it. Discuss issues of copyright and patent agreements if applicable.	Thresholds: Clarify what kinds of issues require a face-to-face meeting. Discuss how and under which circumstances each may be contacted at home (e.g., by phone, instant messaging).
Publishing and presenting: Explain the standards and norms for authorship credit in your field, and to what degree you will help students prepare their work for submission to journals or conferences. Discuss when and where you would like to see the student present or publish the research.	Assessments: Clarify how often and in which form you will provide a general progress assessment. Be explicit about how long it generally takes you to provide comments on their work, and when and how they may remind you if necessary.

are not their student's parents or friends. Note that students' expectations and perceptions may vary considerably: while many students welcome a friendly interest from their advisor, such as asking whether they had a nice holiday break, other students may find such questions prying and rude.

In our experience, incoming students often expect their advisor to know it all and to structure their learning (e.g., by defining their research project and telling them what to do). This may be especially true for students from high-power-distance cultures (Dimitrov 2009). To show their respect, students may be reluctant to say no to a request, to disagree with their advisor's opinion, or to impose on the advisor's time and ask for help. Advisors can help students adapt (Dimitrov 2009) by giving explicit permissions, encouraging students to contribute their original thoughts and ideas, and asking open-ended questions. Closed questions, where the answer is "yes" or "no", leave little room for students who don't feel comfortable to say "no" to a person of authority. For instance, "what would be a realistic deadline?" is a better way of negotiating a deadline than "can you do this by Friday?"

What to discuss

Many universities have developed graduate advising policies that spell out the responsibilities of graduate students, advisors, and graduate programs. Some graduate schools provide checklists of what to address during initial meetings (**Table 3**). While a checklist can help with managing the professional arrangements and practicalities, *there is a risk that checklists distract from the main goal of establishing a collaborative, learning-centered working relationship* where a student and an advisor share the responsibility for the relationship and for the student's learning. What often remains unaddressed is the psychological level, which includes our vision, motivations, expectations, hopes and fears, values and judgments, issues of power and trust, and previous experiences (Napper and Newton 2014; **Fig. 2**).

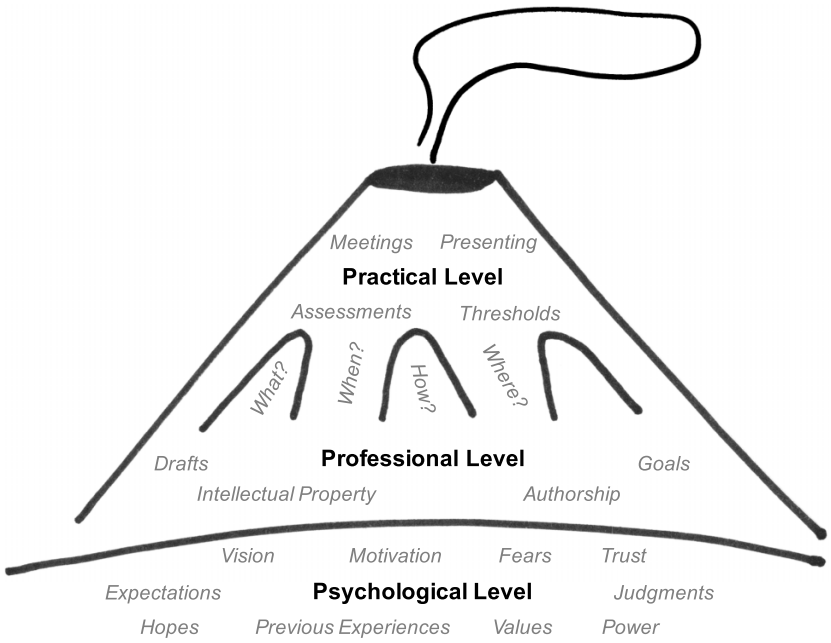

Fig. 2. Discussions during initial meetings should cover topics at the practical, professional, and psychological levels. If they have not been named and thus brought to the surface in time, issues at the psychological level may cause problems to erupt later on at the practical or professional levels.

