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Teacher–Student Relationship and Students' Social Competence in Relation to the Quality of Educational Dialogue

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ABSTRACT

Teacher–student relationship and students' social competence were investigated in relation to the quality of educational dialogue. The data consisted of 151 video-recorded Grade 2 lessons. The teachers (N = 50) also rated their students' (N = 664) social competence and the teacher–student relationship. In terms of teacher–student relationships, closeness associated positively while conflict associated negatively with high quality dialogue. Regarding students' social competence, cooperation skills and empathy linked positively while disruptiveness linked negatively with high quality dialogue. The findings provide new knowledge on how different student-related factors may support or prevent the building of educational dialogue.

Keywords: quality of educational dialogue, teacher–student relationship, social competence, primary school

Introduction

Educational dialogue describes continuous, cumulative, and reciprocal classroom talk, through which the teacher and students explore and build shared knowledge together (Alexander 2006). For years, dialogue has been acknowledged as being vital for students' development, and dialogic interactions have been shown to support their socialisation, motivation, personal self-development (Gillies 2014; Johnson and Johnson 2002), metacognitive processes and self-regulation (Newman 2017). In light of some recent studies, dialogue has been shown to support students' learning in different subjects (e.g. see Alexander 2018; Howe et al. 2019; Muhonen et al. 2018; Sedova et al. 2019). Despite the acknowledged importance of educational dialogue, it rarely occurs in the classrooms of diverse school levels worldwide (Howe and Abedin 2013). It is often the case that teachers do not actively and consistently invite their students to explain their thinking or ask questions that would allow shared knowledge building and practicing dialogic skills (Howe et al. 2019; Webb et al. 2019). In addition, students rarely take their own initiative but instead participate in discussion only when asked to give answers to justify their thoughts (Myhill 2006). To enhance the quality and occurrence of dialogue in the classrooms, there is a need to determine which factors may prevent or advance educational dialogue and thereby link with students' learning. In prior research, there are less studies that have investigated the role of diverse student-related factors in the occurrence or quality of educational dialogue. In our study, we investigated the teacher–student relationship and students' social competence as student-related factors possibly associated with the quality of educational dialogue.

The teacher–student relationship has been typically defined based on the closeness and conflict in the daily interactions between the teacher and the student (see Pianta 1999). There is considerable research evidence that young students' relationships with their teachers predict students' social and academic success (e.g. Bergin and Bergin 2009; Pianta 1999;

Roorda et al. 2011; Rudasill and Rimm-Kaufman 2009) and the teacher–student relationship has been found to be connected with the quality of classroom interactions on a broader scale (Buyse et al. 2008; Hamre and Pianta 2005). However, there is limited knowledge of how the teacher–student relationship may be linked with the quality of educational dialogue in the classroom.

Students' social competence refers to the presence of prosocial behaviour (such as cooperation skills and empathy) and lack of antisocial behaviour (such as disruptiveness and impulsivity) (see Junttila et al. 2006). It has been acknowledged that through interactions in the classroom, children practice their social competence and emotional understanding (e.g. see Pakarinen, Lerkkanen, and von Suchodoletz 2020; Rose-Krasnor 1997). In prior research, students' social competence development has been found to be connected to high-quality teacher–student interactions in the classroom (e.g. Hamre and Pianta 2005; Rimm-Kaufman and Chiu 2007). However, less is known about how students' social competence may be associated with the quality of educational dialogue, especially among young students and when no interventional approach has been used.

Over the past decades, the extensive research on educational classroom dialogue has predominantly focused on describing effective dialogue as it typically occurs in classrooms on diverse school levels (for a review, see Howe and Abedin 2013). However, in order to facilitate the increase of dialogue in the classrooms, also broader investigation in terms of the background mechanisms of dialogue is needed (Howe and Abedin 2013). The aim of our study was to contribute to prior research by looking into the relation between student-related factors and the quality of educational dialogue in Grade 2 classrooms. Authentic classroom interaction data in terms of the moderate and high quality of educational dialogues and ratings of the teacher–student relationship and students' social competence are utilised in the current study.

Educational Dialogue

The importance of educational dialogue is based on the view that learning has its basis in interacting with other people (Vygotsky 1978). In effective whole-class educational dialogue, which was the focus of our study, both teacher and students are expected to participate actively in the learning process by sharing their thoughts and knowledge, asking questions, elaborating different views, and further building knowledge based on one another's thoughts (Alexander 2006; Mercer and Littleton 2007). In prior research, diverse terms have been used in parallel to describe the phenomenon of educational classroom talk and the prior research has illustrated how different dialogic approaches create so called 'communities of enquiry' (Mercer 2000). The definition for educational dialogue used in our study relies on Alexander's (2006, 2020) concept of dialogic teaching, which describes dialogue between the teacher and students through the following six principles (Alexander 2018, p. 566; Alexander 2020, p. 131): 1) collective (teacher and students together participate in the classroom discussion); 2) reciprocal (teacher and students listen to each other and share ideas and alternative views); 3) supportive (teacher and students have the freedom to express ideas freely without the fear of giving a wrong answer); 4) deliberate (teacher and students discuss and seek to resolve different points of view, they present and evaluate arguments as they work towards reasoned positions and outcomes); 5) cumulative (teacher and students build on their own and each other's contributions towards the gradual accumulation of knowledge); and 6) purposeful (the discussion between the teacher and students is structured with specific learning goals in view).

