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The role of emotional support and classroom organisation in the social inclusion of students with and without special educational needs

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Self-perceived social inclusion in the classroom is associated with positive developmental outcomes, highlighting the importance of understanding factors that may shape students' perceptions of inclusion. Drawing on the Teaching Through Interactions framework, this study explores whether Emotional Support and Classroom Organization are associated with student perceptions of social inclusion, with a particular focus on students with special educational needs (SEN). Social inclusion was assessed through student self-report, while Emotional Support and Classroom Organization were assessed through classroom observations using the Classroom Assessment Scoring System (CLASS). The study included 1,373 German-speaking Swiss primary school students, of whom 328 had SEN, from 74 inclusive classrooms in Years 3–6 ($\bar{x}$ = 10.10, SD = 1.22). Due to missing data, the analytical sample comprised 1,173 students (69 inclusive classrooms). Structural equation modelling revealed no significant association between Emotional Support and social inclusion. Although Classroom Organization was not associated with social inclusion for students without SEN, a significant positive effect was found for students with SEN. The results highlight Classroom Organization as a potential lever for fostering social inclusion among students with SEN and provide implications for inclusive classroom practice.

KEYWORDS
classroom climate, classroom observation, inclusive education, social acceptance, social inclusion, special educational needs, teacher behaviour

Introduction

When students feel socially included in a classroom, it benefits their academic, social, and psychological development (Berndt, 2002; Bukowski and Sippola, 2005; Cillessen et al., 2005; Liem and Martin, 2011; Tipton et al., 2013). Within the school environment, social inclusion encompasses social interactions, relationships, peer acceptance, and student perceptions of acceptance; in other words, being an active member of their class, being valued as such, and maintaining positive relationships with peers and teachers (Bossaert et al., 2013; Farrell, 2000; Koster et al., 2009; Venetz et al., 2015). Students who feel socially included demonstrate greater engagement and

persistence, improved learning performance, enhanced prosocial behaviour, and increased self-esteem (Bukowski and Sippola, 2005; Cillessen et al., 2005; Liem and Martin, 2011).

Student perceptions of inclusion are shaped by their relationships with peers and teachers, as well as by the degree to which their individual needs are met (Koster et al., 2009; Smith et al., 2016). In Bronfenbrenner's bioecological model, interactions with significant others (i.e., parents, teachers, peers) are conceptualised as proximal processes that play a vital role in children's development (Bronfenbrenner and Morris, 2007). In the classroom, these proximal processes are reflected in students' interactions with teachers and classmates. Although research has explored the impact of classroom interactions on students' academic outcomes, behaviour, and engagement (Gregory et al., 2014; Pianta et al., 2008), their influence on social inclusion has rarely been examined (Gasser et al., 2022). This study seeks to explore the relationship between student perceptions of social inclusion and the quality of classroom interactions, specifically Emotional Support and Classroom Organization.

From a bioecological perspective, identical interactions can affect students differently. Thus, interactions measured at the classroom level may not have the same effects on all students (Downer et al., 2012). This issue is especially relevant for students with special educational needs (SEN). SEN services are provided to students whose learning and/or development are affected by disabilities, difficulties, or disadvantages (OECD, 2005). Such factors may hinder positive interactions with peers and teachers and be associated with lower social inclusion. Proximal processes disproportionately affect disadvantaged individuals (Bronfenbrenner and Ceci, 1994), thus, this paper examines whether high-quality classroom interactions - such as experiencing emotionally supportive interactions and well-organised classrooms - might be particularly beneficial for greater social inclusion of students with and without SEN.

Social inclusion

Multiple terms are used to describe social inclusion, integration, or participation. An analysis of the literature by Koster et al. (2009), which was replicated by Bossaert et al. (2013), compared the definitions of these three concepts and concluded that the terms can be used synonymously. This article uses the term social inclusion to emphasise whether students feel socially included in their classrooms rather than the degree to which they actively participate in class (both are key dimensions of the concept of social inclusion).

Friendships are a key component of social inclusion. They provide important opportunities for social interaction and support and contribute to students' sense of belonging within the classroom (Bossaert et al., 2013; Koster et al., 2009). Garrote et al. (2023) found that self-perceived social inclusion is connected to the number of people within a classroom that a student identifies as a friend. Close peer relationships foster a sense of connection and belonging in students (Vaquera and Kao, 2008) and are associated with higher self-esteem, more prosocial behaviour, increased school engagement, higher academic achievement, and greater social success later in life (Bukowski and Sippola, 2005; Cillessen et al., 2005; Liem and Martin, 2011). The complexity of peer relationships increases in the later primary school years (Brown and Larson, 2009; Eccles, 1999; Gasser et al., 2017) as students become more aware that relationships convey status and reputation within the wider peer system (Brown and Larson, 2009).

