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Do learners with special education needs really feel included? Evidence from the Perception of Inclusion Questionnaire and Strengths and Difficulties Questionnaire

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Abstract

Background

School inclusion is an important right of students in school systems around the world. However, many students with special education needs (SEN) have lower perceptions of inclusion despite attending inclusive schools.

Aims

This study examined perceived levels of inclusion, academic self-concept and developmental problems in inclusive schools.

Methods and Procedures

The Strengths and Difficulties Questionnaire and the Perception of Inclusion Questionnaire were administered at two measurement points (6^{th} and 7^{th} grade; $n = 407$, including 48 with SEN) at multiple inclusive schools. Responses were compared based on gender, grade level, and SEN. Factor structure and measurement invariance were evaluated.

Outcomes and Results

Factor structures of both questionnaires were confirmed. Academic self-concept and emotional inclusion were lower for learners with SEN. However, these effects shrank in grade 7. Similarly, academic self-concept increased between grade 6 and 7. Lastly, learners with SEN had a higher level of conduct problems.

Conclusions and implications

Both instruments remain suitable for use in comparisons in inclusive schools. Significant differences exist for learners with SEN in inclusive classrooms, although these differences may shrink over time. We recommend the continued use of the Perception of Inclusion Questionnaire for information about school inclusion and for learners with SEN.

Keywords

Special Education Needs; Inclusive Education; Strengths and Difficulties Questionnaire; Perception of Inclusion Questionnaire; Academic Self-Concept; Self-perception

What this paper adds?

This paper contributes to the literature on inclusion in three important ways. First, the study examines participants across multiple schools in an inclusive school system, providing an *in situ* measurement of how included learners both with and without special education needs (SEN) perceive themselves to be included in their classes. Second, this paper uses an important new instrument to assess perception of inclusion, the perception of inclusion questionnaire (PIQ). The PIQ is evaluated alongside a well-researched instrument, the strengths and difficulties questionnaire (SDQ), allowing for a comparison between both scales. Besides data on the social inclusion and the emotional inclusion, the PIQ provides valuable information about the self-concept of learners, which the SDQ does not assess. Further, we examine the factor structure and invariance of both measures across SEN, gender, and grade level. Third, we found that learners with SEN feel a lower academic self-concept and feel less emotionally included across both measurement points and less socially included in the 6^{th} grade (although not the 7^{th} grade). Further, the difference between these groups shrinks from 6^{th} to 7^{th} grade. This novel interaction was unaccounted for in previous research; therefore, it necessitates more work to investigate the nature of inclusive schooling related to perceived social and emotional inclusion for children with SEN.

Highlights

- The PIQ and SDQ were administered in inclusive schools.
- The subscales of both instruments correlated significantly.
- Invariance tests and factor analyses were performed.
- Learners with SEN were lower on academic self-concept and emotional inclusion.
- Learners with SEN improved on all 3 PIQ measures from 6^{th} to 7^{th} grade.

1.0 Introduction

While inclusion in schools is an agreed-upon international goal (United Nations Convention on the Rights of Persons with Disabilities, 2006), many students with special education needs (SEN) remain excluded socially and emotionally from regular classroom experiences (Banks, McCoy, & Frawley, 2017; Bossaert, Colpin, Pijl, & Petry, 2013; Prince & Hadwin, 2013; Schwab, Gebhardt, & Gasteiger-Klicpera, 2013). Similarly, learners with SEN are at risk for a lower academic self-concept (Elbaum, 2002; Li, Tam, & Man, 2006; Wei & Marder, 2010). Emotional, social, and academic inclusion at school can reduce the negative risks faced by such students with SEN (Grütter, Gasser, & Malti, 2017; Schwab, 2017). However, differing inclusive schools may vary on how much access learners with SEN may have and how much support such students receive, resulting in greater or lower benefits from inclusion (Prince & Hadwin, 2013).

This study will examine students in inclusive schools in order to identify the relationship between higher perceived inclusion and emotional, social, and conduct problems. We will use a well-established instrument, the strengths and difficulties questionnaire (SDQ; Goodman, 1997) alongside a newer instrument, the perceptions of inclusion questionnaire (PIQ; Venetz, Zurbriggen, & Eckhart, 2014). We will evaluate these instruments' applicability for learners with and without SEN and we will examine how both instruments relate to gender and SEN across two measurement points (6th and 7th Grade).

