



# Are we included? Secondary students' perception of inclusion climate in their schools

Susanne Schwab<sup>a, b, \*</sup>, Umesh Sharma<sup>c</sup>, Tim Loreman<sup>d</sup>

<sup>a</sup> University of Wuppertal, Germany

<sup>b</sup> Extraordinary Prof. in the Research Focus Area Optentia at the North-West University, Vanderbijlpark, South Africa

<sup>c</sup> Monash University, Australia

<sup>d</sup> Concordia University of Edmonton, Canada

## HIGHLIGHTS

- Examined secondary school students' perception of inclusion climate.
- Findings underscore the high psychometric quality of the Inclusion Climate Scale.
- The Inclusion Climate Scale has two factors: 'Teacher support and care' + 'Emotional Experience'.

## ARTICLE INFO

### Article history:

Received 20 February 2018

Received in revised form

24 May 2018

Accepted 30 May 2018

### Keywords:

Inclusive education

Quality of inclusion

Class climate

School wellbeing

Teacher-student relationship

## ABSTRACT

The study examines secondary school students' perception of the climate in their classrooms with reference to inclusive education. A key objective of the study was also to examine psychometric properties of a newly developed Inclusion Climate Scale (ICS). Data were obtained using a paper-pencil survey in which 699 students (age = 10–17 years) from North Rhine-Westphalia (Germany) participated. The results of exploratory factor analysis revealed two factors (Factor I: Teacher Support and Care; Factor II: Emotional Experience). The Inclusion Climate Scale along with the two factors it contains showed satisfactory reliability and validity.

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## 1. Introduction

Schools in Europe and in most parts of the world are recognizing the importance of inclusive schooling and the United Nations Convention on the Rights of Persons with Disabilities (United Nations, 2007) has been ratified by most of the European countries. Inclusive education initiatives, although originally conceived for students with disabilities, now encompass a broad range of student diversity, including students from diverse socioeconomic, linguistic, cultural, and religious backgrounds, as well as various gender identities and sexual orientations, and more recently

students from refugee backgrounds. The number of students with various diversities including those with disabilities, has increased in mainstream classrooms internationally (for actual statistics in Europe see European Agency Statistics on Inclusive Education, 2017; for other countries see e.g. Forlin, Chambers, Loreman, Deppeler, & Sharma, 2013).

However, there are still concerns regarding the practical implementation of inclusive practices. Even the term inclusive education continues to be contentious. There is not one universally agreed-upon definition of inclusive education. As Grosche (2015, p. 18) states “the terminological ambiguity and the resulting lack of adequate operationalization of inclusion is a great challenge for empirical educational research on inclusion”. He further pointed out that “up to date, there is no canonical, precise definition of inclusion”. Göransson and Nilholm (2014) criticized the lack of clarity of the term of inclusion in empirical research. Some definitions differ between a narrow and broad definition of inclusion

\* Corresponding author. University of Wuppertal, Gaußstraße 20, 42119, Wuppertal, Germany.

E-mail addresses: [schwab@uni-wuppertal.de](mailto:schwab@uni-wuppertal.de) (S. Schwab), [umesh.sharma@monash.edu](mailto:umesh.sharma@monash.edu) (U. Sharma), [tim.loreman@concordia.ab.ca](mailto:tim.loreman@concordia.ab.ca) (T. Loreman).

(Ainscow et al., 2006). While the narrow definition mainly focuses on inclusion of students with special educational needs (SEN) in mainstream education, the broader definition refers to inclusion of students with a wide range of diversities. Regardless of this lack of conceptual clarity, it is possible to move ahead with research on inclusive education, as a large number of studies over the past forty years have demonstrated. This requires, however, that each study defines its focus at the outset and remains cognizant of that focus throughout.

### 1.1. Quality of inclusive education

The focus of the current paper rests on an understanding of inclusion as a process of high quality implementation of aspects that are important for psycho-emotional and academic development of students with and without SEN. Successful implementation of inclusive practices does not only benefit students who were previously excluded, such as those with disabilities. “Effective inclusion is effective for all students” (Jordan, Schwartz, & McGhie-Richmond, 2009, p. 536). This leads to the questions regarding what determines high quality inclusive education. Göransson and Nilholm (2014) examined different understandings of inclusive education: placing students with SEN in mainstream classes, meeting the academic and social needs of students with SEN, or meeting the needs of all students regardless of their SEN. If it comes to the physical appearance of students with SEN in mainstream classes, the quality of inclusion can easily be determined by the number of students with SEN in mainstream classrooms or the amount of time students with SEN spend in mainstream classes. However, it is clear that these measures do not cover the entire complexity of determining the quality of inclusive education.

