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How do included and excluded students with SEBD function socially and academically after 1,5 year of special education services?

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ABSTRACT


The present study tested three conflicting hypotheses as to how students with social/emotional/behavioural difficulties (SEBD), who showed similar social-emotional, behavioural and academic functioning prior to placement, function socially and academically after they have received additional support either in inclusive regular education or in exclusive special education. Thirty-six *included* and 15 *excluded* students with SEBD participated. We collected data from students and teachers with classroom surveys, individual testing sessions with students with SEBD, and from application files. Using Bayesian statistics, our results suggest that excluded students are better socially embedded in exclusive special education and that they perform better academically than comparable included students with SEBD. Special education services in exclusive settings may thus afford certain benefits to some students with SEBD, not typically found in regular education, which can be considered a first indication that there may be valid counterarguments against the ‘inclusion for all’ perspective on educational needs.

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KEYWORDS Social-emotional/behavioural difficulties; social functioning; academic functioning; Bayesian statistics

Students with Social-Emotional and Behavioural Difficulties (SEBD) cope with various behavioural, social, and academic problems, such as internalizing and externalizing behaviour problems; difficulties in establishing and maintaining relationships with adults and peers; and impaired task-related behaviour and low academic achievement (Cannon, Gregory, &

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 Supplemental data for this article can be accessed [here](#).

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Waterstone, 2013; Furlong, Morrison, & Jimerson, 2004; Gresham & Kern, 2004). Due to these problems, they are at risk for poor outcomes in later life, such as suspension and expulsion, school dropout, involvement in the juvenile justice system, and psychiatric hospitalization and residential treatment (e.g., Cannon et al., 2013). During their school career, some students with SEBD may already experience some of these poor outcomes, as their problems limit their participation in education (Cannon et al., 2013). In many countries, parents and schools can apply for additional support to promote positive social-emotional, behavioural and academic development in school and prevent future adversities.

In the Netherlands, eligibility for special education services is determined by independent committees. Once eligibility is established, parents and schools must agree on where these special education services will be provided. Generally, services are either provided to students within their own regular education classrooms (i.e., inclusive setting) or the students get excluded from regular education and will receive special education services in specific schools for special education (i.e., exclusive setting).

It is important to note that both educational contexts (inclusive or exclusive setting) only refer to the locations in which special education services can be provided. The quality or appropriateness of the special education services cannot be judged by the place where they are carried out (see for a more elaborate discussion of the place vs. instruction debate: Brigham, Ahn, Stride, & McKenna, 2016; Kauffman, Anastasiou, Badar, Travers, & Wiley, 2016;; Kauffman & Badar, 2014). Rather than considering the location or place of education, one should consider what special education services are necessary to optimize students' learning (Brigham et al., 2016; Kauffman et al., 2016; Kauffman & Badar, 2014). When the special education services that a student with SEBD needs can be implemented in inclusive classrooms for regular education (e.g., preteaching, remedial teaching, an adjusted work place, or training by paraprofessionals outside the classroom), the student with SEBD will receive the most effective instruction in regular education. When the special education services that a student with SEBD needs are individualized to such an extent (e.g., along multiple dimensions as pace, duration, frequency, intensity, and provision of feedback) that it is not possible to implement them in regular education, the student will receive the most effective instruction in exclusive classrooms for special education. More specifically, in exclusive schools for special education a more structured daily educational program is provided, classrooms

consist of fewer students, students are supported by teachers trained to predict, understand, and replace disruptive and inappropriate behaviour, and professional and paraprofessional support is available within the school (Lane, Wehby, Little, & Cooley, 2005). Hence, in the Netherlands, additional support provided in exclusive settings for special education is assumed to be more extensive than additional support provided in inclusive settings for regular education.

Before students with SEBD receive additional support – either in inclusive or exclusive settings – they all seem to comprise a single group of students with SEBD who do not develop well in regular education. In fact, in the Netherlands, a single eligibility statement (issued by independent committees) provides access to special education services in both inclusive and exclusive settings. Some studies have suggested, however, that two different subgroups – comprising students with SEBD with distinctive needs – can already be distinguished before placement. These studies have found that students with SEBD who were later placed in exclusive settings showed more severe externalizing behaviour problems and more severe impairments in academic functioning (Lane et al., 2005; Ledoux, Roeleveld, Van Langen, & Smeets, 2012; Stoutjesdijk & Scholte, 2009) than students with SEBD who were later included in regular education. Zweers, Bijstra, Orobio de Castro, Tick, and Van de Schoot (*in press*), however, showed that included and excluded students with SEBD did not differ in social, emotional, behavioural and academic functioning prior to placement.