Peer relationship formation require opportunities for interaction (Bronfenbrenner and Morris, 2007). Teachers exert great influence on the interactions in the classroom and act as key facilitators of proximal processes by guiding social dynamics and peer interactions (Gregory et al., 2014; Sette et al., 2020). Teacher interactions with individual students influence group perceptions of that student. For example, when teachers show affection to a student, this positively influences how peers perceive that student (Sette et al., 2020). This finding suggests students use their teachers' interactions with other students as a reference point, at least in part, for their own interactions with their peers (Hamm and Hoffman, 2016; Hughes et al., 2001).

The Teaching Through Interactions Framework

The Teaching Through Interactions (TTI) framework (Hamre et al., 2013) provides a framework for examining the quality of interactions within the classroom, thereby offering a way to operationalise the quality of proximal processes in the school context (Hamre et al., 2013; Hamre and Pianta, 2007). From this perspective, the student's immediate classroom experience, including interactions with teachers and peers, is central (Cryer et al., 1999). The TTI framework specifies three domains of classroom interaction: Emotional Support (ES), Classroom Organization (CO), and Instructional Support (IS). Research suggests that specifically ES and CO may influence social inclusion and peer relationships (Chen et al., 2020; Garrote et al., 2020; Gest and Rodkin, 2011; Hamre et al., 2013). Accordingly, the present study focuses on these two domains.

The domain of ES encompasses warm, caring teacher-student and peer relationships, as well as teachers' awareness of and responsiveness to students' needs and perspectives (Hamre et al., 2013). ES is operationalised along three dimensions: Positive Climate, Teacher Sensitivity, and Regard for Student Perspectives (Pianta et al., 2012). Emotionally supportive teachers demonstrate strong social skills, communicate expectations, display behaviour that guides peer relationships, and provide practice opportunities (Hamre and Pianta, 2005; Luckner and Pianta, 2011). Studies link high-quality ES to more positive peer interactions and teacher-student relationships (Gest and Rodkin, 2011; Hamre and Pianta, 2005). Findings on specific ES dimensions are mixed. For instance, Madill et al. (2014) found Teacher Sensitivity and Regard for Student Perspectives improved social inclusion, but that Positive Climate had no significant effect. However, Gest and Rodkin (2011) found no significant effects of Positive Climate and Teacher Sensitivity on social inclusion. A study of secondary school students reported that the mean quality of student-rated student-teacher interactions did not contribute to peer acceptance but did improve self-perceived social inclusion (Schürer et al., 2025). Students who assessed their interactions with their teacher more positively also experienced higher levels

of social inclusion (Schürer et al., 2025). These inconsistent findings might suggest that children do not respond equally to variations in teachers' ES.

The domain of CO concerns how teachers help students manage their time, attention, behaviour, and emotions, all of which facilitate the pursuit of academic goals (Hamre et al., 2013). CO is operationalised along three dimensions: Behaviour Management, Productivity, and Negative Climate (Pianta et al., 2012). CO might impact social inclusion because feeling included depends strongly on the quality of peer interactions and relations. Research on CO and students' peer relationships has largely focused on pre-kindergarten, kindergarten, and early primary school contexts (Chen et al., 2020; Hamre and Pianta, 2005). In classrooms with high-quality CO, students engage in more positive peer interactions and experience less peer rejection (Chen et al., 2020; Luckner and Pianta, 2011). These findings indicate that CO plays an important role in shaping students' social skills and peer interactions.

Despite these insights into the influence of CO and ES on social inclusion, several gaps exist. To date, most studies have used teacher reports to assess social inclusion (Aguiar et al., 2019; Luckner and Pianta, 2011; Rudasill et al., 2016). Second, most studies have focused on preschool-age students (Chen et al., 2020; Hamre and Pianta, 2005), with comparatively less evidence from older student populations (Luckner and Pianta, 2011). Third, the effects of classroom interactions may vary across students (Bronfenbrenner and Morris, 2007; Mashburn et al., 2008), suggesting that gains in social inclusion may be particularly pronounced among specific groups, such as students with special educational needs (SEN).

Social inclusion of students with SEN

Students with SEN represent a highly heterogeneous group. SEN is a broad umbrella term that encompasses students whose learning and/or development is affected by disabilities, difficulties, or disadvantages (OECD, 2005). This heterogeneity is also reflected in students' social experiences and may shape their opportunities for social inclusion in inclusive classrooms.