Another well-researched means of assessing the quality of inclusive education is to investigate academic outcomes. According to past research, students with SEN show better academic achievements in mainstream education compared to special schools. The academic development of students without SEN in inclusive classes appears to be at least comparable to classes with no students with SEN (for an overview of studies examining impact of inclusion on academic achievement see: Baker, Wang, & Walberg, 1995; Dessemontet & Bless, 2013; Dessemontet, Bless, & Morin, 2012; Ruijs & Peetsma, 2009; Ruijs, Peetsma, & van der Veen, 2010). Yet when it comes to other factors that impact academic outcomes, such as academic self-concept, research has shown that students with SEN in inclusive education often have a lower academic self-concept compared to their classmates without SEN (Bear, Minke, & Manning, 2002; Krull, Wilbert, & Hennemann, 2014; Weber & Freund, 2017; Zeleke, 2004; Zurbriggen, Venetz, Schwab, & Hessels, 2018).

Meeting the social needs of students is another crucial aspect of inclusion. Recent research points out that students with SEN are at risk of low social participation in mainstream education, however, this issue is not solely restricted to students with SEN (for an overview see: Bossaert, Colpin, Pijl, & Petry, 2013; Koster, Nakken, Pijl, & van Houten, 2009; Schwab, 2014). Teachers play an important role in the facilitation of positive relationships between students with and without SEN. Some studies report that students' social behavior is linked to the quality of their teacher-student relationships. Particularly, students who display emotional and behavioral problems often struggle in their relationships with their teachers (Baker, Grant, & Morlock, 2008; Liu, Li, Chen, & Qu, 2014; O'Connor, Dearing, & Collins, 2011; Roorda, Koomen, Spilt, & Oort, 2011; Sointu, Savolainen, Lappalainen, & Lambert, 2016).

School well-being is considered as another crucial outcome of inclusive education (Hascher, 2017). Both, students with and without SEN score rather high in well-being, with some studies

reporting significant differences between both groups of students (McCoy & Banks, 2012; Skrzypiec, Askeel-Williams, Slee, & Rudzinski, 2016; Venetz, Tarnutzer, Zurbriggen, & Sempert, 2012; Weber & Freund, 2017), while other studies have not found any significant differences (e.g. Schwab, Gebhardt, Hessels, Ellmeier, Gmeiner, & Rossmann, 2015).

### 1.2. Inclusion climate

This paper provides an approach to assessing the quality of inclusive education in regard to the variety of aspects discussed above. This approach ties each of these aspects together in order to examine an overall ‘inclusion climate’. Although as there is no canonical definition of inclusion there can be no clear definition of inclusion climate, it may be described by using the more widely understood concept of ‘school climate’ as a reference point. According to Cohen, McCabe, Michelli, and Pickeral (2009, p. 180), school climate “refers to the quality and characters of school life. School climate is based on patterns of people's experiences of school life and reflects norms, goals, values, interpersonal relationships, teaching and learning practices, and organizational structures.” Mitchell, Bradshaw, and Leaf (2010, p. 272) define school climate as “shared beliefs, values, and attitudes that shape interactions between the students, teachers, and administrators”.

However, there might be some special aspects that need to be accounted for when focusing on inclusion climate. The Index of Inclusion (Booth & Ainscow, 2002; Booth, Ainscow, Black-Hawkins, Vaughan, & Shaw, 2000) provides indicators, such as removing barriers to learning through adaptive support, valuing and acceptance of all learners, and the provision of high-quality learning. Teachers play a significant role in creating a positive inclusion climate by ensuring that students with various diversities are included in their schools. However, we know from past research that teachers often struggle in responding to the individual and diverse needs of their students. Sometimes systematic institutional barriers can hinder the creation of positive inclusion climate (Schwab et al., 2015). When teachers are apprehensive about implementing inclusive practices, they tend to overtly or covertly use teaching practices that may exclude students with diversities from participating in a range of classroom activities and experiences. For example, students with disabilities can be primarily assigned to what are known as integration aides or teacher assistants where these students may undertake activities that are significantly different from that of their other classmates (Blatchford et al., 2011). We also know that teachers who truly believe in inclusive education initiatives and have positive attitudes towards implementing inclusive education in their classes have been reported to use teaching practices (e.g. co-operative learning and peer tutoring) that promote inclusion in their classes (Avramidis & Kalyva, 2007; Schwab et al., 2015; Sharma & Jacobs, 2016).

### 1.3. Assessing inclusion climate

One way to determine if teachers' self-reported beliefs are consistent with their use of inclusive teaching practices is to undertake classroom observations. In a Canadian study, Jordan et al. (2009) used multiple data collection methods and undertook half-day observations of teachers who were teaching in inclusive classrooms. They found that teachers who accepted ownership of teaching students with disabilities were more likely to have positive attitudes toward inclusion and were thus more effective with all students, including those with and without SEN.

