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Supporting the development and improvement of teachers' relational competency

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In this paper we present experiences and findings from a research program on how to support the development and improvement of teachers' relational competency. Outcomes of the research program include a theoretical framework encompassing different aspects of relational competency ("communicative competency," "differentiation competence," and "socio-emotional competency"), and studies reporting on the use of two different methodologies (digital video simulations and virtual simulations with avatars) for assessing, as well as supporting, the development and improvements of said competency. The merits and shortcomings of these methodologies are discussed, and we propose a framework that can be used in teacher education and/or for professional development of teachers' relational competency, based on our experiences and research findings.

KEYWORDS

avatars, digital video, student–teacher relationship, teacher competency, teacher education

1 Introduction

There is a growing realization that teachers' capacity to create productive relationships with their students is fundamental to successful teaching. For example, a comprehensive research review carried out in 2008 concluded that establishing high-quality teacher–student relations, characterized by respect, tolerance, empathy, and interest for the students, is a central competence for teachers (Nordenbo et al., 2008). Similar findings are reported by Sabol and Pianta (2012) in their synthesis of trends in research on teacher–child relationships, claiming that "Children who have closer relationships with their teachers tend to have higher academic performance, lower externalizing behaviors, and better social skills" (p. 218) and that "high quality relationships with teachers appear to decelerate the deleterious effects of risk and promote healthy functioning for children with externalizing and internalizing problems" (p. 219). The perhaps most ambitious attempt so far to summarize the research on the connection between teacher–student relationships and students' outcomes is a synthesis of 24 meta-analyses (Emslander et al., 2023). Although the findings from this review show strong associations between positive teacher–student relationships and a number of positive student outcomes, the strongest association is between negative teacher–student relationships and students' behavioral problems, suggesting that in terms of student outcomes it may be more effective to avoid negative relationships than to improve already positive ones.

In order to capitalize on these findings, both pre-, and in-service teachers need to be made aware of the importance of creating productive relationships with students, as well as receiving appropriate training to develop this capacity. This, in turn, relies on the appreciation of

teachers as the central agents of change for improving these relationships. As noted by Sabol and Pianta (2012), the quality of the relationship between teacher and students depends largely on the teachers' characteristics and interpersonal skills, but also on a view of such skills as dynamic and possible to develop and improve (as opposed to stable and inert personality traits).

The recognition that teachers may develop and improve their relational competency has led to an interest in professional development that can provide experiences more closely associated with the professional context than formal education, thereby facilitating skill acquisition and improving professional practices (see, e.g., Sheridan et al., 2009). In particular, there has been an increased interest in using simulations and (more or less technology-enhanced) role-play to replicate the professional context and provide a common ground for discussion and reflection.

In this article we describe and discuss two such approaches, where simulation methodologies focusing on supporting teachers' capacity to create productive relationships with students have been used in our research program on teachers' relational competency.

2 Pedagogical frameworks

2.1 Teachers' relational competency

While research on teachers' personality traits has a long history (see, e.g., Kim et al., 2019), showing for instance that "Cooperative, democratic attitude" and "Kindliness and consideration for the individual" were the most valued traits in teachers according to an investigation encompassing data from 12,000 students (Witty, 1947), research into teaching relational skills to teachers seems to be a more recent phenomenon. This is likely to depend, at least partly, on the view of such skills as more or less stable and inert personality traits. In the following, however, it is assumed that relational competency can be developed and improved regardless of which personality the teacher might have.

In order to support teachers in developing relational competency, a conceptual understanding of what such a competency might entail is needed. However, as noted by Jensen et al. (2015), despite the abundant empirical support for the importance of productive teacher-student relations for student achievement and well-being, there is still a lack of a solid theoretical foundation in this area. Jensen et al. (2015) therefore sought to explicate the assumptions underlying their own understanding of relational competency as an integral part of the overall professionalism of teachers, as well as clearly stating that it is the teacher who is responsible for the quality of the relationship. According to their definition, relational competency concerns:

The professional's ability to "see" the individual child on its own terms and attune her behavior accordingly without giving up leadership, as well as the ability to be authentic in her contact with the child (p. 206).