Some studies have found that students with SEN feel less socially included than their peers without SEN (Pozas et al., 2023; Schwab et al., 2020; Zurbriggen et al., 2023), while others have not found significant differences (Guillemot and Hessels, 2022; Venetz et al., 2019, 2012). Students with SEN tend to have fewer close relationships within their classrooms than their peers without SEN (Avramidis et al., 2018; Pijl and Frostad, 2010; Tipton et al., 2013). These relationships are frequently characterised by less intimacy and reciprocity (Carter et al., 2008; Tipton et al., 2013). Additionally, students with SEN spend less time with peers outside of school, face higher rates of social rejection, and are more likely to encounter negative attitudes (Carmona and Montanero, 2025; Gasser et al., 2014, 2017; Grütter et al., 2018; Zurbriggen and Venetz, 2016). As such, students with SEN tend to face greater challenges with social inclusion than their peers.

These findings suggest that positive ES and CO may have a larger effect on students with SEN. Not all students react the same to the quality of ES and CO, measured at the classroom level (Downer et al., 2012). This theorising aligns with Bronfenbrenner's bioecological model, which proposes that disabilities may constrain individual development and the acquisition of knowledge, skills, and experience (Bronfenbrenner and Ceci, 1994; Bronfenbrenner and Morris, 2007). However, few studies have examined whether the effects of ES and CO on social inclusion differ between students with and without SEN.

Some research indicates that children with SEN are more responsive to high-quality classroom interactions (Hamre and Pianta, 2005). For example, students with SEN develop more positive relationships with teachers when exposed to high ES, but more conflictual relationships under low ES (Hamre and Pianta, 2005; O'Connor, 2010). A study by Garrote et al. (2020) connected CO to social acceptance in inclusive classrooms. Classrooms with high-quality CO, especially clear and consistent rules and time management, positively influenced social acceptance (Garrote et al., 2020). To our knowledge, studies investigating the influence of ES and CO on SEN students' social inclusion are lacking.

In summary, research indicates that ES and CO might be particularly important for students with SEN. It is therefore essential to specifically examine whether high-quality ES and CO are particularly advantageous for students with SEN.

Several gaps remain in the literature on the role of CO and ES in social inclusion. First, many studies focus on friendship, which is only one element of social inclusion. More insights about the students' perception of inclusion are needed to better understand how students feel included. Second, most studies focus on preschool settings (Chen et al., 2020; Hamre and Pianta, 2005), with less evidence from older student populations (Luckner and Pianta, 2011). Third, students with SEN are rarely considered when assessing students' social inclusion. Special needs may moderate the effects of classroom interactions (Bronfenbrenner and Morris, 2007), suggesting that gains in social inclusion may be concentrated within subgroups such as students with special educational needs (SEN).

The present study

This study examines whether ES and CO are related to students' perceptions of social inclusion in inclusive primary school classrooms, and whether these associations differ between students with and without SEN. The following hypotheses were tested: 1) ES (a) and CO (b) are positively associated with students' self-perceived social inclusion. It was expected that SEN students would be more responsive to high-quality ES and CO compared to students without SEN. It was therefore hypothesised that 2) students' SEN status enhances (i.e., moderates) the effect of ES (a) and CO (b) on social inclusion. Student gender and the attended school year may influence perceptions of social inclusion (Brown and Larson, 2009; Garrote et al., 2023; Morán et al., 2019); thus, these variables were included in our model as control variables. Instructional support (IS) by the teacher was also added as a control variable to account for the range of types of interaction quality in classrooms and to reveal unique effects of ES and CO on perceived social inclusion.

Methods

Study context

This study was conducted in Switzerland, where each of the 26 cantons maintains its own education system and regulations. Although most cantons align on overarching learning goals and transition points, there is no national curriculum or uniform structure for compulsory schooling (Swiss Conference of Cantonal Ministers of Education (EDK) and State Secretariat for Education, Research and Innovation (SERI), 2022). This study focused on the German-speaking cantons of Switzerland (approx. 60% of the Swiss population are German-speaking; Bundesamt für Statistik, 2022). Inclusive classrooms are typically co-taught by a classroom teacher and a SEN teacher, although the SEN teacher is often only present for a few lessons per week (Pool Maag and Moser Opitz, 2014). Moreover, there are no binding guidelines to ensure high-quality inclusive instruction or to specify collaboration between classroom and SEN teachers (Grosche and Moser Opitz, 2023). Special needs support is individually assigned following an internal school assessment or evaluation by an expert committee (EDK and SERI, 2022) and is based on criteria set forth by the International Classification of Functioning, Disability and Health - Children and Youth Version (World Health Organization, 2007). Support intensity varies; some students with SEN are taught the regular curriculum and regular goals and receive supplemental group support from a SEN teacher, whereas other students with SEN might receive more individualised support to pursue individual goals within the regular curriculum. Thus, the group of students with SEN in this study had heterogeneous support needs. In this study, SEN status represents a form of resource allocation to a specific student, rather than a category within a clinical spectrum or a clinical diagnosis.

