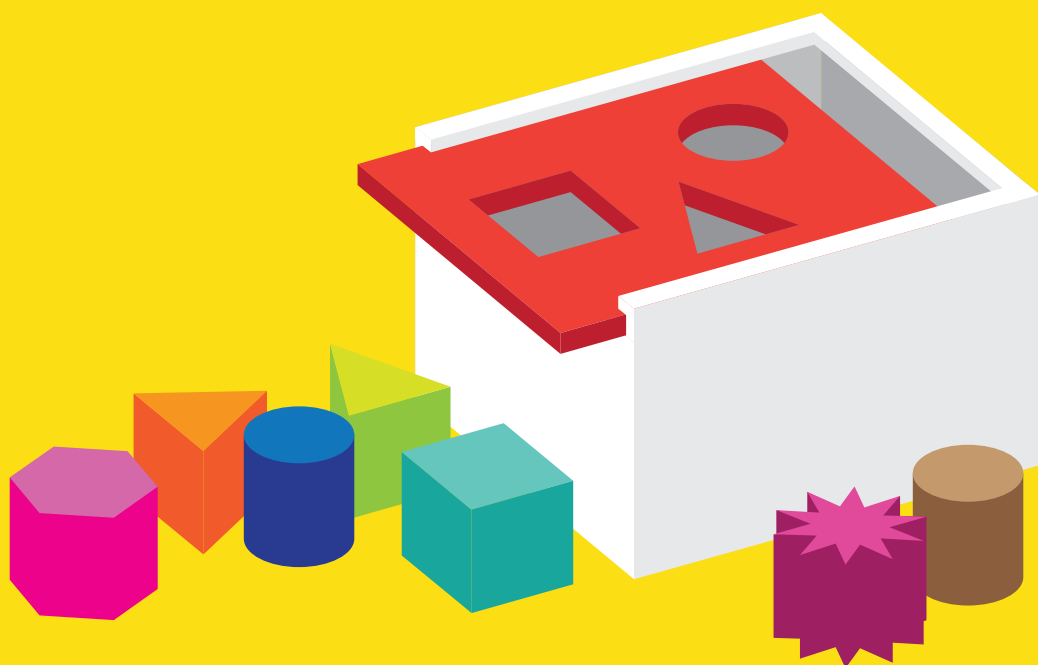


# "SHAPE SORTING" STUDENTS FOR SPECIAL EDUCATION SERVICES?

*A study on placement choices and social-emotional  
and academic functioning of students with SEBD  
in inclusive and exclusive settings*



**INGE ZWEERS**



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Inge Zweers

ISBN 978 94 6299 913 8

Printed by Ridderprint BV | [www.ridderprint.nl](http://www.ridderprint.nl)

Layout by Jos Hendrix

Coverdesign by Tom Schrooten

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# **“Shape sorting” students for special education services?**

A study on placement choices and social-emotional  
and academic functioning of students with SEBD  
in inclusive and exclusive settings

*Een “sorteerbox” voor leerlingen met extra onderwijsbehoeften?*

*Een studie naar plaatsingskeuze en leerlingfunctioneren van leerlingen met  
sociaal-emotionele en gedragsproblemen in het regulier en speciaal onderwijs  
(met een samenvatting in het Nederlands)*

## **Proefschrift**

ter verkrijging van de graad van doctor  
aan de Universiteit Utrecht

op gezag van de  
rector magnificus,

prof. dr. G. J. van der Zwaan,  
ingevolge het besluit van het college voor promoties  
in het openbaar te verdedigen op

vrijdag 18 mei 2018  
des middags te 12.45 uur

door

**Inge Zweers**

geboren op 31 augustus 1987 te Haaksbergen

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Dit proefschrift werd (mede) mogelijk gemaakt met financiële steun van REC Oost Nederland en Stichting Orthopedagogisch Centrum De Ambelt.

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## GENERAL INTRODUCTION

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## GENERAL INTRODUCTION

Noah is an 8-year-old boy, who resides in grade 3 of regular education. He is diagnosed with an Autism Spectrum Disorder and also shows attention-deficit hyperactivity and impulsivity symptoms. Noah takes language literally and has difficulty with interpreting facial expressions, taking another person's perspective, and changing activities and situations, which often leads to miscommunication and temper tantrums. This hampers his relationships with classmates and teachers. During free play situations, such as recess, Noah often comes into conflict with his peers. He gets frustrated easily, yells and shouts at other students, gets into physical fights with other students, and cannot calm down. Therefore, Noah prefers to stay inside the classroom during recess, rather than spending his time alone with his peers. In the classroom, Noah has difficulty starting academic tasks and staying on-task. He works impulsively and is easily distracted, thereby also distracting his peers. When the teacher or a peer addresses his disruptive behavior, he gets angry, sometimes even resulting in physical attacks or destroyed school materials. Teachers have tried to support Noah by creating an individually adjusted work place, providing additional instruction, explaining change of activities and situations, and supporting him in social interactions with his peers. Yet, this additional individual support is very burdensome for teachers and does not lead to sufficient progress in either Noah's academic or his social-emotional development in school. Parents and schools therefore decide to apply for special education services for students with social-emotional and behavioral disorders.

Schools are regularly faced with cases like the case of Noah described above. That is, schools for regular education often provide education to a variety of students with social-emotional and behavioral difficulties (SEBD). These students cope with various problems, such as internalizing and externalizing behavior problems, problems in establishing and maintaining satisfying interpersonal relationships with adults and peers, and impaired task-related behavior and academic performance (Cannon, Gregory, & Waterstone, 2013; Furlong, Morrison, Jimerson, 2004; Gresham & Kern, 2004; Landrum, 2011; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004). This broad variation of problems shows that students with SEBD comprise a heterogeneous population. Some of these students may be diagnosed with various mental disorders, such as Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Autism Spectrum Disorder (ASD), and Attention-Deficit Hyperactivity Disorder (ADHD). Although the problems that

students with SEBD face are diverse, research has consistently shown that they are severe, pervasive, and chronic, resulting in the worst prospects of any student group during and after their school career (Bradley, Doolittle, & Bartolotta, 2008; Cannon et al., 2013; Lane, Wehby, Little, & Cooley, 2005). Examples of these adversities include suspension and expulsion, school dropout, involvement in the juvenile justice system, and psychiatric hospitalization and residential treatment (e.g., Cannon et al., 2013). Without intervention, these adversities in the development of students with SEBD will stay stable or even deteriorate over time (Breeman et al., 2015; Mikami, Griggs, Reuland, & Gregory, 2012; Useche, Sullivan, Merk, & Orobio de Castro, 2014), which indicates that these students are seriously at risk.

When the social, emotional and behavioral difficulties of students with SEBD severely limit their participation in education, special education services are available to prevent adverse outcomes and to promote academic and social-emotional development. These services are predominantly aimed at supporting the learning development and behavioral functioning of the students with SEBD and they can be offered in a regular school (i.e., *inclusive regular education*) or in a school for special education (i.e., *exclusive special education*). Specifically, in inclusive regular education, services such as an individually adjusted work place or remedial teaching, are provided in the regular classroom in which students with SEBD are educated together with their typically developing peers. In exclusive special education, special education services are provided in schools in which students with SEBD are exclusively educated with other students with special educational needs. In such settings, a more structured daily educational program is provided, classrooms consist of fewer students and students are supported by teachers trained to predict, understand, and replace disruptive and inappropriate behavior (Lane et al., 2005).

Whether special education services should preferably be provided in inclusive or in exclusive settings is an important issue in education today. This question has been asked for many years (United Nations, 2006; Oh-Young & Filler, 2015), and is important for teachers and schools (e.g., teachers find these students the most difficult to teach and support; Buttner, Pijl, Bijstra, & Van den Bosch, 2016; Goei & Kleijnen, 2009) and individual students' development as provision of special education services in inclusive regular education or exclusive special education may have far-reaching consequences for these students' future (De Roos & Bloem, 2014). The current dissertation aims to shed more light onto the issue what is best for students with SEBD: special education services provided in inclusive regular education or special education services provided in exclusive special education?

## Changing systems of special education services in The Netherlands

In the Netherlands, questions about whether students with SEBD should be provided with special education services in inclusive or exclusive settings have been pressing for decades. In the past, the Netherlands have been familiar with a differentiated system of special education services and facilities for students with various special educational needs. At the same time, the use of such services and facilities has increased tremendously over the years, resulting in increased costs. The ideological discussion about what is best for students' development in combination with the continuous struggle of the Dutch government to reduce the growth of special education and the associated costs, has historically led to substantial changes in educational laws and policies (Bakker, Noordman, & Rietveld – Van Wingerden, 2006). These changes instigated a move towards more inclusive education, which seamlessly connects with the international movement towards inclusion (United Nations, 2006; Oh-Young & Filler, 2015). Consequently, Dutch educational systems and criteria to determine eligibility for special education services have changed over the years.

In 2003, for example, the differentiated educational system was brought back to four clusters for special education services. Cluster 1 included schools and special education services for students with visual impairments; cluster 2 included schools and special education services for students with hearing impairments and speech- and language impairments; cluster 3 included schools and special education services for students with cognitive impairments or chronic illnesses; and cluster 4 included schools and special education services for students with social-emotional and behavior problems and/or psychiatric disorders. To be eligible for special education services, students with SEBD had to meet nationally prescribed criteria. Specifically, students with SEBD were eligible for additional support when: (a) they showed severe emotional and behavioral problems at school and at home or in the community (either formally diagnosed or not); (b) their participation in education was severely limited by their emotional and behavioral problems (i.e., they showed impairments in learning and/or their interactions with school personnel and/or classmates); and (c) the school's prolonged extension of support services has proven insufficient to meet the student's needs (LCTI, 2006; Meijer, 2003). In addition to this cluster system, a new funding policy was instated: the *Leerlinggebonden Financiering* (LGF; a personal budget for students with special educational needs) (Besluit Leerlinggebonden Financiering, 2003). With this personal budget, parents of students with special educational needs had to make a placement choice as to where special education services will be provided: in an inclusive school for regular education or in an exclusive school for special education.

Yet, the instigation of the new funding policy led to an explosive growth of the number of students identified as having special educational needs, in inclusive regular

education settings as well as in exclusive special education settings, especially among students with SEBD (De Greef & Van Rijswijk, 2005, 2006; Hover, 2006). In 2014, a new educational policy – *Passend Onderwijs* (i.e., Suitable Education) – has been instated (Ministry of Education, Culture, and Science, 2011). This new policy aims for suitable education for each individual student, regardless of his/her (special) educational needs. In addition, the policy of *Passend Onderwijs* aims to reduce the number of students in exclusive special education, to improve the academic outcomes and school well-being of students with special educational needs, and to improve the position of these students on the job market (ECPO, 2008).

