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ARTICLE



Social participation in the context of inclusive education: primary school students' friendship networks from students' and teachers' perspectives

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ABSTRACT

Having friends influences students' academic, socio-emotional as well as health development. Especially, students with special educational needs (SEN) are at a high risk to belong to the subgroup of students without friends in class. Within a sequential explanatory design, two study phases have been implemented in the present study. In phase 1, a sociometric network analysis of 449 students from 25 inclusive primary school classes (4th grade, age = 9–11 years) were examined at t1. To assess students' friendships, sociometric nominations of the students' top five friends have been used. Results showed that the agreement of students' and teachers' rating varies strongly across classes ($r = .18 - .71$). In phase 2, interview data from a subsample (a sub-sample selected from phase 1) comprising teachers ($n = 2$) and students ($n = 15$) was qualitatively analysed. The evaluation of teachers' interviews identified three explanations for missing accuracy in the sociometric networks. From students' interviews, six subcategories describing friendship were found.

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Introduction

The spatial placement of students with and without special educational needs (SEN) together in the same classes is a shared policy all over Europe (Schwab 2020). However, inclusive education does not simply refer to the spatial inclusion of students with SEN. Recent definitions of inclusive education emphasise a non-categorical approach referring to equitable quality education and full participation of **all** students (e.g. UNESCO 2015). Social participation within the context of school means students' involvement with the peer group, which includes, e.g. interaction with peers, acceptance by peers, being part of friendship dyads/networks in class, and feeling socially included (see, e.g. Bossaert et al. 2013; Koster et al. 2009). However, while spatial inclusion can be forced by law, being socially included cannot be similarly enforced.

However, recent literature reviews indicate lower social participation of students with SEN and that they lack friendships (Schwab 2018; Bossaert et al. 2013; Hassani et al. 2020; Koster et al. 2009). Students with SEN form very heterogeneous groups. Each student with SEN may have conditions very different from others, which could hamper their ability to make and maintain friendships. Previous literature indicates that students with SEN, particularly those with social and/or emotional disorders, are at risk of being socially excluded (e.g. de Leeuw, De Boer, and Minnaert 2018; Petry 2018). However, several studies did not differentiate between different kinds of SEN, which might also be related to the fact that there is a high propensity to comorbidity among various kinds of SEN.

According to Bukowski et al. (1996) friendship is a bilateral construct that refers to a selected group (e.g. between two individuals). Definitions of friendships often refer to reciprocal friendships. For instance, Rubin et al. (2011, p. 315) defined friendship as 'close, mutual, and voluntary dyadic relationship' (Rubin et al. 2011, 315). Also, the results of the thematic literature review of Rossetti and Keenan (2018, 203), which focused on friendship between students with and without severe disabilities, indicated that most definitions (regarding 2/3 of the analysed papers) of friendships included reciprocity as the 'give-and-take' nature. However, friendships can also be operationalised as a unilateral construct by just counting one-sided nominations of friendships emphasising the individual appraisal of the character of socio-emotional variables (Lazarus 1991). Defining friendships about its reciprocity is rather a technical definition and it does not prioritise students' perceptions about friendships. As Østvik, Ytterhus, and Balandin (2018) stressed in addition, students' voices and their unique interpretations about how to define friendships are important. A recent study by Østvik, Ytterhus, and Balandin (2018) investigated the characteristics of friendships from students who use augmentative and alternative communication (AAC). The results showed that friendships between students using AAC and their peers were often unilateral and rather superficial.

However, in most quantitative studies, friendships are operationalised using socio-metric nominations (SNA). For instance, plenty of research asked students to nominate their top friends in class (e.g. Pijl, Frostad, and Flem 2008; see also the reviews by Bossaert et al. 2013; Koster et al. 2009). SNA data can be analysed either by counting the outgoings (how many names have been mentioned by a student – so-called 'out-degree centrality' in SNA), incomings (how often has a student has been nominated by peers – so-called 'in-degree centrality' in SNA) or by mutual nominations (taking into account self- and peer-nominations – so-called 'dyad reciprocity' in SNA). SNA is low in complexity as students only need to nominate peers and not read long and, sometimes, rather complex elaborations. Therefore, SNAs are often used in surveys that include students with SEN (e.g. Avramidis et al. 2017; Mamas et al. 2019b). For instance, Schwab (2019) showed that around 15% of primary school students with SEN (mostly diagnosed with learning disabilities) in inclusive education do not have a single reciprocal friendship in their class (compared to 3.9% of students without SEN). Similarly, Avramidis, Avgeri, and Strogilos (2018) reported 11.1% of students with moderate learning difficulties who have not nominated a single friend at all in comparison to 3.6% of students without SEN. Further, the long-term perspective for students with SEN seems to be less positive compared to the stability of friendships of students without SEN (e.g. Avramidis et al. 2017). In this line, research also

questioned if the number of friends or rather the quality of friendships effects peers' development.

