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Social classroom climate and personalised instruction as predictors of students' social participation

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ABSTRACT

Previous research has repeatedly confirmed that students with special educational needs (SEN) are generally less accepted by their peers. Although inclusive teaching strategies and classroom characteristics are frequently hypothesised to improve students' social participation, empirical evidence is scarce. Therefore, the purpose of this paper is to investigate classroom characteristics and teaching practices that can help foster social participation, in general, and reduce the effect of lower social participation among students with SEN, in particular. The sample includes 518 students in 31 Grade 4 and 7 classes from Austria, of whom 99 are students with SEN. The results show that students with SEN receive fewer peer nominations and perceive their social participation to be lower compared to their peers without SEN. However, the association between SEN and self-perceived social participation is moderated by the social classroom climate, i.e. the difference becomes smaller when the social classroom climate is more positive. Furthermore, the higher the personalised instruction was rated by a student, the higher was his or her social status. The results suggest that interventions should focus not only on the improvement of individual students (with SEN) but also on changing the whole classroom environment.

Even though the definitions and implementation policies of inclusive education vary considerably, and the framework and conditions required remain contested (Bierman and Powell 2016; Watkins and Meijer 2016), there seems to be a convergence towards a general consensus on the overall goals. Inclusive education aims to respond to the diversity among students to foster both their academic and social development, by providing high-quality educational opportunities, as well as to reduce social exclusion (Powell, Edelstein, and Blanck 2016; Watkins 2017). In other words, it attempts to facilitate and promote the social participation of all students, both in the short and long terms.

Achieving these goals requires a pedagogical approach that embraces individual differences by providing rich learning opportunities sufficiently made available to everyone in a class (Florian and Black-Hawkins 2011). At the same time, inclusive education also involves embracing teaching practices that encourage collaboration between students to finally build an inclusive classroom community (Spratt and Florian 2015).

The study results of students' academic and social development underpin the importance of social participation. For instance, social participation is linked to students' academic engagement and achievement (e.g. Delgado et al. 2016; Knifsend et al. 2018), self-worth (e.g. Maunder and Monks 2019), emotional well-being (e.g. Zurbriggen and Venetz 2016), and health complaints, especially psychosomatic complaints (Låftman and Östberg 2006). Despite the widespread recognition and empirical evidence of the importance of social participation, one group of students is still particularly at risk of social exclusion. Students identified as having special educational needs (SEN) are generally less accepted by their peers or experience more difficulties in interacting with their peers than other students (e.g. Bossaert et al. 2013a; Koster et al. 2009). Exploring the possible explanations for lower peer acceptance, previous studies have focused mainly on students' characteristics such as social behaviours and competencies. As the social skills of students with SEN seem to play only a minor role in social participation, several authors suggest focusing on classroom-level variables and teaching characteristics (e.g. Farmer et al. 2018; Garrote 2017; Gest and Rodkin 2011). However, empirical evidence of effective teaching practices to improve the social participation of students with SEN is scarce (Garrote, Sermier Dessemontet, and Moser Opitz 2017).

Therefore, the purpose of this paper is to investigate classroom characteristics and teaching practices that can help foster social participation in general and reduce the effect of lower social participation among students with SEN in particular.

The Issue of social participation of students with SEN

As already indicated, literature reviews have confirmed that students with SEN are generally less accepted by their peers or less socially involved in the classroom than other students (Bossaert et al. 2013a; Koster et al. 2009; Ruijs and Peetsma 2009). A closer examination of the state of research reveals a rather ambiguous picture: While the social participation of students with SEN is viewed negatively by their classmates, the corresponding self-reports tend to be more favourable.