With the instigation of *Passend Onderwijs*, eligibility for special education services is no longer determined by nationally established criteria. Independent regional committees set up by collaborative networks of schools for regular and special education determine which students are eligible for additional support and which students are not. The independent regional committees consist of, amongst others, educational experts, (school) psychologists, youth physicians, and social workers, who all have substantive expertise in the field of SEBD and/or education. Although criteria for eligibility for special education services are no longer established by national law, the committees base their decisions predominantly on data on students' behavioral, social-emotional, and academic functioning provided by the original schools. Subsequently, parents and schools agree on whether special education services will be provided in settings for inclusive regular education or exclusive special education. Despite the fact that laws and policies have changed over the years, questions about whether students with SEBD should be provided with special education services in inclusive settings for regular education or exclusive settings for special education thus stay relevant.

### **Conflicting perspectives on which educational context is best for students with SEBD**

Both nationally and internationally, conflicting ideological perspectives exist on what is best for the social-emotional and learning development of students with SEBD. The Netherlands, and many other countries, have signed the Salamanca Statement (United Nations Educational Scientific and Cultural Organization [UNESCO], 1994), which states that all children, including those with special educational needs, must have the opportunity to be educated in settings for regular education. Thus the leading perspective is that it is rarely appropriate to exclude students from regular education and inclusive regular education has to be aimed for at all times. There is a lot to be said for this perspective, because exposure to the regular curriculum may increase academic knowledge and skill acquirement in students with SEBD. In addition, students with SEBD who are surrounded by typically developing peers, may be provided with



ample opportunities to improve social skills, whereas educating students with SEBD with other students who need additional support in a specialized setting could result in peer deviancy training (e.g., Dishion, Spracklen, Andrews, & Patterson, 1996; Snyder et al., 2010).

The discussion about whether this 'inclusion for all' perspective is best for all students with SEBD, however, has not yet been settled. It can also be argued that some students, in contrast, may only benefit from highly specialized environments in which instruction is tailored to their unique needs and in which professional and paraprofessional behavioral/therapeutic support is available in the school (Lane et al., 2005; Tankersley, Landrum, & Cook, 2004). This introduces a second perspective: although some students' needs can be met with special education services implemented in inclusive classrooms for regular education, other students' needs are individualized to such an extent that they can be met only in exclusive settings for special education (e.g., Kauffman, Anastasiou, Badar, Travers, & Wiley, 2016). This suggests that special education services should be provided in inclusive regular education whenever possible, but that exclusive special education must be offered to those students whose needs cannot be met in inclusive regular education. This perspective forms the basis of the Dutch policy of *Passend Onderwijs*.

Both perspectives have predominantly been based on ideological grounds as empirical evidence supporting one perspective over the other is lacking. The limited number of studies that have compared included and excluded students with SEBD do not provide a definite conclusion. Several studies have shown that students with SEBD included in regular education perform better than excluded students with SEBD on reading (Lane et al., 2005; Ledoux, Roeleveld, Van Langen, & Smeets, 2012), spelling (Lane et al., 2005; Stoutjesdijk & Scholte, 2009), math (Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009), and task-related behavior and that included students with SEBD have more positive social relationships with teachers and peers than excluded students with SEBD (e.g., Ledoux et al., 2012). Although this supports the notion that inclusive education may be better for some students with SEBD, this does not prove that inclusive regular education is best for all, as student functioning before placement in either inclusive or exclusive settings may have biased these outcomes (i.e., excluded students may have had more severe problems to begin with).

Other studies have shown equally low performance for both student groups in reading (Ledoux et al., 2012; Reid et al., 2004; Stoutjesdijk & Scholte, 2009), spelling, and math (Reid et al., 2004). This may suggest that for those students whose needs cannot be met in inclusive regular education, exclusive special education must be offered in order to reach the same educational outcomes. Yet, again this does not prove that the needs of these students with SEBD can only be met in exclusive special education, as this

research does not rule out that the excluded students with SEBD would have performed similarly or even better in inclusive regular education.

We thus know, to some extent, how included and excluded students with SEBD differ from each other once they reside in their respective inclusive and exclusive settings, but surprisingly little is known about the characteristics of students with SEBD *before* these placement choices are made. Furthermore, studies examining developmental outcomes of students with SEBD over time in both inclusive and exclusive settings are scarce, despite the fact that these developmental outcomes are important factors for students' adjustment in later life (e.g., Cannon et al., 2013; Ladd & Burgess, 2001; Pianta & Stuhlman, 2004). Existing studies have only focused on academic progress (Carlberg & Kavale, 1980; Oh-Young & Filler, 2015; Schneider & Leroux, 1994; Wang & Baker, 1985-1986). Even less is known about how the provision of special education services affects the social-emotional development of students with SEBD in school. Yet, it has become widely acknowledged that schools play an important role in fostering students' social-emotional development in addition to their learning development (Crnic & Neece, 2015), which may be even more important for vulnerable students such as students with SEBD.

Moreover, when comparing students with SEBD in inclusive and exclusive settings, it is important to note that both inclusive and exclusive educational contexts only refer to the locations in which special education services can be provided. This does not reveal anything about the quality or appropriateness of the specific special education services provided or whether individual student needs will be met (see for a more elaborate discussion of the place vs. instruction debate: Brigham, Ahn, Stride, & McKenna, 2016; Kauffman et al., 2016; and Kauffman & Badar, 2014).

To summarize, both nationally and internationally there has been a long history of debate about the question what is best for students with SEBD: special education services provided in inclusive regular education or special education services provided in exclusive special education? Yet, we actually know surprisingly little about the characteristics of students with SEBD, what schools do to support them, which trajectories of additional support they follow over time, and what cognitive and/or social-emotional results will be yielded with the additional support provided. Given the limited empirical evidence for either ideological perspective and given our limited knowledge base, research into these topics is important to shed more light on the characteristics of students with SEBD and on how these students who receive special education services – either in inclusive or exclusive settings – develop over time.

## Overview of this dissertation

The studies included in this dissertation examine how students with SEBD function academically and social-emotionally both before and after they received special education services – either in schools for inclusive regular education or in schools for exclusive special education – and how students with SEBD develop over time. The studies started when parents and schools signalled that the student did not develop well in regular education and collaboratively decided to apply for special education services. Subsequently, students were followed for approximately two years to examine their development in either settings for inclusive regular education or in settings for exclusive special education.

**Chapter 1** provides more detailed information on the characteristics of our participants, the various trajectories of additional support that they followed over time, and the procedures that serve as a foundation for the specific studies described in the consecutive chapters.

**Chapter 2** examines characteristics of students with SEBD before they receive special education services – either in inclusive or in exclusive settings – to see whether students who will consequently be referred to inclusive or exclusive settings can already be distinguished in regular education. Specifically, chapter 2 describes which aspects of student functioning and which teacher factors were related to placement choices for students with SEBD, whether the two subgroups of included and excluded students with SEBD differed from typically developing peers in their self-perceptions, and whether possible differences in self-perceptions between groups of students were related to placement choices.

**Chapter 3** describes a short follow-up study of chapter 2. It describes how students with SEBD – who were similar in student functioning prior to placement – function socially and academically after they have received a substantial amount of additional support, either in an inclusive setting for regular education or in an exclusive setting for special education.

**Chapter 4** is a methodological chapter that examines whether the instruments that we regularly use in schools to measure social-emotional functioning are suitable to compare scores of various student groups and to compare students' scores over time. Specifically, chapter 4 describes whether three subscales of the self-reported *Volginstrument Sociaal-Emotionele ONtwikkeling* (VISEON) [student monitoring instrument for social-emotional development] (Citogroep, 2004) are suitable for use among students with SEBD and whether the subscales measure the same constructs over time. In order to make valid comparisons (e.g., between student groups or over time), the instruments used should work consistently – they should be measurement invariant – across groups and over time.

**Chapter 5** describes how social relationships with teachers and peers and self-esteem of students with SEBD develop over time in comparison with typically developing peers. The chapter describes differences between the three student groups in initial levels of student-teacher conflict, peer acceptance, and self-esteem and/or differences in the development of these aspects over time. In addition, the chapter zooms in on the two subgroups of students with SEBD to see whether factors present before students with SEBD received special education services could predict development in social relationships and self-esteem.

The dissertation ends with a discussion providing an overview and interpretation of the findings in the preceding chapters. The discussion concludes with recommendations for future research and implications for practice.





# 1

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## **MEET OUR NEEDS:**

### CHARACTERISTICS OF STUDENTS WITH SOCIAL-EMOTIONAL AND BEHAVIORAL DIFFICULTIES RECEIVING SPECIAL EDUCATION SERVICES IN PRIMARY EDUCATION

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Author contributions: I. Zweers conceptualized the study, N.T. Tick, J. O. Bijstra, and B. Orobio de Castro gave advice and feedback. I. Zweers and trained graduate students collected the data. I. Zweers analyzed the data and wrote the manuscript. N. T. Tick, J. O. Bijstra, and B. Orobio de Castro provided feedback on the manuscript.





## INTRODUCTION

Some children face Social-Emotional and Behavioral Difficulties (SEBD) – specific educational needs that go further than standard educational practice. Schools are challenged to meet these needs with limited budgets. In The Netherlands, parents and schools can apply for additional funding to help to meet the needs of these children at school. During that process, parents and schools have to fill out various forms and questionnaires and to collect a lot of information to build up the student's application file; they have to come to an agreement about the special education services that will be provided if eligibility will be established; and the outcome is sometimes different from what was initially expected or preferred by parents and/or schools. The application process may thus be a continuous process of change and adjustment for students with SEBD, their parents and their schools and this is often experienced as a very stressful and burdensome period in their lives.

Surprisingly little is known about the characteristics of these students and the various trajectories of additional support that students with SEBD follow over time. This seems unfortunate, given the importance of accommodating education to the specific needs of these students. The aim of the present study was to clarify these issues. To this end, we collaborated with two independent committees who determined eligibility for additional support. Students with SEBD were recruited during the process of applying for special education services. That is, when schools and parents of students with SEBD applied for eligibility for additional support, parents were asked to participate in our study.

The goal of this study is to provide more detailed information on the characteristics of participants and the procedures that serve as a foundation for the specific studies described in the consecutive chapters. To this end, we provide an overview of:

- our procedure to recruit participants and to collect data;
- the social, emotional, behavioral and academic functioning of students with SEBD before they received any special education services;
- the various forms of support that schools provided to students with SEBD before they received any special education services;
- the various trajectories of additional support that students with SEBD followed over time; and
- which waves of data collection are used in the following chapters to answer specific research questions about the development of students with SEBD in various educational contexts.

## METHOD

### Design

This prospective multi-informant study included students with SEBD who were in the process of applying for additional support and who all resided in regular education and had not received any additional support for their social-emotional and/or behavioral problems yet. We recruited participants across the school year of 2012-2013, after parents and schools applied for additional support, but before eligibility for special education services was established. After baseline assessment, independent committees determined eligibility for special education services. Subsequently, parents and schools agreed on the type of special education services provided and we followed the development of the students with SEBD for approximately 1,5 years with three additional waves of data collection in any educational context. We employed a prospective multi-informant design in which teachers, peers, and students themselves reported on different aspects of the behavioral, social-emotional, and academic functioning of the students with SEBD.