Placement choices concerning in which educational setting special educational services can best be provided to meet the needs of a specific student with SEBD can be difficult, given that choices for providing special education services in either inclusive or exclusive settings are based on students' functioning in a context in which they did not receive additional support. However, maybe even more informative for making future placement choices is how students fare after they have received a substantial amount of additional support in either setting. Specifically, the question is how included and excluded students with SEBD – who were similar in student functioning prior to placement – function after they have been provided with special education services in either setting for some time.

This question is especially important as different perspectives exist on what is the best choice for students with SEBD. With the national and international movement towards inclusive education (Oh-Young & Filler, 2015; United Nations, 2006), some have come to believe that full inclusion should be

pursued. Even though – to our knowledge – no researcher claims that educating students with special needs in exclusive settings should be prevented in all cases, several articles discuss the perspective that inclusive settings have to be aimed for (e.g., Kauffman & Badar, 2014; Tkachyk, 2013). Also in practice this ideological perspective has often been taken. Studies supporting the perspective that students with SEBD included in regular education perform better than excluded students with SEBD, have shown better task-related behaviour, reading, spelling, and math performance and more positive social relationships with teachers and peers among included students with SEBD than among excluded students with SEBD (Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009). From the perspective that inclusive settings have to be aimed for, the *Included Performs Better hypothesis*, it is hypothesized that after the provision of special education services included students with SEBD perform better than excluded students with SEBD.

However, others emphasize that before placement choices can be made, one should first consider what special education services are necessary to meet the specific needs of the specific student with SEBD (e.g., Kauffman et al., 2016). That is, some students' needs can be met with special education services implemented in inclusive classrooms for regular education. Other students' needs, however, are individualized to such an extent that they can be met only in classrooms for exclusive special education. Several studies have indeed shown equally low performance for both student groups in reading, spelling, and math (Ledoux et al., 2012; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004; Stoutjesdijk & Scholte, 2009), while – to our knowledge – no studies have found similarities in social functioning between these two student groups. Based on this second line of reasoning, the *Equal Performance hypothesis* can be formulated: when included and excluded students with SEBD are similar in student functioning prior to placement, similar student functioning would also be expected after the provision of special education services in either setting.

Yet, a third perspective should be considered. The guiding principle of special education is that special education is designed for students whose needs cannot be met in regular education (Rijksoverheid, n.d.). Special education schools are equipped in such a way that students with SEBD are well-supported in their social-emotional and learning development. Yet, conclusive empirical support for this third perspective is sparse. Only one study has found better peer relationships for aggressive children in

exclusive special education than for aggressive children in regular education (Useche, Sullivan, Merk, & Orobio de Castro, 2014). From this third perspective, the *Excluded Performs Better hypothesis*, it is hypothesized that after the provision of special education services excluded students with SEBD perform better than included students with SEBD.

In sum, three conflicting theoretical hypotheses exist as to how students with SEBD fare after they have received a substantial amount of additional support in either setting. The aim of the present study is to examine the degree of support for these conflicting hypotheses.

Methods

Procedure

The current paper is part of a longitudinal project in which the development of students with SEBD in inclusive regular education and exclusive special education is examined in four waves over a time period of two years. More detailed information on the procedure and the participants is provided in the supplementary material and only a brief summary is provided here.

Two institutions that determined eligibility for additional support, invited parents to participate in our study when parents applied for special education services. Parents agreed by signing a consent form. Students with SEBD enrolled in our study when they still resided in regular education without additional support. Subsequently, independent committees decided, based on established criteria (WEC Raad, 2008), whether students with SEBD were eligible for additional support. Subsequently, parents and schools decided whether the student with SEBD would receive special education services in inclusive regular education or in exclusive special education.