The agreements at the professional and practical levels and the naming of what else is occupying the mind at the psychological level—whether written, spoken, or in the form of unspoken assumptions—together form an informal "contract" between an advisor and a graduate student (Napper and Newton 2014). If agreements are not clear and shared by both partners, this can cause problems later on. Interestingly, problems tend to erupt at the level of practicalities (such as adhering to deadlines for submitting and commenting on drafts) or sometimes at the level of professional arrangements. *However, the root of such problems often lies in unspoken issues at the psychological level* (**Fig. 2**; Napper and Newton 2014).

Establish a dialog

How can we collaboratively discuss mutual expectations as a basis for an effective, learning-centered working relationship, where a student and an advisor collaborate in different roles toward a common set of goals, sharing the responsibility for the relationship? Worksheet C (**Supplementary Material**) suggests four steps that follow the experiential learning model (Kolb 2014): (1) describe the common goals, (2) explore the personal significance, (3) analyze expectations, and (4) agree on how you will collaborate to address challenges as they arise.

Every now and then, it may be necessary to revisit the agreement. We may think of the working relationship as a cart that requires two horses to pull and for both to pull in the same direction: does it feel, or sound, or look like only one is pulling? If yes, it is time to sit down and talk, refocus on the common goals, and regain an agreement of how to reach them. In such a situation, it is especially important to communicate effectively and avoid fueling conflict (see companion paper).

Consider the context

The individual advisor–student relationship does not exist in isolation. Other parties are involved in the student's degree program, including the supervisory committee, the graduate school, external research collaborators, or other lab members. Indeed, the lab group is often an important resource where students can learn from each other.

Working relationships that involve multiple parties represent "multi-cornered contracts", where it is important to maintain a balance of "psychological distances" (indicated by equal lengths of the sides of the triangle on the left side of **Fig. 3**). (Micholt 1992; Napper and Newton 2014). *If two parties become too close, they may alienate another party*. This may happen, for example, if the boundaries between professional and personal relationships are blurred, or by taking sides with one party against another party. For instance, an advisor and a student may develop a common understanding that program regulations are unnecessary administrative burdens that don't need to be taken seriously. This collusion reduces the distance between the student and the advisor and increases the distances between them and the graduate program (**Fig. 3**, right). Such alienation can seriously limit the ability of the graduate coordinator or the supervisory committee to support graduate students and

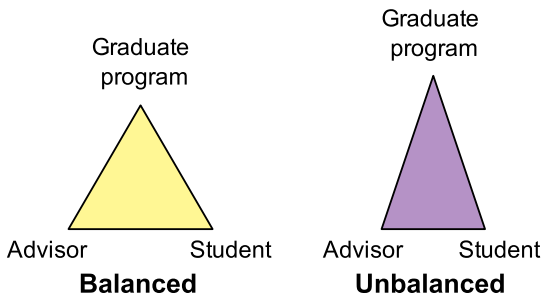

Fig. 3. Balancing multiple professional relationships. Graphical representation of a multi-cornered contract, where equal length of all sides indicates a good balance of the psychological distances between parties. Collusion between two parties (indicated by shorter psychological distance) may alienate a third party. Adapted from Micholt (1992), Napper and Newton (2014).

advisors and to contribute to effective and timely completion. Similarly, it is important to maintain a balance of psychological distances when the advisor and the graduate student share the responsibility of training undergraduate students, and within the lab group. Note that a personal friendship with some lab members can distort the psychological distances with others. Finally, the dependence of students on the advisor would render any romantic relationship unethical (Shore 2014).

Conclusion

We propose that graduate advising is not something that the advisor does to the student, rather it is a collaborative learning process with the goal of promoting the student's development toward becoming an independent scientist. By sharing the concepts presented in this paper with the student, using the worksheets provided, advisors can help students make sense of their experience, take responsibility for their own learning, and develop their "Inner Advisor". This paper provides advisors and students with a common language for reflecting on and talking about their working relationship. Negotiating the common goals and the ground rules for the learning-centered working relationship sets the stage for negotiated agency (Jazvac-Martek et al. 2011), where the student is "in the driver's seat", develops intentions and negotiates with the advisor for how to pursue them. The companion paper provides guidance on how to communicate effectively to build students' competence and confidence and to prevent and resolve conflict. Further research is required to elaborate links between concepts and validate the applicability of the proposed conceptual model of graduate advising (**Box 2**).