1.1 Socioemotional inclusion and academic self-concept

School inclusion is related to social, affective, and self-concept outcomes for children with SEN (for a review, see Prince & Hadwin, 2013). Learners with SEN may lack key social skills (Schwab et al., 2013; Wight & Chapparo, 2008). They may face greater prejudice (Avramidis, 2010) and bullying (Rose, Monda-Amaya, & Espelage, 2010), and are at a greater risk to feel excluded at schools (Grütter et al., 2017; Schwab et al., 2013; Schwab,

2017). Recent large-scale studies found that students with SEN felt less included at school (Stiefel, Shiferaw, Schwartz, & Gottfried, 2017) and that they had fewer friends and experienced negative peer relationships than other students (Avramidis, Avgeri, & Strogilos, 2018; Banks et al., 2017; Huber, Gerullis, Gebhardt, & Schwab, 2018). A lack of inclusion is also related to many negative emotional-developmental outcomes, including depression, (McGraw, Moore, Fuller, & Bates, 2008), substance abuse, and other mental health problems (Arslan, 2018; Bond et al., 2007), as well as poorer academic outcomes (Szumski & Karwowski, 2015; van Ryzin, Gravely, & Roseth, 2009) such as a reduced academic self-concept (Bear, Minke, & Manning, 2002). Children with SEN are at an even greater risk of poor academic outcomes due to worse feelings of inclusion and a lower academic self-concept (Elbaum & Vaughn, 2003; Korhonen, Linnanmäki, & Aunio, 2014; Szumski & Karwowski, 2015).

1.2 The Perceptions of Inclusion Questionnaire

The Perceptions of Inclusion Question (PIQ; Venetz et al., 2014; Venetz, Zurbriggen, Eckhart, Schwab, & Hessels, 2015) is designed to measure three areas critical to inclusion: social inclusion, emotional inclusion, and academic self-concept. Academic self-concept (see Elbaum, 2002; Elbaum & Vaughn, 2003; Prince & Hadwin, 2013) describes a learner's self-concept in the specific domain of school. Relatedly, emotional inclusion refers to a sense of well-being at school and social inclusion describes the sense of connectedness (e.g., friends) at school (Elbaum & Vaughn, 2003; Schwab et al., 2013; Stiefel et al., 2017; Szumski & Karwowski, 2015). The PIQ measures these three constructs (academic self-concept, emotional inclusion, and social inclusion) with four items each on a 4-point Likert scale ("not at all true" to "certainly true"). It can be self-administered or taken by a child's teacher or parent, and it is designed for 8- to 16-year-olds.

The PIQ is based on the longer questionnaire to assess the dimensions of integration of pupils (FDI; in German: Fragebogen zur Erfassung der Dimensionen der Integration von Schülern; Haeberlin, Moser, Bless, & Klaghofer, 1989). The FDI was the first instrument developed in Switzerland to assess levels of perceived inclusion by students at schools. It had a big influence in the discussion of implementation of inclusion in the German speaking countries (Gebhardt, Schwab, Krammer, & Gasteiger, 2012; Sauer, Ide, & Borchert, 2007; Schwab et al., 2013; Schwab, Gebhardt, Krammer, & Gasteiger-Klicpera, 2015). The FDI included 45 items across 3 factors, and the PIQ was able to reduce the scale to 12 items across the same 3 factors (4 items per factor), while maintaining a high Cronbach's alpha (all $\alpha \geq .80$) and good model fits (Venetz et al., 2014).

English, German, and other language versions of the PIQ are available online to educators and researchers (see Venetz et al., 2015). The scale was further evaluated by Zurbriggen, Venetz, Schwab, and Hessels (2017), where its 3-factor structure was confirmed. Overall, the test items behaved normally. However, one item was found to lack measurement invariance between learners with learning disabilities and those without. Zurbriggen et al. (2017) concluded that more work is necessary to compare the instrument in general across differing SEN. Furthermore, a comparison of the scale with other established scales will allow for additional cross-validation of its latent variables. This study seeks to close this research gap by comparing the PIQ with the SDQ.