For the current study, the data of wave 4 of the longitudinal project were used. Only students with SEBD who continuously had received special education services in either inclusive regular education or exclusive special education were examined. Students who had switched types of additional support were excluded from the analyses.¹ After their schools gave verbal consent, schools sent out informative letters in

¹Figure 1 in the supplementary material shows the various trajectories that students with SEBD have followed during the data collection process and includes all students with SEBD in each setting – also the students who switched types of support during the data collection process. To this end, the *n*'s in exclusive special education at each wave are higher than those reported in the current paper. The flowchart in Figure 2 in the supplementary material maps the steps taken from participant recruitment until final *n*'s included in the 'pure' *included* and *excluded* subgroups in our analyses. That is, students who switched type of support during the data collection process are excluded in this flowchart.

which parents of classmates of the students with SEBD were asked to give passive consent for their child to participate in a classroom survey. The first author and/or trained (under)graduate students collected survey data with all students and the teacher in the concerning class during a single classroom session. After a short break, we tested the student with SEBD individually. In addition, we examined the application files of students with SEBD. Ethical approval for the study procedures and data collection was given by the Ethics Committee of the Faculty of Social and Behavioural Sciences Utrecht (FETC16-077).

Participants

Two subgroups participated in our study: included students with SEBD ($n = 36$) and excluded students with SEBD ($n = 15$). All students were eligible for additional support as judged by the independent committees. The majority of these students fulfilled diagnostic criteria for DSM-IV diagnoses, see Table 1 (American Psychiatric Association, 2000).

Tables 2 and 3 contain additional descriptive statistics. Preliminary analyses examining background variables showed that classrooms of excluded students with SEBD consisted of significantly fewer students than classrooms of included students with SEBD, $F(1,48) = 56.65$, $p < .001$. No other differences between groups were found (all p 's $> .05$).

Preliminary analyses examining dependent variables at Wave 1 (T1) showed no differences between groups (all p 's $> .05$).²

Measures

Social functioning

We measured student-teacher relationships with the teacher-reported Dutch Student-Teacher Relationship Scale (STRS; Koomen, Verschueren, & Pianta, 2007). Teachers had to rate on a 5-point Likert scale (ranging from 1 = *definitely does not apply* to 5 = *definitely applies*) to what extent 28 statements applied to their relationship with the student with SEBD. Three dimensions were distinguished: Closeness (11 items), Conflict (11

²As we advocate later that we should use Bayesian statistics to test specific constrained hypotheses against each other to handle our small sample sizes with greater accuracy, we also conducted Bayesian preliminary analyses. For social functioning, academic functioning and total student functioning, the Equal Performance Hypothesis received six to fifteen times more support from the data than the Included Performs Better Hypothesis.

items), and Dependency (6 items). Cronbach's alpha coefficients ranged from .81 to .88 across dimensions.

In addition, we used peer-reported sociometric ratings to measure social acceptance and perceived popularity (Cillessen, 2009). For all classmates in the concerning classroom, students had to rate on a 5-point Likert scale (ranging from $-2 = \textit{not at all}$ to $2 = \textit{very much}$) to what extent they liked them (social acceptance) and to what extent they perceived them to be popular (perceived popularity). To obtain acceptable sociometric scores, we set a minimum class participation criterion of 60% (Marks, Babcock, Cillessen, & Crick, 2013). We summed the scores received by each pupil and divided these by the number of raters in the respective classroom (minus one because we disregard self-scores in these measures).

Furthermore, we assessed social-cognitive functioning with the Social Cognitive Skills Test (SCVT; Van Manen, Prins, & Emmelkamp, 2009). Three stories with corresponding story vignettes were read to the students with SEBD. The student had to answer eight questions measuring four levels of social-cognitive skills. Participants' total scores on these questions were converted to norm scores with tables of norm data of students of the same sex and age and reflect the level of social-cognitive functioning of the student. Cronbach's alpha was .69.

Academic functioning

We measured task-related behaviour with the teacher-reported Conscientious Task Attitude subscale of the Dutch school monitoring instrument for social-emotional development (VISEON; Citogroep, 2004). Teachers were presented with 11 pairs of opposing statements and they had to rate to what extent one of these applied to the student with SEBD on a 4-point scale (ranging from $1 = \textit{right statement definitely applies}$ to $4 = \textit{left statement definitely applies}$). Cronbach's alpha was .92.

In addition, we measured school achievement during individual testing sessions with established Dutch tests. We tested *reading ability* with the BRUS Één-Minuut-Test (EMT) [one-minute reading fluency test] (Brus & Voeten, 2006), *spelling ability* with the PI-dictee [spelling dictation task] (Geelhoed & Reitsma, 2004), and *mathematics ability* with the Tempo Test Automatiseren (TTA) [arithmetic processing speed test] (De Vos, 2011). Participants' individual scores for each skill were converted to norm scores with tables of norm data of students in the same grade.