In a more recent study, Schwab et al. (2015) observed classroom practices of five teachers using a newly developed inclusive

classroom observation scale. The participating teachers completed three scales measuring their attitudes towards inclusion, concerns about teaching in inclusive classrooms, and their level of teaching self-efficacy to teach in inclusive classrooms in Winnipeg, Canada, prior to classroom observations. This study found that teachers who used more inclusive practices tended to have significantly lower degrees of concern, higher level of teaching self-efficacy, and more positive attitudes towards inclusion. Observational studies on teachers' use of inclusive practices provide meaningful insights about how consistent they are with their self-reported beliefs.

#### 1.4. Including student voices to assess inclusion climate

Undertaking classroom observations is highly resource intensive exercise. It is also possible that a few observations may not provide a complete picture of holistic use of teaching practices as teachers may act differently when they are being observed, or they may not be able to display all their skills at the time of observation. One way to address this issue is to gather student reports about the extent to which they feel sense of inclusion in their classrooms/schools. Student voices could provide a fresh perspective in understanding how effective teachers are teaching and including all students. Students with disabilities and other diversities represent hidden voices. Rarely is any attention paid to what they have to say about their education, which seems to be a stunning omission in the research considering the rhetoric around student-centred education and valuing student voice. It is argued that failure to engage in conversations about students' learning can significantly increase the chances of their disengagement (Dunleavy, 2008). Considering students are the primary consumers of educational services, their voices need to be captured. It is still not clear if teachers' perceptions of being more inclusive are consistent with the perception of their students. Furthermore, assessing students' perspectives can help to overcome the effect of social desirability in teachers' self-reported surveys about their beliefs and practices. Use of data from students can provide a robust way to triangulate teachers' self-reported data with the actual use of inclusive practices as experienced by their students.

#### 1.5. Research questions

The primary objective of this research was to report on the psychometric qualities (factorial structure, reliability and validity) of a newly developed Inclusion Climate Scale (ICS). The secondary objective of the research was to determine secondary (5–9th grade) students' perception of inclusion climate in their schools. We were also interested in determining which of the following factors may predict students' perceived sense of inclusion: gender, grade level, SEN, student achievement in mathematics (chosen as representative of academic performance), and school type.

## 2. Methods

### 2.1. Participants

Data were collected from 18 schools in North Rhine-Westphalia, a federal state in Germany. Informed consent was obtained from participants and their parents completing the questionnaire, and the research was approved by the ethics commission of the University of Wuppertal. Data were collected as part of a German study of Resources and Efficacy of Inclusive Education in lower secondary schools (RESE). The sample of secondary school students was considered appropriate for this study as we believed that some of the items could prove too difficult for students in primary schools to answer effectively. The schools were located both in urban and

rural areas with varying socioeconomic status. Participants were 699 German students from lower secondary grade classes (grade 5th to 9th) and from different school types that prepare students for different pathways from higher education to vocational education. Ages ranged between 10 and 17 years, and 52.8% were male. The students came from 42 inclusive classrooms, meaning that there was at least one student with a diagnosis of SEN present. The Special Educational Needs status was reported by the teachers as per the local North Rhine-Westphalian legislation. Students with SEN are those who could have either learning, sensorial disability, and/or social and emotional disorders. The largest group consisted of students with learning disabilities. Since only a very small number of students with SEN-types other than learning disabilities were found in the sample, no other subgroups were formed. A total of 94 students (16.7% of the boys and 10.4% of the girls) were identified as having SEN by their teachers and in most cases (65.5%) the SEN was related to learning disabilities only.

### 2.2. Instrumentation

#### 2.2.1. Inclusion Climate Scale

The questionnaire concerning classroom inclusion climate was developed using a multi-step process (DeVellies, 2016). We first reviewed the literature and developed items that could be included in the scale. The review broadly identified items relating to presence, participation, acceptance, and achievement (Ainscow & Miles, 2008; Ainscow et al., 2006), sense of belonging (Voltz, Brazil, & Ford, 2001), and degree of happiness with being educated in the school (e.g. Hascher, 2017). We were particularly keen to develop a scale that was based on a strength based approach to inclusion where each student is viewed as having strengths irrespective of having special needs. We used a four-point Likert-style scale (1 = Not at all true, 2 = Somewhat not true, 3 = Somewhat true, 4 = Certainly True) as it is easier for students to discriminate between fewer anchors compared to a 6- or 7-point scale. The first draft of the questionnaire consisted of 28 items (see Table 1). The items were originally developed in English language. It was translated into the German language for this study (for the German version see Table 7). We translated the scale into German and then independently translated it back into English to check that the meaning was preserved.

#### 2.2.2. School achievement

School achievement was estimated with the multiplication-division-mixed exercises version (MD 3a version) of the 3-min mathematic tests of Hartmann and Müller (2014). This speed test consists of 40 exercises about addition, subtraction, division and multiplication from numbers 1 to 100. This language-free test was chosen so as not disadvantage immigrant students with or others with poor German language proficiency (Stability coefficient:  $r_{tt} = .63/.75$ ; Hartmann & Müller, 2014). While this test is obviously not a comprehensive test of academic performance, it is standardized and does provide some information on which to base comparisons.