For educational dialogue to succeed, the teacher has an important opportunity to open the dialogic space for the participants to share their thoughts, explore, negotiate, and confront different ideas in an open and supportive learning environment (Webb 2009). As the

Alexander's (2020) principles of dialogic teaching suggest, supportive and respectful relationship between the teacher and students should be built for effective dialogue to occur in the classroom. Participants' good interpersonal skills and purposeful interaction support the building of successful dialogue in which the group members encourage and facilitate each other's efforts as they work together (Gillies 2014). In scaffolded interactions between the adult and young children, mutual trust is considered as the key element for sharing thoughts and learning through the interaction (Rommetveit 1979; Stone 1998). Therefore, trustful relationship between the adult and child is needed to build dialogue and further to support child's language development (Bruner 1975; Hobson 2002; Rommetveit 1979).

The teacher also has the key responsibility in reacting to student initiatives and further allowing openings and time for the shared dialogic space (Cazden 2001; Webb 2009). Practices such as asking open questions, encouraging students to share and explain their thinking, encouraging students to justify and clarify their problem-solving strategies, and providing supportive and constructive feedback represent teachers' scaffolding through which they support students' conceptual development and participation in dialogue (e.g. Muhonen et al. 2016; Rojas-Drummond et al. 2013; Webb at al. 2019). In addition, scaffolding students' process and self-evaluative metatalk have been shown to facilitate classroom dialogues that harness students' metacognitive processes and self-regulation (Newman 2017). It has also been proposed that through more student-centred scaffolding practices, teachers can shape the quality of the dialogue, for instance, by using authentic questions about issues and concepts that students have experience with and by allowing students' initiatives, questions, and ideas to modify the direction of the discussion (Nystrand 1997; Rasku-Puttonen et al. 2012). In fact, it is predominantly the teachers' scaffolding practices, their activeness, and the participation of students that have been suggested to define the quality of the educational dialogue. In the present study, the analysis of the educational

dialogue quality is based on the four patterns of dialogic teaching discovered by Muhonen et al. (2016, 2018, 2022): teacher-initiated dialogues of a moderate and high quality and student-initiated dialogues of a moderate and high quality. Within the patterns, the different types of educational dialogues are identified based on the initiator (either the teacher or student) and the quality (either moderate or high) of the dialogue. The quality of the dialogue is defined based on the activeness and strategies of the teacher's scaffolding and on the involvement of the students. In moderate-quality dialogues, students' participation is highly dependent on the teacher's scaffolding, and the teacher utilises a relatively limited variety of scaffolding techniques and questioning. In high-quality dialogues, both teacher and students participate actively in the discussion, and the teacher utilises a variety of scaffolding strategies to support shared knowledge building.

Though the quality and effects of educational dialogue have been broadly examined, research considering factors contributing to dialogue quality (at least in the classroom context) is still in the early stages. In prior research, student-related factors, such as communication skills or academic performance, have been predominantly considered as trained outcomes of educational dialogue rather than factors that may enable the occurrence of dialogue in the classroom. Through interventional studies, it has been shown that students' communication skills can be trained and improved when teachers actively scaffold students and invite them to participate in the dialogue. In his interventional study focused on dialogic teaching, Alexander (2018) found that students in the intervention group demonstrated higher levels of argumentation, explanation, justification, and challenging each other. In their Thinking Together intervention program, Mercer and colleagues (e.g. Mercer 2008; Mercer and Littleton 2007) showed that primary school students in the intervention program raised their skills in individual reasoning and collective thinking. In addition, through their intervention study-based Professional Development Program (PDP), van der Veen et al.

(2017) showed that productive classroom dialogue supported young children's oral communicative competence. However, research (without an interventional approach) is needed also on how students' already existing social competence, including communication skills, may contribute to the quality of educational dialogue in the classroom. In our study, the teacher–student relationship and students' social competence are considered as factors that can potentially contribute to the quality of educational dialogue.

Teacher–Student Relationship and Its Associations with Classroom Interactions

The emotional relationship between the teacher and students is acknowledged as an important factor in students' development (Hamre and Pianta 2001). The quality of the teacher–student relationship has been typically defined based on the levels of closeness and conflict in the relationship (Pianta 1999; Roorda et al. 2011). In a supportive relationship, high closeness between the teacher and student is characterised by warmth, good communication, and approachability (Birch and Ladd 1997; Pianta 1999). On the other hand, in more conflicted relationships, anger and tensions usually exist between the teacher and student (Birch and Ladd 1997). In general, teachers have a basic need for relatedness with their students, and the quality of the relationships can be reflected in teacher's work performance and well-being (Spilt, Koomen, and Thijs 2011). In fact, teachers have reported relationships with their students as the most meaningful source of motivation and enjoyment in their work (Hargreaves 2000).

Based on attachment theory and relationship-driven models (see Verschueren and Koomen 2012), warm and supportive relationships with low conflicts between teachers and students have a beneficial impact on students in diverse ways (e.g. Bergin and Bergin 2009; Pianta 1999; Roorda et al. 2011). Research has consistently reported that a close teacher–child relationship is linked with students' higher academic performance (e.g. Birch and Ladd

1997; Hamre and Pianta 2001; Hughes 2011). In addition, teacher–student relationships with high closeness have been found to be associated with students' higher levels of school adjustment and behavioural engagement (Birch and Ladd 1997; Cadima et al. 2015), higher self-regulation skills (Cadima et al. 2016), lower levels of anxiety, and social withdrawal (Arbeau, Coplan, and Weeks 2010) and to enhance students' social skills and peer relations (e.g. Berry and O'Connor 2010; Gazelle 2006). On the other hand, conflicted relationships have been found to be long-term contributors to students' lower academic achievement (Hughes 2011; 2008; Mason et al. 2017; Pakarinen et al. 2021), interest in learning (Pakarinen et al. 2021), and behavioural challenges (e.g. Birch and Ladd 1997; Buyse et al. 2008; Doumen et al. 2008; Mejia and Hoglund 2016).