During recent years, further developments have been made regarding the theoretical underpinnings of relational competency. For example, in the research program discussed in this article, Scheff's (1990) theory about social bonds has been used to create a model for teachers' relational work, called "Relational Competency Model" or

"RCM" (e.g., Aspelin and Jönsson, 2019; Plantin Ewe and Aspelin, 2022). RCM is a sociological model, as it focuses on social interaction, but in the research described here, it is mainly used as a pedagogical tool for assessing pre-service teachers' relational competency.

The most central concept of Scheff's (1990) theory is the "social bond," which can be defined as the forces that hold people and groups in the community together. Although these bonds between people may appear well established and lasting, they are in fact temporary, dynamic, and unpredictable. You can therefore never be completely sure that relationships will have a certain character and the social bonds are tested continuously. The quality of social bonds ranges from fragile and uncertain to strong and secure, and the bonds can be built, repaired, threatened, or even cut-off. What is crucial for the quality of the bonds is how participants communicate with each other and how well they are "attuned." The term "attunement" refers to people's cognitive and emotional adjustment to each other in the interpersonal communication, both verbal (what is being said) and non-verbal (how it is said and expressed). The degree of attunement depends on how well individuals understand each other and the extent to which they show each other adequate and due respect.

Another concept in Scheff's (1990) theory is "differentiation," which refers to the degree of closeness and distance in interpersonal relations. Scheff assumes that differentiation is a fundamental dilemma in human relationships. Optimal differentiation is when two people become so close that they can experience each other's side of the relationship yet are distanced enough from each other that they perceive themselves as unique, individual entities. In such a relationship, a balance is achieved between closeness and distance. However, should one or the other, or both parties, experience excessive distance, where direct contact with the other is absent and the importance of the self is overemphasized, over-differentiation or isolation occurs. Correspondingly, under-differentiation or engulfment occurs when individuals experience excessive closeness, losing contact with vital aspects of themselves and the importance of the other person/group is overemphasized.

Emotions also play an important part in Scheff's theory. Stable social bonds imply lasting and relatively deep emotional connections and Scheff defines shame and pride as fundamental social emotions. These emotions are awakened in a context where the individual visualizes how he/she behaves and is valued in the eyes of others. Positive role-taking is initiated by and leads to feelings of pride, while negative role-taking is associated with feelings of shame. Stable bonds are thus signaled by feelings of pride and unstable bonds by feelings of shame.

With the aid of Scheff's theory, a more nuanced description can be made of teachers' relational competency. For example, Scheff holds that attunement is crucial for understanding the quality of social bonds in the act of interpersonal communication. Relationally competent teachers therefore need to communicate in such a way that they and their students form strong social bonds with each other, which requires mutual understanding and respect. Consequently, teachers need to make themselves understood and understand – as well as demonstrating that they understand – the students. Teachers also need to show respect for students while acting in a way that promotes students' respect for them. In line with this, the first aspect of relational competence in the RCM is "communicative competence," which reflects the ability of teachers to communicate both verbally and non-verbally in order to achieve a high degree of cognitive and

emotional attunement in relation to students. In this regard, the actions of a relationally competent teacher encourage mutual understanding and respect in the work with students.

The second aspect of relational competency in the RCM is “differentiation competence,” which reflects the capability of teachers to act in such a way that neither they nor the students become too close nor too distant from each other. A relationally competent teacher acts in a way that space is created to allow both students and teachers to discern themselves as individuals, without jeopardizing social bonds.

“Socio-emotional competence” is the third aspect of relational competency in the RCM, and this concept reflects the importance of teachers’ attunement toward emotional signals in interpersonal communication. A relationally competent teacher acts in order to evoke and encourage feelings of pride, while acknowledging and channeling feelings of shame in a direction that is productive from the standpoint of educational goals.

In our research program, these three aspects of relational competency in the RCM (i.e., “communicative competency,” “differentiation competence,” and “socio-emotional competency”) have been used to formulate a set of criteria, which can be shared with teachers and used to (self-) assess teachers’ relational work.