Box 2. Limitations.

We acknowledge that alternative theories and concepts could be applied to graduate advising and that this work includes an inherent bias, especially toward Situational Leadership® and Transactional Analysis. Inclusion and presentation of concepts reflect perceived relevance and applicability based on our own practice (H. Wagner), many years of coaching of graduate advisors and students (C. Boyd), the response of workshop participants at four universities in Canada, the US and Germany, and comments by 12 participants of a "friendly review" of an early version of the manuscripts.

The motivation for this two-part series was a perceived lack of training materials for current or future graduate advisors that could meet the demand for professional development as expressed by graduate students and postdocs in the department. In 2010, H. Wagner (an ecologist and graduate advisor) performed an initial search for relevant concepts and training materials that quickly focused on Situational Leadership® (motivated by Holsinger 2008 and Gatfield 2005) and Transactional Analysis, which were extensively and internationally used in managerial leadership training (e.g., by the WHO). This led her to embark on three years of professional development training in organizational and educational Transactional Analysis provided by R. Napper (a teaching and supervising transactional analyst (TSTA) in the fields of organization, education and counselling), where she met I. Dankert (lecturer in intercultural coaching and team development) and was introduced to the Functional Fluency model that S. Temple had developed recently in her PhD in Education. In parallel, H. Wagner collaborated with C. Boyd, founding director of the Robert Gillespie Academic Skills Centre at the University of Toronto Mississauga, proponent of learning-centered environments, and expert in experiential learning, on the development of workshops, separately for graduate advisors and for graduate students. The overarching goal of this journey was to develop a synthesis of useful concepts that would provide a map for faculty to navigate the complex process of graduate advising and ultimately to contribute to making academia more human.

Box 2. (*continued*)

While Situational Leadership® is widely applied outside academia, it has been criticized for a lack of sound theoretical foundation of the hypothesized sequence of development levels, conceptual inconsistencies, and scarcity of published empirical evidence (Graeff 1997; Northouse 2015). Our conceptual framework shares these limitations, and like Situational Leadership®, it is meant as a practical model, not a theory (Graeff 1997). We consider it a preliminary sketch of a model of graduate advising that proposes links between concepts from disparate fields and that requires to be further elaborated and tested in dedicated educational research. While such research often focuses on one or few aspects, positioning it in our framework will help clarify its contribution to the vision of making graduate advising more effective and enjoyable for both sides.

The worksheets provided here can be used by advisors to introduce students to the concepts (individually or, e.g., at lab meetings) and as collaborative tools during supervisory meetings. When used as a training tool for advisors or graduate students, the worksheets may promote adoption by making it easy to take away concepts and share them outside of the workshop. Furthermore, we observed that students profited from working with worksheet A in pairs to mentor each other by taking the advisor position in turn and thus practice moving "from one side of the table to the other" (Amundsen and McAlpine 2009).

From a practical perspective, it would be important to test hypotheses along the following lines:

- The proposed learning model has high acceptance among graduate students, helps them make sense of their experiences, and promotes student agency.
- Training in "contracting" (e.g., as a workshop for upper-level undergraduate students or during induction to graduate school) promotes student agency, the development of effective working relationships, and completion.
- Formal or informal training for advisors in the use of the learning model, role theory, and contracting promotes their competence and confidence in establishing and maintaining an effective working relationship, assessing a situation and acting to promote student development.
- Explicit application of the learning model, role theory, and contracting in advisor—graduate student relationships (e.g., using Worksheets A–C (**Supplementary Material**) in collaboration) increases satisfaction about the advisory process for both sides, promotes negotiated agency, increases completion and helps reduce time to completion.
- Formal or informal training in the use of the learning model, role theory, and contracting during the PhD period facilitates transition into an advisor role.
- Additional training to promote emotional literacy and communication skills (see companion paper) enhances the above effects.

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Author contributions

Conceived and designed the study: HHW, CB, RN. Contributed resources: HHW, CB. Drafted or revised the manuscript: HHW, CB, RN.

Competing interests

The authors have declared that no competing interests exist.