#### 2.2.3. Social inclusion, emotional inclusion, and academic self-concept

Social inclusion, emotional inclusion, and academic self-concept were assessed using the German version of the Perception of Inclusion Questionnaire- Student Version (Venetz, Zurbriggen, & Eckhart, 2014). The scale provides students' perceptions of how they feel about being included in classrooms. The scale is different from the ICS as most items report how a student feels and do not address what schools and teachers do to make schools inclusive. The PIQ has 12 items and yields three sub-scale scores for social

**Table 1**  
Factor loadings and inter-item correlation of the items on ICS.

Item	Factor loadings factor I 'Teacher support and care'	Factor loadings factor II 'Emotional Experience'	The inter-item correlation factor I 'Teacher support and care'	The inter-item correlation factor II 'Emotional Experience'
1 I enjoy coming to school every day.		.78		.66
2 I enjoy attending most of my classes.		.84		.75
3 I like the majority of lessons in my school.		.85		.76
4 I look forward to participating in classroom activities that my teachers have planned for us.		.70		.64
5 I receive enough help from teachers if I struggle to do school work.	.68		.59	
6 Most teachers in my school make learning fun.		.71		.64
7 Teachers and other staff in this school are friendly to me.	–		–	
8 My teachers give me supportive feedback when I do well at school.	–		–	
9 The majority of my teachers are not interested in teaching students who struggle with their learning.	–		–	
10 My teachers make sure that students, who face difficulty in learning a subject, receive enough support and guidance.	.65		.57	
11 Most of my classmates like me.	–		–	
12 I have at least one friend in my school who cares about me.	–		–	
13 I am happy to be at this school.	–		–	
14 My teachers are impartial and apply school rules in a fair way when somebody misbehaves in the class.	.58		.47	
15 I try to do my best in all subjects.	–		–	
16 My teachers make sure that all students are actively participate in the majority of school and classroom activities.	.72		.63	
17 My teachers are very caring about all students.	.68		.62	
18 My classmates invite me to social events (e.g birthday parties).	–		–	
19 My teachers want me to work as good as possible and to do well.	.59		.47	
20 I have at least one teacher in my school who I can contact if I am facing any difficulties.	–		–	
21 My teachers are not very keen on teaching students who are shy and withdrawn.	–		–	
22 I am satisfied with my school achievement in most of my subjects.	–		–	
23 Teachers treat all students with respect in my school.	.67		.58	
24 I have been bullied by other students in this school at least once.	–		–	
25 Teachers are not interested in teaching students who frequently misbehave in class.	–		–	
26 Teachers encourage cooperation among students.	.61		.54	
27 Teachers in our school cooperate effectively with each other.	.61		.56	
28 Teachers interact respectfully with all students' parents.	–		–	

**Table 2**  
Inter-correlations between math achievement, social inclusion, emotional inclusion and academic self-concept and two factors of the Inclusion Climate Scale.

	ICS Teacher support and care	ICS Emotional Experience	math achievement	PIQ-social inclusion	PIQ-emotional inclusion	PIQ- academic self-concept
ICS total score	.92**	.83**	-.06	.32**	.63**	.31**
ICS Teacher support and care		.53**	-.05	.29**	.41**	.20**
ICS Emotional Experience			-.05	.28**	.75**	.37**

\* $p < .05$ , \*\* $p < .01$ .

**Table 3**  
Means and standard deviations for ITC total score and subscale scores.

	ICS total score M(SD)	ICS subscale 'Teacher support and care' M(SD)	ICS subscale 'Emotional Experience' M(SD)
Total sample (N = 699)	3.32 (0.50)	3.40 (0.45)	3.17 (0.60)
Boys (n = 365)	2.88 (0.54)	3.04 (0.55)	2.59 (0.72)
Girls (n = 326)	3.00 (0.52)	3.17 (0.54)	2.69 (0.69)
Students without SEN (n = 605)	2.94 (0.52)	3.11 (0.54)	2.65 (0.70)
Students with SEN (n = 94)	2.92 (0.61)	3.08 (0.65)	2.62 (0.75)
Students in school type which is not preparing for university (n = 574)	2.94 (0.53)	3.11 (0.55)	2.64 (0.70)
Students in school type which is preparing for university (n = 125)	2.93 (0.55)	3.09 (0.54)	2.65 (0.74)
5 <sup>th</sup> graders (n = 121)	3.22 (0.50)	3.29 (0.50)	3.09 (0.68)
6 <sup>th</sup> graders (n = 143)	2.92 (0.58)	3.11 (0.58)	2.58 (0.78)
7 <sup>th</sup> graders (n = 164)	3.00 (0.53)	3.20 (0.55)	2.64 (0.67)
8 <sup>th</sup> graders (n = 159)	2.87 (0.46)	3.04 (0.52)	2.56 (0.58)
9 <sup>th</sup> graders (n = 112)	2.67 (0.46)	2.84 (0.50)	2.36 (0.62)

**Table 4**

Estimates of the multi-level regression analyses to predict the ICS total score (model with predictors).