Research has also shown that the teacher–student relationship contributes not only to diverse student outcomes, but research evidence is available regarding the teacher–student relationship and the quality of classroom interaction when assessed in terms of emotional and instructional supports and classroom organisation. Prior research has shown that a warm teacher–student relationship is associated with teachers' higher emotional support and sensitivity in early school years (Ahnert, Pinquart, and Lamb 2006; Buyse et al. 2008; Cadima et al. 2015). In Grade 1, a close teacher–student relationship has been found to be linked with strong instructional and emotional support in the classroom (Hamre and Pianta 2005). Furthermore, in her longitudinal study, O'Connor (2010) found that children in classrooms with a more positive climate and high classroom organisation had warmer relationships with their teachers. On the other hand, in terms of conflict in teacher–student relationships in preschool classrooms, higher levels of conflict have been found to be associated with lower emotional support provided by the teacher (Hamre et al. 2008). However, even though the teacher–student relationship has been found to have a connection with classroom interactions in a broader sense (in terms of emotional and instructional

supports and classroom organisation), scant research is available that has considered the associations between the teacher–student relationship and educational dialogue.

Students' Social Competence and Its Associations with Classroom Interactions

Students' social competence can be defined as their competence to engage in a group action, to build and maintain relationships with other people (Rubin, Bukowski, and Parker 2006), and to participate in cooperation and display appropriate behaviour in different social situations (Brophy-Herb et al. 2007; Chen and French 2008). In early school years, young students' social competence is manifested in their use of behavioural strategies in interaction, for instance, in terms of play, peer group entry, and prosocial behaviour (Guralnick 2010; Odom, McConnell, and Brown 2008). The concept of social competence has been suggested to reflect two main behaviours: the presence of prosocial behaviours and the absence of antisocial behaviours (Junttila et al. 2006). According to Junttila et al. (2006) students' prosocial behaviour covers the dimensions of cooperation skills and empathy, whereas antisocial behaviour covers dimensions of impulsivity and disruptiveness. Prosocial behaviour, such as helping, cooperation, and comforting, are vital for the quality of interaction in the classroom (Rubin, Bukowski, and Parker 2006). Empathy contributes to prosocial behaviour by reflecting the person's understanding and resembling the other person's feelings (Eisenberg, Fabes, and Spinrad 2006). Antisocial behaviours, on the other hand, describe students' low emotional regulation, verbal and physical aggressiveness, and low emotion expression skills (Denham 2006). In terms of antisocial behaviour, disruptiveness, impulsivity, and aggressiveness have been found to be linked with students' behavioural adjustment challenges in the classroom (Thomas et al. 2008).

In prior research, positive associations between students' social competence and the quality of classroom interactions have been predominantly found in terms of instructional and

emotional supports and classroom organisation (e.g. see Mashburn et al. 2008; Pianta et al. 2002). Teachers have been found to be more interactive and responsive with socially competent students and give more positive feedback and instructional support for their learning (Denham 2006; Raver and Knitzer 2002). In Finnish Grade 1 classrooms, students' higher prosocial behaviour in the fall semester was found to predict higher instructional and emotional support in the classrooms in the spring semester (Penttinen, Pakarinen, and Lerkkanen 2022). Furthermore, in Finnish preschool classrooms, higher quality of emotional support has been found to be associated with students' higher prosocial behaviour (Pakarinen, Lerkkanen, and von Suchodoletz 2020), and more observed instructional support has been linked with students' higher empathy and lower disruptiveness (Siekkinen et al. 2013). In terms of antisocial behaviour, students' lower social competence has been connected with low climate and less optimal teacher behaviour in the classroom (Brophy-Herb et al. 2007). On the other hand, teacher's high emotional support has been found to be an important protective factor for students' problem behaviour (Domínguez et al. 2011).

These prior findings indicate that students' social competence is associated with the quality of classroom interactions in a broader sense. However, the studies investigating interaction domains of emotional and instructional supports and classroom organisation have mostly emphasised the role of teacher's actions in the classroom. Research is needed to investigate to what extent students' social competence may be associated with the quality of educational dialogue, a form of classroom interaction in which both the teacher and students have an active role in the process of shared knowledge-building.

Aims of the Study

The scant prior research on educational dialogue calls for evidence regarding the factors that link with educational classroom dialogue, especially in early school years and

without an interventional approach. Our study aimed to answer these research gaps by investigating educational dialogue in an authentic classroom setting without an intervention. We considered student-related factors that could help us to better understand the classroom conditions that may support or restrict educational dialogue and students' learning through it. Student-related factors of teacher–student relationship and students' social competence were investigated in relation to the quality of educational dialogue in Grade 2 classrooms. The research questions were as follows:

RQ1. To what extent does the teacher–student relationship (closeness and conflict) associate with the quality of educational dialogue (moderate or high quality)?

RQ2. To what extent does students' social competence (cooperation skills, empathy, disruptiveness, and impulsivity) associate with the quality of educational dialogue (moderate or high quality)?

Method

Participants and Procedure

The data of our study stem from a larger longitudinal research project that examined the role of the well-being of teachers and students in classroom interaction (Lerkkanen and Pakarinen 2016–2022). Fifty Grade 2 teachers and their students comprised the sample for this study. The average age of the participating teachers (3 male, 47 female) was 45.7 years, and, on average, they had 18.5 years of teaching experience. All teachers were holders of a master's degree, which is the degree requirement for primary school teachers in Finland. On average, there were 18.8 students (minimum 5, maximum 26) in the Grade 2 classrooms, representing a typical primary school class size in Finland. Of the 664 participating students, 50.7% were girls, and the students were predominantly eight years old. The educational degree of the students' parents (N = 451) varied from no vocational education to a licentiate or doctorate

(Mode = vocational school degree). All subjects gave their written consent for their participation in the study (parents gave consent for their child's participation). Participation in the study was voluntary, and the participants had the opportunity to drop out at any stage of the study. The research project received ethical approval from the university's ethics committee in 2018 (details removed for peer review), and the data were collected in the 2019 spring semester.