### Recruitment procedure

We collaborated with two independent committees who determined eligibility for additional support to recruit participants. These committees consist of experts in the field of SEBD and/or education, such as (school) psychologists, youth physicians, and social workers. The study's inclusion criteria were the following:

- parents and schools of students with SEBD had to apply for eligibility with independent committees who determined eligibility for additional support for students with SEBD;
- students with SEBD did not yet receive any special education services for their SEBD (it was their first time to apply for eligibility); and
- students with SEBD were in grade 2, 3 or 4 of primary education.

When schools and parents of students with SEBD applied for eligibility for additional support, parents were asked to participate in our study for two years (four waves of data collection). As parents and schools could apply for eligibility during the whole school year, students with SEBD could enroll in our study at various moments across the school year of 2012-2013. When parents decided not to participate, they were asked written permission to use their application file for research purposes and the procedure was ended. Parents who agreed to participate returned a signed consent form for the full study, after which we invited the schools of the students with SEBD to participate in our study. When schools declined participation, the respective parents were asked written permission to only use the application files for research purposes and the procedure was ended. When schools verbally consented to participate in (part of) the research, a first school visit was planned.

The students we recruited, came from schools for regular education and had not received any additional support for their social-emotional and/or behavioral problems yet. However, some of them had (temporarily or permanently) resided in schools for students with mild special educational needs, the so-called SBO schools. In the Dutch school system, the SBO school is meant for students who primarily deal with a variety of special educational needs such as learning problems, cognitive problems, and problems in task-related behavior (although they may also have mild behavioral problems). In an SBO school, students receive additional support primarily aimed at improving their learning and task-related behavior in order to be able to reach the educational attainments of regular education. Classrooms in SBO schools consisted of fewer students and students in SBO schools were educated solely with other students who also needed additional support due to a variety of mild special educational needs. The recruited students who attended an SBO school, did not receive any special education services exclusively for their social-emotional and behavioral difficulties.

When a school agreed to fully participate, this entailed: 1) a classroom survey session with all students and their teacher in the concerning class, and 2) an individual testing session with the student with SEBD. In addition, the application files of students with SEBD were examined to collect data on their social, emotional, behavioral and academic functioning and background variables (e.g., IQ and diagnoses). In some cases full participation was too burdensome for either the student with SEBD or the classroom or the teacher, so not all data could be collected for all students. The researchers discussed with the teachers in which part(s) of the study the school would be able to participate.

When the school participated in the classroom survey, schools sent out informative letters in which parents of classmates of the students with SEBD were asked to give passive consent for their child to participate in the classroom survey. We explained to classmates of the concerning student with SEBD that the classroom would participate in a study concerning school climate and social relationships and that one student was randomly drawn from the classroom to participate in an individual testing session. Informed consent was obtained from all individual participants included in the study.

At each wave of data collection, the first author and/or trained (under)graduate students (i.e., the researchers) also collected survey data during a classroom session with all students in the concerning class. Researchers gave verbal instructions after which students completed the questionnaires. In grades 2 and 3 and for students with reading or learning problems, the complete questionnaire was read out aloud. In addition, students received individual instruction when necessary. In the meantime, the teacher filled out a teacher questionnaire (see Measures). Student completion of all study measures was supervised by the researchers. After completion, the class was thanked for their participation.

Subsequently, individual testing took place. After a short break of 15 to 30 minutes, we tested the student with SEBD during an individual testing session with three standardized school achievement tests and one standardized measure for social-cognitive functioning (see Measures). If a student's application file did not contain IQ scores, two subtests of an intelligence test (see Measures) were also conducted to estimate the student's IQ score. After completion, the student with SEBD was thanked for his/her participation. The study was approved by the research ethics committee of the Utrecht University Faculty of Social Sciences, in accordance with the Dutch regulations for research with children.

The first wave (T1) was conducted when students with SEBD were in the process of determining eligibility for additional support. That is, the data were collected when the student with SEBD still resided in his/her original school without additional support – after parents and schools applied for additional support, but before eligibility for additional support was established. After the first wave, independent committees determined whether students with SEBD were eligible for additional support. That is, students had to show severe emotional and behavioral problems at school and at home or in the community (either formally diagnosed or not); their participation in education had to be severely limited by their emotional and behavioral problems (i.e., they showed impairments in learning and/or their interactions with school personnel and/or classmates); and the school's available support services had to be insufficient to meet the students' needs (LCTI, 2006; Meijer, 2003). More specifically, the independent committees evaluated whether students with SEBD fulfilled these criteria, based on information on students' social, emotional, behavioral, and academic functioning that was provided by the schools (independent of the present research data). The severity of students' emotional and behavioral problems was determined using standardized behavioral questionnaires (e.g., Child Behavior Checklist and Teacher Report Form; Verhulst & Van der Ende, 2013) and psychodiagnostic reports. Student participation in education and the sufficiency of available services were determined based on an educational report composed by the school, containing mostly qualitative data. This report contained information on, for instance, academic performance scores in various subjects; descriptions of students' learning behavior; descriptions of students' social behavior in interaction with teachers and classmates; and students' individual education plans. Furthermore, the available information could be supplemented with psychodiagnostic reports from youth care.

After eligibility for special education services was established, parents and schools collaboratively decided whether students with SEBD (a) would be included in their original classroom and would receive special education services there (i.e., *inclusion*) or (b) would be placed in a school for exclusive special education (i.e., *exclusion*). For the majority of the students with SEBD, either a decision for *inclusion* or *exclusion* was made.

Those who originally resided in schools for regular education and for whom such a decision was made, we could divide into two subgroups: *included* and *excluded* students with SEBD. However, 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; the independent committee rejected the application file of one student with SEBD; and several other students with SEBD were included in SBO schools and additionally received special education services for their SEBD there.

After the first wave of data collection, many students with SEBD transferred schools. In those cases, the new school was asked to participate in our study for the remaining waves of data collection following the procedure described above. The development of the students with SEBD was followed for approximately 1,5 years with three additional waves of data collection in any educational context. Peer data (which included typically developing peers, peers with SEBD, and peers with various mild special educational needs, depending on the school context where the student with SEBD received his/her special education services) were only collected when they resided in a classroom of a participating student with SEBD.

In these subsequent stages of our research in which we followed students' development, we had several students with SEBD who switched forms of additional support. In those cases, we contacted their parents to ask to participate in our study for either one or two additional waves of data collection, to be able to follow the development of these students for approximately 1,5 years after their switch. After parents consented to participate, we asked the new school to participate in our study for the remaining waves of data collection following the procedure described above. The flowchart in Figure 1 shows the various trajectories that students with SEBD have followed during the data collection process and the flowchart in Figure 2 maps the steps taken from participant recruitment until final *n*'s included in the 'pure' *included* and *excluded* subgroups in our analyses.

## Participants

As described above, we thus included all students with SEBD in our study (a) whose parents and schools applied for eligibility with independent committees who determined eligibility for additional support exclusively for students with SEBD and (b) who did not yet receive any special education services exclusively for SEBD (it was their first time to apply for eligibility). The majority came from schools for regular primary education ( $n = 64$ )<sup>1</sup> and a minority came from SBO schools for students with various

<sup>1</sup> We excluded the two students whose parents and schools stopped the application procedure for additional support ( $n = 2$ ).

special educational needs ( $n = 5$ ). Students resided in grade 2 (23.2%), grade 3 (39.1%) or grade 4 (37.7%) of primary education and classroom sizes ranged from 14 to 33 ( $M = 23.02$ ,  $SD = 4.76$ ). The sex distribution was 57 boys : 12 girls, ages ranged from 7 to 11 years old ( $M = 8.77$ ,  $SD = 1.05$ ), and the majority was of Dutch origin (97.1% Dutch; 1.5% Ethiopian; 1.5% Haitian<sup>2</sup>).

## Measures

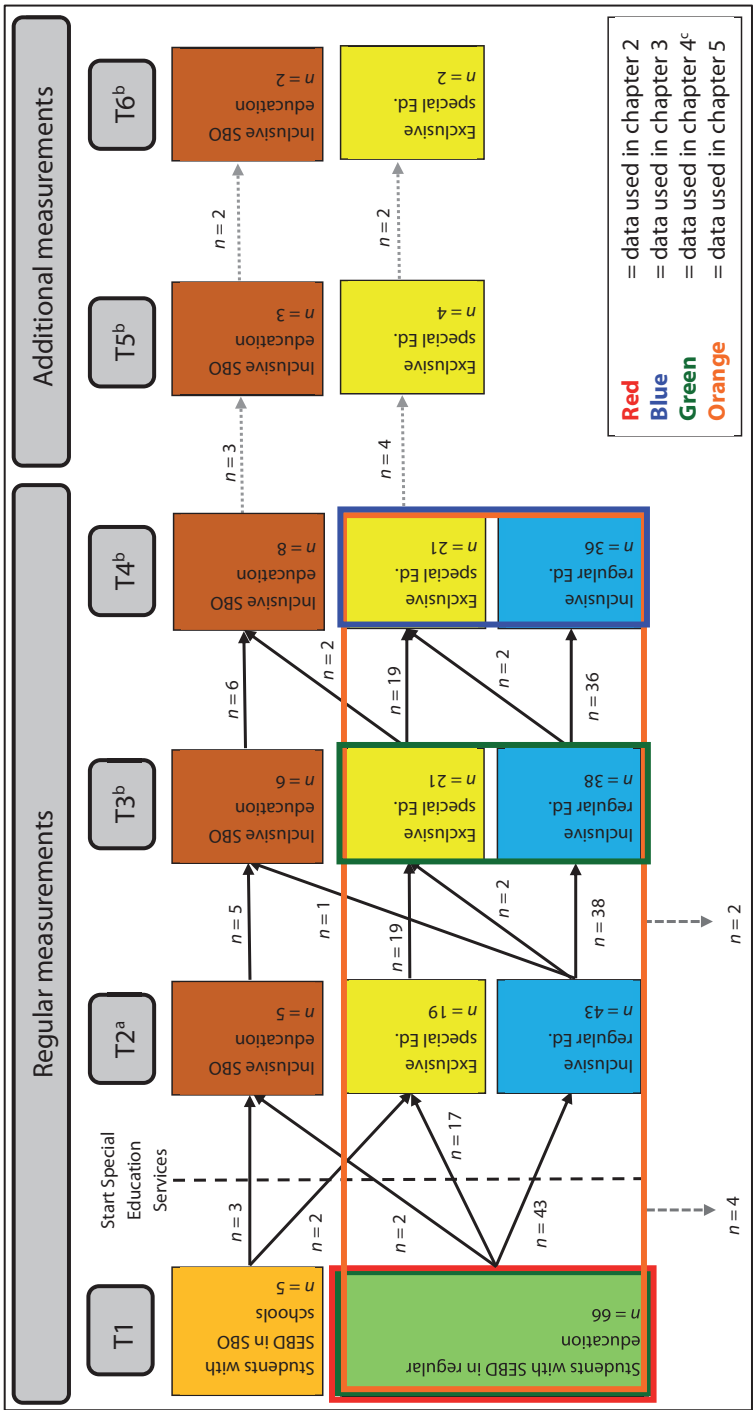
### *Emotional and behavioral functioning*

To measure emotional and behavioral functioning at home and in the school context, we derived scores for children's behavior problems from the files that schools and parents composed to apply for additional support with the independent committees (from now on: students' application files). The independent committees used either the Child Behavior Checklist (CBCL) and the Teacher Report Form (TRF; Verhulst & Van der Ende, 2013) or the Dutch parent-reported and teacher-reported Sociaal-Emotionele Vragenlijst (SEV) [social emotional questionnaire] (Scholte & Van der Ploeg, 2007). Both questionnaires have been shown valid and reliable in previous research among typically developing students and students with social-emotional problem behavior (Scholte & Van der Ploeg, 2007; Tick, Van der Ende, & Verhulst, 2007; Verhulst & Van der Ende, 2013). Furthermore, validity of the TRF and reliability and validity of the SEV are also established according to the criteria of the Dutch Commissie Testaangelegenheden Nederland (COTAN) [committee for test affairs] (Evers, Lucassen, Meijer, & Sijsma, 2010). Students' application files thus contained data of different questionnaires, but subscales of the CBCL/TRF and SEV that measure corresponding social-emotional problems have been shown to correlate with each other (Scholte & Van der Ploeg, 2007).