1.3 The Strengths and Difficulties Questionnaire

The SDQ is a well-established tool for assessing individual personality qualities of 2- to 17-year old children (Goodman, 1997; Goodman, Lamping, & Ploubidis, 2010). It is traditionally assessed via a 5-factor structure matching to its five subscales: emotional symptoms, conduct problems, hyperactivity, peer problems, and prosocial behavior (Goodman et al., 2010). Each subscale contains five items with three response categories

describing the frequency of a behavior (0: not true, 1: somewhat true, 2: certainly true). It possesses measurement invariance over time in a sample of German children (DeVries, Gebhardt, & Voß, 2017); however, it's invariance across SEN and gender in the same sample have not been demonstrated. Because the SDQ is used as a clinical screening test (Goodman, Ford, Simmons, Gatward, & Meltzer, 2000; Mellins et al., 2018), an evaluation of its invariance across SEN is necessary.

1.4 Present Study

As described by Prince and Hadwin (2013), low levels of inclusion relate to increased risk for social and emotional problems, especially for children with SEN. The SDQ will allow us to examine socioemotional problems alongside perceptions of emotional and social inclusion as well as academic self-concept from the PIQ. This comparison will enable us to connect the subscales of the PIQ to established theory. Furthermore, we will examine the functioning of the PIQ and SDQ across different subject groups (i.e., gender, SEN, and grade). In the present study, we compare the sum (SDQ) and mean scores (PIQ) on these scales; we assess their metric invariance over grades 6 and 7, over the presence of SEN, and over gender; and we examine the effects of grade level, SEN, and gender on both instruments. These research goals led us to our five research questions.

1. Do the subscales of the PIQ and SDQ correlate to each other?
2. Do the SDQ and PIQ possess measurement invariance across 6^{th} and 7^{th} grade, SEN, and gender?
3. Do students' answers differ on the PIQ and SDQ between 6^{th} and 7^{th} grade?
4. Do boys and girls respond differently to the PIQ and SDQ?
5. Do learners with SEN respond differently to PIQ and SDQ?

2.0 Methods

2.1 Participants

Participants were 407 (47.7% girls) students attending 9 different inclusive middle schools in a school district in northern Germany. Each school had between 1 and 3 classes with 14 to 27 students per class. The sample included 48 learners with SEN. Special education needs were diagnosed by the responsible diagnostic service based on the ICD-10 classification from the World Health Organization (WHO), category F81 “Specific developmental disorders of scholastic skills” (n = 29), learners who repeated a grade (n = 17), and students who were referred for diagnosis by their teachers, but were not officially diagnosed (n = 2). The students with SEN attended mainstream schools. In this school district an agreement between these schools and government agencies established a framework for the inclusion of learners with SEN (Voß et al., 2017). These include:

- Flexible support for students with minor academic problems by their teachers (e.g., extended learning time through additional small groups instruction)
- Additional support for students with serious persistent problems by special educators (e.g., individualized education plan, specific trainings)
- A twice-yearly evaluation of the academic achievement of all students via standardized tests in language and mathematics in order to foster instruction, decision-making, and school resource utilization
- At least half-yearly team consultations between subject teachers and special education teachers about the status of learners with SEN
- Adverse balancing or goal-differentiated evaluation and censoring for students with SEN

According to this agreement, about 0.3 teacher lessons per student are available for special educational support. This corresponds to about 6-8 hours per week in an average class.

2.2 Instruments & Procedure

Students responded on the self-report versions of the German language SDQ and PIQ. Self-reports were chosen over teacher ratings because secondary-school students would have multiple teachers throughout the day and over two years. Self-reports are also easier to administer than parent ratings through the process of regular testing. Teachers administered the questionnaires in the regular classroom, to all students simultaneously.

Ratings were collected at the end of the 6th and 7th grade. However, only a reduced sample was available for the 6th grade (n = 288) due to a coding error. A series of t-tests comparing 7th grade SDQ and PIQ subscales confirmed no systematic differences existed between those included (n = 288) and excluded (n = 119) in the 6th grade (all *p*s > .05). For within-subjects analyses, we used the reduced dataset of 288, but for all between-subjects analyses, we used the full sample of 407 available at the second measurement point.