The data for this study were collected in two ways. First, the teachers filled in questionnaires in which they rated each of the participating students' social competence and the quality of their relationship with the student. Second, classroom observations were conducted through video recordings during one typical school day. In total, 151 lessons (three to four lessons per classroom) were video recorded, and the typical duration of the lessons was 45 minutes. A variety of subjects (literacy, mathematics, science, religion/social studies, English as a foreign language, crafts, and art) were included in the recorded lessons. The recordings were conducted with two video cameras, one of which was placed in a back corner and the other one in a front corner of the classroom. The purpose of the video-recorded classroom observations was to collect authentic classroom data on the interactions between teachers and students and to observe the dialogic practices that the teachers utilise in their everyday teaching throughout the school day. The recordings were done during usual school days and during usual lessons. The teachers did not receive specific training on how to conduct educational dialogue, and they were not advised to use dialogue in their teaching during the classroom recordings.

Measures

Teacher–Student Relationship

The Grade 2 teachers filled in a short version of the Student-Teacher Relationship Scale (STRS; Pianta 2001; Finnish version by Lerkkanen and Poikkeus 2011) that measures the

quality of teacher–student relationship in terms of closeness and conflict. The scale consists of 15 items, of which eight measure the closeness of the relationship between teacher and student (e.g. “I share an affectionate, warm relationship with this child.”) and seven items measure the conflicts (e.g. “This child and I always seem to be struggling with each other.”). The STRS is a teacher-report measure in which the teachers rate the items per individual child on a five-point, Likert-type scale (from 1 = definitely does not apply to 5 = definitely applies). The Cronbach’s alpha for closeness was 0.71 and for conflict 0.87.

Student Social Competence

The participating teachers also rated their students’ social competence using the Multisource Assessment of Social Competence Scale (MASCS; Kaukiainen et al. 2005). The Finnish MASCS scale was developed as a multisource instrument for diverse raters (teachers, parents, peers, and children themselves), and the factorial structure has been tested in the Finnish context (see Junttila et al. 2006). For each participating student, teachers rated 15 items on a four-point scale (1 = never, 2 = rarely, 3 = frequently, and 4 = very frequently) to capture both behavioural and affective aspects of students’ social competence. The MASCS measures students’ prosocial and antisocial skills. The prosocial skills were assessed in terms of cooperation skills (five items, e.g. “is skilful in starting conversations with mates”; α = .78) and empathy (three items, e.g. “knows how to be a good friend”; α = 71). The antisocial skills were assessed in terms of disruptiveness (four items, e.g. “argues and quarrels with peers”; α = .87) and impulsivity (three items, e.g. “is easily irritated”; α = .88).

Control Variables

The teachers also reported their teaching experience in years and the number of students in the classroom. The parents of the students reported the gender of their child.

Analysis

Analysis of the Quality of Educational Dialogue

The first analysis phase focused on identifying episodes of educational dialogue within the 151 video-recorded lessons. The video recordings were viewed by a researcher specialising in analysis of dialogic interactions. During video viewing, the researcher made notes regarding the interaction in the lessons and aimed to identify episodes of educational dialogue between the teachers and students (i.e., communicative events; see Hymes 1972). The identification of the episodes was based on the criteria of dialogic teaching by Alexander (2006, 2020). According to these criteria, mutual continuous verbal exchange between the teacher and students was considered an episode of educational dialogue if it reflected the six principles of dialogic teaching: 1) collective, 2) reciprocal, 3) supportive, 4) deliberate, 5) cumulative, and 6) purposeful educational classroom talk. Therefore, educational classroom talk characterised only as dialogic was considered for the present study and for further analysis. Shorter and segmented types of interaction, for instance separate question–answer sequences, or other types of educational classroom talk, were not considered as episodes of educational dialogue themselves, but they could be included within an episode including a broader exchange between the teacher and students. The episodes represented discussion under one main topic. In cases where a topic or activity changed, the episode was considered to end. A new main topic, initiated by either the teacher or students, was defined to begin a new dialogic episode. The researcher, responsible for the analysis, watched and evaluated each identified episode of educational dialogue several times in order to identify the boundaries of the episodes as correctly as possible and to verify the quality of dialogic interaction between the teacher and students participating in the discussion. On average, the found episodes of educational dialogue lasted for 169 seconds (minimum of 30 seconds, maximum of 700 seconds). Regarding the dialogue duration per entire lesson, on average, 237 seconds of educational dialogue occurred per lesson (min = 0, max = 1,993 seconds).

After identifying the episodes of educational dialogue, the content of each dialogic episode was carefully examined. The episode content was analysed in terms of separate communicative acts (i.e., statements; see Hymes 1972) of the teacher and students. Each individual communicative act of the teacher or students was determined as an analysis unit. The length of a communicative acts varied and was considered as consisting of a word, a sentence, or several sentences, as long as the communicative act was identifiable. Different types of communicative acts were analysed within the dialogic episodes: for example, questions (open / closed, clarifying / expanding, abstract / practical), elaborations, responses, feedback comments, justifications, expanding comments, and summarising comments.