	$\beta$	S.E.
Students' gender (male vs. female)	.20**	.07
Students' SEN (no SEN vs. SEN)	.07	.10
School type (not preparing for university vs. preparing for university)	-.21	.14
Grade	-.28**	.06
Intra-group-variance	.837**	.05
Inter-group-variance	.07*	.03
Deviance	1886.18	

\* $p < .05$ , \*\* $p < .01$ .**Table 5**

Estimates of multi-level regression analyses to predict the ICS subscale Teacher support and care (model with predictors).

	$\beta$	S.E.
Students' gender (male vs. female)	.21**	.07
Students' SEN (no SEN vs. SEN)	.04	.11
School type (not preparing for university vs. preparing for university)	-.20	.13
Grade	-.23**	.05
Intra-group-variance	.88**	.05
Inter-group-variance	.05*	.02
Deviance	1916.63	

\* $p < .05$ , \*\* $p < .01$ .**Table 6**

Estimates of multi-level regression analyses to predict the ICS subscale Emotional Experience (model with predictors).

	$\beta$	S.E.
Students' gender (male vs. female)	.12	.07
Students' SEN (no SEN vs. SEN)	.09	.10
School type (not preparing for university vs. preparing for university)	-.15	.15
Grade	-.27**	.06
Intra-group-variance	.83**	.05
Inter-group-variance	.09	.03
Deviance	1890.09	

\* $p < .05$ , \*\* $p < .01$ .**Table 7**

Items of the German language version of the ICS.

	Item
1	Ich freue mich, jeden Tag in die Schule zu kommen.
2	Die Teilnahme an den meisten meiner Fächern macht mir Spaß.
3	Ich mag die meisten der Unterrichtsstunden.
4	Ich freue mich auf die Unterrichtsaktivitäten, die meine Lehrer für uns vorbereitet haben.
5	Wenn ich Schwierigkeiten mit meinen Schularbeiten habe, bekomme ich genug Unterstützung von meinem Lehrer.
6	Bei den meisten Lehrern in meiner Schule macht Lernen Spaß.
7	Die Lehrer und die anderen Mitarbeiter in der Schule sind nett zu mir.
8	Meine Lehrer loben mich, wenn ich in der Schule etwas gut mache.
9	Die meisten meiner Lehrer interessieren sich nicht für Schüler, die Schwierigkeiten beim Lernen haben.
10	Meine Lehrer sorgen dafür, dass Schüler unterstützt und angeleitet werden, wenn sie in einem Fach Schwierigkeiten mit dem Lernen haben.
11	Die meisten meiner Klassenkameraden können mich leiden.
12	Ich habe mindestens einen Freund in meiner Schule, der mich mag.
13	Ich bin froh, an dieser Schule zu sein.
14	Meine Lehrer sind unvoreingenommen. Wenn sich jemand schlecht benimmt, wird er nach den Regeln fair bestraft.
15	Ich versuche, in jedem Fach mein Bestes zu geben.
16	Meine Lehrer sorgen dafür, dass alle Schüler an den meisten Aktivitäten in meiner Schule und Klasse aktiv teilnehmen.
17	Meine Lehrer sorgen sich um alle Schüler.
18	Meine Klassenkameraden laden mich zu gesellschaftlichen Anlässen ein (z.B. eine Geburtstagsfeier).
19	Meine Lehrer wollen, dass ich so gut arbeite wie ich kann und ich meine Sache dabei auch gut erledige.
20	Es gibt mindestens einen Lehrer, den ich ansprechen kann, wenn mir irgendetwas schwer fällt.
21	Meine Lehrer haben wenig Lust, schüchternen oder zurückgezogenen Schüler etwas beizubringen.
22	In den meisten Fächern bin ich mit meinen Leistungen zufrieden.
23	In meiner Schule behandeln die Lehrer alle Schüler mit Respekt.
24	Ich wurde schon einmal von anderen Mitschülern schikaniert.
25	Die Lehrer haben wenig Lust, Schülern etwas beizubringen, die sich im Unterricht oft danebenbenehmen.
26	Die Lehrer fördern die Zusammenarbeit unter Schülern.
27	Die Lehrer in unserer Schule arbeiten gut zusammen.
28	Die Lehrer haben einen sehr respektvollen Umgang mit den Eltern aller Schüler.

inclusion (e.g. 'I have a lot of friends in my class.'). emotional inclusion (e.g. 'I like it in school.'). and academic self-concept (e.g. 'I do well in my schoolwork.'). The scale uses a four-point Likert type anchors (1 = not at all true, 2 = somewhat not true, 3 = somewhat true, 4 = certainly true) It is found to have adequate reliability ( $.79 \leq \alpha \leq .90$ ;  $.85 \leq \omega \leq .94$ ; Zurbriggen et al., 2018).