2.2.1 The Perceptions of Inclusion Questionnaire (PIQ).

The PIQ (see Venetz et al., 2015 for full version) is a short-form version of the questionnaire to assess the dimensions of integration of pupils (FDI; originally: Fragebogen zur Erfassung von Dimensionen der Integration von Schülern FDI 4-6; Haeberlin et al., 1989). It includes the three scales: emotional integration, social integration, and academic self-concept. Each scale is significantly related to the inclusion of a child in the school system (Venetz et al., 2014; Zurbriggen et al., 2017). The PIQ items and factors are described in Table 1.

[Insert Table 1 about here]

2.2.2 The Strengths and Difficulties Questionnaire (SDQ).

The SDQ is a 25-item questionnaire that rates children on conduct problems, peer problems, hyperactivity, emotional problems, and prosocial behavior. It has been used in

many countries (Bøe, Hysing, Skogen, & Breivik, 2016; Ortuño-Sierra, Fonseca-Pedrero et al., 2015) and across many age groups (e.g., DeVries et al., 2017; Hagquist, 2007). The SDQ items and factors are described in Table 2.

[Insert Table 2 about here]

2.3 Analyses

2.3.1 Factor Analyses

Separate confirmatory factor analyses (CFAs) for the PIQ and SDQ were conducted in Mplus 7.4 (Muthén & Muthén, 1998-2015) using robust maximum likelihood estimation (MLR). Fits for both instruments at the second measurement point were assessed. Root mean square of approximation (RMSEA) < .08, comparative fit index (CFI) > .90, and standardized root mean square residual (SRMR) < .10 were considered acceptable fits, and RMSEA < .05, CFI > .95, and SRMR < .08 were considered good fit values (Brown, 2015; Hu & Bentler, 1999). Minor model modifications for the SDQ to reach acceptable fits are detailed in the results section. Similar minor modifications for SDQ data are common (e.g., Ortuño-Sierra, Fonseca-Pedrero et al., 2015).

Next, separate invariance measures were calculated for both instruments in Mplus. We tested invariance across measurement points, gender, and presence of SEN. For the gender and SEN invariance tests, we used data from the 7th grade because of the larger number of participants. Weak and strong invariance were assessed by comparing the base, metric and scalar models following the procedures recommended by Dimitrov (2017). Changes in MLR corrected χ^2 (Satorra & Bentler, 2010) resulting in a significant difference ($p < .05$) were set as our critical threshold. In the event of invariance, we examined the effects of constraining specific factor loadings and freeing specific intercepts. If only 20% of loadings and intercepts

were not invariant we concluded we had partial invariance sufficient for subsequent comparisons (see Levine et al., 2003).

2.3.2 Correlations

In order to examine the relationship between the two scales, sum scores (SDQ) and mean scores (PIQ) were compared in a correlation matrix for measurement point 2.

2.3.3 MANOVA

Lastly, we examined the effects of gender and SEN over both measurement points in a repeated measures MANOVA (Gender x SEN x Grade) with each subscale as dependent variable.

3.0 Results

3.1 Model Fits & Model modifications

The 3-factor structure of the PIQ had good fit metrics, RMSEA = .053 (042–.064), CFI = .952, and SRMR = .058. While its RMSEA was above the .05 threshold for good fits, this value was in the acceptable range, while other values were in the good ranges. Furthermore, as seen in Table 1, all factor loadings were significant.

Initial 5-factor SDQ fits were insufficient, RMSEA = .043 (.036 – .049), CFI = .866, SRMR = .064. While the RMSEA and SRMR were in the good range, the CFI was below our threshold for acceptable fit. Therefore, three minor modifications were made based on reported modification indices and theoretically related items. Specifically, item 8 was cross listed under prosocial behavior, item 18 was cross listed under peer problems, and the errors of items 20 and 25 were correlated. In the self-report version, item 8 reads “I worry a lot,” which might relate to a greater motivation to help others. Similarly, item 18 reads “I am often accused of lying or cheating.” This may relate to peer-problems because accusations are also

affected by social relationships. Lastly, item 20, “I often volunteer to help,” and item 25, “I Finish the work I am doing,” share aspects of conscientiousness (see Ortuño-Sierra, Chocarro, Fonseca-Pedrero, Riba, & Muñiz, 2015 for detailed description of similar modifications to the SDQ). The modified model had sufficient fit metrics, with RMSEA = .035 (.027 – .042), CFI = .912, and SRMR = .056. Additionally, as seen in Table 2, all factor loadings were significant.