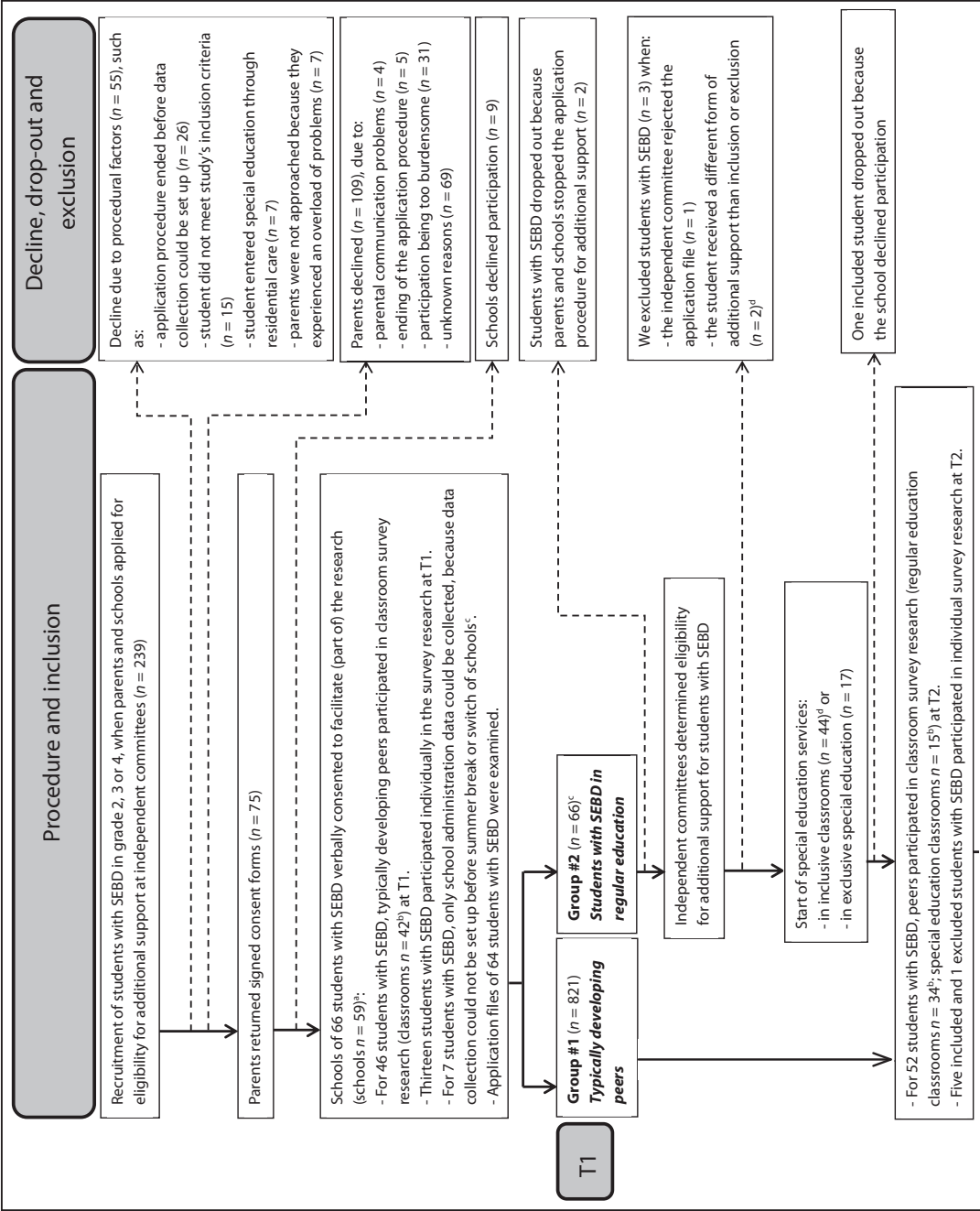
Although not all application files contained the raw CBCL/TRF and SEV scores, most of them (92.8%) contained classifications for 'normal' (CBCL/TRF percentiles 0-92; SEV percentiles 0-89), 'subclinical' (CBCL/TRF percentiles 93-96; SEV percentiles 90-94), and 'clinical' behavior (CBCL/TRF percentiles 97-100; SEV percentiles 95-100). To accommodate the different sources of information, we created new classifications on a three-point scale (0 = *normal*, 1 = *subclinical*, 2 = *clinical*) based on the rounded average classifications on corresponding CBCL/TRF and SEV subscales. We disregarded the slight differences in the cut-off criteria between CBCL/TRF and SEV as the subclinical and clinical categories concern extremely high percentiles in both cases. For internalizing behavior problems we used CBCL/TRF Anxious-Depressed and Withdrawn-Depressed subscales and SEV Anxiety, SEV Social Anxiety, and SEV Anxious-Depressed subscales.

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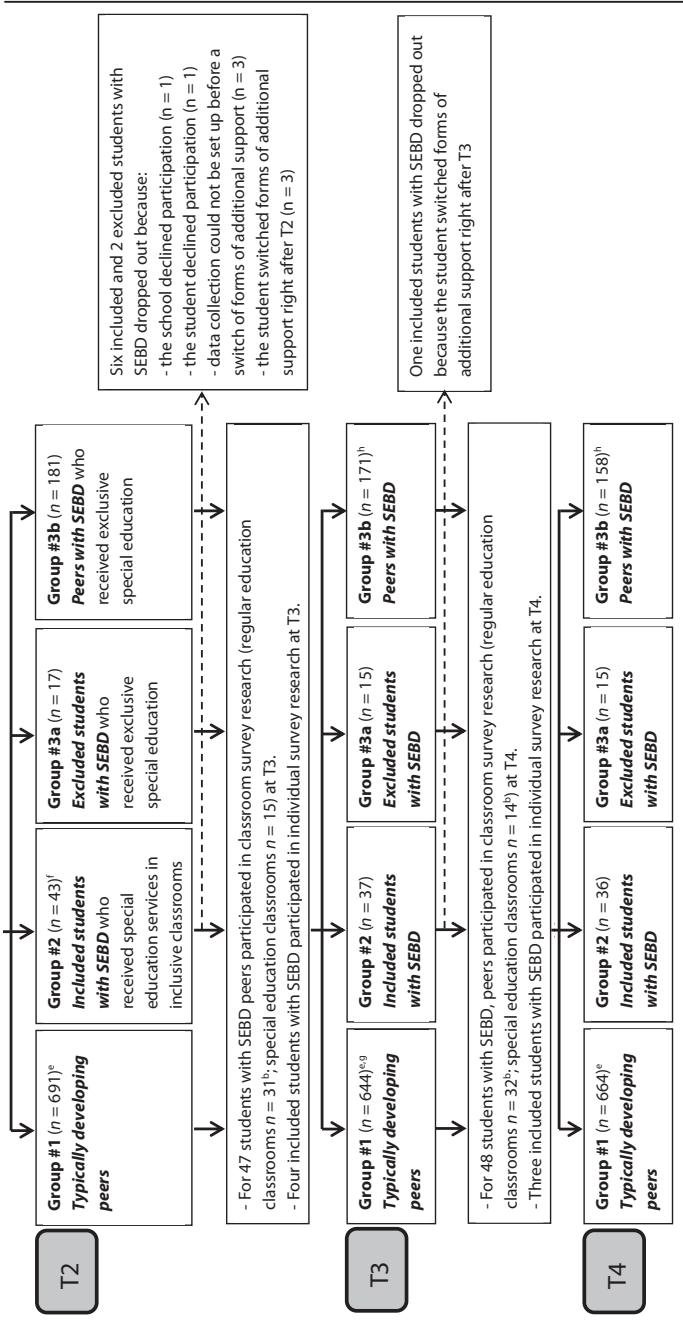
<sup>2</sup> Due to rounding off, percentages do not add up to 100% exactly.



**Figure 1** | Flowchart of the various trajectories that students with SEBD have followed during the data collection process.  
Note. <sup>a</sup> +/- 2,5 months after start of special education services; <sup>b</sup> +/- 5 months after previous wave (except for participants who just switched forms of special education services; in those cases data collection took place +/- 2,5 months after the switch). <sup>c</sup> Data of T2 were not included in the analyses conducted in chapter 4. To this end, T3 of the full study is considered as T2 in chapter 4.







**Figure 2** | Flowchart of recruitment procedure, inclusion and exclusion of participants, and drop-out during data collection.

Note. <sup>a</sup> Seven schools contained two students with SEBD who participated in the study resulting in lower  $n$  for participating schools. <sup>b</sup> Several classrooms contained two students with SEBD who participated in the study resulting in lower  $n$ 's for participating classrooms. <sup>c</sup> The samples in chapter 4 contain seven fewer students with SEBD (i.e., three included and four excluded students with SEBD), because the survey data that are analyzed in this chapter could not be collected for these students at T1. <sup>d</sup> The included sample in chapter 2 contains one included student more, since the first choice of parents and schools was to include one student with SEBD in regular education. After approximately two months, parents and schools decided to switch to a different form of additional support than including or exclusion. <sup>e</sup> All typically developing peers of included students with SEBD were reported. This implied that some typically developing peers already participated in the study at previous waves (e.g., T1), and that some new classmates participated at the respective wave only. <sup>f</sup> For two students, no data could be collected at T2 due to an upcoming switch of schools for regular education. The student participated in the new school from T3 on. <sup>g</sup> Only typically developing peers who were present at T1 and T3 (i.e., respectively T1 and T2 in chapter 4) could be included in the analyses of measurement invariance over time. Typically developing peers who participated only a single wave were excluded from the analyses, resulting in a lower sample size of TD students in chapter 4. <sup>h</sup> All peers with SEBD of excluded students with SEBD were reported. This implied that some peers with SEBD already participated in the study at previous waves (e.g., T2), and that some new classmates participated at the respective wave only.

For externalizing behavior problems we used CBCL/TRF Aggressive and Rule-Breaking subscales and SEV Oppositional-Defiant, Aggressive, and Antisocial subscales. For attention-deficit hyperactivity problems we used CBCL/TRF Attention Problems subscale and SEV Attention-Deficit, Hyperactivity, and Impulsivity subscales.