Table 1. Descriptive statistics of the students with SEBD.

Diagnosis in %					Comorbidity in %			IQ	
ASD	ADHD	DBD	LD	Other	undiagnosed	One	two	more	<i>M (SD)</i>
56.9	47.1	5.9	33.3	25.5	2.0	43.1	39.2	15.7	102.00 (13.59)

ASD = Autism Spectrum Disorder (including Pervasive Developmental Disorder – Not Otherwise Specified [PDD-NOS]); ADHD = Attention-Deficit Hyperactivity Disorder; DBD = Disruptive Behaviour Disorder; LD = Learning Disorder.

Table 2. Descriptive statistics of the background variables of the subsamples.

Sex	Included SEBD				Excluded SEBD			
	boys	girls			boys	girls		
<i>n per Grade</i>	30	6			10	5		
	5	6	7	8	5	6	7	8
	1	15	11	9	2	3	5	5
Class size ^a <i>M (SD)</i>	23.23 (5.65)				11.93 (1.87)			
Age in years <i>M (SD)</i>	10.19 (1.01)				9.93 (.96)			
Ethnicity (% Dutch)	97.2				100			
Behavioural functioning	N	S	C		N	S	C	
<i>Internalizing symptoms</i>	32.4%	8.8%	58.8%		23.1%	7.7%	69.2%	
<i>Externalizing symptoms</i>	26.5%	29.4%	44.1%		23.1%	23.1%	53.8%	
<i>ADHD symptoms</i>	40.0%	8.6%	51.4%		30.8%	15.4%	53.8%	

^aOne missing in the included students with SEBD group. * Classrooms of excluded students with SEBD contained significantly fewer students than classrooms of included students with SEBD, $F(1,48) = 56.65, p < .001$.

Background variables

We collected information on background variables from the students' application files, including IQ, diagnoses, and comorbidity. If students' application files did not contain IQ scores, we conducted the subtests Block Design and Vocabulary of the WISC III^{NL} (Kort et al., 2005).

Data-analyses

We tested our three informative hypotheses with the software BIEMS – Bayesian Inequality and Equality constrained Model Selection (Mulder, Hoijtink, & De Leeuw, 2012) for two reasons. First, BIEMS enabled us to directly test our conflicting hypotheses derived from previous research as coherent models instead of testing a set of null hypotheses. In BIEMS a single test directly indicated which one of our three conflicting hypotheses received most support from the data, whereas conventional frequentist statistics can only falsify null hypotheses (i.e., there are no differences between groups for this variable). By using Bayesian statistics, we were thus able to integrate findings from previous studies with current results. Second, while studies examining



Table 3. Descriptive statistics for social and academic functioning for both subsamples of students with SEBD at wave 1 (T1).

	Included students with SEBD (n = 36)		Excluded students with SEBD (n = 15)		H ₁ : Included performs better hypothesis	H ₂ : Equal performance hypothesis	BF _{2u}	Hypothesis comparison
	M _{T1}	SD _{T1}	M _{T1}	SD _{T1}				
CL _T	3.78	.70	4.08	.90	INCL > EXCL		INCL = EXCL	
CO _T	2.36	.87	2.40	1.11	INCL < EXCL		INCL = EXCL	
DE	2.82	1.08	2.92	.91	INCL < EXCL		INCL = EXCL	
SA ^a	.19	.69	.32	.74	INCL > EXCL		INCL = EXCL	
POP ^a	-.64	.45	-.51	.55	INCL > EXCL		INCL = EXCL	
SCS	47.41	23.77	52.30	26.40	INCL > EXCL		INCL = EXCL	
Social functioning					0.17		2.55	T1 BF ₂₁ = 2.55/0.17 = 15
TA _T	2.26	.75	2.09	.97	INCL > EXCL		INCL = EXCL	
READ ^b	8.39	3.43	9.60	3.10	INCL > EXCL		INCL = EXCL	
SPEL ^b	18.39	24.24	15.36	24.83	INCL > EXCL		INCL = EXCL	
MATH ^b	19.35	18.87	27.45	24.02	INCL > EXCL		INCL = EXCL	
Academic functioning					0.78		5.01	T1 BF ₂₁ = 5.01/0.78 = 6.42
Total student functioning					0.22+		2.73	T1 BF ₂₁ = 2.73/0.22 = 12.41