[Insert Table 3 about here]

3.1.1 Invariance Tests

Table 3 describes the results of the invariance analysis. Both the SDQ and PIQ possessed strong invariance across both grade level and SEN. Furthermore, the PIQ showed strong invariance across gender, but the SDQ lacked invariance across gender.

Further examination of factor loadings and intercepts revealed that items 3, 5, 9, 13, and 22 of the SDQ resulted in significantly worse fits with their loadings freed, and items 1, 2, 9, 11, 18, 20, 22, and 22 resulted in significantly better fits with their intercepts freed. Thus 13 of 50 (26%) of loadings and intercepts were not invariant. Because the established threshold for partial invariance is 20% (Dimitrov, 2017; Levine et al., 2003), we cannot reasonably conclude sufficient partial invariance exists in the SDQ across gender.

[Insert Table 4 about here]

3.2 Correlations

Table 4 shows a correlation matrix between each of the subscales for both instruments. All PIQ subscales of academic inclusion were positively correlated with prosocial behavior

and negatively correlated to difficulties items from the SDQ. All correlations were significant except for social inclusion with hyperactivity and emotional inclusion with peer problems.

[Insert Table 5 about here]

3.3 Grade Level, Special Education Needs, and Gender

3.3.1 Grade Level

Marginal means from the MANOVA can be found in Table 5. A significant main effect for grade level was only found for academic self-concept, $F(1, 212) = 13.55$, $p < .001$, partial $\eta^2 = .060$. This medium-sized effect is further explained by the interaction between special education needs and grade level (see below). There were no other main effects of grade level ($p > .05$).

3.3.2 Special education needs

As seen in Table 5, children with SEN had a significantly lower academic self-concept, $F(1, 212) = 17.13$, $p < .001$, partial $\eta^2 = .075$. Additionally, they had a lower feeling of emotional inclusion, $F(1,212) = 4.143$, $p < .05$, partial $\eta^2 = .019$. Similarly, they had a greater incidence of conduct problems, $F(1, 212) = 5.083$, $p < .05$, partial $\eta^2 = .023$. This indicates a medium effect of SEN on academic self-concept, and small effects of SEN on emotional inclusion and conduct problems. There were no other main effects of SEN ($p > .05$).

3.3.3 Gender

Also seen in table 5, there were no significant effects of gender on the PIQ subscales ($p > .05$). Although female students did have a significantly greater level of prosocial behavior and emotional symptoms, comparisons by gender on the SDQ are not reliable because we could not establish measurement invariance across gender for the instrument.

[Insert Figure 1 about here]

3.3.4 Interactions

Significant time by SEN interactions were found for comparisons on each subscale of the PIQ, academic self-concept $F(1, 212) = 6.45$, $p < .05$, partial $\eta^2 = .030$; emotional inclusion $F(1,212) = 4.60$, $p < .05$, partial $\eta^2 = .021$; and social inclusion $F(1, 212) = 4.69$, $p < .05$, partial $\eta^2 = .022$. As seen in Figure 1, the academic self-concept, emotional inclusion, and social inclusion of children with SEN increases from grade 6 to 7. Meanwhile, these values remain flat (academic self-concept) or decrease (emotional inclusion and social inclusion) for children without SEN. No other interactions were detected in our MANOVA ($p > .05$).

4.0 Discussion

We examined the relationship between self-reported socioemotional problems and perceived school inclusion in a sample taken from inclusive schools. We further examined the effects of grade level, special education needs, and gender on socioemotional difficulties and perception of inclusion. Correlations between SDQ and PIQ scales indicated that children with higher SDQ scores for peer, emotional, and conduct problems perceive themselves to be less included in the classroom. This was also true for children with SEN (as described in section 2.1), which was demonstrated by lower levels of academic self-concept and emotional inclusion on the PIQ.