### ***Social functioning***

To assess social functioning in the school context, we collected data on student-teacher relationships and peer relationships. Teachers reported on the student-teacher relationship with the Student-Teacher Relationship Scale (STRS; Koomen, Verschueren, & Pianta, 2007). The STRS has been shown reliable and valid in previous research with a representative Dutch student population, including students with various special educational needs (Koomen, Verschueren, & Pianta, 2007; Koomen, Verschueren, Van Schooten, Jak, & Pianta, 2012) and with research of the COTAN (Evers et al., 2010). The STRS consists of the dimensions Closeness (11 items, e.g., "This child openly shares his/her feelings and experiences with me"), Conflict (11 items, e.g., "This child sees me as a source of punishment and criticism"), and Dependency (6 items, e.g., "This child reacts strongly to separation from me"). Teachers rated to what extent they thought the statements characterized their relationship with the student with SEBD on a 5-point scale (ranging from 1 = *definitely does not apply* to 5 = *definitely applies*). Cronbach's alpha coefficients ranged from .85 to .90 across subscales.

Students with SEBD themselves also reported on the student-teacher relationship with the Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015). The SPARTS has been shown reliable and valid with typically developing elementary school students, and students with internalizing problem behavior (Jellesma, Zee, & Koomen, 2015; Koomen & Jellesma, 2015; Zee & De Bree, 2017). The SPARTS consists of the dimensions Closeness (8 items, e.g., "I think I have a good relationship with my teacher"), Conflict (10 items, e.g., "My teacher treats me unfairly"), and Negative Expectations (7 items, e.g., "I wish my teacher could spend more time with me"). Students rated to what extent they thought the statements characterized their relationship with the teacher on a 5-point scale (ranging from 1 = *no, that is not true* to 5 = *yes, that is true*). Cronbach's alpha coefficients ranged from .71 to .84 across subscales.

In addition, we measured peer-reported peer relationships with sociometric ratings (Cillessen, 2009) which have been shown reliable and valid in previous research with typically developing students (Maassen, Van Boxtel, & Goossens, 2005; Maassen, & Verschueren, 2005). Furthermore, applicability of sociometric methods has been demonstrated in studies with children with emotional and behavioral problems as well (Breeman et al., 2015; Zakriski & Prinstein, 2001). Students rated all their classmates

individually on a 5-point Likert scale (ranging from -2 = *not at all* to 2 = *very much*) with respect to how well they liked that particular student (social acceptance) and how popular they perceived that particular student to be (perceived popularity). Furthermore, students rated their classmates on another 5-point Likert scale (ranging from 0 = *never* to 4 = *multiple times a week*) with respect to how often that particular student bullied other students (bullying) or was victimized by other students (victimization). We set a minimum class participation rate of 60% in order to obtain acceptable sociometric scores (Marks, Babcock, Cillessen, & Crick, 2013). We summed the scores received by each pupil. Because of the unequal number of pupils in the different classes, and because of the unequal number of scores of pupils within classes, these sum scores were converted into mean scores by dividing them by the number of raters (minus one because we disregarded self-scores in these measures). These final scores reflected social acceptance, perceived popularity, bullying and victimization among peers.

Students themselves also reported on peer relationships with the Relationships with Peers subscale of the Dutch school monitoring instrument for social-emotional development (*Volginstrument voor sociaal-emotionele ontwikkeling*; VISEON; Citogroep, 2004) which has been shown reliable and valid with typically developing students and students with special educational needs in elementary school (Cito, 2011; Citogroep, 2004) and according to the criteria of the COTAN (Evers et al., 2010). Students rated on a 4-point Likert scale (ranging from 1 = *Not true* to 4 = *True*) to what extent nine items applied to them (e.g., "I have a lot of friends in my classroom"). Cronbach's alpha was .83.

Furthermore, social-cognitive functioning was assessed with the Social Cognitive Skills Test (SCVT; Van Manen, Prins, & Emmelkamp, 2009). The SCVT has been shown reliable and valid with typically developing elementary school students and students with SEBD (Van Manen, Prins, & Emmelkamp, 2007) and with research of the COTAN (Evers et al., 2010). Students with SEBD were presented with three stories with corresponding story vignettes in which the main character was presented with a problem caused by someone else or by external circumstances. The story showed the consequences for the main character and the child had to answer eight questions measuring four levels of social-cognitive skills (e.g., egocentric level "How does the boy on picture 1 feel?"; subjective-perspective level "The girl on picture 4 and the gardener on picture 8 feel differently. How do they feel?"; self-reflective level "How will mother feel when she notices that the girl did not bring any groceries?"; and mutual perspective taking level "What can the boy do so that his mother is not surprised anymore?"). Answers were scored following the procedures described in the SCVT manual (Van Manen et al., 2007). Participants' total scores 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 .76.

### ***Academic functioning***

To measure academic functioning, we collected data on task-related behavior and on academic achievement. Teachers reported on task-related behavior with the Conscientious Task Attitude subscale of the Dutch school monitoring instrument for social-emotional development (VISEON; Citogroep, 2004). Teachers rated on a 4-point Likert scale (ranging from 1 = *right statement definitely applies* to 4 = *left statement definitely applies*) to what extent one of two opposing statements applied to the student with SEBD. The subscale consists of 11 items (e.g., “Student usually pays attention”) and Cronbach’s alpha was .92.

Students themselves also reported on task-related behavior with the Task Attitude subscale of the VISEON (Citogroep, 2004). Students rated on a 4-point Likert scale (ranging from 1 = *Not true* to 4 = *True*) to what extent 9 items applied to them (e.g., “When I am done with a task, I check my work to see if I made any mistakes”). Cronbach’s alpha was .74.

Furthermore, we derived scores for academic achievement from the students’ application files. Schools in The Netherlands are obliged to use a student monitoring system (SMS) to monitor student academic development. Schools may determine themselves which SMS they want to use; however, most schools use the measures from the Cito monitoring system primary and special education (*Cito Volgsysteem primair en speciaal onderwijs*; Cito LVS; Rijksoverheid, n.d.a) which have generally been found reliable and valid with research of the COTAN (Evers et al., 2010). Students’ application files thus contained scores for *reading fluency*, *reading comprehension*, *spelling ability*, and *mathematics ability* from this SMS. Based on the scores in the application files, we coded whether students had learning deficits in a particular domain of academic achievement or not (i.e., students belonged to the lowest-scoring 25% of the national grade norms).

### ***Demographic variables***

In addition to the information on demographic variables that we collected during the classroom survey research, we also collected information on background variables from the students’ application files. Background variables included total IQ, diagnoses, comorbidity, involvement in youth care, psychotropic medication use, family composition, and support in school. Intelligence, derived from the application files, was measured with established intelligence tests, such as the WISC III<sup>NL</sup> (Kort et al., 2005) or the WPPSI III – NL (Hendriksen & Hurks, 2009). Both tests have been shown suitable for use with typically developing children and children with various social-emotional problem behavior (Hendriksen & Hurks, 2009; Kort et al., 2005) and with research of the COTAN (Evers et al., 2010). If students’ application files did not contain total IQ scores,

we conducted the subtests Block Design and Vocabulary of the WISC III<sup>NL</sup> (Kort et al., 2005) during the individual testing session with the student with SEBD. Research has shown that this combination of Wechsler subtests is the most valid for estimating a child's cognitive capacities, even within a child psychiatric setting (Legerstee, Van der Reijden – Lakeman, Lechner-Van der Noort, & Ferdinand, 2004).

### **Data-analyses**

To characterize our sample of students with SEBD, we calculated descriptive statistics and we compared these with norm data for the typically developing population and/or students with SEBD. If norm data were not available, we interpreted students' scores based on the values of the original measurement scales.

## **RESULTS**

### **Social, emotional, behavioral and academic functioning**

The majority of students with SEBD whose parents and school applied for eligibility for additional support (98.6%) had previously or currently been in contact with one or more youth care institutions and fulfilled established diagnostic criteria for one or more DSM-IV diagnoses such as Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Autism Spectrum Disorder (ASD), and Attention-Deficit Hyperactivity Disorder (ADHD) (American Psychiatric Association, DSM-IV, 2000), with diagnoses made by psychiatrists/psychologists of these youth care institutions (see Table 1). More than half of the students with SEBD (55.2%) used psychotropic medication related to these diagnoses. The majority of students with SEBD lived in traditional two-parent families (72.5%). Mean IQ of students with SEBD was 100 (SD = 13.68).

Table 2 to 4 present the descriptive statistics of the emotional and behavioral functioning, social functioning, and academic functioning of students with SEBD, respectively. With respect to emotional and behavioral functioning, the majority of both parents and teachers of students with SEBD reported clinical scores (i.e., percentile scores  $\geq 95$ ) on internalizing problems, externalizing problems and/or ADHD symptoms. This indicates that students with SEBD showed severe problems that warrant professional (youth) care both within the home and the school context.

**Table 1** | Descriptive Statistics of Demographics of Students with SEBD

Measures	Sample Statistics					
Involvement youth care	<i>n</i>	No	Current	Waiting list	Finished	
	69	1.4%	69.6%	5.8%	23.2%	
Diagnosis <sup>a</sup>	<i>n</i>	ASD	ADHD	DBD	Learn	Other
	69	56.5%	46.4%	8.7%	34.8%	24.6%
Comorbidity (incl. learning problems)	<i>n</i>	Undiagnosed	One	Two	More	
	69	1.4%	42.0%	39.1%	17.4%	
Psychotropic medication use	<i>n</i>	No	Yes			
	67	44.8%	55.2%			
Family composition	<i>n</i>	Two parents	One parent	Stepparent	Other	
	69	72.5%	14.5%	10.1%	2.9%	
Support in school	<i>n</i>	Not present	Present			
Support for the teacher by someone in school (e.g., special education teacher, school psychologist)	63	22.2%	77.8%			
Support for the teacher by someone outside of school (e.g., school psychologist)	63	46.0%	54.0%			
Additional staff within school (e.g., teaching aid)	63	60.3%	39.7%			
Additional staff from outside of school (e.g., physical therapist, speech therapist)	63	73.0%	27.0%			
Special classroom within school	63	95.2%	4.8%			
Additional materials (e.g., modified curriculum, modified work space for the student)	63	41.3%	58.7%			
Dispensatory measures (e.g., student gets exemption of tasks)	63	77.8%	22.2%			
Other	63	92.8%	7.2%			

Note. ASD = Autism Spectrum Disorders (including Pervasive Developmental Disorder – Not Otherwise Specified [PDD-NOS]); ADHD = Attention Deficit Hyperactivity Disorder; DBD = Disruptive Behavior Disorders; Learn = Learning problems (e.g., Dyslexia, Dyscalculia).

<sup>a</sup> Percentages do not add up to 100%, because students with SEBD can have comorbid diagnoses.