CL_T = Closeness (teacher-reported); CO_T = Conflict (teacher-reported); DE = Dependency; SA = Social acceptance; POP = Perceived popularity; SCS = Social-Cognitive Skills; TA_T = Task attitude (teacher-reported); READ = Reading achievement; SPEL = Spelling achievement; MATH = Math achievement; BF = Bayes factor, _u = unconstrained hypothesis. ^a Some students with SEBD were individually tested only, because the school could not facilitate a classroom testing session, resulting in lower sample sizes for peer-rated acceptance and popularity. ^b Some students with SEBD participated in classroom testing sessions only (i.e., individual testing sessions with an unfamiliar experimenter would be too stressful), resulting in lower sample sizes for reading, spelling, and math achievement.

students with SEBD have often been limited by small sample sizes (e.g., Lane et al., 2005), Bayesian statistics have provided possibilities to handle small samples with greater accuracy. That is, testing specific constrained hypotheses against each other will lead to increased power and will decrease the need for large sample sizes (see for a more elaborate explanation Vanbrabant, Van de Schoot, & Rosseel, 2015). Specifically, instead of testing all possible solutions in a parameter space, we tested only a predetermined set of solutions in the parameter space – namely specific constrained hypotheses based on previous literature – which is easier to falsify or to find support for than when you do not have specified any hypotheses at all. For a gentle introduction to Bayesian analyses in the context of informative hypothesis testing interested readers are referred to Hoijtink (2012).

First, all three hypotheses (i.e., H_1 , H_2 , and H_3) were translated into statistical models containing inequality constraints reflecting the relative ordering of the groups. For example, the *Included performs better hypothesis* states that included students with SEBD generally performed better socially and academically than excluded students with SEBD. The statistical model reflecting the ordering of the two groups can be expressed as: $M_{INCL} > M_{EXCL}$ for student-teacher closeness, social acceptance, perceived popularity, and social-cognitive skills; and $M_{INCL} < M_{EXCL}$ for student-teacher conflict and dependency. See Table 4 columns 6–8 for all statistical models being tested.

Second, using Bayes Factors (BFs) we evaluated whether each of the three hypotheses had a sufficient fit to the data by comparing them against a model containing no constraints on the means, the so-called unconstrained hypothesis (H_u). Third, we compared each of the three hypotheses against each other for social (combining student-teacher relationships, peer relationships, and social cognitive skills) and academic functioning (combining task attitude, reading ability, spelling ability, and math ability) separately. Lastly, we computed BFs for a joint model combining all aspects of student functioning.

Bayesian model selection does not rely on significance testing or p -values, but the extent to which the data supports one hypothesis over another is quantified by Bayes Factors (BF). A BF equal (or close) to 1 indicates equal support in the data for both specified hypotheses and a BF > 1 indicates support in favour of the specified hypothesis over the alternative hypothesis. Some researchers use cut-off values of BF > 3 and BF

> 10 to indicate substantial and strong evidence, respectively (Kass & Raftery, 1995), but others argue strongly against using specific cut-off values for Bayes factor values (Konijn, Van de Schoot, Winter, & Ferguson, 2015).

Results

Results are presented in Table 4. For social functioning, only the Excluded Performs Better hypothesis received more support from the data than the unconstrained hypothesis ($BF = 2.49$). Although the BF against the unconstrained hypothesis is rather low, when compared to the Included Performs Better and the Equal Performance hypotheses, the Excluded Performs Better hypothesis is clearly the preferred hypothesis among the hypotheses under investigation (BFs are 13.11 and 83, respectively). The findings are supported by the means of the separate variables (e.g., included and excluded students' social acceptance means are .13 and .83, respectively).

For academic functioning, the Excluded Performs Better hypothesis received more support from the data than the unconstrained hypothesis and much more support when compared to either the Included Performs Better or the Equal Performance hypotheses, see Table 4. When we entered all aspects of student functioning in a joint model for student functioning, the Excluded Performs Better hypothesis again received more support from the data than the unconstrained hypothesis and much more when compared to either the Included Performs Better or the Equal Performance hypotheses. All in all, the results seem to suggest that after 1,5 year of special education services, excluded students with SEBD showed better student functioning than comparable included students with SEBD.

Discussion

The present study compared three conflicting theoretical hypotheses as to how students with social, emotional and behavioural difficulties – who showed similar social, emotional, behavioural and academic functioning prior to placement – function socially and academically after they have received 1,5 years of inclusive or exclusive special education services. Before drawing any conclusions, it is important to consider some differences between the students with SEBD in the two different educational contexts.