Participants

A total of 1,373 students from 49 schools provided written informed consent to participate in this study (5.57% of students chose not to participate). These students attended 74 inclusive classrooms that spanned years 3 through 6 (ages approx. 9–12 years, $\bar{x} = 10.10$, SD = 1.22, International Standard Classification of Education level 1, primary education); classrooms were led by a main teacher and a special needs teacher (teaching teams).

Of the $N = 1{,}373$ students who provided informed consent, $n = 1{,}252$ completed data collection. Students' gender was equally distributed (52.0% girls).

A total of 308 students (24.60%) received SEN support, and 944 children (75.40%) did not receive additional support. Students with SEN were a very heterogeneous group. Some students with SEN received more intensive special educational support and others received less intensive support. Some classrooms spanned two years, for example years 3 and 4. Class size averaged 19.60 students (SD = 2.79, range 12–25) per class. There were 279 students in year 3, 380 students in year 4, 302 students in year 5, and 288 students in year 6. Three students who were in classes that spanned two years could not be allocated to a year due to missing data.

The teaching teams and their classrooms took part in a longitudinal cluster-randomised controlled trial with 4 data collection points in 14 German-speaking cantons of Switzerland (Altmeyer et al., 2021). Only baseline data (before the intervention was conducted) was analysed for this study to avoid confounding by intervention effects.

In total, 74 teaching teams participated. Of the classroom teachers, 51 (68.92%) were female. The mean age of classroom teachers was 35.77 years (SD = 11.12), and they had an average of 7.59 years (SD = 9.58, range = 1–40 years) of teaching experience. SEN teachers tended to be female (61 or 82.43%), were on average 43.17 years old (SD = 10.76), and had 14.53 years (SD = 10.73, range = 1–37) of general teaching experience. SEN teachers taught an average of 7.82 lessons (SD = 4.15, range = 1–21) per week in the participating classrooms alongside the classroom teachers.

Measures and procedures

This study used data from student questionnaires and videorecorded lessons (primarily German or mathematics) that were recorded towards the beginning of the school year (September–December, 2020 and November–December 2021). Teachers were not present in the classroom when research assistants collected questionnaire data from students. Students filled in the questionnaire in the absence of the teachers to limit possible direct influence. Support was offered to students who experienced difficulties filling out the questionnaires and included reading the questions aloud and/or writing down dictated responses.

Video-based data collection used recordings from typical 45-minute lessons. Classroom and SEN teachers chose how they wanted to teach and collaborate. If the SEN teacher taught in a separate room, then both classrooms were filmed simultaneously. The cameras were set up to focus on the facial expressions of students and teachers. To ensure good audio quality, teachers were equipped with pin-on microphones (Pianta et al., 2012). Children whose parents declined consent for filming were seated behind the camera or worked in separate rooms. Some parents provided consent for their child to participate but stipulated their student must have a digitally unrecognisable face for privacy protection. In some classrooms, adults (including research assistants) and children were obliged to wear face masks due to the COVID-19 pandemic. Safety for all participants was always a priority. For more information about the coding of ES and CO during safety measures, see the Variables section.

Variables

Social inclusion (SoI)

The student version of the Perception of Inclusion Questionnaire (PIQ; Venetz et al., 2015) was used to assess self-perceived social inclusion. It consists of four items (e.g., 'I have a lot of friends in my class,' 'I get along very well with my classmates'). Answers are scored on a four-point Likert scale,

with a higher score indicating greater agreement (from 1 = *not at all true* to 4 = *certainly true*). The questionnaire includes a negatively worded question that is reverse coded in analysis. Students filled out a paper version of the German PIQ. Cronbach's Alpha of this study was acceptable ($\alpha = .74$).

Emotional support (ES) and classroom organization (CO)

Emotional Support and Classroom Organization were assessed using the Classroom Assessment Scoring System – Upper Elementary (CLASS-UE) (Pianta et al., 2012), which uses video recordings to assess classroom interaction quality. In the CLASS-UE, the quality of interactions between teachers and students, among students, and among teachers are categorised into 11 dimensions across 3 domains: Emotional Support (ES), Classroom Organization (CO), and the control variable Instructional Support (IS). Certified observers rated the quality of each dimension on a seven-point scale. Scores within the range of 1–2 indicate low quality, scores of 3–5 indicate medium quality, and scores of 6–7 indicate high quality. Certified observers scored three 15-minute segments within one lesson. The CLASS-UE manual stipulates that the quality of interactions for co-teachers should be averaged into a single rating. Therefore, regular and SEN teachers were not coded separately. If the contribution to the teaching of the entire class was unequal between the two teachers, the scores were weighted to match the contributions. The 7 coders participated in a two-day observation training and completed an online reliability test. To become a certified observer, coders had to pass a web-based test that was administered by Teachstone; certification required coding five videos within one point of the master code. Certification renewal was required annually. Teachstone provided information about coding interaction quality affected by social distancing rules, the obligations to wear face masks, and other pandemic measures (Teachstone, 2020).