One possible explanation for the discrepancies may be the various operationalisations. In the literature, terms such as social participation, social inclusion or social integration are often used synonymously. The literature study of Koster et al. (2009) revealed four key themes related to social participation in primary education: friendships or relationships, acceptance by classmates, interactions or contacts, and the social self-perception of students with SEN (for secondary education: see review of Bossaert et al. 2013a). Another explanation, which is related to the first one, pertains to the different methods used to investigate social participation among students. In the research on inclusion, the most common method for the assessment of social participation is the sociometric method. In this respect, the first two key themes have primarily been surveyed. Using sociometric measurement techniques, a large number of studies showed that students with SEN are less often nominated as friends compared to their peers without SEN (e.g. Avramidis,

Avgeri, and Strogilos 2018; Henke et al. 2017). A noticeable finding is that the group difference between the number of friends of students with and without SEN is larger when the incoming nominations (those coming from the peers) are considered instead of the outgoing nominations (number of friends who are nominated) (Hoffmann et al. 2020). Schwab (2016) found that the agreement between self- and peer-rated friendships is lower for students with SEN compared to students without SEN.

Focusing on students' self-perception of their social participation, the findings are more inconsistent. While some studies indicated that students with SEN feel less socially accepted than students without SEN (e.g. Bossaert et al. 2013b; Schwab et al. 2015), other studies did not find any group differences (e.g. Avramidis, Avgeri, and Strogilos 2018; Koster, Pijl, Nakken, and Van Houten 2010; Zurbriggen and Venetz 2016). Overall, the self-perception of students with SEN regarding their social participation is somewhat positive, whereas their social acceptance by their classmates is less favourable. In the study of Avramidis, Avgeri, and Strogilos (2018), for example, students with SEN were less socially accepted and received fewer nominations for being a friend than their class-mates, but the perceptions of friendship quality did not differ for both groups. This finding may imply that students with SEN have different understandings of friendship than their fellow students or that they focus more on the subjective quality of social participation. Two real-time studies on students' quality of experience during social interactions with peers partly lend support for the second explanation. In both studies, students reported their current social context and affective state by means of the experience sampling method (e.g. Hektner, Schmidt, and Csikszentmihalyi 2007). More specifically, they answered a randomly assigned short questionnaire several times a day during one week in order to obtain a most representative sample of moments of the students' daily lives. Grade 6 students experienced social interactions with peers in the classroom in general very positively (Zurbriggen and Venetz 2016). The same applied to Grade 9 students. Not surprisingly, the quality of experience of adolescents was even better when they were with their peers during leisure time (Zurbriggen, Venetz, and Hinni 2018). It should be emphasised that in both studies, no differences were found for students with SEN compared to other students.

Effects of social classroom climate and personalised instruction on social participation

Owing to the existence of a risk of low(er) social participation by students with SEN and based on the empirical evidence that children's peer relations and social participation provide essential contributions to their educational and socio-emotional development, research has not only continued the endeavour of identifying the status quo but has also investigated the risk factors associated with low peer acceptance and other factors influencing students' social participation in the classroom. In the popular meta-analytic review by Newcomb, Bukowski, and Pattee (1993) on the behavioural differences among children with different peer status (assessed via sociometric methods), a noticeable difference in the behavioural repertoire and competencies of popular vs. rejected children was found: While the popular children evidenced greater social and cognitive abilities and lower levels of aggression and withdrawal, the behavioural patterns of the rejected children were nearly the opposite. Due to the connection between students' peer status and

social behaviour, individual characteristics have been primarily studied with regard to the social participation of students with SEN (e.g. Avramidis 2013; Pijl, Frostad, and Flem 2008). Some studies pointed out that students with SEN showed more negative social behaviour and had lower social competencies (compared to their peers without SEN), both of which were linked to their social participation (e.g. Schwab et al. 2015). In contrast, other studies found no significant relationship between the social skills of students with SEN and their social relationships or social acceptance (e.g. Frostad and Pijl 2007; Garrote 2017). As the social skills of students with SEN seem to play only a minor role in social participation, and in the light of methodological advances such as multilevel modelling, several authors suggest focusing on classroom-level variables such as the classroom climate and teaching characteristics (e.g. Farmer et al. 2018; Garrote 2017; Gest and Rodkin 2011).