### 3. Data analysis

Prior to data analysis, missing data were addressed by using expectation maximization techniques. However, two datasets were initially analyzed, one with replaced missing values and one with no replacement of the missing values. The results for both datasets were similar. Thus, the results reported below refer to the dataset with replaced missing values.

#### 3.1. Psychometric analysis of ICS

In order to determine the number of items that should be retained in the final scale, we used a procedure similar to Deng, Wang, Guan, and Wang (2017). First, we determined the discriminating power of each item by using high-low 27% group method (see e.g. Pedhazur & Schmelkin, 1991). When using this technique, the sample is divided into two groups – those 27% who score highest on the total scale score as well as individual items and those 27% who score lowest. A series of t-tests for independent samples is then used to check if the two groups differ significantly ( $p < .05$ ). Items where no significant group differences exist are deleted (see Deng et al., 2017). None of the items were deleted as the two groups differ significantly in each item. Second, we checked correlations between each item and the total score of the ICS. Items that had a correlation below 0.40 were removed. Seven items (9, 11, 12, 18, 21, 24 and 25) were deleted as they had low correlations with the total score. Third, we analyzed the factor structure of the remaining 21 items using a principal components analysis with varimax rotation. The Kaiser-Guttman criterion (Eigen values greater than one) were used for deciding the number of factors. The first factor analysis showed that the data were suitable for factor analysis (Kaiser-Meyer-Olkin (KMO) = .94, Bartlett's Test = sig,  $p < .001$ ). Any item that loaded on more than one factor and could not be clearly assigned to one factor (meaning that the difference of the factor loadings was less than 0.2) was removed. Five items that loaded on two factors were removed (items 7, 13, 15, 22 and 28). Items with a loading of less than 0.5 on a factor were also removed. Two items were deleted at this stage (8 and 20). The 14-item scale was used for the final analysis.

A principal component analysis (KMO = .92, Bartlett's Test = sig,  $p < .001$ ) of the 14 item scale was conducted and yielded two components (Eigen Value Factor 1 = 5.59, Factor 2 = 1.75). The first factor was named 'Teacher support and care' and included items about teachers' relationships with a student and the rest of the class as perceived by the responding participant. The variance explained by this factor was 39.95%. The second factor, which was named 'Emotional Experience' mainly addressed items relating to happiness and wellbeing in school. It explained 12.49% of the variance. The factor loading for individual items are provided in Table 1. The overall reliability of the total scale ( $\alpha = .89$ ) and two sub-scales were found to be adequate (Factor 1:  $\alpha = .84$ ; Factor 2:  $\alpha = .87$ ). The inter-item correlations ranged from 0.44 to 0.62.

In order to establish convergent and discriminate validity of the ICS, we calculated Pearson correlation coefficients with three sub-scales of PIQ student version and Maths Achievement tests. Significance of the differences between the correlations were calculated using the Fisher  $r$ -to- $z$  transformations (Eid, Gollwitzer, & Schmidt, 2011). As Table 2 indicates, strong correlations were

found between ICS total score as well as the sub-scale scores and the PIQ sub scale scores for all three factors (Social Inclusion, Emotional Inclusion and Academic Self Concept;  $p < 0.01$ ). No significant correlations between ICS scores and Mathematics achievement scores were found. The results were indicative that ICS has high convergent validity and is appropriate to measure perception of inclusion in students.

#### 3.2. Students' perceptions of inclusion climate

Mean and standard deviation scores were calculated to determine participating students' perceptions of their inclusive educational contexts. As indicated in Table 3, ICS total score and both subscales values were between 3.17 and 3.40 for the combined sample. Taking into consideration the theoretical mean of the scale as 2.5, the total mean scores and sub-scale scores were significantly positive,  $t(698) = 21.8$ ,  $p < .01$  (total score,  $t(698) = 28.02$ ,  $p < .01$  (Teacher support and care), and  $t(698) = 5.39$ ,  $p < .01$  (Emotional Experience). However, it is important to note that students' perceived scores were higher on Factor I (Teacher support and Care) than Factor II (Emotional Experience),  $t(698) = 19.48$ ,  $p < .01$ . We also calculated Mean and SD scores based on participants' demographic variables.

In order to determine if any of the variables were significant predictors of student perceptions about inclusion, we conducted multilevel regression analyses. Firstly, for each subscale a model without any predictors was calculated to estimate the proportion of variance at the individual level (students' level) and at class level. Afterwards gender (male vs. female) and SEN (no SEN vs. SEN) were added as predictors on the level of the individual student. Grade and school type were entered at class level. Metric variables (ICS total score and ICS subscale scores) were z-standardized scores.