To ensure intercoder reliability, 20% of the videos were double-coded. Further description of the confirmed three factor structure for CLASS in the Swiss school context and its inter-rater reliability for ES (ICC = .77) and CO (ICC = .75), using data from this sample, can be found in (Antognini et al., 2026).

Special education needs (SEN)

Teachers reported whether the students had SEN (1) or did not (0), based on administrative data from an internal school assessment or evaluation by an expert committee.

Gender

Students identified themselves as male or female within the student questionnaire (preprinted options).

Year

Teachers reported on each student's year level via questionnaire.

Statistical analyses

To investigate the research questions, single-level Structural Equation Modelling (SEM) was performed. SEM accounts for non-normality of outcomes and non-independence of observations due to cluster sampling by using robust estimation of standard errors as well as robust chi-square tests of model fit (Muthén and Muthén, 1998a–2017). All analyses were performed in MPlus Version 8.8 (Muthén and Muthén, 1998b–2022). The clustering function was used to account for students nested in classes. SEM uses regression models with latent variables (Bollen, 1989; Browne and Arminger, 1995). The latent construct variables of SoI and the interaction variables (ES, CO, and IS) were grand-mean centred. Variables were added in a step-wise manner, resulting in models of increasing complexity.

When testing Hypotheses 1a and b, the predictor variables ES and CO, as well as the control variable IS, were included as manifest variables predicting SoI. SoI was controlled for SEN, gender, and year.

To test hypotheses 2a and b, the direct effect of SEN as well as the interaction effect between SEN and each of the classroom interaction variables (SEN × ES, SEN × CO, and SEN × IS) on SoI was modelled (Muthén and Muthén, 1998b–2022) (see Figure 1). SoI was controlled for gender and year.

To further explore the nature of the interaction term, a multi-group SEM was conducted for two groups (students with SEN/ students without SEN). The effects of ES and CO on SoI, while controlling for gender and year, were analysed for each subgroup.

Results

First, the descriptive statistics for SoI regarding SEN and the correlations are described, followed by a description of the results of the effects of ES and CO on SoI as direct effects controlled by SEN, gender, year and IS. Third, the results of the moderated regression with the interaction effects of ES and CO with SEN are reported.

Descriptive statistics

The SoI scale provided significant ($p < .001$) factor loadings (Table 1) and an acceptable model fit (SRMR = 0.036, RMSEA = 0.139, CFI = 0.957) when all students were included. The RMSEA point estimate (RMSEA = 0.139) exceeded the threshold of <0.100, which might be a result of the limited number of degrees of freedom (11) (Kenny et al., 2015). As CFI and SRMR are indicating acceptable model fit and the RMSEA in the following analyses is under the threshold, we decided to use the SoI scale.

The mean social inclusion score across all students ($N = 1{,}165$) was $\bar{x} = 3.46$ (SD = 0.55). Students without SEN ($n = 878$) reported a mean SoI of 3.47 (SD = 0.55), where 4 is the highest possible value. SEN students ($n = 287$) had a mean SoI of 3.43 (SD = 0.54). Students with SEN showed no significant differences in SoI compared to their peers without SEN ($p = .228$). There were no significant differences in SoI between