After analysing the content of the dialogic episodes, the quality of the episodes was finally determined. Based on the analysis of the dialogue content, each episode was categorised based on the four patterns of dialogic teaching by Muhonen et al. (2016, 2018): teacher-initiated dialogue of moderate quality, teacher-initiated dialogue of high quality, student-initiated dialogue of moderate quality, and student-initiated dialogue of high quality. The four patterns describe differences between moderate- and high-quality dialogues in both teacher- and student-initiated educational discussions (see Figure 1). In moderate-quality educational dialogues (both teacher- and student-initiated ones), the teacher is predominantly responsible for scaffolding the discussion and students' participation, and the teacher's scaffolding comprises a relatively limited variety of scaffolding techniques and unitary forms of questioning. On the other hand, in high-quality dialogues (both teacher- and student-initiated ones), both teacher and students participate actively and equally in the shared knowledge-building process, share thoughts, consider different alternatives, and ask questions. In addition, the teacher utilises diverse scaffolding strategies to support the shared knowledge building, synthesis of diverse ideas, and development of students' conceptual thinking. For each identified episode of educational dialogue, one of the four pattern types

was determined (see examples of the four pattern types in Muhonen et al. 2016, 2018, 2022). As a result of this qualitative analysis phase, the quality of educational dialogue in each of the 151 video-recorded lessons was determined according to the occurrence of the patterns of dialogic teaching.

(Insert Figure 1 here)

Analysis of the Student–Teacher Relationship and Students' Social Competence in Relation to the Quality of Educational Dialogue

The second analysis phase focused on examining the associations of student–teacher relationship and students' social competence with the quality of educational dialogue. The analysis was conducted with multilevel modelling, which considered variance at the classroom and individual student levels (between- and within-levels) (Heck and Thomas 2009; Muthén and Muthén 1998–2018). First, in order to determine how much of the variation in teacher–student relationship and students' social competence was due to the classroom level (between-classroom variation) and due to the individual level (within-classroom variation, differences between individual students), intra-class correlation coefficients were calculated. Next, correlations were calculated among the study variables of student–teacher relationship, students' social competence, and educational dialogue. Third, multilevel path models were conducted. The moderate-quality dialogue and high-quality dialogue (including both teacher- and student-initiated ones) were investigated in their own separate models in relation to the two domains of the teacher–student relationship: closeness and conflict. In addition, moderate-quality dialogue and high-quality dialogue were investigated in their own separate models in relation to the four domains of student's social competence: cooperation skills, empathy, disruptiveness, and impulsivity. Teacher work experience, class size, and child's gender were controlled for in the analyses. This statistical

analysis phase was conducted with the Mplus statistical software package (Muthén and Muthén 1998–2018).

Results

In total, 212 episodes of educational dialogue were identified within the 151 video-recorded lessons. Therefore, on average, 1.4 dialogic episodes occurred per lesson (min = 0, max = 12 episodes). In terms of the quality of educational dialogue and the four patterns of dialogic teaching, the teacher-initiated dialogue of high quality was the predominant pattern type in the sample (n = 123 episodes). In addition, 58 dialogic episodes representing the teacher-initiated dialogue of moderate quality, six episodes representing the student-initiated dialogue of moderate quality, and 27 episodes representing the student-initiated dialogue of high quality were found within the lessons.

Teacher–Student Relationship and Students' Social Competence in Relation to the Quality of Educational Dialogue

First, potential differences between classrooms regarding teacher–student relationship and students' social competence were examined by calculating the intra-class correlation coefficients (ICCs) and variance estimates at the between- and within-levels (see Table 1). Regarding teacher–student relationship, in closeness 27.4% ($p < .001$) and in conflict 6.1% ($p < .05$) of the variance was due to classroom differences. Regarding students' social competence, in students' cooperation skills 17.3% ($p < .001$), in empathy 20.5% ($p < .001$), in impulsivity 11.5% ($p < .01$), and in disruptiveness 12.8% ($p < .001$) of the variance was due to classroom differences. Hence, the rest of the variance in teacher–student relationship and students' social competence was due to within-classroom differences (between individual students). Next, as presented in Table 1, descriptive statistics and the between- and within-

level correlations among the study variables were determined.

The correlations showed that closeness in the teacher–student relationship was positively related to student-initiated high-quality dialogue (r = .200, p <.05). In addition, students' cooperating skills correlated positively, albeit marginally significantly, with student-initiated high-quality dialogue (r = .270, p <.10). Student disruptiveness was associated negatively with student-initiated moderate (r = –.161, p <.05) and high-quality (r = –.329, p <.05) dialogues.

(Insert Table 1 here)

Next, multilevel models were run to determine to what extent the teacher–student relationship (closeness and conflict) and students' social competence (cooperation skills, empathy, disruptiveness, and impulsivity) were associated with the quality of educational dialogue (moderate or high quality). In each model, the teacher's teaching experience and number of students was controlled for at the classroom level, and student gender was controlled for at the individual student level. The results of multilevel models are shown in Table 2. In terms of the teacher–student relationship, closeness had a positive association with high-quality educational dialogue (β = .227, p = .031). The model fit the data well: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 2.630, p = .6215; CFI = 1.00; TLI = 1.00; RMSEA = .000; $SRMR_{between}$ = .048, $SRMR_{within}$ = .000]. In addition, conflict in the teacher–student relationship was found to be negatively, albeit marginally significantly, associated with high-quality dialogue (β = –.288, p = .090). The fit of the model was good: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 2.433, p = .6567; CFI = 1.00; TLI = 1.00; RMSEA = .000; $SRMR_{between}$ = .046, $SRMR_{within}$ = .000]. In turn, neither closeness nor conflict was found to be associated with moderate-quality dialogue.