2.2 Eliciting and assessing relational competency

Formulating explicit criteria for teachers’ relational work makes it possible to assess teachers’ proficiency in relation to these criteria and, from this assessment, identify strengths and aspects in need of improvement. Through feedback and/or additional teaching, such formative assessments may then support the development and further improvement of teachers’ relational competency. However, in order to assess teachers’ relational competency, you have to find or create situations where this competency is expressed.

At first thought, professional practice (e.g., teaching) might seem to be the most appropriate setting for assessing teachers’ relational competency. There are, however, several practical limitations to this approach. For example, professional practice is typically a very “messy” environment with different activities going on simultaneously and with a lot of people involved. To assess a teacher’s proficiency in such a situation can be challenging, as there are so many other factors at work at the same time, making it hard to sift out a particular competency. Pedagogical practice is also very unpredictable, which means that unwanted and unexpected events may at any time change the conditions and substantially affect the outcome of the assessment. Furthermore, since the particular situations where teachers’ relational competency becomes clearly visible cannot be staged or forced to happen, assessments during professional practice may be very time consuming. This is especially true if you want to observe a range of different aspects of the same competency, or how the same aspect is manifested in different situations or with different students. These drawbacks have made simulations a more attractive option, as they make it possible to design specific situations that are likely to elicit the competencies sought for and collect more concentrated data, less affected by other factors or random events. Data from simulations are therefore likely to be more reliable and comparable, as compared to data from professional practice. Still, of course, there is a question

about validity and whether the proficiency (or lack thereof) displayed during simulation exercises actually transfers to authentic work settings.

The concept of validity has changed significantly over the years, and it is probably safe to say that the debate has not yet settled. Still, there is some consensus in the “argument-based approach to validity” as outlined by Kane (1992), where validity is associated with the interpretation assigned to test scores (or, more broadly, to assessment outcomes), rather than with the test scores or the test itself. As noted by Kane (1992), an explicit recognition of the inferences and assumptions in the “interpretive argument” facilitates the possibility to identify the kind of evidence needed to evaluate the argument.

In the context of simulations, this means that assessments of teacher competency made during simulated events are not valid (or invalid) *per se*. Instead, validity depends on: (1) What kind of interpretations or claims we make from the outcomes of such an assessment, and (2) the strength of the arguments we have for these interpretations or claims. Consider, for instance, a claim that a teacher has shown high proficiency in relational work during a simulation event. An argument for the validity of this claim could be supported by evidence in the shape of an assessment of her/his performance according to explicit criteria. However, if we wish to make claims about the general capabilities of the same teacher, or generalizing the outcomes of the assessment to other settings, a stronger argument is needed. Below, we therefore limit our claims about the capabilities of the pre-service teachers’ relational competency to the specific contexts of simulations with digital video and virtual simulations with avatars. We make no claims about pre-service teachers’ general capabilities or about their relational competency in authentic professional practice.

3 A research program on teachers’ relational competency

Our research program on teachers’ relational competency started in 2016, by performing a pilot study on relational competency in a group of pre-service teachers using digital video simulations (Aspelin and Jönsson, 2019). The investigations were later continued with other groups of pre-service teachers (Holmstedt et al., 2018), as well as pre-service special educators (Aspelin et al., 2021). Within the program, we have also started to explore the use of digital simulations where pre-service students interact with avatars, as a way to elicit and assess relational competency (Lindberg et al., forthcoming).

In this section, we will describe our experiences with these different technologies, as tools for eliciting and assessing relational competency, and discuss their pedagogical potential in supporting the development and improvement of teachers’ relational competency.

3.1 Digital video simulations

In this section, we describe how we have used digital video to elicit and assess relational competency. Details on methodology, analyses, and data are provided in the individual studies.

The use of digital video is sustained by research showing that this medium may have beneficial effects in various regards and contexts, such as teachers’ relational abilities (Pianta et al., 2002; Rimm-Kaufman et al., 2003; Sabol and Pianta, 2012), but also their “reflective

ability” (Metcalf et al., 1996) and professional development in a broader sense (Harlin, 2011, 2013).