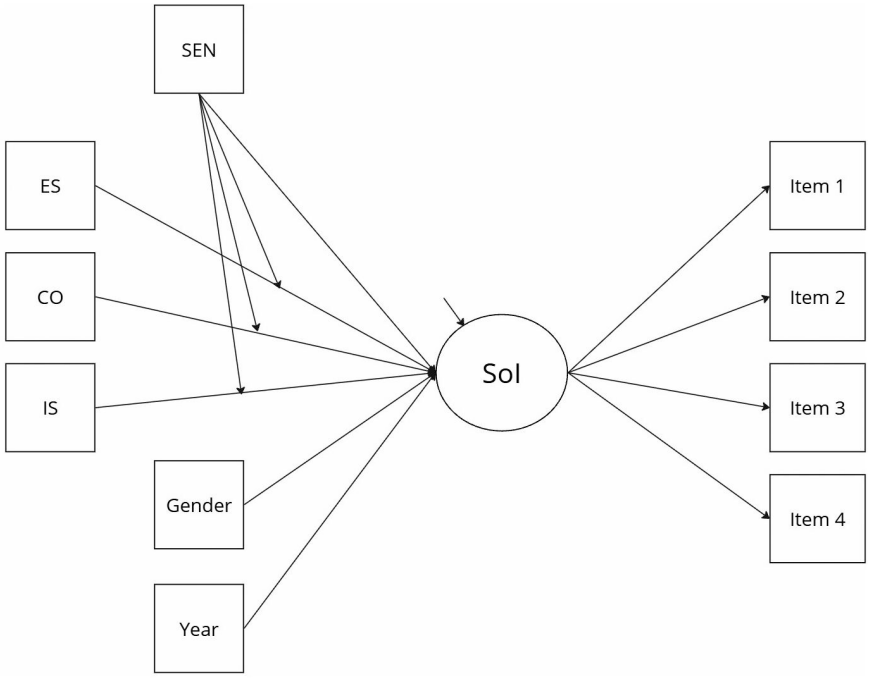


FIGURE 1
Simplified statistical model of the influence of interaction quality domains (ES, CO, and IS) on social inclusion (SoI), moderated by SEN and controlling for gender and year.

TABLE 1 Factor loadings of SoI.

Item	1	2	3	4
Description	He/she has a lot of friends in his/her class.	He/she gets along very well with his/her classmates.	He/she feels alone in his/her class. Reverse coded.	He/she has very good relationships with his/her classmates.
Observations	1,233	1,228	1,226	1,223
P-Value	999.00	<.000	<.000	<.000
Factor loading estimate	1.00	1.23	0.75	1.07
Within residual variance	0.38	0.20	0.46	0.21

years ($p = .833$) or by gender ($p = .367$). Intraclass Correlations (ICC) for SoI was .035.

In the 69 classrooms that reported classroom interaction data (i.e., missing data on 6 classrooms), ES was considered mid-range, CO was high, and IS was considered low mid-range (please see Table 2 for detailed descriptive statistics). All three domains were significantly correlated (all $p < .001$, see Table 2).

Model results

The results describe the regression estimates of ES and CO predicting students' social inclusion depending on SEN, and controlling for IS, gender and year. Valid data of 1,173 students in 69 classes were included.

To test Hypotheses 1a and 1b, we analysed whether social inclusion was predicted by ES and CO, controlling for SEN, gender, and year. The model fit was considered good (SRMR = 0.028, RMSEA = 0.044, CFI = 0.946). The variables SEN, gender, and year did not significantly predict SoI. No significant effect of ES on SoI was found ($p = .837$), thus, Hypothesis 1a was not supported. With respect to Hypothesis 1b, CO was found to significantly and positively predict SoI ($p = .044$) with an effect size of $\beta = 0.104$, which supported our hypothesis and indicates that high CO is positively associated with SoI. The effect of the control variable IS was not significant ($p = .188$).

To test Hypotheses 2a and 2b, we used multi-group SEM to estimate moderated regression models, including an interaction between ES and SEN for Hypothesis 2a and an interaction between CO and SEN for Hypothesis 2b. The fit of the first model was considered good (SRMR 0.028, RMSEA = 0.039, CFI = 0.953). After including moderating variables (ES, CO, IS), SEN was found to significantly predict SoI ($p = .031$, $\beta = -0.886$), indicating that the self-perceived social inclusion of students with SEN was significantly lower than that of their peers without SEN when controlling for ES, CO, and IS. No significant direct relationship between ES ($p = .214$) and CO ($p = .278$) with SoI was found (see Table 3). The effects of the control variables gender, year, and IS were non-significant ($p = .136$, $p = .980$, and $p = .159$). Concerning hypothesis 2a, the

TABLE 2 Descriptive statistics and correlations for ES, CO, and iS.

Variable	Classrooms	M	SD	ES	CO	IS
ES	69	4.36	0.76	–		
CO	69	6.30	0.61	.387***	–	
IS	69	3.40	0.80	.686***	.451***	–

*$p < 0.10$. **$p < 0.05$. ***$p < 0.01$.

TABLE 3 Effects on SoI.

Variable	Estimate	p
Gender (male, female)	0.047	0.136
Year (3rd to 6th year)	0.000	0.980
SEN (No SEN, with SEN)	−0.997	0.031
CO	−0.123	0.278
ES	0.117	0.214
IS	−0.124	0.159
Interaction CO and SEN	0.182	0.039
Interaction ES and SEN	−0.094	0.207
Interaction IS and SEN	0.062	0.358

effect of the interaction term between ES and SEN was not significant ($p = .207$). Therefore, Hypothesis 2a was not supported. The interaction term between CO and SEN was significant ($p = .039$) with an effect size of $\beta = 1.048$ (2b), which supports Hypothesis 2b. This finding suggests that the relationship between CO and SoI is moderated by SEN, indicating that the effect of CO on student SoI was greater for students with SEN than for students without SEN. To explore this effect further, a multi-group SEM was conducted, whereby the interaction term (SEN × ES, SEN × CO, SEN × IS) was removed, and a comparison between students with and without SEN was generated. This model allowed us to investigate the relationship of ES and CO for each subgroup (SEN students and students without SEN) individually. The model was considered a good fit (SRMR = 0.048, RMSEA = 0.021, CFI = 0.984). Results showed that ES had no significant direct relationship with SoI in either group (without SEN: $p = .524$; with SEN: $p = .586$). For students with SEN, CO had a significant positive direct effect on SoI ($p = .001$, $\beta = 0.258$). This finding indicates that SEN students have greater self-perceived social inclusion in classrooms with high-quality CO. For students without SEN, the point estimates for whether CO predicts SoI indicated a positive statistical trend ($p = .083$, $\beta = 0.077$).