In terms of students' social competence, several associations with high-quality dialogue were found. Students' disruptiveness was found to be negatively associated with the high-

quality educational dialogue (β = –.360, *p* = .011.). On the other hand, students' cooperation skills were positively associated with high-quality educational dialogue (β = .341, *p* = .026). In addition, empathy had a marginally significant positive association with high-quality educational dialogue (β = .323, *p* = .052). The model, including students' disruptiveness, fit the data well: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 2.642, *p* = .6194; CFI = 1.00; TLI = 1.00; RMSEA = .000; $SRMR_{between}$ = .050, $SRMR_{within}$ = .000]. The model fit indices for the model, including students' cooperation skills were: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 2.018, *p* = .7323; CFI = 1.00; TLI = 1.00; RMSEA = .000; $SRMR_{between}$ = .046, $SRMR_{within}$ = .000]. In addition, the model including empathy fit the data well: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 2.103, *p* = .7168; CFI = 1.00; TLI = 1.00; RMSEA = .000; $SRMR_{between}$ = .045, $SRMR_{within}$ = .000]. Student impulsivity was not found to associate significantly with the high-quality dialogue.

Considering the associations between students' social competence and moderate-quality dialogue, fewer associations were found. Disruptiveness was found to be negatively, albeit marginally significantly, related to moderate quality educational dialogue (β = –.157, *p* = .057). The model fit the data well: [χ^2 (4) (N_{within} = 713, $N_{between}$ = 49) = 6.411, *p* = .1705; CFI = .978; TLI = .939; RMSEA = .029; $SRMR_{between}$ = .085, $SRMR_{within}$ = .000]. No other statistically significant associations between domains of students' social competence and moderate-quality dialogue were found.

(Insert Table 2 here)

In summary, the findings of multilevel modelling showed that the domains of teacher–student relationship and students' social competence associated predominantly with the high-quality educational dialogue in the classrooms. To demonstrate the high quality of educational dialogue in the study sample concretely, two examples of high-quality dialogues are included as an Appendix.

Discussion

Our study aimed to explore the associations between certain student-related factors and the quality of educational dialogue in Grade 2 classrooms. We examined to what extent the teacher–student relationship (closeness and conflict) and students' social competence (cooperation skills, empathy, disruptiveness, and impulsivity) were associated with the quality of educational dialogue (moderate or high quality). The results of the multilevel modelling showed that in terms of teacher–student relationship, closeness associated positively, and conflict associated negatively with the high quality of educational dialogue. Regarding students' social competence, cooperation skills and empathy were found to link positively with the high quality of educational dialogue. On the other hand, students' disruptiveness was linked negatively with both high and moderate quality of dialogue.

The first research question focused on the relationship between the teacher–student relationship and the quality of educational dialogue. In prior research, the associations between the teacher–student relationship and educational dialogue are scantly studied. However, if we look at classroom interactions in a broader sense (in terms of emotional and instructional supports), our study results are in line with prior research suggesting a positive link between closeness and high quality of interaction (in this study, educational dialogue) in the classroom. For instance, in the early school years setting, prior research has shown that a warm teacher–student relationship is associated with teachers' higher instructional support (Hamre and Pianta 2005) and with higher emotional support and sensitivity (Ahnert, Pinquart, and Lamb 2006; Buyse et al. 2008; Cadima et al. 2015). In addition, we suggest that in terms of the proximity of the theoretical definitions of both teacher–student relationship and educational dialogue, there are indisputable links that support the empirical findings of our study. As presented earlier in the description of a supportive teacher–student relationship,

high closeness between teacher and student is characterised by warmth, open communication, and approachability (Birch and Ladd 1997; Pianta 1999). To our understanding, these three elements strongly concur with Alexander's (2006, 2020) six principles of dialogic teaching that are required for educational dialogue to happen. The elements of warmth and approachability can be seen to merge with the dialogic principles (Alexander 2018, p. 566) of collectiveness (the classroom is a site of joint learning and inquiry) and supportiveness (participants feel able to express ideas freely, without risk of embarrassment over "wrong" answers). In addition, the element of good communication can be seen to cover the vital dialogic principles (Alexander 2018, p. 566) of reciprocity (participants share ideas, listen to each other and consider alternative views) and cumulation (participants build on their own and each other's ideas and chain them into coherent lines of thinking and understanding). Therefore, considering this proximity of the concepts of close teacher–student relationship and educational dialogue and based on the findings of our study, it seems reasonable to suggest that close teacher–student relationships can enable and support the higher quality of educational dialogue between the teacher and students.

In terms of conflict in the teacher–student relationship, a marginally significant association with high-quality dialogue was found, but there was no association with moderate-quality dialogue. Since the association with high-quality dialogue was only marginally significant, caution is needed when interpreting the results. The finding may suggest that the conflicts in teacher–student relationships can negatively influence the quality of the educational dialogue between teachers and students, at least to some extent. In prior research, higher conflict has been found to be associated with lower emotional support provided by the teacher (Hamre et al. 2008) and with student outcomes, such as lower academic achievement (Hughes 2011; Mason et al. 2017; Pakarinen et al. 2021), behavioural challenges (e.g. Buyse et al. 2008; Doumen et al. 2008; Mejia and Hoglund 2016), and with

lower prosocial behaviour and lower cooperation skills (Birch and Ladd 1997). It should be kept in mind that, in general, conflicted relationships between the teacher and students are relatively rare in Finnish classrooms and most often concern a limited number of individual students. Therefore, conflicted teacher–student relationships may not have that significant of an effect on the overall whole-class educational dialogue, which we examined in our study. In the future, more fine-grained research is needed regarding the link between conflicted teacher–student relationships and individual students' participation during educational dialogue.