Scripts for the video sequences used in this research program were written by the research team and recorded by professional film makers, guided by the assumption that high-quality movies would make it easier for viewers to empathize with the persons and situations depicted in the movies. Efforts were also made to make the videos appear as authentic as possible, for instance by basing the scripts on personal experiences, recording the movies in an authentic school environment (a sixth-grade classroom), and using volunteer students as participants. To facilitate reflection, each video included some kind of problematic situation or dilemma, while still maintaining a more or less open format as to how the teacher could and should act (i.e., the movies did not present any solutions to the problems depicted).

In the studies performed, pre-service teachers were asked to watch one of the movies and then: (a) Describe the situation; (b) Analyze the situation in terms of how the teacher in the movie acts to support, and/or counteracts, a positive relationship with the students; and (c) Describe how they thought the teacher should handle the situation. The students first answered these questions without any specific training in relational work, relying only on what they had already been taught during their teacher education. Afterwards, students were provided with criteria for assessing relational competency and participated in a lesson, where the criteria were explained, and the students were shown how to use the criteria in relation to a short sequence from a commercial movie (“Precious”). Then they answered the questions again, either in relation to the same movie or a similar one.

By analyzing these data, we have seen, for instance, that before the training the pre-service teachers mainly focused on other aspects in the situations displayed (e.g., social structures and individual characteristics), rather than the teacher–student interaction. This finding suggests that the pre-service teachers did not discern the teacher–student interaction in the situations (i.e., they did not see it, because they did not know what to look for) and/or did not have the appropriate professional language to communicate about relational work. Furthermore, by applying the conceptualization of relational competence according to Scheff’s theory of interpersonal relationships to the pre-service teachers’ responses, more precision and detail could be added to the analysis, making it possible to identify strengths and areas in need of improvement in the answers (Aspelin and Jönsson, 2019).

Findings from our studies also suggest that by providing the pre-service teachers with criteria and training, their discernment of critical dimensions of relational competency was significantly improved and they were able to discuss aspects of the teacher–student relationship with another focus and with greater detail and nuance (Holmstedt et al., 2018; Aspelin and Jönsson, 2019). Similarly, pre-service special educators were found to make a shift from focusing on teaching strategies and the learning environment, toward an awareness of teacher–student interaction. They also made a shift from the teacher’s management of problematic student behavior, toward an acknowledgment of the communicative and socio-emotional challenges in contexts involving students with different needs (Aspelin et al., 2021).

Taken together, findings from our studies suggest that simulated video sequences, together with a detailed conceptualization of relational competency, can be successfully used to: (a) identify

strengths and areas in need of improvement in teachers’ analyses of teacher–student interaction, as well as (b) support teachers in discerning, reflecting upon, and discussing critical aspects of relational work.

3.2 Virtual simulations with avatars

Virtual simulation is a relatively recent educational approach, in which technology is used to recreate certain aspects of reality in order to enhance the teaching process (Levin and Flavian, 2022). There are several benefits to using virtual simulations in teacher education, such as enabling preservice teachers to practice in controlled and safe environments, without the risk of harming students (Dieker et al., 2014; Howell and Mikeska, 2021; McGarr, 2021), which is especially important during special educator education, as well as the possibility to explore different solutions to complex pedagogical situations.

There are several examples in the research literature, where virtual simulations have been introduced in teacher education, as a means to better prepare students to teach in real classrooms (e.g., Howell and Mikeska, 2021; Magen-Nagar and Steinberger, 2022). A common focus in this area of research is classroom management, investigating, for example, how to improve teachers’ teaching skills or practicing specific teaching strategies, readiness to manage a classroom, and teaching performance (e.g., Luke et al., 2021; Rosati-Peterson et al., 2021).

Practice through simulations is described as a promising tool in learning basic aspects of teaching (Dawson and Lignugaris Kraft, 2017; Peterson-Ahmad, 2018), such as developing students’ capability to manage a classroom (Hudson et al., 2019) and gaining confidence (Landon-Hays et al., 2020). The use of virtual simulations may also influence students’ perceptions of behavioral problems (Cohen et al., 2020). It should be noted, however, that these results are not unequivocally positive, as there are results showing that students may feel quite anxious before engaging in simulations (Larson et al., 2020), which may significantly affect their performance, and that the perception of authenticity during the simulation may differ. While some pre-service teachers feel that the simulation lack the authenticity of real classrooms, others participate as if the avatars were indeed real children (Luke et al., 2021).