Students' and teachers' perspectives on students' friendships

According to most studies, (e.g. reviews by Bossaert et al. 2013; Koster et al. 2009) friendships are assessed via students' self-perceptions. This seems plausible because direct observation of friendships might be difficult. For instance, observers might not always be present when significant moments for friendships occur, e.g. intimacy (e.g. Schneider 2016) and cracking of jokes (Rossetti 2011). These characteristics of friendships may be incomprehensible for bystanders. However, teachers' knowledge about their students' relationships with peers is crucial as they would need to be aware of the needs for intervention. For instance, teachers can intervene to foster friendships (e.g. Circle of Friends program; see also Hassani et al. 2021), form positive social behaviour or arrange contacts (e.g. through school projects) between students (for an overview, see Schwab 2018). According to de Leeuw, De Boer, and Minnaert (2018), students with social, emotional, and behavioural difficulties desire a stronger initiative from teachers when it comes to resolving social problems between peers. In addition, Farmer, McAuliffe Lines, and Hamm (2011) pointed out the crucial role teachers play in their students' peer experiences. However, if teachers are not aware of the social situation of their students, they might not be able to intervene. Therefore, it should be interesting to investigate teachers' insights into students' social participation. For instance, in the study of Hoffman, Hamm, and Farmer (2015) on average, only 17% of friendship dyads among early elementary students could be correctly reported by teachers. Pittinsky and Carolan (2007) demonstrated that around 11–29% of friendship ties among middle school students were different by teachers' and students' reports. Gest (2006) showed, that, for teachers and students (in grades 1, 3, and 5), teachers could correctly identify 72.5% of friendship dyads and the overlap in identification was higher regarding the subsample of male students. In the context of social networks, results from Pearl et al. (2007) showed that teachers identified the most salient social groups of typically developing students. Interestingly, in spring, teachers overlooked a fewer number of classroom social groups than in fall. Therefore, it seems that teachers are able to identify students' friendships more correctly at the middle or end of a school year than in the first term.

According to previous sociometric networks analysis, students' and teachers' ratings of peer popularity are only moderately correlated ($r = .42$) (Kwon, Kim, and Sheridan 2012). Harks and Hannover (2019a) reported for primary and secondary school students an overlap of 36% (study 1)/39% (study 2) of students' individual nominations and teachers' nominations. Another study by Harks and Hannover (2019b) showed a moderately accurate overlap of peer networks rated by students and teachers. Generally, it can be summarised that the teacher-student rating overlap for students' social inclusion (e.g. Südkamp et al. 2018) is rather low. All the mentioned studies were conducted within the context of mainstream school students and did not specifically address students with SEN. Studies comparing the views of teachers and students with SEN's view on students' friendships are rare. The study of Koster et al. (2007) revealed a bias of teachers' perceptions of the social participation of students with SEN demonstrating a more positive view on students' social position by teachers compared to the results of sociometric

nominations made by peers. The larger proportion of studies in the context of SEN focused on teachers' and students' ratings of social inclusion rather than on comparison between teachers' and students' nominations of students' friends. Here, the gap regarding social participation between students with and without SEN is often bigger in teacher ratings compared to students' ratings. Further, Venetz, Zurbriggen, and Schwab (2019) showed that the overlap between students' self-ratings and teachers' ratings of social inclusion is lower for students with SEN compared to students without SEN. Schwab, Zurbriggen, and Venetz (2020) identified a bias regarding the overlap of teachers' and students' ratings of students' social inclusion indicating a lower overlap for students with SEN compared to those without SEN. Moreover, teacher ratings of social inclusion showed more positive results compared to sociometric assessment techniques also in the study of de Monchy, Pijl, and Zandberg (2004).