The second research question addressed the association between students' social competence and the quality of educational dialogue. Our results showed that students' cooperation skills associated positively with high-quality educational dialogue, and student empathy was linked marginally significantly with high-quality dialogue. These findings are in line with prior research considering classroom interaction in a broader sense (in terms of emotional and instructional supports), since prior studies have shown students' prosocial behaviour, such as cooperation among peers, as being associated with higher classroom interaction quality (e.g. Pakarinen, Lerkkanen, and von Suchodoletz 2020; Penttinen, Pakarinen, and Lerkkanen 2022; Rubin, Bukowski, and Parker 2006; Siekkinen et al. 2013). However, in terms of educational dialogue, the associations between students' social competence and dialogue have been predominantly studied through interventions suggesting that students' communication skills can be trained and improved when teachers actively scaffold students and invite them to participate in the dialogue (see e.g. Alexander,2018; Mercer and Littleton 2007; van der Veen et al. 2017). For instance, through his dialogic teaching-focused intervention, Alexander (2018) showed that students' skills in argumentation, justification, and challenging each other's views improved. These prior findings are encouraging and of a high importance, but on the other hand, they consider less

the possibility that students' already existing communication skills and prosocial behaviour may contribute to the quality of educational dialogue in the authentic classroom situation. Therefore, the findings of our study are important by suggesting that students' already existing social competence, in terms of prosocial behaviour, can support the high quality of educational dialogue in an authentic classroom setting.

Our findings also showed a negative association between students' disruptiveness and the high quality of educational dialogue. In addition, we found a marginally significant association between disruptiveness and moderate-quality dialogue. In terms of classroom interaction as a broader concept, students' lower social competence and disruptiveness have been found to have a connection with lower classroom interaction quality (Brophy-Herb et al. 2007; Thomas et al. 2008). Therefore, our findings appear to be in line with broader interaction research, but at the same time, they provide additional knowledge regarding the negative association between student disruptiveness and the quality of educational dialogue in the authentic classroom setting. It is widely acknowledged that it is the teacher who has a vital role in scaffolding the dialogue and in opening the dialogic space for the students to share their thoughts and explore, negotiate, and confront different ideas in an open and constructive environment (Wegerif 2007). However, especially in high-quality educational dialogue, in which the students are treated as equal and active participants of the shared knowledge building, students also have a vital responsibility as participants in the dialogue (Muhonen et al. 2016; Webb at al. 2019). This type of responsibility requires students to respect each other's thoughts, views, and turn-taking. Therefore, students who display antisocial behaviours, such as disruptiveness, low emotion expressions skills or emotional regulation (Denham 2006), may have a negative impact on the quality of the dialogue, which ideally should reflect the six principles of dialogic teaching (Alexander 2006, 2020): collectiveness, reciprocity, supportiveness, deliberativeness, cumulativeness, and

purposefulness. However, in the future, more detailed research is needed regarding students' disruptive behaviour and how teachers can efficiently support building educational dialogue in the classrooms of behavioural challenges.

Implications, Future Directions, and Limitations

Our study has both theoretical and practical implications. Let us start with the theoretical ones. In prior research, a great deal of studies exploring educational dialogue have been conducted through an interventional study approach considering student-related factors as an outcome of dialogic intervention (e.g. Alexander 2018; Mercer and Littleton 2007; van der Veen et al. 2017). However, the data of our study were collected in Finnish Grade 2 classrooms without an interventional setting. Therefore, the results contribute to prior research by describing the authentic occurrence and quality of educational dialogue and how they are linked to the quality of the teacher–student relationships and students' social competence in the participating classrooms. Thus, our study provides evidence regarding how teacher–student relationship and students' social competence contribute to the high quality of educational dialogue. In the future, research should be continued concerning early school years educational dialogue, and diverse student-related variables should be considered to investigate factors that may prevent or advance educational dialogue from both whole-class and individual student perspectives.

Regarding the practical implications of our study, the findings suggest that it is important that teachers become aware of the benefits of a close relationship with their students and that the building of the relationship should start from the very beginning of the students' school journey. Though building a close relationship with each child in the classroom takes time and consistent effort, warm relationships can support a higher quality of educational discussion and further students' collaborative learning. Furthermore, students'

social competence, especially in terms of cooperation skills and empathy, should be supported from the beginning of their school journey in order to raise the quality of dialogue in the classroom. However, it is also vital that students with antisocial behaviour (especially disruptiveness) receive sufficient teacher support for them to be able to participate in the collaborative and constructive educational dialogue with their peers. Therefore, attention should be paid on supporting teachers' skills on managing and scaffolding educational dialogue efficiently, especially with the students with antisocial behaviour. In order to support the high quality of dialogue in the early school years classrooms, it is important that teachers receive training and knowledge, both in teacher education and in-service training, about how to scaffold effective dialogue that supports the development of the students.

Our study also has limitations that should be considered when interpreting the results. First, the number of the video-recorded lessons (N = 151) and the participating teachers (N = 50) was relatively small for statistical modelling. In future research, it will be important to replicate the findings with a larger sample size. Second, the lesson context was not controlled for. The data consisted of a variety of different subjects and classroom activities. This decision was intentionally made because the study goal was to capture authentic real-world data on how teachers use dialogue and interact with their students throughout the school day. Therefore, the subjects and activities of the recorded lessons varied based on the regular school day schedule of the class. Nevertheless, it should be acknowledged that the lesson subject/topic or type of activity can have an impact on the amount and quality of dialogue utilised in the lesson. For instance, independent work may be less favourable for whole class dialogue (discussion is not encouraged) whereas whole class activities or topics close to students' own experiences may generate more discussion in the classroom. In future, more controlled lessons context (in terms of certain subject and/or classroom activity) may be considered for more concentrated study approach. Third, the study did not have a longitudinal