Another line of research, where virtual simulations are used in teacher education, concerns collaboration with colleagues and collaboration skills (Robbins et al., 2019; Wernick et al., 2021). Relational skills, however, are not currently well represented in this literature (Lindberg and Jönsson, 2023). We have therefore explored the use of virtual simulations for this purpose.

There are different kinds of virtual simulations and the most recent research on interactive classroom teaching uses “human-in-the-loop” (HIL) technology to support an authentic experience. In HIL simulations, digital avatars are controlled by humans in real time. The avatar controller is trained to work in the simulation and uses technical aids, which include, for example, voice modulation and preconfigured movements (e.g., hand-raising). HIL is compatible with theories of practice-based teacher education, which means that teachers engage in professional practice (albeit simulated) and reflect on it (Howell and Mikeska, 2021), in order to identify potential shortcomings and improve their teaching skills.

In our simulation exercises,¹ pre-service teachers were expected to plan for a school dance together with four avatar students. This kind of general (i.e., not subject-specific) situation was deliberately chosen, so that we could focus on relational work, without the interference from pre-service teachers' content knowledge.

Although only one student interacted with the avatars at a time, the pre-service teachers entered the simulation room in small groups. The non-acting persons functioned as a resource, which means that the person interacting with the avatars could pause the simulation at any time and ask for advice or discuss her/his approach with peers. The next person in line took over by continuing the interaction right where the previous one stopped. Each group participated in the simulation for about 1 h and there were three pre-service teachers from each group interacting with the avatars.

By analyzing recordings from the simulations, we have seen that pre-service teachers interact authentically with the avatars, for instance by clearly listening to the avatars and also responding to the virtual body language in the interaction (Lindberg et al., forthcoming). Since the pre-service teachers are forced to act in real time, by responding to the avatars, the simulation provides more than adequate conditions for practicing certain aspects or relational competency, such as the communicative and socio-emotional aspects, focusing on the attunement in interpersonal communication between teacher and students. It also allows for repeated testing of different approaches, and for collective reflection with peers, in a setting that has been perceived as authentic by the participants in our research. An important limitation is that, since the avatars are not physically present in the room, we cannot access the full spectrum of relational competency with this methodology. For example, the use of physical closeness is not possible with the avatars, nor is the possibility to change location.

As part of the research program, we have also performed more detailed analyses of pre-service special educators' (PSEs) perceptions of interacting with the avatars, as well as how their relational competence is manifested during this interaction (Aspelin et al., 2024). Here, we have seen that the PSEs focused either on how the interaction was organized (e.g., providing space and making arrangements for discussions in pairs or groups) or the quality of the interaction (e.g., how to listen, ask questions, or show empathy), which are two different aspects of teachers' relational work. When looking more closely on how the PSEs interacted with one of the insecure personalities among the avatars, we can see that they demonstrate a varying degree of attunement. However, most PSEs tended to support this avatar when signs of insecurity are shown, for instance by asking follow-up questions and by encouraging the avatar to answer.

4 A framework for professional development of teachers' relational competency

As is apparent from the presentation of the two methodologies, neither of them can, by themselves, elicit or support the development of all aspects of relational competency. A major limitation with digital video simulations is that, although they may

support teachers in discerning, reflecting upon, and discussing critical aspects of relational work, this methodology does not allow teachers to interact with students. In contrast, virtual simulations allow teachers to interact with avatars, but does not necessarily support the discernment or reflection upon critical aspects of relational work, unless this is an explicit part of the teaching. However, the two methodologies may provide powerful tools for professional development in combination, for instance by first using video to support teachers in discerning, analyzing, and reflecting upon authentic situations, and then using virtual simulations to explore different approaches to interacting with students, preferably with the support of peers. Such an approach to teacher education and/or professional development in the realm of relational competency may equip teachers with the necessary tools for *in situ* professional development, where they, individually or with peers, observe and reflect upon authentic situations in the much more intense and messier environment of real classrooms. This approach also functions as the fundament of our suggested framework for teacher education and/or professional development of teachers' relational competency, which consist of the steps outlined below.