Although the importance of classroom-level characteristics in students' social functioning is widely acknowledged in peer influence and school effectiveness research (for an overview: e.g. Müller and Zurbriggen 2016), such factors have received little attention in the research on social participation so far. Nevertheless, it is quite conceivable that a positive social classroom climate – characterised by the acceptance of diversity, mutual support, and good social relationships among students – can have a substantial impact on social participation beyond what can be explained by the individual characteristics of students. In a study by Gazelle (2006), for example, socially anxious children were found more likely to be rejected by their peers in classrooms with a negative (observed) emotional climate than in classrooms with a positive climate. In the context of inclusion, the attitudes towards peers with SEN or disability have been mentioned frequently as an important influencing factor (e.g. de Boer, Pijl, and Minnaert 2012). The classroom level, however, has hardly been taken into account when examining the relationship between attitudes and social participation. A study by Petry (2018) identified a link between the class attitudes towards peers with disability and the social participation of students with disability. Recent findings from a study with a mixed-method approach (combining social network analysis and semi-structured interview) indicated that a more socially responsive classroom enhances the social participation of all students, especially those with SEN (Mamas, Daly, and Hartmann Schaelli 2019). The authors concluded that students with SEN may require more personalised support to enable their active participation and that teachers should aim to enhance social responsiveness in the classroom.

As hypothesised by several authors (e.g. Farmer et al. 2018; Garrote, Sermier Dessemontet, and Moser Opitz 2017), teaching practices can also be decisive in promoting the social participation of students with SEN. In an inclusive classroom, it is important to adopt inclusive teaching practices such as differentiation and personalisation in order to respond to the individual differences between students while enabling participation (e.g. Spratt and Florian 2015). If such teaching practices promote participation among students, adopting such measures can have a positive effect on the social participation of students with SEN. The results of a study by Fuchs et al. (2002) indicated, for example, that students with learning difficulties were more socially accepted in classes with peer-assisted learning than in classes without this approach of cooperative learning. Similar results were found by Jacques, Wilton, and Townsend (1998) regarding a cooperative learning programme in increasing the social acceptance of children with mild intellectual disability.

One key strategy of an inclusive pedagogical approach has to do with teachers creating the options for work choice as well as conditions that support students to work with different students or groups (Florian and Black-Hawkins 2011). This strategy is in line with personalised learning in which the range of instructions is differentiated and adapted to personal competencies and needs and is shaped by the students' learning preferences. As such, personalised learning affords students a certain degree of choice over what, when, how, and with whom learning happens (Murphy, Redding, and Twyman 2016). In consideration of an inclusive classroom setting with special educational support, it can be assumed that teachers can personalise instructions even more intensively to meet specific needs and accommodations for students with SEN. The consequences of personalised learning can be the reduction of social pressure and fewer social comparisons among students, which in turn can benefit social participation of students with SEN. It can thus be assumed that a positive social classroom climate and personalised instruction can positively influence the social participation of children with SEN.

Research Questions

The main research question of this study is whether a positive social classroom climate and high levels of personalised instruction can reduce the effects of lower social participation among students with SEN. First, the group differences for students' self-perceived social participation and social status are tested. Based on former research, no group difference between students with and without SEN, with regard to self-perceived social participation, is expected, but concerning social status, students with SEN are expected to have lower social status compared to their peers without SEN. Second, the association of social classroom climate and personalised instruction with students' social participation is investigated. Both the individual perception of classroom variables and the mean score of all students in a class are of interest. Third, the interaction effects between SEN and social classroom climate on social participation as well as between SEN and personalised instruction on social participation are examined. Gender, grade level and country of birth are used as control variables.