#### 3.3. Validity- multilevel analyses

Next, multi-level regression analyses were conducted. The models without any predictor variables showed that 15.1% of the variance was explained at class-level (deviance = 1928.5,  $Wald-Z = 3.33$ ,  $p < .01$ ). For the subscale Teacher Support and Care the variance at class level was about 10.7% (deviance = 1953.92,  $Wald-Z = 2.95$ ,  $p < .01$ ) and for the Emotional Experience 16.2% of variance was at class level (deviance = 1923.69,  $Wald-Z = 3.39$ ,  $p < .01$ ). The model with predictors for the total scale score (see Table 4; variance at student's level = .836, variance on class-level = .069, deviance = 1886.18,  $Wald-Z = 2.54$ ,  $p < .05$ ) could explain the 1.3% of variance at student's level and 8.1% at class level. Being female ( $\beta = .20$ ,  $p < .01$ ,  $t[685.50] = 2.74$ ,  $S.E. = .07$ ) and attending lower grades ( $\beta = -.28$ ,  $p < .01$ ,  $t[39.47] = -5.08$ ,  $S.E. = .06$ ) predicts sense of positive inclusion climate.

For the ICS subscale Teacher Support and Care (see Table 5; variance at student's level = .884, variance at class-level = .05, deviance = 1916.63,  $Wald-Z = 2.14$ ,  $p < .05$ ) could explain the 0.9% of variance at student's level and 5.7% at class level. Similar to the results of the ICS total subscale gender was a significant predictor ( $\beta = .21$ ,  $p < .01$ ,  $t[688.3] = 2.92$ ,  $S.E. = .07$ ). Females had a better perception of Teacher Support and Care. Moreover, the grade is a significant predictor of students' experience of Teacher Support and Care ( $\beta = -.20$ ,  $p < .01$ ,  $t[39.02] = -4.49$ ,  $S.E. = .05$ ). Attending lower grades relate to a more positive perception of Teacher Support and Care.

For the subscale Emotional Experience the model with predictors (see Table 6; variance at student's level = .835, variance on class-level = .086, deviance = 1890.09,  $Wald-Z = 2.74$ ,  $p < .01$ ) could explain 7.6% of the variance at class level. Only one variable, Grade level, emerged as the significant predictor for "Emotional

Experience” subscale. Students in lower grades perceived a better sense of inclusion climate (Emotional Experience) in their classrooms. ( $\beta = -.27$ ,  $p < .01$ ,  $t[38.69] = -4.56$ ,  $S.E. = .06$ ).

#### 4. Discussion

There is limited research on what students think of the classroom environments where they are educated. Do they have a sense of being fully included and a sense of belongingness irrespective of the diversity they bring to the class? A primary objective of the current study was to develop a psychometrically sound scale that will allow researchers to capture student voices about their sense of being included in mainstreamed classrooms. Even though some instruments already exist that attempt to measure the perception of students on several important outcome variables of inclusion (e.g. the PIQ; Venetz et al., 2015), there are almost no reliable scales that are based on solid philosophical foundations of inclusive education. There is some research available that attempted to measure perceptions of an individual in relation to interactions between a teacher and an individual student (e.g. a subscale in the study by Rauer & Schuck, 2003 ‘Feeling Accepted by the Teacher’). The scale developed in the current study takes a different approach by asking students to report on how educators work with all of the students in their class, and how they feel about being part of that environment.

We noted that students, even if they are in secondary schools, struggled with negatively formulated items. All negatively worded items were eliminated from our scale. The problem of negative items having lower correlations in such scales has already been noted in other studies (e.g. Schwab et al., 2015). Negatively worded items might be especially challenging for students with disabilities or low language competencies. Statistical analyses showed that the newly developed ICS is a reliable and valid self-report measure of students’ perception of the inclusion climate in their classes. Factor analysis supports the use of a total scale as well as a two-subscale solution. The first factor contained 14 items about the relationship and treatment by the teachers of all students and their effectiveness at addressing individual needs. The second factor contained five items relating to students’ self-perception of their emotional experiences in their schools. This factor is a good indicator of students’ perception of their well-being. There is a large body of literature indicating that students emotional well-being is an important outcome variable of schools in general (Hascher, 2017). Students who have a positive sense of well-being tend to be less likely to drop-out of school early (Schwab, in press).

Social participation is another very important factor in this context (e.g. Avramidis, 2010; Bossaert et al., 2013). However, all items that measured social participation (item 11,12 and 18) had to be removed because their correlations with the total scale were too low. One explanation could be that social participation plays a relatively minor role for the inclusion climate as perceived by students. It is likely that the construct of social participation is too broad to be assessed by only a few items or that the items we used were incongruent with student views of the social aspect. Regardless, scale development is normally an interactive and iterative process. Future researchers may consider adding additional items to determine if social participation is an important aspect of the inclusion climate. Addition of such items is likely to further strengthen the overall reliability and validity of the scale.