design, and therefore, caution is required when making causal inferences. Fourth, for the statistical analyses, the quality of educational dialogue was determined by separating the moderate and high-quality dialogues based on the framework of Muhonen et al. (2016, 2018, 2022). However, in the original framework, distinction also between teacher- and student-initiated dialogues was made. Therefore, the original framework considers a wider variation both in teachers' and students' contributions within dialogue. It is important to acknowledge that the approach of the present study is simpler compared to the original four pattern characterisation. In future research, in addition to the framework by Muhonen et al. (2016, 2018, 2022), alternative characterisations (e.g. *exploratory talk* in Barnes and Todd, 1977; Mercer and Dawes, 2008; *dialogic instruction* in Nystrand 1997; *dialogic inquiry* in Wells 1999; and *accountable talk* in Michaels et al. 2008) and their analysis frameworks should be utilised to examine the classroom talk and educational dialogue in more detail. Fifth, the student-related variables of teacher–student relationship (closeness and conflict) and students' social competence (cooperation skills, empathy, disruptiveness, and impulsivity) were measured only based on teachers' ratings. Perceptions of the students regarding the teacher-student relationship and their own social competence were missing. This is a major limitation of the present study, and therefore, caution is needed when generalising the findings. In the future, a variety of different measures and especially student self-assessments and parental/peer assessments need to be included to gain a deeper understanding of the phenomenon.

Conclusions

This study is among the first ones to explore the associations between student-related factors and the quality of educational dialogue in early school years classrooms without an interventional approach. The findings showed links between the teacher–student relationship and students' social competence and the quality of educational dialogue in the classroom.

Closeness and students' cooperation skills and empathy appeared to be factors that may support the building of high-quality educational dialogue in the classroom. In turn, students' disruptive behaviour and conflict in teacher–student relationship may prevent the building of effective whole-class high-quality dialogue. Based on the study findings, we suggest that it is important that teachers receive knowledge about these links in order to make an effort to build close relationships with their students and to support the students' social competence. Research is needed in understanding how teachers can scaffold educational dialogue effectively with different students, especially with the ones of conflicted relationship or antisocial behaviour.

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Appendix

Sample extract 1: Teacher-initiated dialogue of high quality.

Context: *Students have been learning to memorise number sequences in pairs.*

Teacher:	How did it go this time? How did you learn it this time or how did you remember? Dan.
Student 1:	I first just repeated those four first numbers, and then I just glanced at those last ones. And straight away I knew all of them.
Teacher:	Then, you remembered then?
Student 1:	Yeah.
Teacher:	You like learned these 4, 3, 7, 6 and then you glanced at those other ones? And then the information went from your eyes to your brain and you remembered it that way.
Student 2:	Yeah, we did it the same way!
Teacher:	Very efficient! Teddy.
Student 3:	We did it so that I looked at the numbers up to 6, and Alice looked at the rest of the numbers. And then we combined them.
Student 4:	Yeah, we did it that way, too!
Teacher:	There is power in cooperation! You had the same strategy, too, Kelly.
Student 5:	Simon had the numbers up to 6, and I took the numbers until 10. But I did glance at the beginning part, too.
Teacher:	Just in case you look at the beginning part, too. Just to make sure?
Student 5:	Yeah, and then I just tried to remember the whole thing.

Context: *The discussion regarding memorising continues.*

Sample extract 2: Student-initiated dialogue of high quality.

Context: *Teacher has asked students to have a look at the study book page about Finland's reptiles.*

Student 1:	Oh no, they are scary . . .
Teacher:	You are not alone in your reaction. For some reason, snakes can cause that kind of escape reaction in us. It must be a very primitive intuition in us humans.
Student 1:	Ugh, ugh . . .
Teacher:	Though actually we see them quite seldom. But where do you think snakes are now at this time of year?
Student 1:	Well, they are now waking up from hibernation after the winter.
Teacher:	Yes! In southern Finland, the spring is ahead of us, but we still have snow here and the ground is still quite frozen. But I am guessing that after last weekend, since it was so warm, some snakes started waking up from

	hibernation also here. Someone had taken a picture in which a snake was lying on snow.
Students:	Wow!
Teacher:	It really shows when snow is white and if the viper is dark or black. That is quite a vision! But yes, they are in hibernation under leaves or trees, or if they get in to woodsheds, they probably like it. And from the picture there, you can see there is a nice looking viper. Actually, there are two of them. And the people who study snakes know that snakes often stay in those shared nests. There is quite a hustle there in springtime when snakes start waking up. I have only seen one viper at a time, but I have never seen a viper nest. I have only seen when a snake crosses a road or a trail.
Student 2:	Once, I was walking on that one road and after walking some time, I saw a viper there just lying in the sun! I went past it, but then I came back and tried to take a picture. And then I had to do a little stumping there so it could hear me, and then it went away.
Teacher:	Yes, so many of you have seen snakes. I remember the last time when we talked about vipers that many of you wanted to share their experiences. And what other reptiles do exist? There is picture in the book, too.
Student 3:	A viviparous lizard!
Teacher:	Indeed. How does it differ from a snake? What is the most visible difference?
Student 4:	At least it has legs.
Teacher:	Yes, a lizard has legs and very fine legs indeed. What can you tell about the lizard legs?
Student 5:	So, I wanted to share with you, that at home, we have those stones close to the kennel, and we always find so many lizards there under those stones. And I have held so many times a lizard on my hand, so I know that the nails in their feet are really sharp and firm.
Teacher:	Yes, you actually really nicely answered that question.
Context: *Teacher and students continue exploring reptiles.*	