Aim of the current study

Until now, there has been little research on the teacher-student overlap of friendship nominations using sociometric network analysis in the subgroup of students with SEN. Moreover, as Froehlich, Rehm, and Rienties (2020; see also Froehlich, van Waes, & Schäfer, 2020) pointed out: social network research is mainly done within quantitative research designs. Especially, mixed-method studies are missing. Another gap in the literature is that, for the few studies existing about sociometric analysis, hardly any reasons are provided which explain the low overlap between students' and teachers' nominations. Therefore, within study phase 1, the sociometric networks of students with and without SEN from students' as well as teachers' perspectives are analysed to investigate the overlap and the stability over time. Further, within study phase 2 teachers' explanations for missing overlap as well as insights into students' conditions of friendships are provided.

Within study phase 1, the following hypotheses are formed:

Hypothesis 1. Given the findings on student-teacher-agreement reported above, we assume that the overlap between students' and teachers' nomination is moderate.

Hypothesis 2. The agreement between students' and teachers' nomination increase significantly over time from the beginning (t1) to the end (t3) of the school year.

Within study phase 2, the following research questions are addressed within an explorative character:

- (1) How do teachers explain low accuracy of ratings of sociometric networks between students' and teachers' perspectives?
- (2) Which characteristics do students report as decisive for considering and/or building a friendship?

Method

Settings

The current data derives from the mixed-methods research project funded by the German research foundation DFG (funding number: 393,078,153). Within this project, only inclusive primary school classes were included. The criterion regarding the inclusivity of the educational setting was that at least one student in class was diagnosed as having SEN.¹ To recruit inclusive fourth classes, all primary schools situated in urban and rural areas spread over the entire federal state of North Rhine-Westphalia in the Federal Republic of Germany were contacted via Email and given written information about the project. The schools were requested to seek clarifications of their doubts by communicating directly with the project team. Participation of the schools was voluntary. Data for phase 1 was collected a few weeks after the beginning of the school year (t1) and at the end of the school year (t3). In-between, phase 2 (interviews and short paper-pencil questionnaires) have been conducted in March and May 2019 (t2).

Ethics

The authorised ethics committee of the University of Wuppertal has given their approval for the current study. Written consent was obtained from teachers and the parents of underage students. Primary school students also gave their consent to participate and were made aware of the fact that they could withdraw from participation at any stage during the survey. All students were invited to participate in phase 1 of the study. For phase 2, teachers nominated the students to be interviewed.

Study 1

Participants

In the current paper, only data of classes is used, for whom friendship nominations from students as well as teachers were available. Therefore, the sample consists of 24 classes at t1 (N = 436 fourth graders, age: 9–11 years; 52.2% boys, 47.8% girls). Of the 12.4% students diagnosed as having SEN, 62.5% had learning disabilities and 12.5% had social-emotional disorders. The remaining 25% had motor, sensor or multiple disabilities. This sample dropped to 23 classes at t3 from students' nominations (n = 419). For 11 classes (n = 209), data from both, students' and teachers' nominations were available at both measurement points (t1 and t3). Therefore, the calculations are based on varied sample sizes. For calculations for the measurement point t1, data from 24 classes are integrated into the final sample. For the analysis of longitudinal data, the data from the final sample that included 11 classes was used.

¹While being aware that placement of students with SEN does not automatically imply that the school practices inclusivity, still, for this study, enrolment of students with SEN was the only quantifiable and objective criterion for a class to be considered inclusive.

Instrument

To assess students' friendships, students were asked to list their best friends based on free recall. The students were provided a list of all their peers on one page and were asked to write the first names of five friends they could recall in a box in the questionnaire. This procedure was used to avoid the use of nicknames. The often used (see, e.g. Frostad, Mjaavatn, and Pijl 2011) question 'Which students in the class are your top friends?' was asked. Emulating other researchers (e.g. Frostad, Mjaavatn, and Pijl 2011; Pijl, Frostad, and Flem 2008), the number of friends to be named was restricted to five peers. This restriction was placed to prevent peers with whom the respondent had weak relations entering into the list (see, e.g. Pijl, Frostad, and Flem 2008). In addition, the class teacher of the students named the five friends of each student in their class.