However, in our sample from inclusive schools, learners with SEN improve on perceptions of academic self-concept, social inclusion, and emotional inclusion from grade 6 to grade 7. By Grade 7, social inclusion of both groups is indistinguishable, and the differences in emotional inclusion shrinks dramatically (i.e., overlapping error bars). Learners with SEN at grade 7 still have a lower academic self-concept, but the difference has significantly shrank. This finding is not predicted by previous research on social inclusion

which found a lower overall level of social inclusion in learners with SEN (Bossaert et al., 2013; Schwab et al., 2013; Stiefel et al., 2017). However, this may be related to the longitudinal effect of inclusive schooling, which may boost the academic self-concept, as well as social and emotional well-being of learners with SEN. Alternatively, this could be an effect of the school transition from elementary to middle school levels. Students may have had an artificially lowered self-concept at grade 6 (the year after transition). Another possibility is that of actual improved academic performance, reflected by improved self-concept. More longitudinal research is necessary to determine the specific cause of this interaction. Such research should assess changes across different school types, transitions, and make comparisons to school achievement.

It is important to note that this is unlikely to be an artifact of the PIQ. The subscales of the PIQ correlate to the SDQ's subscales in the expected directions. In other words, children with more socioemotional problems had lower academic self-concept and lower feelings of inclusion. This is congruent with predictions based on Prince and Hadwin's (2013) synthesis, which concluded that socioemotional problems correlate to lower levels of inclusion at school. This is of greater importance for children with SEN, who face lower levels of inclusion already. Furthermore, despite the relationship between both instruments, the PIQ demonstrated significant differences for learners with SEN, while the SDQ found these differences only for conduct problems. One possibility is that the PIQ is more sensitive to disruptions caused by special education needs. Furthermore, the PIQ provides more school-relevant data, whereas the SDQ examines overall behavior relating to specific problems. The PIQ may therefore be able to provide important insights that are missed by responses to the SDQ alone, and it is especially relevant in school-based studies.

We found that the SDQ and PIQ possessed measurement invariance over time. This confirms a similar finding of measurement invariance over time for the SDQ from DeVries et al. (2017). However, we did not find significant changes in any SDQ subscales over grade

level, which contrasts with DeVries et al.'s (2017) finding that these values increased over time. This data reflects self-reports of middle-school students, whereas DeVries et al.'s paper reflected teacher-rated primary school students.

Our inability to find partial measurement invariance across gender contrasts with Bøe et al.'s (2016) finding in a Norwegian sample of adolescents; however, it is in accordance with van de Looij-Jansen, Goedhart, Wilde, and Treffers's (2011) results in a Dutch sample. Further work examining measurement invariance for gender in the SDQ is required. Cross-cultural samples would be preferable to eliminate the effect of culture- or language-specific effects.

Several limitations remain in our study. First, we did not explicitly compare different inclusive classroom procedures. A detailed longitudinal comparison may be able to identify the specific effects of different inclusion programs. Second, we tested only the German language version of the PIQ. Lastly, we only used the self-report versions of both tests. More work across multiple language versions, raters, and multiple cultures is still required.

5.0 Conclusion

Learners with SEN have lower levels of academic self-concept, social inclusion, and emotional inclusion than their typically developing peers; however, these differences shrink dramatically between grades 6 and 7 in inclusive schools. Furthermore, we found that the PIQ scale is valid for making comparisons across gender, grade level, and SEN. The SDQ is similarly valid for grade level and SEN, but not for gender. High values of academic self-concept, social inclusion, and emotional inclusion on the PIQ relate to low levels on the difficulty subscales on the SDQ and high levels of prosocial behavior on the SDQ. We recommend the use of the PIQ for investigations involving inclusive education and for learners with SEN in order to get a detailed picture of how students behave and of how they

feel; however, further work relating the PIQ to other instruments and psychological constructs will solidify its usefulness in educational and professional settings.

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Table 1

Factor Structure & Standardized Factor Loadings of the Perception of Inclusion Questionnaire (PIQ)

Item	Factor & Full Item Text	Loading
	Emotional Inclusion	
1	I like going to school.	.875
4	*I have no desire to go to school.*	.733
7	I like it in school.	.782
10	School is fun.	.861
	Social Inclusion	
2	I have a lot of friends in my class.	.677
5	I get along very well with my classmates.	.740
8	*I feel alone in my class.*	.618
11	I have very good relationships with my classmates.	.772
	Academic Self-Concept	
3	I am a fast learner.	.765
6	I am able to solve very difficult exercises.	.707
9	I do well in my schoolwork.	.761
12	*Many things in school are too difficult for me.*	.588

Note: Italicized items are reverse scored. All factor loadings were significant at $p < .001$. Full version of the PIQ is available under Venetz et al. (2015).