ICS was found to have sound psychometric properties for the ICS total score and both subscales. All scales (the total scale as well as both subscales) demonstrated good internal consistency ( $.84 \leq \alpha \leq .89$ ). In addition, the factor loadings as well as the inter-item correlations were high. Furthermore, convergent and discriminate validity of the ICS were also strong. Strong correlations

for the total scale as well as both subscales of ICS with social inclusion, emotional inclusion, and academic self-concept were found. This is evident in the strong relationship between the subscale for Emotional Experience provided by the ICS and the Emotional Inclusion subscale of the PIQ (Venetz et al., 2015). The correlation between the ICS subscale Teacher Support and Care and the Emotional Inclusion subscale of the PIQ was weak.

Pearson’s correlation showed no significant relationships between inclusion climate and mathematics achievement. It perhaps suggests that the socioemotional development of students is impacted to a greater extent by inclusion climate than academic development. Evaluating the quality of education cannot be simply based on the students’ academic achievement in one content area (mathematics) or on observable characteristics such as drop-out rates or conditions of school building and resources. It is also important to consider students’ perspectives. Given the relatively high variance of perception of inclusion climate at the students’ level one can assume that measures of the students’ individual experiences are a meaningful addition to other more objective assessment methods. From a theoretical perspective, items for the Teacher Support and Care subscale should have been rated relatively similarly by different students as some items (e.g. item 10 or 13) were related more to all teachers and all students in the classroom and were less about the individual teacher-student relationship. However, the variance at class level was only 10.7%.

The mean and standard deviation scores of the students’ ratings in this sample suggests that the inclusion climate overall in North Rhine-Westphalia is positive. Teacher support and care was rated as especially positive by the sample. In line with studies on teacher-student relationship (De Laet et al., 2014) and students’ emotional wellbeing (Author et al., 2015) female students perceived the inclusion climate slightly more positively than their male counterparts in the current study. No significant differences were noted between male and female participants on the Emotional Experience subscale. Significant differences were noted for participants’ grade levels and their sense of inclusion climate for all three scores (total score and both subscale scores). Students in lower grades perceived a higher degree of positive inclusion climate when compared to their counterparts in higher grades. This finding is consistent with past research which shows that as grade levels increase, the focus of teaching shifts more towards covering subject matter and the mechanics of completing the curricular content makes it difficult for teachers to include students with a range of diversities (Pearce, Gray, & Campbell-Evans, 2010). In contrast, a major focus in lower grades is on developing skills to learn academic and social skills and appears to be relatively easy by comparison for teachers to address student diversities in these classrooms. The results indicating that the perception of inclusion climate is higher amongst students from lower grades might indicate that expectations concerning the inclusion climate might be different for students from different grades. Having SEN was not a significant predictor, suggesting that students with SEN in different grades had similar perceptions to those without SEN of the inclusion climate in their schools. This finding is positive as it shows that schools are creating positive experiences for students with SEN in schools. There were no significant differences in students with and without SEN in terms of their sense of perception of inclusion climate which could be interpreted as an indicator of high quality of inclusive education for all students. Further, the school type had no effect, showing that schools which are preparing for university have a similar inclusion climate than schools that are not preparing students for university.

This study provides a new scale to assess students’ perspective of Inclusion Climate including two subscales: Teacher Support and Care as well as Emotional Experience. The psychometric analyses of

the instrument showed satisfactory reliability and factorial validity. Moreover, inclusion climate seems to be related to outcome variables of inclusion (social inclusion, emotional inclusion and academic self-concept). Students from higher grades perceived a weaker inclusion climate.

## 5. Limitations and future directions

In this study, the ICS is firstly introduced. However, there are many more aspects of psychometric qualities (e.g. the analysis of measurement invariance or equivalence or the analyses of differential item functioning) that need to be examined. Moreover, the factorial structure of the ICS has to be cross-validated using confirmatory factor analysis. In future research, an examination might be conducted to see if it is possible to combine ICS with experience sampling method as intensive longitudinal measurements.

Further, the results of the group-comparisons and the multi-level regression analyses need to be interpreted with caution as no longitudinal data was available and causal interpretations should be based on cross-lagged-panel-designs.

## 6. Conclusion

Most countries now have policies and/or legislation suggesting a need to include all learners (e.g. United Nations, 2007). However, it remains unclear if schools truly include all learners and provide them with best developmental possibilities instead of simply physically placing different students in the same classrooms. Asking students to report how they feel about being included provides a new and innovative way to examine how well the inclusive education policies are implemented. This study has demonstrated that examining students' perspectives on inclusion climate is a useful component of a more holistic evaluation of inclusion in school, and is a meaningful addition to measuring the quality of inclusive education solely by students' academic outcomes.

## Appendix A Supplementary data

Supplementary data related to this article can be found at <https://doi.org/10.1016/j.tate.2018.05.016>.

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