Phase 2 – case study

Participants

Following a sequential explanatory design (Creswell & Plano-Clark 2017) the study was divided into 2 phases. For phase 2, from among the students who volunteered for interviews, those to be interviewed were selected in consultation with the schools and the respective teachers. When recruiting the corresponding teachers and students, an attempt was made to use key data of the first measurement point (t1) as a guide. The criterion for selecting the participants for collecting qualitative data was whether the students rated themselves as closely or poorly socially integrated into the class. A list of target students (which included a few additional students to be substituted for those who dropped out) was communicated to the teachers. Regarding the previously described inclusion criteria for selection (close or poor social integration), classes that were suitable for such participation were requested to participate in phase 2 of the study. The number of responses was very low in comparison to the sample of the quantitative strand of the study and, therefore, the potential sample for the qualitative phase 2 was limited. Eventually, 15 students from four classes and two teachers (from two of those four classes) who had already been participants in phase 1 constituted the sample for phase 2.

Interview-Method

The semi-structured interviews were conducted using guiding key questions and included individualised questions regarding the previously collected sociometric assessments of teachers and students. Teachers were confronted with the social networks from the perspective of their students and the social networks based on their own ratings of their students' social connectedness. The student interviews were led by questions on reasons for building friendships with the friends listed by them and information on their perception of their social inclusion previously gained from quantitative data. The inductive category development approach of qualitative content analysis (e.g. Mayring 2010) was chosen to answer research questions 2.1 and 2.2. Guided by these research questions, the focus was set for each of the data from the teachers' interviews and the students' interviews. Teachers' interviews should give insights into

the narrow overlap between teachers' and students' ratings of friendships in the classes by following the patterns of explanation and interpretation of differing views of friendships and social inclusion from teachers' perspectives. Regarding student interviews, explanations, and possible interpretative aspects of decisive factors for building a friendship or perceiving peers as friends from students' perspectives were the focus of data analysis.

Results

Results of phase 1

First, students without SEN reported at t1 that they have 3.95 friends on average ($SD = 1.33$) while their peers with SEN only had about 3.79 friends ($SD = 1.62$). The difference in the mean values is not statistically significant ($t = 0.70$, $df = 393$, $p = .48$). Teachers' nominations at t1 indicated that students without SEN had around 3.31 friends ($SD = 1.27$) while students with SEN had 2.89 ($SD = 1.42$; $t = 2.08$, $df = 393$, $p = .20$).

Further analyses were performed using the R package 'Siena'. Firstly, it was investigated to what extent student friendship networks based on class teachers' top friend nominations correspond to student friendship networks based on students' top friend nominations. Results show that in t1 friendship networks based on class teachers' top friend nominations largely differed from friendship networks based on students' top friend nominations. The mean agreement for all 25 classes was $r = .47$ ($SD = .12$). The network correlations of the 25 classes varied between $r = .18$ -.72.

Regarding the stability of the networks, results show that students' friendship networks seem rather unstable over time. The mean retest correlation of students' friendship networks based on students' top friend nominations between t1 and t3 was $r = .45$ ($SD = .11$) for all available 23 classes. The network correlations of the 23 classes varied between $r = .21$ -.75.² Hence, there are classes with rather unstable friendship networks and classes with rather stable friendship networks. Further, it was analysed whether the agreement between teachers' and students' nominations increases over time from the beginning (t1) to the end (t3) of the school year. Results show that at t3, friendship networks based on class teachers' top-friend nominations still differed considerably from friendship networks based on students' top friend nominations. The mean agreement for all 11 classes was $r = .45$ ($SD = .11$). The network correlations of the 11 classes varied between $r = .26$ -.59.

Qualitative results of phase 2

Low accuracy regarding teachers' ratings of students' sociometric networks

Teachers' explanations of differences in students' and teachers' top friend nominations can be basically traced back to one overall category: the lack of insight into students' social networking and participation. As the sample of teachers who participated in the

²The networks were correlated using the `gcor` command of the R `sna` package (Butts 2020). The function `gcor` returns the (product-moment) correlation between two or more labelled graphs (Butts 2020). As network data violates the independence assumption, we refrained from carrying out hypothesis testing. Hence, we do not report any p values.

interview study is very small, the approach is treated as a case study. Therefore, the explanation patterns for divergent friendship perceptions of teachers and students are displayed separately for the two participating teachers.