Data accessibility statement

All relevant data are within the paper and in the Supplementary Material.

Supplementary material

The following Supplementary Material is available with the article through the journal website at doi:10.1139/facets-2015-0013.

Supplementary Material 1

References

Amundsen C, and McAlpine L. 2009. 'Learning supervision': trial by fire. Innovations in Education and Teaching International, 46: 331–342. doi:10.1080/14703290903068805.

Baker VL, Pifer MJ, and Griffin KA. 2014. Mentor-protégé fit: identifying and developing effective mentorship across identities in doctoral education. International Journal for Researcher Development, 5: 83–98. doi:10.1108/IJRD-04-2014-0003.

Barrow G, and Newton T. 2016. Educational transactional analysis: an international guide to theory and practice. Routledge, Abingdon, UK. 316 p.

Bedford C, and Gehlert KM. 2013. Situational supervision: applying situational leadership to clinical supervision. The Clinical Supervisor, 32: 56–69.

Berne E. 1961. Transactional analysis in psychotherapy. Grove Press, New York City, NY. 272 p.

Berne E. 1964. Games people play. Grove Press, New York City, NY. 216 p.

Blanchard KH, Zigarmi P, and Zigarmi D. 1985. Leadership and the one minute manager: increasing effectiveness through situational leadership. Morrow, Scranton, Pennsylvania. 112 p.

Boeren E, Lokhtina-Antoniou I, Sakurai Y, Herman C, and McAlpine L. 2015. Mentoring: a review of early career researcher studies. Frontline Learning Research, 3: 64–76.

Boud D, and Molloy E. 2013. Rethinking models of feedback for learning: the challenge of design. Assessment & Evaluation in Higher Education, 38: 698–712. doi:10.1080/02602938.2012.691462.

Clarke JI. 1988. The synergistic use of five transactional analysis concepts by educators. Transactional Analysis Journal, 26: 214–219.

Council of Graduate Schools. 2010. PhD completion and attrition: policies and practices to promote student success. Council of Graduate Schools, Washington, DC. 74 p.

Dimitrov N. 2009. Western guide to mentoring graduate students across cultures. The University of Western Ontario Teaching Support Centre, London, Ontario. 55 p.

Eckleberry-Hunt J, and Tucciarone J. 2011. The challenges and opportunities of teaching "Generation Y". Journal of Graduate Medical Education, 3: 458–461. doi:10.4300/JGME-03-04-15.

Epstein M, and Howe P. 2006. The millennial generation: recruiting, retaining, and managing. Today's CPA, Sept/Oct 2006: 24–27.

Gatfield TJ. 2005. An investigation into PhD supervisory management styles: development of a dynamic conceptual model and its managerial implications. Journal of Higher Education Policy and Management, 27: 311–325. doi:10.1080/13600800500283585.

Graeff CL. 1997. Evolution of situational leadership theory: a critical review. Academy of Management Review, 8: 285–291.

Grow G. 1991. Teaching learners to be self-directed. Adult Education Quarterly, 41: 125–149. doi:10.1177/0001848191041003001.

Hay J. 1995. Transformational mentoring: creating developmental alliances for changing organizational cultures. McGraw-Hill, New York, New York. 183 p.

Holsinger JW Jr. 2008. Situational leadership applied to the dissertation process. Anatomical Sciences Education, 1: 194–198. doi:10.1002/ase.37.

Jackson PZ, and McKergow M. 2007. The solutions focus: making coaching and change simple. Nicholas Brealey International, London, UK and Boston, Massachusetts. 286 p.

Jazvac-Martek M, Chen S, and McAlpine L. 2011. Tracking doctoral student experience over time: cultivating agency in diverse spaces. *In* Doctoral education: research-based strategies for doctoral students, supervisors and administrators. *Edited by* L McAlpine and C Amundsen. Springer, Amsterdam. pp. 17–36.

Johnson DH. 2014. Reaching out: interpersonal effectiveness and self-actualization. 11th edition. Pearson Education, Boston, Massachusetts. 416 p.

Kiley M, and Wisker G. 2009. Threshold concepts in research education and evidence of threshold crossing. Higher Education Research & Development, 28: 431–441. doi:10.1080/07294360903067930.