Methods

Participants

Data from the second measurement point of the ATIS-SI study [Attitudes Towards Inclusionof Students with disabilities related to Social Inclusion] was used. The sample included primary school students (Grade 4) and secondary school students (Grade 7) with and without SEN from three federal states of Austria (Styria, Lower Austria and Burgenland). The data collection took place at the end of the school year 2013/2014. For the current study, the subsample of students in inclusive classes (classes where students with and without special needs are taught) was used. This subsample included 635 students in 33 classes. A total of 117 students (18.4% of $n = 635$) were excluded because no complete data on social participation were available. Hence, the final sample used for the analyses consisted of 518 participants in 31 classes, of whom 48.8% ($n = 253$) were

female, 57.3% (n = 297) belonged to Grade 7, 10.0% (n = 52) were born in a country other than Austria, and 19.1% (n = 99) had SEN. As only inclusive classes were included in the study, students with SEN were overrepresented.

Measures

Social participation

The dependent variable social participation was measured in two different ways: as perception of social participation and as social status in class using friendship nominations.

(1) *Self-perceived social participation*. The perception of social participation was measured using a subscale of the Questionnaire to Assess the Emotional and Social School Experiences of Third- and Fourth-Grade Primary School Children (FEESS 3-4; Rauer and Schuck 2003). In the original scale, 'social integration' consists of 11 items and has high internal consistency (α = 0.84 for Grade-4 students). Students had to indicate how much they agreed (from 1 = not true to 4 = exactly true) with statements such as the following: 'I get along well with the other classmates', or 'Only a few classmates like me'. Hence, higher values were related to higher perceived social participation. In the current study, a shortened six-item version of the scale with an internal consistency of α = .78 among the whole sample was used.

(2) *Social status in class*. Students were asked whom they considered their best friends in the class to assess social status. A maximum of five classmates could be nominated. Students' social status was determined according to Dollase (1976). Based on this calculation, all scores of social status were above zero and below two. Higher values indicated a higher social status in class.

Special educational needs (SEN)

Teachers were asked about the official status according to the local school authority to identify students with SEN. This official status is obligatory in Austria to claim additional resources for these students. For the assignement of the status of SEN, the local school authorities refer to a report that is based on a broad assessment battery and generated by a specialist teacher. In the current sample, most students with SEN had learning disabilities (approximately 80%). The remaining 20% included behavioural disorders and intellectual, sensory or physical disabilities.

Social classroom climate

Another subscale of the FEESS 3–4 was used to assess social classroom climate, where the agreement to 11 items (from 1 = 'not true' to 4 = 'exactly true') was inquired. Some of the items were as follows: 'in class, we all stick together', 'we help each other' and 'we understand each other well'. Higher values indicated a more positive social classroom climate. Rauer and Schuck (2003) showed acceptable reliability for this scale for Grade-4 students (α = .77). In the current study, the internal consistency was α = .85. In addition to a combined scale mean for each student, the classroom mean of all individual scores was calculated to serve as an overall factor of classroom climate (Marsh et al. 2012). The

intraclass correlation coefficient (ICC1) of students' individual scores within a class was .24. As an indicator of agreement between students, ICC2 was found to be .86 for the present sample. This showed satisfactory reliability for the student ratings of the social classroom climate within classes (Lüdtke et al. 2007).

Personalised instruction

Personalised instruction was measured by a scale by Helm (2014), with a focus on how many choices students have in terms of learning within lessons. Five items were used to ask students whether they could choose in lessons, how they would organise their time for learning, where and with whom they would learn, what they would learn, and with what materials. Helm (2014) showed high reliability for the five items in a study among Grade 9 students ($\alpha = .81$). In the current study, items were rated on a five-point scale from 1 = 'never' to 5 = 'always'. First, items were combined to an individual mean score. Second, as for social classroom climate, the classroom mean of individual scores was calculated to obtain an overall value of personalised instruction within a classroom. The internal consistency of individual scores was $\alpha = .82$ in the current sample, and the ICC1 within classes was .34. Again, ICC2 was calculated to measure within-group agreement. The ICC2 of .91 revealed good reliability of individualised instruction within classrooms.

Grade level

The students of the sample were either in Grade 4 or 7.

Country of birth

Students were asked to report where they were born. The variable was dichotomised into 'born in Austria' and 'born in a country other than Austria'.