Step 1: Teachers (either pre-, or in-service) watch a short movie sequence, displaying a situation where the teacher's relational work can be observed, analyzed, and discussed. The teachers are then asked to (a) Describe the situation, (b) Analyze the situation in terms of how they think the teacher in the movie acts to support, and/or counteracts, a positive relationship with the students; and (c) Describe how they think the teacher in the movie should handle the situation. Such an exercise is likely to provide a number of different views, as teachers will tend to discern different aspects of the teacher–student interaction, and also suggest different solutions. By allowing them to present their observations and analyses to peers, they are also likely to identify and reflect on some of their own shortcomings in relation to relational competency.

Step 2: Teachers may at this point be open for theoretical input on relational competency, as they are likely to see the need for a detailed framework and a common terminology, in order to understand and being able to discuss the situation with their peers. In our experience, providing pre-service teachers with explicit criteria for relational competency, so that they may assess their own or others' actions according to these criteria, has been a very valuable and appreciated part of the support for developing and improving relational skills.

Step 3: Teachers are allowed to watch another short movie sequence, where they can use the theoretical framework to analyze the situation at a greater depth and with greater detail than before, for instance by identifying more than one possible solution to the same situation. By improving their performance on this second occasion, teachers may increase their self-confidence and self-efficacy, which is important for the next step.

Step 4: Teachers are invited to put their skills to the test in the simulator. This should preferably not be an individual exercise, even if only one teacher can interact with the avatars at a time. Instead, a group of teachers could test different approaches together. While one teacher interacts with the avatars, the others observe this interaction and may be asked for advice or for taking over the simulation. After the simulation exercise, it is important for the group to discuss the experience together. As shown in Aspelin et al. (2024), the pre-service special educators

¹ For a more thorough description of the simulation environment used ("Mursion"), see <https://www.smu.edu/simmons/research/center-for-virtual-reality-learning-innovation/mixed-reality-simulation-lab>

(PSEs) tended to associate relational competence mainly with questions of how to organize the interaction, which means that they need to direct their attention to the quality of interaction as well. Furthermore, the PSEs displayed a varying degree of attunement, which could be used to exemplify and discuss different approaches to relational work.

Step 5: As a final step, when teachers' understanding of the criteria have improved, and they have been training to discern important aspects of relational competency in simulation contexts, they are in a better position to observe and analyze their own, or their peers', relational work during professional practice in authentic classrooms, as an integrated part of teacher education and/or professional learning.

5 Future research

As emphasized above, we have until now investigated pre-service teachers' relational competency in the context of simulations. Any claims made about the capabilities of the pre-service teachers' competency are therefore limited to these specific contexts. With this reservation in mind, we have found that simulated video sequences, together with a detailed conceptualization of relational competency, can be successfully used to identify strengths and areas in need of improvement in teachers' analyses of teacher–student interaction, as well as support teachers in discerning, reflecting upon, and discussing critical aspects of relational work. We have also found that pre-service teachers interact authentically with avatars, displaying communicative and socio-emotional aspects of relational competency. However, as we do not have data on how these aspects of relational competency transfer to authentic classrooms, a natural next step in our research program is to connect the suggested framework with professional practice (*cf.* Step 5 above). Here we want to explore the possibilities for assessing relational competency in authentic settings, as well as to investigate how teachers' relational competency, as manifested in simulations contexts, correlate with the same competency in authentic classroom settings, as a way to further validate our previous findings.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding authors.

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Ethics statement

Ethical approval was not required for the study involving humans in accordance with the local legislation and institutional requirements. Written informed consent to participate in this study was not required from the participants or the participants' legal guardians/next of kin in accordance with the national legislation and the institutional requirements.

Author contributions

AJ: Funding acquisition, Methodology, Supervision, Writing – original draft, Writing – review & editing. JA: Conceptualization, Funding acquisition, Supervision, Writing – review & editing. SL: Conceptualization, Methodology, Writing – review & editing. DÖ: Conceptualization, Funding acquisition, Methodology, Supervision, Writing – review & editing.

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