Kloss K. 1994. A nudge is best: helping students through the Perry Scheme of intellectual development. College Teaching, 42: 151–158. doi:10.1080/87567555.1994.9926847.

Kluger A, and Nir D. 2009. The feedforward interview. Human Resource Management Review, 20: 235–246. doi:10.1016/j.hrmr.2009.08.002.

Kolb DA. 2014. Experiential learning: experience as the source of learning and development. 2nd edition. Pearson Education, Upper Saddle River, New Jersey. 416 p.

Lechuga V. 2011. Faculty-graduate student mentoring relationships: mentors' perceived roles and responsibilities. Higher Education, 62: 757–771. doi:10.1007/s10734-011-9416-0.

Lee A. 2012. Successful research supervision: advising students doing research. Routledge, Abingdon, UK. 216 p.

Lee A, Dennis C, and Campbell P. 2007. Nature's guide for mentors. Nature, 447: 791–797. doi:10.1038/447791a.

McAlpine L, and Amundsen C. 2011. Doctoral education: research-based strategies for doctoral students, supervisors and administrators. Springer, Amsterdam.

Mezirow J. 1997. Transformative learning: theory to practice. New Directions for Adult and Continuing Education, 1997: 5–12. doi:10.1002/ace.7401.

Micholt N. 1992. Psychological distance and group interventions. Transactional Analysis Journal, 22: 228–233.

Napper R, and Newton T. 2014. Tactics: transactional analysis concepts for all trainers, teachers and tutors and insight into collaborative learning strategies. 2nd edition. TA Resources, Ipswich, UK. 272 p.

Northouse PG. 2015. Leadership: theory and practice. 7th edition. Sage, New York, New York. 520 p.

O'Meara K, Knudsen K, and Jones J. 2013. The role of emotional competencies in faculty-doctoral student relationships. The Review of Higher Education, 36: 315–347. doi:10.1353/rhe.2013.0021.

Ramsey VJ, and Fitzgibbons DE. 2005. Being in the classroom. Journal of Management Education, 29: 333–356. doi:10.1177/1052562904271144.

Revelo RA, and Loui MC. 2016. A developmental model of research mentoring. College Teaching, 64(3): 119–129. doi:10.1080/87567555.2015.1125839.

Rogers C. 1969. Freedom to learn: a view of what education might become. Merrill, Princeton, North Carolina. 358 p.

Schmid B. 2008. The role concept of transactional analysis and other approaches to personality, encounter, and cocreativity for all professional fields. Transactional Analysis Journal, 38: 17–30. doi: 10.1177/036215370803800104.

Schroeder CM. 2004. Evidence of the transformational dimensions of the scholarship of teaching and learning: faculty development through the eyes SoTL scholars. *In* To improve the academy. *Edited by* S Chadwick-Blossey and D Reimondo Robertson. Josssey Bass, San Francisco, California. Vol. 23. pp. 47–71.

Shore BM. 2014. The graduate advisor handbook: a student-centered approach. University of Chicago Press, Chicago, Illinois. 160 p.

Stevens-Long J, Schapiro SA, and McClintock C. 2012. Passionate scholars: transformative learning in doctoral education. Adult Education Quarterly, 62: 180–198. doi:10.1177/0741713611402046.

Taylor EW. 2000. Analyzing research on transformative learning theory. *In* Learning as transformation: critical perspectives on a theory in progress. *Edited by* J Mezirow and Associates. Jossey-Bass, San Francisco, California. pp. 285–328.

The Rackham School of Graduate Studies. 2015. How to mentor graduate students: a guide for faculty. The Regents of the University of Michigan, Ann Arbor, Michigan. 47 p.

Weimer M. 2013. Learner-centered teaching: five key changes to practice. 2nd edition. Jossey-Bass, San Francisco, California. 304 p.

Wendler C, Bridgeman B, Cline F, Millett C, Rock J, Bell N, and McAllister P. 2010. The path forward: the future of graduate education in the United States. Educational Testing Service, Princeton, New Jersey. 72 p.

Wisker G. 2012. The good supervisor. 2nd edition. Palgrave Macmillan, London, UK. 576 p.