Procedure

The data of the current project were collected from inclusive schools where at least one of the classes had included students with SEN. The schools were located in the rural, urban and suburban areas of Styria, Lower Austria and Burgenland. The study was approved by the regional school authorities of the three federal states where the schools were situated and informed consent was obtained from all participants and their parents. Students with reading problems or special needs were supported by trained research assistants in filling out the questionnaire.

Analyses

In the sample, students were nested within classrooms. The measurements of students within a classroom were, therefore, not independent. That is, the students in the same classrooms were probably more similar compared to students from other classrooms, which might lead to biased significance tests (Raudenbush and Bryk 2002). To obtain appropriate estimates, multilevel models controlling for the clustering of individuals within higher-level units were estimated using MLwiN 2.36 software (Rasbash et al. 2009).

Separate models were calculated for the two dependent variables: self-perceived social participation and social status in the class. As both classroom constructs – social classroom climate and personalised instruction – were based on aggregates of students' individual ratings, the characteristics were controlled at the individual level (e.g. Müller and Zurbriggen 2016).

Results

Descriptive statistics

The sample mean of perceived social participation was high ($M = 3.44$, $SD = 0.58$) compared to the scale range from 1 to 4, indicating that students generally felt well-accepted in their class. However, the observed range from 1.17–4 revealed that some students did not reach a high level of social participation. Students' social status in class was normally distributed around a mean value of 1.00 ($SD = 0.12$) with an observed range from 0.60–1.38. The individual scores of social classroom climate were also quite high, with a mean of 3.00 ($SD = 0.32$) and an observed range from 1.18 to the scale maximum of 4. In addition, students reported having a relatively high level of options to choose from during the lessons. The mean score of personalised instruction was 3.18 on a scale from 1 to 5, with an observed range from 1.14–5.

Predictors of social participation

Before examining the moderating effects of social classroom climate and personalised instruction on students with SEN, the main effects of these variables were tested controlling for gender, grade level and country of birth (see Tables 1 and 2). Table 1 refers to the influence of social classroom climate on perceived social participation (Model 1) and social status in class (Model 2), whereas Table 2 presents the results of the effects of personalised instruction on perceived social participation (Model 1) and social status in class (Model 2). First, results showed that students with SEN scored lower on self-perceived social participation as well as on social status in class according to peer nominations in all main effects models ($p </= .001$).

Table 1. Multilevel analyses for the prediction of perceived social participation and social status in class by SEN and social classroom climate: Main effects.

	Model 1: Prediction of self-perceived social participation				Model 2: Prediction of social status in class			
	B	SE B	z	p	B	SE B	z	p
Fixed effects								
Intercept	2.664	0.221	12.051	<.001	1.042	0.053	19.551	<.001
Special educational needs (SEN)	−0.208	0.056	−3.744	<.001	−0.093	0.013	−6.914	<.001
Classroom climate: individual score	0.603	0.045	13.341	<.001	0.022	0.011	2.009	.044
Classroom climate: classroom mean	−0.335	0.085	−3.956	<.001	−0.026	0.020	−1.269	.204
Female gender	−0.066	0.044	−1.495	.135	−0.020	0.011	−1.894	.058
Other country	0.066	0.072	0.915	.360	−0.011	0.017	−0.651	.515
Grade 7 (compared to Grade 4)	0.059	0.045	1.327	.185	−0.000	0.011	−0.013	.990
Variance Components								
Level 1 (within classes)	0.231	0.015	15.000	<.001	0.013	0.001	13.000	<.001
Level 2 (between classes)	0.000	0.000	0.000	-	0.000	0.000	0.000	-

Table 2. Multilevel analyses for the prediction of perceived social participation and social status in class by SEN and personalised instruction: Main effects.