Teacher A

- (A1): Friendship as a fluid phenomenon that changes in phases

'That [their friendships] is always in phases, just a phase where they have not got along well'. (teacher A).

One explanation pattern of teacher A that has recurred is the perception that their students form fluid friendships, which means that friendships in this class and among students are not perceived as a stable construct but rather as fitful phenomena that change in phases (phases in which students consider each other as friends and phases in which they do not consider each other as friends).

- (A2a): Different understandings of the construct friend/friendship OR (A2b): Teachers' expectations of public expressions of friendship

'[student a] has only nominated [student b] because she is sitting next to her, I am sure'. (teacher A).

When teacher A was confronted with friendship nominations of a student that differed massively from their own ratings of this students' friends, teacher A implicitly referred to different understandings of friends and friendships from teachers' and students' perspectives. This student stated a particular peer from class as one of her best friends in class, whereas the teacher can only explain this nomination by the fact that the two are sitting next to each other during lessons. Therefore, teachers A might have a different understanding of the construct 'friendship' than the student who nominated among her five best friends the student who is 'only sitting next to her'

Another category within which this statement could be discussed is teachers' expectations of public expression of friendship. This means that the students might perceive their seatmates as friends because they spend most of the lessons together and, probably, also work together. On the other hand, teachers perceive the fact that students are sitting next to each other solely as an organisational consequence of lesson design and classroom practice but consciously observe friendships during breaks in learning.

Teacher B

- (B1): Secrecy of the private sphere and social networking of students outside school life

'It may be that they are then connected differently again in the afternoon and are in close contact after school'. (teacher B).

Teacher B draws her information and assessment of the friendships of her students from everyday school life, i.e. from their interaction with each other during and between lessons. Her knowledge concerning friendship interactions does not expand beyond the school context. Therefore, teachers may lack insights into students' social connectedness in the private sphere and social networking of students outside of school life (e.g. the

Table 1. Subcategories decisive characteristics for friendships.

Subcategory	Anchor example for students with and without SEN (interview excerpts)
Playing together	For example, answers to questions like: Why is this student your best friend? Who would you like to be friends with and why? Why do you think this student has so many friends? Anchor example for student with SEN <i>'Because [student A] always plays so much with me and [student B] often plays with me during the break'.</i> Anchor example for student without SEN <i>'We often just play with each other and we laugh often'.</i>
Spending leisure time together	Anchor example for student with SEN <i>'After school we go to the playground'.</i> Anchor example for student without SEN <i>'Yes, well I am in a soccer club and [student C] and we play soccer there. And I often play with him, because I only have to go down the street, then I'm already with him'.</i>
Academic performance	Anchor example for student with SEN <i>'Because he is so good. And he's good at Maths and German and everything. And he's good at English. He's good at sports. And he [...] because he is everything. He is smart. Directly a question is asked, he will raise his hand immediately.'</i> Anchor example for student without SEN <i>'Because he is also very clever and he always has good grades'.</i>
Support	Anchor example for student with SEN <i>'Because they always help me and take care of me'.</i> Anchor example for student without SEN <i>'He sometimes helps me, supports me'.</i>
Being nice to each other	Anchor example for student with SEN <i>'We are nice to each other'.</i> Anchor example for student without SEN <i>'Yes, she is, because she is always quite nice'.</i>
Common interests	Anchor example for student with SEN This category could only be found within interviews with students without SEN. Anchor example for student without SEN <i>'He also plays soccer, like me in the same club. And I play with him a lot'.</i>

teacher may not be aware that students meet in their spare time after school or on the weekends).

- (B2a): Different understandings of the constructs friend/friendship, OR (B2b): Teachers' expectations of public expressions of friendship

'They sit together at a group table. It seems to have developed into something more than we thought' (teacher B).

Like teacher A, teacher B also describes students' nominations of friends that differ from their own ratings of their students' friendships as to unexpected outcomes. The extracted statement might also be explained by different understandings of the construct friend/friendship or teachers' divergent expectations of public expression of friendship and students' actual acting out of social connectedness (see also the results of teacher A).

Decisive characteristics for considering or building a friendship

To assess students' perception of decisive characteristics for considering or building a friendship, the student interviews were analysed. As a result, six subcategories of reasons for friendships can be extracted, some of which are interrelated and cannot be clearly delimited from each other (ordered by quantity of mentions): playing together

(12), spending leisure time together (11), academic performance (8), support (7), being nice to each other (6), and common interests (4; see [Table 1](#)).