First, students with SEBD in inclusive settings were educated by regular education teachers in an environment in which they were

surrounded by typically developing peers. Students with SEBD in exclusive settings for special education, in contrast, were surrounded by peers with SEBD and were taught by special education teachers trained to understand, predict and replace disruptive behaviour. To this end, teachers and peers in special education contexts may have different reference points for what they consider normative behaviour. That is, they are used to the more deviant behaviours that occur within the SEBD population. The results of a comparison between students with SEBD as reported by teachers and peers from those different educational contexts could be distorted by these different normative perspectives (Lane et al., 2005; Useche et al., 2014).

Results of our study support the Excluded Performs Better hypothesis for both social functioning and academic functioning. However, given that we used both objective and subjective measures for social functioning and academic functioning, some of our results may be influenced by subjective perceptions. An inspection of the means of the separate variables shows that the largest differences between the included and excluded students with SEBD are found for teacher- and peer-reported variables. That is, the results might be driven by the subjective perceptions of reporters who share the same educational context with the students with SEBD.

Teacher-perceptions of the student-teacher relationship and peer-perceptions of social acceptance and popularity may thus be biased to some extent and may not be generalized to students' actual, or objective, behaviour in social situations. Yet, although they may be difficult to compare objectively, these perceptions do reflect to what extent students with SEBD are socially embedded in their educational context. One of the concerns when placement decisions have to be made, is that students with special needs are socially marginalized in inclusive regular education (e.g., Tkachyk, 2013). Although reports may be somewhat biased due to reporter biases that result from the different setting, the results at least seem to indicate that students with SEBD are better socially embedded in exclusive special education than in inclusive regular education. This is in line with findings by Useche et al. (2014) who found higher peer status of students with SEBD in exclusive settings. In some cases, conflictual social relationships with teachers and peers in regular education and the extensive opportunities for support in this domain in exclusive special education, may be an argument in favor of providing special education services in exclusive special education.

Table 4. Descriptive statistics for social and academic functioning for both subsamples of students with SEBD at wave 4 (T4).

	Included students with SEBD (n = 36)		Excluded students with SEBD (n = 15)		H ₁ : Included performs better hypothesis	H ₂ : Equal performance hypothesis	H ₃ : Excluded performs better hypothesis	Hypothesis comparison
	M _{T4}	SD _{T4}	M _{T4}	SD _{T4}				
CL _T	3.82	.64	3.96	.47	T4 BF ₁₀ INCL > EXCL	T4 BF ₂₀ INCL = EXCL	T4 BF ₃₀ INCL < EXCL	
CO _T	2.04	.69	2.04	.87	INCL < EXCL	INCL = EXCL	INCL > EXCL	
DE	2.46	.93	2.64	.76	INCL < EXCL	INCL = EXCL	INCL > EXCL	
SA ^a	.13	.54	.83	.47	INCL > EXCL	INCL = EXCL	INCL < EXCL	
POP ^a	-.60	.72	.12	.71	INCL > EXCL	INCL = EXCL	INCL < EXCL	
SCS	45.06	21.30	45.36	33.28	INCL > EXCL	INCL = EXCL	INCL < EXCL	T4 BF ₃₂ = 2.49/0.19 = 13.11 T4 BF ₃₁ = 2.49/0.03 = 83
Social functioning					.03	0.19	2.49	
TA _T	2.59	.67	3.26	.63	INCL > EXCL	INCL = EXCL	INCL < EXCL	
READ ^b	8.29	3.55	10.00	2.30	INCL > EXCL	INCL = EXCL	INCL < EXCL	
SPEL ^b	29.81	29.33	31.93	30.88	INCL > EXCL	INCL = EXCL	INCL < EXCL	
MATH ^b	19.32	21.42	26.71	15.70	INCL > EXCL	INCL = EXCL	INCL < EXCL	T4 BF ₃₂ = 4.67/.29 = 16.10 T4 BF ₃₁ = 4.67/.03 = 155.67
Academic functioning					.03	0.29	4.67	
Total student functioning					.01	.07	6.49	T4 BF ₃₂ = 6.49/.07 = 92.71 T4 BF ₃₁ = 6.49/.01 = 649

CL_T = Closeness (teacher-reported); CO_T = Conflict (teacher-reported); DE = Dependency; SA = Social acceptance; POP = Perceived popularity; SCS = Social-Cognitive Skills; TA_T = Task attitude (teacher-reported); READ = Reading achievement; SPEL = Spelling achievement; MATH = Math achievement; BF = Bayes factor; u = unconstrained hypothesis.
^aSome students with SEBD were individually tested only, because the school could not facilitate a classroom testing session, resulting in lower sample sizes for peer-rated acceptance and popularity. ^bSome students with SEBD participated in classroom testing sessions only (i.e., individual testing sessions with an unfamiliar experimenter would be too stressful), resulting in lower sample sizes for reading, spelling, and math achievement.