	Model 1: Prediction of self-perceived social participation				Model 2: Prediction of social status in class			
	B	SE B	z	p	B	SE B	z	p
Fixed effects								
Intercept	3.477	0.110	31.713	<.001	1.027	0.022	45.798	<.001
Special educational needs (SEN)	−0.212	0.065	−3.246	.001	−0.092	0.013	−6.928	<.001
Personalised instruction: individual score	0.054	0.034	1.623	.105	0.018	0.007	2.636	.008
Personalised instruction: classroom mean	−0.063	0.062	−1.004	.315	−0.016	0.013	−1.252	.210
Female gender	0.018	0.051	0.362	.717	−0.020	0.010	−1.923	.054
Other country	0.081	0.083	0.976	.329	−0.008	0.017	−0.479	.632
Grade 7 (compared to Grade 4)	0.030	0.063	0.469	.639	−0.002	0.013	−0.149	.881
Variance Components								
Level 1 (within classes)	0.317	0.021	15.095	<.001	0.013	0.001	13.000	<.001
Level 2 (between classes)	0.000	0.005	0.000	-	0.000	0.000	0.000	-

The individual perception of social classroom climate had an effect on self-perceived social participation ($p < .001$). In other words, the more positively students rated the social classroom climate of their class, the higher they rated their own social participation. In contrast, there was a negative effect of the mean classroom score of social classroom climate (controlling for the individual value), indicating that a more positively rated social classroom climate by all students in the class was related to a lower perceived social participation of individual students in class ($p < .001$). The individual perception of social classroom climate was also positively related to social status ($p = .044$). That is, students who perceived the classroom climate more positively also had a higher social status in class. However, no effect was found regarding the mean classroom score of social classroom climate on social status ($p = .204$).

Regarding personalised instruction, no main effect on self-perceived social participation was found for the individual score ($p = .105$) and the mean classroom score of personalised instruction ($p = .315$). However, the higher the personalised instruction was rated by an individual student, the higher was his or her social status ($p = .008$). Again, the mean classroom score of personalised instruction revealed no significant effect ($p = .210$). With regard to control variables, no significant effects were found for gender, country of birth and grade level in any of the main effect models.

Moderating effects

Table 3 presents the results of the prediction of self-perceived social participation (Model 1) and social status in class according to friendship nominations (Model 2) by the interaction of SEN and social classroom climate rated by all students in a class (mean score). The results indicated a significant interaction between SEN and social classroom climate with regard to the self-perceived social participation ($p = .025$). In other words, although students with SEN generally felt less integrated into the class, the difference to students without SEN became smaller, the more positive the social classroom climate was. However, no interaction effect was found for the prediction of social status in class assessed by peer nominations. Further, no significant effects were found for the control variables gender, country of birth and grade level in either of the two models. There was still significant variation at the individual level, indicating that there would

Table 3. Multilevel analyses for the prediction of perceived social participation and social status in class by SEN and social classroom climate.

	Model 1: Prediction of self-perceived social participation				Model 2: Prediction of social status			
	B	SE B	z	p	B	SE B	z	p
Fixed effects								
Intercept	2.896	0.243	11.918	<.001	1.034	0.059	17.525	<.001
Special educational needs (SEN)	−1.387	0.526	−2.637	.008	−0.049	0.127	−0.386	.700
Classroom climate: individual score	0.605	0.045	13.444	<.001	0.022	0.011	2.000	.046
Classroom climate: mean score (CCM)	−0.412	0.091	−4.527	<.001	−0.023	0.022	−1.045	.296
CCM*SEN	0.392	0.175	2.240	.025	−0.015	0.042	−0.357	.721
Female gender	−0.068	0.044	−1.545	.122	−0.020	0.011	−1.818	.069
Other country	0.044	0.073	0.603	.547	−0.011	0.018	−0.611	.541
Grade 7 (compared to Grade 4)	0.059	0.045	1.311	.190	−0.000	0.011	−0.000	-
Variance Components								
Level 1 (within classes)	0.228	0.015	15.200	<.001	0.013	0.001	13.000	<.001
Level 2 (between classes)	0.000	0.000	0.000	-	0.000	0.000	0.000	-

be additional individual characteristics influencing social participation. At the between level, no variance was left after controlling for variables at the class level.