Discussion

Being part of friendship dyads or networks is an important factor in students appraisal of social participation (e.g. Bossaert et al. [2013](#)). However, students with SEN and especially students with social and/or emotional disorders are at high risk of being socially excluded (e.g. de Leeuw, De Boer, and Minnaert [2018](#)) as they often lack friends (Bossaert et al. [2013](#); Koster et al. [2009](#); Schwab [2018](#)). This is in line with the descriptive results of the present quantitative study (phase 1), indicating that students with SEN have slightly fewer friends according to sociometric network analysis, although this difference was not significant.

In recent years, approaches to investigate friendships have tended to include an increasing amount of relational information – using techniques such as social network analyses – and do not simply model social relations, e.g. with self-assessment scales. According to Gifford-Smith and Brownell ([2003](#)), a sociometric nomination is considered the most suitable method to assess friendships. However, the present study confirms previous findings (e.g. Kwon, Kim, and Sheridan [2012](#)) that results from using the sociometric network method differ according to the person who is nominating. Overall, results of phase 1 indicated that the coincidence between students' and teachers' nominations is rather moderate (overall $r = .47$) though it is slightly higher than the correlation found in the study by Kwon, Kim, and Sheridan ([2012](#); $r = .42$). Interestingly and in line with previous findings (e.g. Koster et al. [2007](#)), taking students' perspective into account shows a more positive situation (lower difference between the number of friendships of students with and without SEN) compared to teachers' nominations of students' top five friends. This result might be explained by students' decisive motives for considering or building a friendship. Referring to the outcomes of phase 2, playing or spending leisure time together, academic performance, support and being nice to each other revealed as decisive friendship characteristics from students' perspectives. Common interests played a minor role for the current sub-sample of students with SEN. Likewise previous findings (e.g. Garrote [2020](#); Helm [2017](#)), this study indicated that students' appraisal of others' academic achievement is eminent for friendships. Referring to the results of Garrote ([2020](#)) and Helm ([2017](#)) this might only be important for the academic context, e.g. students feel connected when significant others care for them by helping with tasks or explaining facts. High achieving classmates are role models, they are admired and (primary school) students might want to be surrounded by them to benefit from their success and standing in school. Therefore, within the educational context achievement can be a reason for seeking friendships with schoolfellows.

Further, the present results clearly pointed out that some teachers are rather able to identify their students' social relations while others are hardly able to do so. The correlation within the 25 analysed networks varied quite widely ($r = .18-.72$) at measurement point 1. Explanations could be the differences in teacher- student- relationships between classes or the empathy, openness, or solicitousness shown by the teachers. Over the course of one school year, the networks were rather unstable. In addition, also the network stability fluctuated widely within the 23 classes of the longitudinal sample. Comparing the teacher-student- agreement of nominations, the results do not support

the assumption of an increase of teachers' diagnostic accuracy regarding their students' friendship networks. The overall correlation at the end of the school year was rather similar ($r = .45$). Therefore, it seems that spending more time together does not increase teachers' ability to rate students' friends on an average level.

The current study provides some unique insights into why the sociometric network ratings from students' and teachers' perspectives differed. One explanation was a fundamentally shifted external perception of students' friendships. This might also be explained by the fact that students behave differently within different contexts (Achenbach 2018). Maybe students act more distanced when teachers are in the same room and teachers therefore might not realise e.g. how intimate students' conversations are. This would underline teachers' explanation of 'the secrecy of the private sphere and social networking of students outside school life' [teacher B]. Students might consider peers' behaviour and interactions with each other inside and outside the school as crucial for building a friendship – whereas teachers' insights end at the school gate. Furthermore, teachers argue that a different understanding of public expression of friendship might be a possible explanation for differences in teachers' and students' nominations. As results from Østvik, Ytterhus, and Balandin (2018) revealed, primary school students can interpret rather superficial relations as friendships. In contrast, teachers (as they have developed a more fine-grained theory of mind) might have much more complex definitions of friendships compared to students' ones. For students six interrelated reasons seem to be decisive for considering and/or building a friendship, e.g. playing and spending leisure time together, being nice to each other, and tangible supportive behaviour. For some children, simply the fact of sitting next to each other may be enough to call a particular classmate a friend. As for teachers, more psychologically profound reasons (like reciprocal trust or interdependence) and more apparent and observable factors (like picking someone for one's own team in games) may be pivotal.