**Table 2** | Descriptive Statistics of Emotional and Behavioral Functioning of Students with SEBD

	<i>n</i>	Normal	Subclinical	Clinical
<b>Parent-reported</b>				
Internalizing problems	64	29.7%	17.2%	53.1%
Externalizing problems	63	25.4%	12.7%	61.9%
ADHD symptoms	64	26.6%	21.9%	51.6%
<b>Teacher-reported</b>				
Internalizing problems	64	39.1%	9.4%	51.6%
Externalizing problems	64	28.1%	21.9%	50.0%
ADHD symptoms	65	36.9%	13.8%	49.2%

*Note.* Normal = no problematic functioning; Subclinical = considerable/significant problems that may warrant professional (youth) care; Clinical = severe problems that warrant professional (youth) care.

**Table 3** | Descriptive Statistics of Social Functioning of Students with SEBD

	<i>n</i>	Range	<i>M</i>	<i>SD</i>
<b>Teacher-reported student-teacher relationship</b>				
Closeness	63	1-5	3.78	.75
Conflict	62	1-5	2.42	.90
Dependency	64	1-5	2.88	.99
<b>Student-reported student-teacher relationship</b>				
Closeness	59	1-5	3.32	.83
Conflict	58	1-5	2.11	.95
Negative expectations	59	1-5	2.05	.83
<b>Peer-reported social acceptance</b>	45	-2 – 2	.23	.66
<b>Peer-reported perceived popularity</b>	45	-2 – 2	-.56	.45
<b>Peer-reported bullying</b>	35	0-4	.79	.65
<b>Peer-reported victimization</b>	35	0-4	1.03	.74
<b>Self-reported relationships with peers</b>	58	1-4	3.01	.71
<b>Social-cognitive skills</b>	58	1-100	44.42	25.19

**Table 4 |** Descriptive Statistics of Academic Functioning of Students with SEBD

	<i>n</i>	Range	<i>M</i>	<i>SD</i>
<b>Teacher-reported task-related behavior</b>	64	1-4	2.18	.75
<b>Student-reported task-related behavior</b>	58	1-4	2.52	.59
	<i>n</i>	No deficit	Deficit	
<b>Academic achievement</b>				
Reading fluency	69	68.1%	31.9%	
Reading comprehension	68	77.9%	22.1%	
Spelling ability	69	56.5%	43.5%	
Mathematics ability	69	78.3%	21.7%	

With respect to social functioning, both students with SEBD themselves and their teachers reported that the student-teacher relationship was characterized by relatively high levels of conflict, indicating relatively high levels of negativity, unpredictability, and unpleasantness. In addition, teachers reported that the student-teacher relationship was also characterized by relatively high levels of dependency, indicating that students with SEBD were perceived as being developmentally inappropriately overreliant upon and possessive of their teachers. In relationships with peers, students with SEBD as a group seemed to have neutral sociometric status. That is, they were not particularly well-liked by their peers, but they were not particularly disliked either. Students with SEBD themselves seemed quite satisfied with their relationships with peers. They reported that, generally, they often (dare to) interact with their peers and often experience positive interactions with their peers. With respect to perceived popularity among peers, however, results indicated that students with SEBD as a group were perceived as being relatively unpopular among their peers. In addition, peers reported that students with SEBD were neither frequently involved in bullying as a perpetrator, nor as a victim. Furthermore, students with SEBD showed average social-cognitive skills in comparison with their typically developing peers.

With respect to academic functioning, students with SEBD reported that they sometimes/often show a conscientious task attitude. That is, they feel they sometimes/often put effort in their work, focus on their task and show perseverance. Teachers also seem to perceive a variable task attitude among their students with SEBD. They generally perceive the task attitude to be in between conscientious and unconscientious. Furthermore, students with SEBD relatively often show deficits in reading fluency and spelling ability.



## Support provided in the original schools

We found quite some variation in the availability of various facilities that schools could use to directly or indirectly provide support to their students with SEBD. Facilities that were available most often included support for the teacher by someone in or outside of school (respectively 77.8% and 54.0%), the use of additional materials (58.7%) and additional staff support for the student with SEBD from within the school (39.7%). However, the fact that all of the schools who participated in our study applied for special education services for their student with SEBD implied that these available support services were insufficient to meet the students' needs.

## Trajectories

As can be seen in Figures 1 and 2, students with SEBD followed various trajectories in which they received additional support for their SEBD<sup>1,3</sup>. We found two main trajectories. The first, and most prevalent main trajectory was the trajectory in which students with SEBD started in regular education, subsequently received special education services in inclusive classrooms for regular education, and stayed there over time (i.e., *included* students with SEBD). We later examined students in this trajectory as our *included* students with SEBD subgroup ( $n = 36$ ). The second main trajectory was the trajectory in which students with SEBD started in regular education, subsequently received special education services in exclusive classrooms for special education, and stayed there over time (i.e., *excluded* students with SEBD). We later examined students in this trajectory as our *excluded* students with SEBD subgroup ( $n = 15$ ).

In addition to the two main trajectories, we had various exceptions. Several students with SEBD switched forms of additional support (i.e., *switchers* with SEBD). For instance, four students with SEBD starting in regular education who first received special education services in inclusive classrooms for regular education, later switched to placement in exclusive classrooms for special education ( $n = 2$  at T2 and  $n = 2$  at T3, respectively). Another example is of a student with SEBD starting in regular education who first received special education services in an inclusive classroom for regular education, later (i.e., at T3) switched to placement in a SBO school for students with various special educational needs in which additional support for SEBD was received. Two other students with SEBD starting in regular education who first were placed in exclusive classrooms for special education, later (i.e., at T4) switched to placement in SBO schools for students with various special educational needs in which they received additional support for SEBD. Depending on the timing of the switch, these *switchers*

3 One student with SEBD starting in regular education did not follow any trajectory of additional support, since the independent committee rejected the application file.

were either included in our study's analyses or not.

Furthermore, a minority of the students with SEBD who enrolled in our study came from SBO schools for students with various special educational needs ( $n = 5$ ). Three of them stayed in their original SBO school and received additional support for their SEBD there (i.e., SBO<sub>1</sub> included students with SEBD) and two of them were placed in exclusive classrooms for special education (i.e., SBO excluded students with SEBD). Because these groups were so small, we decided to exclude them from our study. In addition, two students with SEBD who started in regular education, were placed in SBO schools for students with various special educational needs in which they received additional support for their SEBD (i.e., SBO<sub>2</sub> included students with SEBD). These students were also excluded from our study<sup>4</sup>.

## DISCUSSION

Students with SEBD comprise a heterogeneous population with a variety of problems at school and at home or in the community, such as severe internalizing and externalizing problems and ADHD symptoms that warrant professional (youth) care. The majority was diagnosed with one or more disorders, such as Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Autism Spectrum Disorder (ASD), and Attention-Deficit Hyperactivity Disorder (ADHD). Although the problems that students with SEBD face are diverse, other research has also consistently shown that they are severe, pervasive, and chronic, resulting in adverse prospects in later life (e.g., Cannon, Gregory, & Waterstone, 2013).

Due to their emotional and behavioral problems, the participation in education of students with SEBD at T1 was severely limited. That is, they showed impairments in their interactions with school personnel (i.e., student-teacher relationships were characterized by relatively high levels of conflict and dependency) and with classmates (i.e., their peers perceived them as relatively unpopular), although students with SEBD themselves reported that they often experienced positive interactions with their peers as well. Furthermore, students with SEBD showed impairments in learning (i.e., frequent deficits in reading fluency and spelling ability). Although a substantial percentage of schools had opportunities to provide support for the teacher, to use additional materials and/or to get additional staff support from within the school, these available support services were insufficient to meet the students' needs. Students with SEBD, their parents

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4 One of these students participated as an *included* student with SEBD in chapter 2, since the first choice of parents and schools was to include this student in regular education. After approximately 2 months, parents and schools decided to switch to a different form of additional support than inclusion or exclusion (also see Figure 2, note d).

and schools thus realized and agreed that additional special educational services were needed.

To this end, parents and schools had to apply for eligibility for additional support and they had to collect a lot of information to build up the student's application file. After the application files were assessed by independent committees and eligibility for additional support was established, parents and schools collaboratively decided which type of support would be provided. Although the majority of the students with SEBD who participated in our study were over time provided with additional support in the setting of their initial placement choice, we also had several students with SEBD who switched forms of additional support.

Regarding the various trajectories of additional support that the students with SEBD who participated in our study followed, we found that the majority of the students who started in regular education, subsequently received special education services in inclusive classrooms for regular education, and stayed there over time (i.e., *included* students with SEBD). This is in line with the international movement towards inclusive education, which has, in the last decades, taken place in The Netherlands as well as in many other countries (CRPD; see United Nations, 2006; Ledoux, Roeleveld, Van Langen, & Smeets, 2012; Oh-Young & Filler, 2015). In addition, we found a substantial number of students with SEBD who started in regular education, subsequently received special education services in exclusive classrooms for special education, and stayed there over time (i.e., *excluded* students with SEBD). This is in line with the perspective that some students' needs are individualized to such an extent (e.g., along multiple dimensions as pace, duration, and intensity) that they can be met only in exclusive classrooms for special education (Brigham, Ahn, Stride, & McKenna, 2016; Kauffman, Anastasiou, Badar, Travers, & Wiley, 2016; and Kauffman & Badar, 2014). In addition to these two main trajectories, we had various exceptions, which may reflect the current transition from a dual system of special education services (i.e., inclusive regular education vs. exclusive special education) into a continuum of special education services for students with SEBD in The Netherlands within collaborative networks of regular and special education schools (De Boer & Van der Worp, 2016). Remarkably, however, we did not find a single trajectory in which a student with SEBD who received special education services 'switched back' to regular education without additional support. This is in line with reports indicating that the percentage of students switching back to regular education without additional support is relatively low (Inspectorate of Education, 2013a, 2014, 2015, 2016), and seems to indicate that many students with SEBD have such severe problems that continuous provision of special education services – either in inclusive or exclusive settings – is necessary (De Boer & Van der Worp, 2016). It thus appears that the much desired 'normalizing' function of the provision of special education services as

a means to enable students to consequently participate in regular education without additional support is not evident to date.

An important limitation of this study is the modest sample size. Given that we recruited students with SEBD, their parents and schools during the often stressful and burdensome process of applying for additional support, many parents and students with SEBD denied participation in our study, resulting in small sample sizes. Current advances in statistics, however, provide possibilities to handle small samples with greater accuracy (e.g., VanBrabant, Van de Schoot, & Rosseel, 2015). We therefore analyzed the data of students with SEBD who followed the two main trajectories with Bayesian statistics and we included *switchers* in either *included* or *excluded* trajectories when they switched after the waves included in the analyses. Nonetheless, these statistical innovations may partly compensate for limited statistical power with small samples, but cannot resolve the impact of parental decline to participate on the representativeness of our sample.

The study outlined in this chapter is the basis for the consequent chapters in this dissertation. Chapter 2 examined cross-sectionally which factors were related to placement choices for inclusive regular education or exclusive special education for students with SEBD. As can be seen in the red box in Figure 1, this chapter includes the data of T1 of all students with SEBD starting in regular education who at T2 receive special education services in inclusive classrooms for regular education (i.e., *included* students with SEBD) or in exclusive classrooms for special education (i.e., *excluded* students with SEBD).