Table 4 shows the results of the prediction of self-perceived social participation (Model 1) and social status (Model 2) by the interaction of SEN and teacher's personalised instruction perceived by all students in a class (mean score). In contrast to social classroom climate, individualised instruction had no moderating effect on the negative effects of SEN, neither in terms of self-perceived social participation nor in terms of social status. Further, no significant effects were found for the control variables country of birth and grade level in either of the two models. However, a significant gender effect was found in Model 2, indicating a generally lower social status for girls. Again, significant variation was found at the individual level but not at the between level.

Discussion

Students' social participation is a significant topic in research on inclusion. Previous studies have often highlighted that students with SEN are exposed to a higher risk of

Table 4. Multilevel analyses for the prediction of perceived social participation and social status in class by SEN and personalised instruction.

	Model 1: Prediction of self-perceived social participation				Model 2: Prediction of social status			
	B	SE B	z	p	B	SE B	z	p
Fixed effects								
Intercept	3.464	0.115	30.122	<.001	1.030	0.024	42.912	<.001
Special educational needs (SEN)	−0.107	0.304	−0.352	.725	−0.117	0.062	−1.887	.059
Individualised instruction: individual score	0.055	0.034	1.618	.106	0.018	0.007	2.571	.010
Individualised instruction: mean score (IIM)	−0.058	0.064	−0.906	.365	−0.017	0.013	−1.308	.191
IIM*SEN	−0.046	0.129	−0.357	.721	0.011	0.026	0.423	.672
Female gender	0.018	0.051	0.353	.724	−0.020	0.010	−2.000	.046
Other country	0.080	0.083	0.964	.335	−0.008	0.017	−0.471	.638
Grade 7 (compared to Grade 4)	0.030	0.064	0.469	.639	−0.002	0.013	−0.154	.878
Variance Components								
Level 1 (within classes)	0.317	0.020	15.850	<.001	0.013	0.001	13.000	<.001
Level 2 (between classes)	0.000	0.000	0.000	-	0.000	0.000	0.000	-

low social participation. However, the results are somewhat inconclusive. Past research revealed that the ways social participation is operationalised and perspectives are assessed (self or others) influence study outcomes. Therefore, within this study, two different methods and perspectives have been used: self-perceived social participation and social status assessed via friendship nominations.

Although classroom characteristics and teaching practices have been hypothesised in recent studies to have an impact on students' social participation, such factors have received little attention in the research on social participation so far. This study aimed to fill this gap and investigated whether a positive social classroom climate and personalised instruction could reduce the effect of lower social participation among students with SEN. As both of these moderating variables were inherently classroom-level constructs, they were modelled on a second level of analysis within a multilevel framework. This approach was empirically underlined by the high ICC2, indicating a high agreement between the students of a class or high reliability of the group average (Lüdtke et al. 2007; Marsh et al. 2012). This was shown for social classroom climate and personalised instruction rated by all students of a class.

Considering the descriptive statistics, the students' self-reports of their social participation were relatively high, suggesting that they felt well accepted in general in their class. However, some students perceived their social participation as rather low. Students' ratings of social classroom climate were high, which indicated that most members of the class considered that e.g. peers in the class sticking together or helping each other. Compared to the original data from Rauer and Schuck (2003), the present sample scored higher in the individual ratings of social classroom climate. Moreover, students reported a relatively high level of work choice options during lessons. In this regard, the present sample's scores were somewhat similar compared to the sample in the study by Helm (2014).

With regard to the first research question, results showed that students with SEN received fewer peer nominations compared to their classmates. This finding is in line with previous research (e.g. Koster et al. 2009; Bossaert et al. 2013; Schwab 2018). Contrary to expectations (e.g. Avramidis, Avgeri, and Strogilos 2018; Zurbriggen and Venetz 2016), the self-perceived social participation of both groups also differed. One possible explanation for this finding may be the different instruments. In the study by Avramidis, Avgeri, and Strogilos (2018), the social self-concept scale of the Self-Description Questionnaire by Marsh (1990) was used, which captures a more cognitive aspect of social self-perception than the FEESS 3–4 by Rauer and Schuck (2003) that was utilised in this study. Having said that and considering the negative effects of low social participation on students' academic, socio-emotional or health development (e.g. Delgado et al. 2016; Maunder and Monks 2019), appropriate interventions and educational support are clearly needed.