Discussion

This study aimed to explore the effects of ES and CO on students' self-perceived social inclusion in primary school settings. Emphasis was placed on students with SEN and the potential for high-quality classroom interactions to differentially benefit this group of students, in line with Bronfenbrenner's bioecological model. An interaction between ES and CO with SEN was anticipated, i.e., that high-quality ES and CO are particularly beneficial for the social inclusion of students with SEN. The results provide evidence for the relevance of CO for SEN students' social inclusion. No effects of ES were observed.

Our descriptive analyses found high levels overall of social inclusion. Students with and without SEN rated their social inclusion and relationships in class equally well. This result aligns with prior studies that likewise found that students with SEN do not generally rate their social inclusion lower than students without SEN (Guillemot and Hessels, 2022; Schwab, 2015; Venetz et al., 2019). The mean scores from this study are comparable to the results of Guillemot and Hessels (2022), but higher than those found in other studies (Pozas et al., 2023; Schwab and Alnahdi, 2020).

However, these descriptive results run counter to previous research. For example, Pozas et al. (2023) and Schwab et al. (2020) found that SEN students feel less socially included than their peers without SEN. Three possible explanations for this divergence exist. First, our results describe student self-perceived social inclusion and do not include a comparative perspective (e.g., from peers, teachers, or other professional staff). Second, the SEN students in our study represent a highly heterogeneous group that includes children with, for example, behavioural and self-regulative difficulties as well as students with academic difficulties. These students might be affected differently by social exclusion. For example, students with behavioural difficulties might be more likely to experience social exclusion compared to students with academic difficulties (Gasser et al., 2017). Third, students who received intensive SEN support comprised a smaller proportion of the SEN students in the study population. It is possible that differences among SEN students were not detected, as we did not differentiate between levels of SEN support.

Average CO ratings in this sample were high. High CO ratings align with the findings of prior studies that were conducted among students from similar cultural backgrounds (Li et al., 2020; Westergård et al., 2019). The teachers who participated in this study appeared, on average, to be very successful at managing behaviours, maintaining high productivity, and supporting students in regulating emotions (Hamre et al., 2013). In contrast, ES ratings fell in the middle range, which is consistent with prior research at over various age levels (Hofkens et al., 2023). This result signals that teachers in the study sample possessed moderate awareness of their students' needs and perspectives. It also points to what could be considered a medium-quality relationship between teachers and students and among students (Hamre et al., 2013).

We had hypothesised that both ES and CO would positively predict SoI, and that the effects would be stronger for students with SEN. Our results indicated no direct or interaction effect of

ES on SoI, which runs counter to expectations from both Bronfenbrenner's bioecological model and prior research that suggests positive effects of ES on positive peer relations (Gest and Rodkin, 2011). One possible reason our results appear to contradict earlier research is a difference in methodology: Gest and Rodkin (2011) assessed peer relationships and friendships using peer nomination, for example. Peer nomination might be more indicative of peer relationships than student self-perception, and student self-perception might differ from peer perception. Just because a student feels included and nominates certain peers as friends does not mean those peers will nominate that student as a friend as well (Garrote et al., 2023). Additionally, this study analysed one time point and relied upon student self-assessment. Prior studies used peer or teacher ratings to detect the effects of ES on social skills and peer relationships (Hamre and Pianta, 2005; Mashburn et al., 2008; Wilson et al., 2007) and one study analysed longitudinal data (Hamre and Pianta, 2005). Thus, it is possible that longitudinal data or external perspectives might be more effective in detecting the effect of ES on social inclusion.

Contrary to our expectations, the effect of CO on SoI was not statistically significant in the full sample. Further analyses showed this was due to an insignificant effect of CO on SoI of students without SEN (although a trend towards significance was observed). In contrast, CO was significantly associated with SoI for students with SEN. Students with SEN who received high-quality CO had higher self-perceived social inclusion. Taken together, these findings suggest that high-quality CO has the potential to increase SoI for SEN students. These findings are in line with those of Garrote et al. (2020), where a positive relationship between high-quality CO and social acceptance in inclusive classrooms was observed.