In chapter 3, the outcomes of *included* and *excluded* students with SEBD were examined cross-sectionally, after they have received special education services in either setting (see blue box in Figure 1). That is, only the students with SEBD who followed the two main trajectories were included in chapter 3.

Chapter 4 examined measurement invariance of three VISEON subscales that we used in our study, to see whether they measured similar constructs among typically developing students and students with SEBD and similar constructs over time. To this end, data of T1 and T3 were used (see green box in Figure 1). That is, to examine measurement invariance across student groups at T1, all students with SEBD starting in regular education<sup>5</sup> were compared with typically developing peers. To examine measurement invariance over time, all students with SEBD who followed the *included* and *excluded* trajectories until T3, were included in chapter 4. Thus, *switchers* who switched at T4 were also included in either *included* or *excluded* trajectories.

Chapter 5 investigated developmental trajectories and differences in levels of social-

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5 Except for seven students with SEBD (i.e., three included and four excluded students with SEBD) for whom the survey data that are analyzed in this chapter could not be collected at T1.

emotional functioning among *included* and *excluded* students with SEBD and typically developing peers. To this end, data of T1 through T4 were used (see orange box in Figure 1). Only the students with SEBD who followed the two main trajectories were therefore included in chapter 5.

This study illustrates the complexity of our sample for which various factors are at play. All in all, we conducted an intensive data collection process, because the students with SEBD who consented to participated followed various trajectories in different schools. Future research will definitely be needed to address all the factors that we disregarded in our study due to these pragmatic problems, such as school level factors, differences in exact timing of measurements, and missing data. Yet, with current advances in statistics, we were able to draw tentative conclusions about this special population that is only scarcely researched and not well-understood.

In conclusion, students with SEBD comprise a heterogeneous group with severe problems at school and at home or in the community, resulting in limitations in their participation in education. Many students with SEBD are over time provided with additional support in the setting of their initial placement choice, but several students with SEBD also switched forms of additional support. Yet, not a single student with SEBD who received special education services 'switched back' to regular education without additional support. Thus, the provision of special education services – regardless of setting – is not a means to 'normalize' the school functioning of students with SEBD, ultimately resulting in return to regular education without any additional support. Instead, students with SEBD have such severe problems that continuous additional support is necessary.



## **WHICH SCHOOL FOR WHOM?**

### PLACEMENT CHOICES FOR INCLUSION OR EXCLUSION OF STUDENTS WITH SOCIAL, EMOTIONAL AND BEHAVIORAL DIFFICULTIES IN PRIMARY EDUCATION

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*Which school for whom? Placement choices for students with  
social-emotional and behavioral difficulties in primary education.*

The supplementary material to this chapter is available at: [goo.gl/ik1vX6](https://goo.gl/ik1vX6)

Author contributions: I. Zweers conceptualized the study, J. O. Bijstra, B. Orobio de Castro, N. T. Tick, and R. van de Schoot gave advice and feedback. I. Zweers and trained graduate students collected the data. I. Zweers analyzed the data and wrote the manuscript. R. van de Schoot provided feedback on the analyses and the manuscript. J. O. Bijstra, B. Orobio de Castro, and N. T. Tick provided feedback on the manuscript.

## ABSTRACT

This study examined which factors were related to placement choices for inclusive regular education or exclusive special education for students with social/emotional/behavioral difficulties (SEBD). Three student subgroups aged 6 to 11 participated: 45 *included* and 17 *excluded* students with SEBD, and 772 *typically developing* peers. Before placement choices had been made, we collected data from students and teachers during classroom surveys and individual testing sessions with students with SEBD, and from application files. Using Bayesian statistics, we found that included and excluded students with SEBD were similar in student functioning prior to placement, while teachers of included students had lower self-efficacy and more positive attitudes towards inclusion than teachers of excluded students. Furthermore, included and excluded students perceived their social-emotional functioning more negatively than typically developing peers. Hence, although considered essential by existing policies, placement choices might not depend on student functioning, whereas teacher factors may play a role.

**Keywords:** social/emotional/behavioral difficulties, placement choice, self-perception, teacher self-efficacy, teacher attitude, Bayes



## INTRODUCTION

Students with social, emotional and behavioral difficulties (SEBD) have mental health problems that substantially disrupt their ability to function emotionally, socially, and academically (Cannon, Gregory, & Waterstone, 2013). Specifically, the majority of students with SEBD shows both internalizing and externalizing behavior problems (Furlong, Morrison, & Jimerson, 2004; Gresham & Kern, 2004; Landrum, 2011), problems in social functioning, such as difficulties in peer and adult relationships (Furlong et al., 2004; Gresham & Kern, 2004), and impaired task-related behavior and academic performance, such as lower achievement scores (Cannon et al., 2013; Furlong et al., 2004; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004) for example in reading (McKenna, Kim, Shin, & Pfannenstiel (2017). These broad descriptions suggest that students with SEBD comprise a considerably heterogeneous population of students with a variety of disorders, such as Conduct Disorder (CD), Oppositional Defiant Disorder (ODD), Autism Spectrum Disorder (ASD), and Attention-Deficit Hyperactivity Disorder (ADHD). Although the problems that students with SEBD face are diverse, research has consistently shown that they are severe, pervasive, and chronic, resulting in adverse prospects in later life (e.g., Cannon et al., 2013).

Students with SEBD whose emotional and behavioral problems severely limit their participation in regular education have special educational needs. Schools can provide these students with the additional support they need. In the Netherlands, schools and parents have to apply for eligibility for special education services with independent committees. Once eligibility has been established by the independent committees a *placement choice* has to be made between two possibilities. One possibility is that special education services such as an individually adjusted work place or remedial teaching, will be provided in the regular education classroom (i.e., *inclusion*) in which students with SEBD are educated together with typically developing peers all of the time. In some cases, students with SEBD may leave the classroom for a limited amount of time per week to receive supplementary services, such as social skills training and/or professional behavioral support, but they receive their core instruction within the regular education classroom. The other possibility is that the student with SEBD will receive special education services in a school for special education that exclusively educates students with special educational needs (i.e., *exclusion*). That is, students with SEBD are educated solely with students who also need additional support in a specialized setting and they do not have opportunities to interact with typically developing peers in school. They reside in smaller classrooms in which they follow a more structured daily educational program, and they are supported by teachers trained to predict, understand, and replace disruptive and inappropriate behavior. Hence, applied to the educational situation of

students with SEBD, grossly three subgroups of students can be distinguished: typically developing students receiving no additional support, included students with SEBD receiving additional support in regular education, and excluded students with SEBD receiving additional support in settings for exclusive special education for students with SEBD. In light of the far-reaching consequences of these placement decisions for the future of children with SEBD (e.g., students who received exclusive special education find less often a job and are more often dependent on unemployment benefits than students in inclusive education; De Roos & Bloem, 2014), surprisingly little research has examined the determinants and consequences of these placement choices.

The Dutch educational system described above originated from the international movement towards inclusive education, which has, in the last decades, taken place in The Netherlands as well as in many other countries (CRPD; see United Nations, 2006; Ledoux, Roeleveld, Van Langen, & Smeets, 2012; Oh-Young & Filler, 2015). It is unclear, however, which educational context is best for the development of students with SEBD. While advantages of inclusion for the development of students with SEBD have been highlighted by some researchers and practitioners (e.g., Ruijs & Peetsma, 2009; Van Leeuwen, Thijs, & Zandbergen, 2009), others have emphasized the benefits of exclusive special education (Crnic & Neece, 2015; Kaufmann & Badar, 2014; Lane, Wehby, Little, & Cooley, 2005). Reasons to include students with SEBD in regular education are that exposure to the regular curriculum increases academic knowledge and skill acquirement, and that students with SEBD who are surrounded by typically developing peers, will be provided with ample opportunities to improve social skills. Reasons to provide special education services in exclusive schools for special education are that students may benefit from highly specialized environments in which instruction is tailored to their unique needs and in which professional and paraprofessional behavioral/therapeutic support is available in the school (Lane et al., 2005; Tankersley, Landrum, & Cook, 2004).

It is important to note that both educational contexts (inclusive or exclusive) 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; and Kauffman & Badar, 2014). With the movement towards inclusive education, some have come to believe that inclusive placement is most likely the preferred placement for students with SEBD, avoiding alternative placements in all cases (see Kauffman et al., 2016 for a discussion of this issue). While the strive for appropriate inclusion is honorable, it cannot come at the expense of effective instruction. Rather than considering the location or place of education, one should first consider what special education services are necessary to optimize students' learning (Kauffman et

al., 2016; Kauffman & Badar, 2014; Brigham et al., 2016). When the special education services that a student with SEBD needs can be implemented in inclusive classrooms for regular education, 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. Hence, the special education services needed to provide the student with SEBD with effective instruction must be considered first, before it can be decided in what location or place effective instruction will be provided.

In addition, solely the placement in exclusive classrooms for special education does not guarantee that student needs will be met. In fact, a recent study of McKenna and Ciullo (2016) showed that a considerable amount of instructional time was lost to managing problem behaviors and class transitions, which was consistent with older studies showing that students with SEBD often receive less instruction than their typically developing peers (e.g., Steinberg & Knitzer, 1992). Moreover, teachers infrequently used evidence-based instructional practices to improve student achievement, even though teachers themselves reported that they did apply evidence-based instruction. Therefore, it can be questioned whether placement in these settings guarantees that student needs will be met.

In practice, however, placement choices are daily business in schools, and a placement choice is based on various criteria related to the student's functioning without receiving additional support. Based on a combination of schools' and parents' observations of the problems and subsequent needs of the student, and the schools' ability to manage student behaviors, schools and parents consider in which educational context the needs of this specific student with SEBD will be met best. Yet, not much is known about how these different aspects contribute to placement choices. A first step towards examining in which educational context students with SEBD develop best, is to investigate which factors are related to such choices.

### **Student functioning**

Studies that compared included and excluded students with SEBD have suggested that placement decisions are related to students' emotional and behavioral functioning before placement. Specifically, studies have consistently found that students with SEBD who were placed in exclusive special education showed more severe externalizing behavior problems (Bijstra, 2004; Drost & Bijstra, 2008; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009) and internalizing behavior problems (Drost & Bijstra, 2008; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009; Stoutjesdijk, Scholte, & Swaab, 2012) before

placement choices had been made, than students with SEBD who were included in regular education. Bijstra (2004), in contrast, did not find differences between groups in internalizing behavior problems. In addition, research has shown that students with SEBD who were later placed in exclusive special education were more often classified with attention-deficit hyperactivity-impulsivity disorders (ADHD) before placement choices had been made than students with SEBD who were later included in regular education (Drost & Bijstra, 2008; Stoutjesdijk & Scholte, 2009), although Stoutjesdijk and Scholte (2009) did not find differences between groups in parent- and teacher-reported attention problems.