With regard to the second research question, the results revealed a somewhat different picture of self-perceived social participation than of social status. For the social classroom climate, a rather paradox effect was found concerning self-perceived social participation: While the effect was positive at the individual level, the effect of the mean classroom score for social classroom climate was negative. In other words, the higher the social classroom climate was rated by all students in a class, the lower a student perceived his or her social participation. This could indicate a 'within-group effect' (Bliese 2000). In contrast, there

was no significant association between personalised instruction and self-perceived social participation – neither at the individual level nor at the class level. For students' social status, a positive effect of the social classroom climate was found at the individual level, but not at the class level. A possible explanation for the absence of this effect might be that the nomination of friendships was limited to five best friends. For future studies related to social status, it is advisable to use an unlimited nomination (Gommans and Cillessen 2015) or alternative procedures such as Social Cognitive Mapping (Pijl et al. 2011). For individual ratings of personalised instruction, a small positive effect was found on the students' social status. As personalised instruction also pertains to the choice regarding with whom a student would like to learn, such teaching strategies could foster social interactions and help build friendships among classmates.

The third question covers the main purpose of the present paper, namely, investigating the differential effects for students with SEN. The analyses revealed that the association between SEN and self-perceived social participation was moderated by the social classroom climate. That is, although students with SEN rated their social participation in general lower than their peers, the difference became smaller the more positive the social classroom climate was. Therefore, improving the social classroom climate in inclusive classes might help foster social participation, especially of students with SEN. No interaction effect was found for social status. Again, the lack of this effect might be explained by the limitation of peer nominations. Contrary to social classroom climate, no interaction effect was identified for the link between personalised instruction and SEN. It can thus be concluded that higher personalisation of instruction seems to help students without SEN as much as other students to improve their social participation.

Taken together, the results suggest that interventions should not solely focus on an individual student or students with SEN, e.g. by fostering their social skills, but also need to change the whole classroom environment or peer ecology (cf. Farmer et al. 2018).

Limitations of the study and Considerations for further research

The present study has three main strengths: First, social participation was assessed via both self-reports and peer nominations. Second, the possible moderating effects at the classroom level for the lower social participation of students with SEN were taken into account. Third, the analyses were conducted in a multilevel framework investigating the effects at individual and class levels. Nevertheless, some limitations have to be addressed.

It should be noted that the general character of the study is rather exploratory. Therefore, no explicit hypotheses for the main and interaction effects were stated. Moreover, only two of the four key themes according to Koster et al. (2009) were covered. Considering other aspects of social participation might lead to different results and, in turn, to different conclusions. Future studies could include other indicators of social participation, such as interactions with peers during break or peer contacts via social media. Another limitation was that no further indications on SEN were available. Since only a small number of students with SEN belonged to categories other than learning disabilities, no analysis for different subgroups could be calculated. To better reflect the diversity of a student body in an inclusive classroom, a dimensional approach (e.g. latent profiles analysis) might be worthwhile. In addition, the operationalisation for personalised

instruction is limited. As only students were asked for the degree of choice in terms of learning activities and collaboration partners, teachers' perspectives or observations could complement the understanding of personalised learning.

Moreover, as all variables were assessed at the same measurement point (i.e. cross-sectional study), the results could not be interpreted as causal effects. Further studies with a longitudinal design are needed to investigate the (causal) influences of social classroom climate and personalised instruction on students' social participation. To this end, it will be necessary to investigate more systematically whether interventions on social classroom climate can foster students' social participation (Garrote, Sermier Dessemontet, and Moser Opitz 2017). Finally, methodologically sound studies examining the effects of inclusive teaching practices are recommended.

Disclosure statement

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