It is possible that CO may function as a compensating factor for SEN students, who were found to have lower social inclusion scores than their peers when accounting for CO. This aligns with Bronfenbrenner's proposition that proximal processes can have stronger effects for children facing disadvantages (Bronfenbrenner and Ceci, 1994). This line of thinking would suggest that high-quality CO can function as a protective mechanism that reduces social inclusion gaps between students with and without SEN. Taken together, our findings extend to previous research that showed that children with developmental risks benefit more from high-quality CO compared to children without risks (Luckner and Pianta, 2011).

The mechanisms underlying the effect of CO on SoI may be related to the three different dimensions of CO: behaviour management, productivity, and negative climate (Hamre et al., 2013). Classrooms with high-quality CO are characterised by clear and consistent instructions, routines, and lack of a negative climate (Pianta et al., 2012). Clear and consistent rules and time management, in turn, positively influence social acceptance (Garrote et al., 2020). High-quality CO is also characterised by the absence of anger, aggression, and irritability among students and in interactions with teachers, all of which would support inclusive peer interactions. This may be especially vital for students with SEN, who are often exposed to negative peer attitudes or social rejection (Carmona and Montanero, 2025; Gasser et al., 2014; Grütter et al., 2018; Zurbriggen and Venetz, 2016). Negative teacher-student relationships were found to predict poorer peer relationships (Endedijk et al., 2022), and it can be surmised that the absence of a negative climate may promote perceived social inclusion among students with SEN.

In conclusion, our findings on the role of CO in self-perceived social inclusion emphasise the central role of proximal processes in the classroom. Teachers structure learning opportunities and create the social context in which social inclusion develops (Gregory et al., 2014; Sette et al., 2020).

Strengths, limitations and future research directions

This study has several strengths. We analysed the association between ES and CO, and the assessment of a first-person perspective of social inclusion among students with and without SEN. It combines a first-person perspective with video observations of classroom interactions rated by trained observers creating a strong basis for assessing the quality ES and CO. Within the video observations, a recently emphasised gap was addressed (Schürer et al., 2025).

Three limitations exist. First, the analyses only used data from one measurement period, limiting our ability to draw causal inferences. Although detailed information was generated by analysing three 15-minute segments during a regular lesson, this form of assessment may have limited sensitivity for measuring CO and ES. This approach may have limited ability to capture ES among peer interactions, which often occur outside lesson time (e.g., during breaks). Future studies may consider including multiple contexts and longitudinal designs to examine how ES, CO, and SoI influence one another over time.

Second, the group of students with SEN in this study sample was highly heterogeneous. While this heterogeneity reflects classroom diversity in the Swiss inclusive school context, greater subgroup sizes across levels of SEN would have allowed for more differentiated analyses by subgroup.

Future studies might seek to study larger samples of SEN students, so as to detect possible differences in the association between social inclusion and ES and CO by intensity of student SEN support.

Third, students' self-perceived social inclusion was assessed with a questionnaire. Perspectives from teachers and peers, or the use of other instruments such as peer nomination, could have provided a more complete perspective of social inclusion.

Finally, although ES and CO are factors known to affect social inclusion, other potentially relevant factors were not included in this study. For example, a meta-analysis by Allen et al. (2021), which was based on Bronfenbrenner's bioecological model, identified academic motivation, emotional stability, and personal characteristics as student-level factors, as well as parent, peer, and teacher support as microsystem factors that were related to social inclusion.

Implications

Social inclusion profoundly shapes students' current experiences and long-term development. Our findings highlight the importance of CO in the social inclusion of students with SEN. High-quality CO provides predictable structures, clear

routines, and behavioural models, which appear to contribute to peer acceptance and less risk of exclusion. Our study supports the perspective that high-quality proximal processes such as CO may improve social inclusion for students with SEN in inclusive classrooms. It also supports the notion that proximal processes have differential effects on student subgroups. These findings underscore the importance of considering differential mechanisms of SoI and position CO as a key lever for inclusive educational practice. Strengthening teacher competencies in CO appears essential. Professional development initiatives, such as coaching, peer collaboration, and additional training, offer promising avenues to enhance CO practices and foster inclusive environments that benefit all students (Kumari and Biswas, 2024).

Data availability statement

The datasets presented in this article are not readily available because the data used in this study is part of a longitudinal RCT study, and the full data set will be publicly accessible on the repository SWISSUbase after project completion. Requests to access the datasets should be directed to https://www.swissubase.ch/en/.

Author contributions

RE: Formal analysis, Visualization, Writing – original draft, Writing – review & editing. KA: Data curation, Methodology, Writing – review & editing. SA: Conceptualization, Funding acquisition, Supervision, Writing – review & editing. CM: Supervision, Writing – review & editing. LG: Conceptualization, Funding acquisition, Supervision, Writing – review & editing.

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Conflict of interest

The author(s) declared that this work was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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