Table 2

Factor Structure & Standardized Factor Loadings of the Strengths and Difficulties Questionnaire (SDQ)

Item	Factor & Short Item Text	Loading
	Emotional Problems	
3	I get a lot of headaches...	.449
8	I worry a lot	.563
13	I am often unhappy...	.646
16	I am nervous in new situations...	.503
24	I have many fears...	.610
	Conduct Problems	
5	I get very angry	.549
7	*I usually do as I am told*	.427
12	I fight a lot	.480
18	I am often accused of lying or cheating	.351
22	I take things that are not mine	.443
	Hyperactivity	
2	I am restless...	.732
10	I am constantly fidgeting...	.663
15	I am easily distracted	.586
21	*I think before I do things*	.417
25	*I finish the work I am doing*	.377
	Peer Problems	
6	I am usually on my own	.539
11	*I have one good friend or more*	.543
14	*Other people my age generally like me*	.396
19	Other children or young people pick on me	.663
23	I get along better with adults than with people my age	.409
	Prosocial Behavior	
1	I try to be nice to other people	.630
4	I usually share with others	.376
9	I am helpful if someone is hurt...	.638
17	I am kind to younger children	.509
20	I often volunteer to help others	.490

Note: Italicized items were reverse scored. In the modified model, item 18 was cross-loaded onto peer problems with a standardized loading of .341 and item 8 was cross-loaded onto prosocial behavior with a factor loading of .287. All loadings, including modifications, were significant at p <.001.

Table 3

Invariance Tests for the Strengths and Difficulties Questionnaire and Perception of Inclusion Questionnaire

	Base Model χ^2 (df)	Metric Model χ^2 (df)	Scalar Model χ^2 (df)	Metric vs. Base Model *p*-value	Scalar vs. Metric Model *p*-value
Grade Level					
SDQ	814.96 (524)	832.57 (546)	862.05 (566)	.588	.081
PIQ	189.62 (102)	201.41 (111)	217.92 (120)	.246	.057
SEN					
SDQ	760.08 (524)	777.68 (546)	801.61 (566)	.400	.261
PIQ	218.49 (102)	233.31 (111)	247.49 (120)	.093	.150
Gender					
SDQ	775.58 (524)	812.09 (546)	865.62 (566)	.035*	.001**
PIQ	197.63 (102)	205.71 (111)	218.93 (120)	.524	.177

Note: Base model has free loadings and intercepts between groups. Metric model has equal loadings, but free intercepts, scalar model has equal loadings and intercepts. All SDQ comparisons use the model with minor modifications.

** Significant at p < .05*

*** Significant at p <.01*

Table 4

Correlation Matrix of subscales of the Strengths and Difficulties Questionnaire and Perception of Inclusion Questionnaire

	ASC	SI	EI	ES	CP	HA	PP	PB
PIQ Academic Self-Concept	1.000							
PIQ Social Inclusion	.184***	1.000						
PIQ Emotional Inclusion	.360***	.231***	1.000					
SDQ Emotional Symptoms	-.236***	-.202***	-.109*	1.000				
SDQ Conduct Problems	-.243***	-.244***	-.341***	.192***	1.000			
SDQ Hyperactivity	-.389***	.080	-.441***	.144**	.504***	1.000		
SDQ Peer Problems	-.212***	-.619***	-.085	.373***	.305***	.080	1.000	
SDQ Prosocial Behavior	.267***	.309***	.449***	.028	-.340***	-.324***	-.232***	1.000

Note: Correlations for all values at grade 7.