Even though we have to bear in mind that teacher-reported task attitude may have influenced our findings on academic functioning, different normative perspectives cannot explain the differences resulting from standardized academic tests. The test results for reading, spelling and math also point in the direction of the Excluded Performs Better hypothesis. These findings contrast with most previous studies showing that included students with SEBD either perform better academically (e.g., Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009) than excluded students with SEBD – the Included Performs Better hypothesis – or that both student groups do not differ in academic functioning (e.g., Ledoux et al., 2012; Reid et al., 2004; Stoutjesdijk & Scholte, 2009) – the Equal Performance hypothesis. Whether this is due to specific conditions that enable students to learn within these settings need to be further explored.

Some limitations need to be considered. First, we were not able to examine school level factors, whereas school level factors like school policies, size and facilities could play a direct role or indirect role in special education services provided. For instance, teachers who teach in a school with a policy for School-Wide Positive Behaviour Support (SWPBS) may be more likely to have supports available to them that are not available to teachers in schools without SWPBS. Furthermore, the generalizability of our findings could be limited by the restricted region where data was collected. However, demographics seem quite consistent with samples from other studies examining a similar student population (e.g., Breeman, 2015). Lastly, we started with a larger sample of students who applied for eligibility for additional support at Wave 1 (T1), but we ended with only small samples of included and excluded students with SEBD in our study (see supplementary material). Although the majority of the students with SEBD either received 1,5 years of special education services in their inclusive regular education school or in a new school for exclusive special education, several other options were also possible. That is, for some students with SEBD, parents and schools terminated the application procedure before eligibility could be established; several other students with SEBD were (temporarily or permanently) included in schools exclusively for students with variety of special educational needs; and several students with SEBD switched forms of additional support during the data collection process. Since the forms of additional support and the trajectories that the students with SEBD followed over time were so diverse, we only analyzed the

data of students with SEBD who followed the two main trajectories (i.e., special education services in *included* or *excluded* settings). Therefore, the results should be interpreted with caution.

To our knowledge, we conducted the first study comparing students with SEBD in these two school settings who were comparable *before* placement and we used innovative Bayesian statistics to deal with small sample sizes that are very common in this field (e.g., Lane et al., 2005). Future research would benefit from larger samples, while using similar longitudinal research designs (including pretesting before placement) and similar Bayesian statistical methods to better understand whether inclusive or exclusive education provides better student outcomes. Furthermore, it is important to consider the objectiveness of the measures used and to systematically examine if there are any differences in how social-emotional skills and academic subjects are taught in both educational settings, in order to be able to explain differences in student performance between groups. Observations of teacher and student behaviour in both in social situations as well as in academic task situations in addition to objective tests of students' social and academic skills may add valuable information to the discussion on what educational context is best for the development of students with SEBD.

Our findings can be considered a first indication that there may be valid counterarguments against the international tendency to promote inclusive regular education over exclusive special education (Oh-Young & Filler, 2015; United Nations, 2006), since our findings seem to support the Excluded Performs Better perspective. Although several educational researchers claim that many teachers in special education are focused on behaviour and work in an ad hoc way (McKenna & Ciullo, 2016; Reid et al., 2004), our findings may indicate that, as was also found in other studies, teachers in special education work fairly systematically and give an adequate amount of academic instruction to their students (e.g., Van der Worp-Van der Kamp, Pijl, Post, Bijstra, & Van Den Bosch, 2016). In addition, the more extensive opportunities for support in the social-emotional domain in exclusive special education may be an argument in favor of providing special education services in exclusive special education in some cases. Special education services in exclusive settings may thus afford certain benefits to some students with SEBD, not typically found in regular education, which promote both their social-emotional as well as their learning development. Therefore, when additional support is needed for students with SEBD,

exclusive settings should not be disregarded, but should be considered as an option as well.

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