In sum, regarding the research questions results of both study phases showed that social networks from 4th graders seem to be rather unstable within one school year, the accuracy between students' and teachers' nomination is moderate, and the agreement between students' and teachers' nomination does not increase from the beginning to the end of the school year. Diverse appraisals of one and the same situation alongside different definitions of the theoretical construct of friendships may lead to differential interpretations, emotions, and cognitions regarding personal and social-environmental variables. An example for this purpose may be students' and teachers' understanding and evaluation of social interactions in class.

Limitations

First, using sociometric nomination method has both advantages and limitations. Especially when limiting the number of friends to a specific number (in this case max. 5 best friends) it might be, that some relations are not recorded. To avoid this, e.g. socio-metric rating procedure can be used. For example, students could rate the amount of time they spend interacting with classmates during breaks (see e.g. Roberts and Smith 1999). As friendships are rather subjective, observable nomination questions such as 'How much time of your breaks do you spent with the following classmate?' might lead to a higher overlap between teachers' and students' nominations. Also, the high dropout of

participants from phase 2, namely, the qualitative part of the study, was a severe limitation. The qualitative approach can only be considered as a case study because the information and perceptions of two teachers and 15 students cannot provide detailed insights into explanation patterns on a macro level.

Regarding the sample, a limitation is that the present results include only primary school teachers and students. The German school system – similar to a lot of other school systems – provides one interdisciplinary teacher per class in primary schools but several subject teachers in secondary schools. Therefore, the teacher- student nomination correlation might be even lower for secondary schools where teachers spend much less time with students from a specific class.

According to students' voices, there might be characteristics for friendship selection which are 'invisible' and unconsciously for teachers and other students. For example, previous research indicated that there is a tendency of homophily – showing that students are preferring similar others as friends (see e.g. Lazarsfeld and Merton 1954). In the current study, this aspect was not specifically addressed through the interview guideline questions or mentioned by the respondents.

Implications

In the current sample, though the differences in the social inclusion of students with and without SEN were noticeable, they were not significant. This may be a promising outcome of this study as former studies (e.g. Avramidis et al., 2018; Bossaert et al. 2013; Koster et al. 2009; Schwab 2018) usually showed bigger disadvantages for students with SEN. This might be interpreted as an optimistic sign for amending the implementation of inclusive education policies.

More distressing are the findings regarding the gap between teachers' and students' perceptions of existing friendships. It would be important that teachers realise that they might have only marginal insights into students' friendship networks. To do so, Mamas et al. (2019a, 2019b) provide a social network analysis toolkit to enable different stakeholders to work together to better understand the social dynamics in schools. Using toolkits like this may help teachers to objectify their primed appraisals of their classroom situation. The changeability of friendship networks allows the conclusion that teachers may affect the development of friendships in class, e.g. through cooperative learning methods (for possibilities to foster students' social participation see, e.g. the review of Hassani et al. 2020). In addition, following the social referencing theory (Walden and Ogan 1988), students notice positive as well as negative attitudes and behaviour of teachers towards specific students and are influenced by these social context cues in their own relationships to those students.

Regarding the limitations of the current study, other sociometric rating procedures should be taken into consideration, especially the more observable and objective nomination criteria. The qualitative approach of the current study should be extended, and the sample size must be enlarged to overcome the status of a case study and obtain detailed insights into explanation patterns on a macro level of an enhanced sample. In addition, observational data of teachers' and students' actual behaviour would be a beneficial addition to SNA data. Thus, the reciprocal impacts that students and teachers have on each other's behaviour could be included in the analyses.

Conclusion

For teachers, it is of high importance that they should be able to identify students' social situations because students might need support and teachers can intervene. A particular problem seems to be that misleading preventions and interventions might be implemented by teachers who do not have valid information about students' social participation. The findings of the qualitative study, in particular, indicate that teachers might have a different understanding or rather too little insight into their students' formation of friendships. Thus, teachers should be aware of different appraisals students may have on the same occasion. Further investigations should deal with the topic in a more differentiated and above all more comprehensive way (students' friendships cannot be narrowed down solely to the school context).

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