** Significant at p < .05*

*** Significant at p <.01*

**** Significant at p < .001*

Table 5

MANOVA – Marginal Means & Main Effects

	Grade 6 M (SE)	Grade 7 M (SE)	*p*-value	Male M (SE)	Female M (SE)	*p*-value	No SEN M (SE)	With SEN M (SE)	*p*-value
PIQ									
Academic Self-Concept	2.50 (0.07)	2.72 (0.07)	.001***	2.72 (0.08)	2.50 (0.10)	.073	2.86 (0.05)	2.36 (0.11)	.001***
Social Inclusion	3.27 (0.07)	3.34 (0.06)	.701	3.26 (0.07)	3.35 (0.08)	.403	3.32 (0.04)	3.29 (0.10)	.779
Emotional Inclusion	2.47 (0.08)	2.50 (0.08)	.288	2.42 (0.09)	2.55 (0.12)	.372	2.64 (0.05)	2.34 (0.14)	.043*
SDQ									
Emotional Symptoms	2.94 (0.20)	3.35 (0.23)	.058	2.50 (0.23)	3.78 (0.30)	.001**	3.03 (0.14)	3.26 (0.35)	.527
Conduct Problems	2.16 (0.16)	1.95 (0.15)	.229	2.28 (0.16)	1.83 (0.21)	.088	1.76 (0.10)	2.36 (0.25)	.025*
Hyperactivity	4.18 (0.23)	4.17 (0.22)	.948	4.51 (0.24)	3.84 (0.30)	.081	3.96 (0.14)	4.39 (0.36)	.273
Peer Problems	2.76 (0.21)	2.53 (0.18)	.284	2.77 (0.20)	2.53 (0.28)	.467	2.54 (0.12)	2.75 (0.30)	.516
Prosocial Behavior	7.17 (0.18)	7.10 (0.19)	.689	6.70 (0.20)	7.58 (0.25)	.006**	7.34 (0.12)	6.94 (0.30)	.214

Note: SEN refers to special education needs. Significant main effects for gender on the SDQ subscales are not trustworthy due to a lack of measurement invariance.

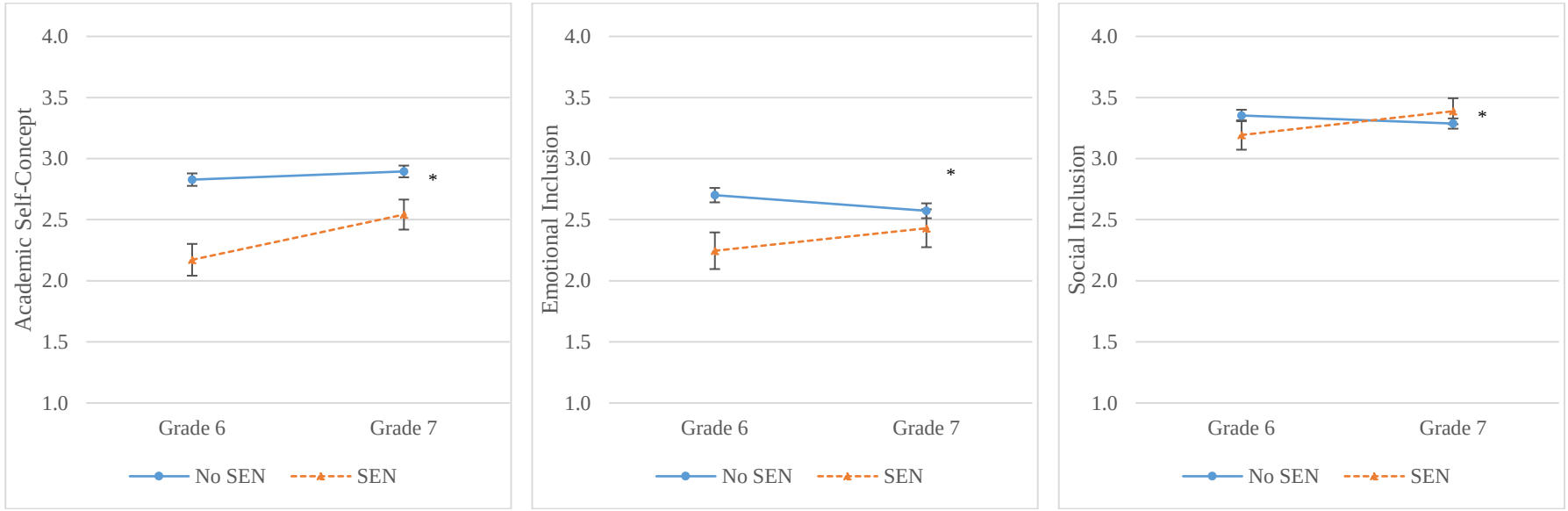
****Significant at p < .001*

***Significant at p < .01*

** Significant at p < .05*

Figure 1

Grade Level x Special Education Needs Interactions from the Perception of Inclusion Questionnaire



Note: SEN refers to Special Education Needs.

** Significant at $p < .05$.*