Factors related to student-teacher interactions and peer-interactions may also play a role in placement choices. Studies that examined student-teacher relationships have consistently found that students with SEBD have worse student-teacher relationships than typically developing students, irrespective of regular or special educational context (e.g., Breeman et al., 2015; Ledoux et al., 2012; Little & Kobak, 2003). Student-teacher relationships of students with SEBD were characterized by less closeness (i.e., openness, warmth, and security), and by more conflict (i.e., negativity, discordance, unpredictability, and unpleasantness) and dependency (i.e., overreliance and possessiveness) (Ledoux et al., 2012). However, these studies compared students who reside in different educational contexts; after placement choices have been made. Teachers in exclusive special education are trained to meet the multiple needs of students with SEBD (Kauffman & Badar, 2014; Lane et al., 2005), which may impact their student-teacher relationship, whereas before placement, teachers in regular education may feel unprepared to support students with SEBD (e.g., Jones & Chronis-Tuscano, 2008).

Studies that examined peer relationships of students with SEBD have found that peer relationships of this population differ between regular or special educational contexts. In regular education, students with SEBD generally have worse relationships with peers than typically developing students (Poulin & Boivin, 2011; Useche, Sullivan, Merk, & Orobio de Castro, 2014), but not all studies support this (Farmer & Hollowell, 1994). In exclusive special education, students with SEBD have also been found to have worse peer relationships than typically developing students in regular education (Little & Kobak, 2003), although another study has even found better peer relationships for aggressive children in exclusive special education than for aggressive children in regular education (Useche et al., 2014). Again it is unknown whether such differences already were present before placement choices were made. In regular education, students with SEBD are surrounded by typically developing peers; a context in which deviation from behavioral norms may result in unpopularity and rejection (Boivin, Petitclerc, Feng, & Barker, 2010; Useche et al., 2014). In exclusive special education students with SEBD are

surrounded by peers with SEBD. Their problems may therefore have less impact on their likeability among peers (Useche et al., 2014).

Academic functioning may also play a role in placement choices. Studies that compared academic functioning of included and excluded students with SEBD have suggested that the latter group performs worse on task-related behavior (Ledoux et al., 2012), but for reading, spelling, and math mixed results have been found. Specifically, some studies have shown that students with SEBD who were referred to exclusive special education performed worse on reading (Lane et al., 2005; Ledoux et al., 2012), spelling (Lane et al., 2005; Stoutjesdijk & Scholte, 2009), and math (Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009) than included students with SEBD. Other studies, in contrast, have shown equally low performance for both groups in reading (Ledoux et al., 2012; Reid et al., 2004; Stoutjesdijk & Scholte, 2009), spelling, and math (Reid et al., 2004). Again, it is not known how these groups functioned before placement choices were made, given that the role of academic functioning on placement choices has yet to be determined.

In order to know whether placement choices for students with SEBD are related to various aspects of student functioning, their behavioral, social, and academic functioning should be compared prospectively when they still reside in regular education without additional support: *before* placement in different kinds of schools. To our knowledge such research – combining behavioral, social, and academic functioning of students with SEBD before placement choices have been made – does not exist. One could expect, though, that students with SEBD who show the most severe problems in student functioning, behaviorally, socially and academically, have more impact on class functioning than students with SEBD with less severe problems. As they are the most difficult to teach and support for teachers (Buttner, Pijl, Bijstra, & Van den Bosch, 2016; Goei & Kleijnen, 2009), this may result in placement in exclusive special education, whereas students with SEBD who show fewer problems in student functioning may be included in regular education with special education services.

### Teacher factors

Although aspects of student functioning have traditionally been deemed essential for placement choices (LCTI, 2006; Meijer, 2003), teachers may play an important role in placement choices as well (Severson & Walker, as cited in Gresham & Kern, 2004). Teachers, for instance, find the disruptive and rule-breaking behavior and problems with task-related behavior – characteristic of students with SEBD – the most difficult behaviors to deal with in the classroom (e.g., Buttner et al., 2016; Meijer, 2001; Goei & Kleijnen, 2009). Relatedly, students with SEBD generally have more often been placed in restrictive educational settings than students with other special educational needs

(Becker et al., 2011; De Greef & Van Rijswijk, 2006). Since substantial differences exist between schools, and even between individual teachers, in their ability to handle students' disruptive behavior (Buttner et al., 2016; Furlong et al., 2004), it is important to also examine which teacher factors are related to placement choices for students with SEBD.

Two important teacher factors have been known to influence teachers' ability to deal with students' problem behavior. The first factor is teacher self-efficacy (Goei & Kleijnen, 2009; Tsouloupas, Carson, Matthews, Grawitch, & Barber, 2010) or "the extent to which a teacher believes that she or he can influence students' behavior and their academic achievement, especially of pupils with difficulties or those with particularly low learning motivation" (Friedman & Kass, 2002, p. 675). The disruptive behavior of students with SEBD not only undermines the influence of teachers on their behavior and academic achievement, but it may also limit the teacher's influence on other students' behavior and achievement. Consequently, many teachers find it especially challenging to teach and support classrooms including students with SEBD (Goei & Kleijnen, 2009). Yet, the question is whether teacher self-efficacy is also related to placement decisions. That is, are teachers with limited beliefs in their knowledge and skills to handle and teach students with SEBD more likely to refer students with SEBD to exclusive special education? While various studies have shown that highly self-efficacious teachers were more tolerant towards problematic students (e.g., Tsouloupas et al., 2010; Zee & Koomen, 2016), associations between teacher self-efficacy and placement choices have not been straightforward. Specifically, although older studies have suggested that highly self-efficacious teachers were less likely to refer problematic students to exclusive special education (e.g., Hughes, Barker, Kemenoff, & Hart, 1993; Meijer & Foster, 1988; Soodak & Podell, 1993), more recent studies have found no associations between teacher self-efficacy and placement choices (e.g., Egyed & Short, 2006; Gibbs & Powell, 2012; Tejada-Delgado, 2009). The second teacher factor is the attitudes a teacher has towards inclusive or exclusive education (Van der Veen, Smeets, & Derriks, 2010) for students with special educational needs. Research has consistently shown that teachers who had more positive attitudes towards inclusive education were less likely to refer problematic students to exclusive special education (e.g., Avramidis & Norwich, 2002; Meijer, 2001; Van der Veen et al., 2010).

### **Self-perceived social-emotional functioning**

Although schools and parents jointly indicate that students with SEBD need additional support in school, we know surprisingly little about students' own perceptions of their social-emotional functioning and to what extent their perceptions are related to placement choices. Instead, the input for determining eligibility for additional support

is mostly a shared effort of parents and schools. While students' experiences have been considered critical aspects of their school development (Den Brok, Brekelmans, & Wubbels, 2004), the self-perceived social-emotional experiences of students with SEBD in school have rarely been assessed within the context of placement choices. This raises the question whether students with SEBD themselves also experience that they have problems in social-emotional functioning as compared to typically developing peers, and if so, whether the extent to which they do is related to the placement choice that is made. When students with SEBD who will be included, can already be distinguished for students who will be excluded based on their self-perceptions, self-perceptions might be an indicator for placement in either inclusive regular education or exclusive special education. This would highlight the use of self-reports, not only because students will be able to directly express their opinions (instead of indirectly via schools or parents), but also because self-reports could be useful instruments to inform future placement decisions in addition to schools' and parents' observations of the problems and subsequent needs of the student.

Research on self-perceived social-emotional functioning of students with SEBD in comparison with typically developing peers is scarce (Flower, McKenna, Haring, & Pazey, 2014). Among typically developing children, behavior problems have mostly been related to elevated positive self-views (David & Kistner, 2000; Orobio de Castro, Brendgen, Van Boxtel, Vitaro, & Schaeper, 2007). Children with behavior disorders, in contrast, have reported more negative self-views than typically developing peers (Ekornås, Heimann, Tjus, Heyerdahl, & Lundervold, 2011) and children with emotional disorders seem to hold even more negative self-perceptions than both typically developing peers (Chansky & Kendall, 1997) and peers with behavior disorders (Ekornås et al., 2011). Furthermore, both students with a variety of special needs in regular education (e.g., internalizing/externalizing behavior problems, cognitive impairments, communication problems, and learning problems) and students with SEBD in exclusive special education report more negative social-emotional functioning than typically developing students (Ledoux et al., 2012). It is unknown, however, whether the self-perceived social-emotional functioning of students with SEBD differs between those who will later receive special education services in an inclusive classroom in regular education and those who will later be excluded and placed in exclusive special education.

### **Present study**

The literature review above shows that there is some variability in results found by studies examining behavioral, social, and academic functioning in students with SEBD included in regular education and in exclusive special education. This is due to the fact



that studies differed in the questions they addressed, (e.g., comparison of different student groups and different educational contexts), in their use of informants (i.e., parent-, teacher-, peer-, and self-reports), in the aspects of student functioning that they examined, and sample size. Therefore, it is difficult to reach conclusions about possible differences before placement between students with SEBD who will be included in regular education (i.e., included students with SEBD) and those who will be placed in exclusive special education (i.e., excluded students with SEBD). Clearly, a careful examination is needed of which aspects of student functioning and which teacher factors play a role. Moreover, research should simultaneously examine the behavioral, social, and academic functioning of students with SEBD and compare these aspects when both groups still reside in the same context of regular education (i.e., before placement choices have been made), instead of comparing groups of students with SEBD in one context (i.e., while receiving special education services in regular education) with groups of students with SEBD in a completely different context (i.e., while being placed in exclusive special education).

We conducted a descriptive multi-informant study in which we addressed two research goals. The first goal was to examine which aspects of student functioning and which teacher factors were related to placement choices for students with SEBD. To this end, we examined the two subgroups of included and excluded students with SEBD with respect to their behavioral, social, and academic functioning, and the self-efficacy and attitudes towards inclusive education of their teachers, before placement choices had been made. In selecting our teacher and student factors, we took an eclectic approach. That is, we combined standard Dutch practice guidelines for independent committees who determined eligibility for special education services with an evaluation of important factors as indicated by the literature.

For student functioning we hypothesized, based on the majority of previous research, that *included* students with SEBD (i.e., who were included in regular education with special education services) generally performed better behaviorally, socially, and academically than *excluded* students with SEBD (i.e., who were placed in exclusive special education), except for reading on which both groups were expected to perform equally. For teacher factors, we had less clear expectations. As older studies found that teachers with high self-efficacy were less likely to refer students with SEBD to exclusive special education (e.g., Hughes et al., 1993; Meijer & Foster, 1988; Soodak & Podell, 1993), but more recent studies did not find any associations between teacher self-efficacy and placement choices (e.g., Egyed & Short, 2006; Gibbs & Powell, 2012; Tejeda-Delgado, 2009), we examined this association exploratory. For teacher attitudes towards inclusive education we hypothesized that students with SEBD of teachers with more positive attitudes would be included in regular education while students with SEBD of teachers



with more negative attitudes would be placed in exclusive special education.

The second goal was to examine whether the two subgroups of included and excluded students with SEBD differed from typically developing peers in their self-perceptions of their social-emotional functioning to see if students experience multiple problems themselves, and whether possible differences between groups of students were related to placement choices. The limited previous research on self-perceived social-emotional functioning of students with SEBD in comparison with typically developing peers suggests that students with SEBD would perceive their social-emotional functioning more negatively than typically developing students (e.g., Chansky & Kendall, 1997; Ekornås et al., 2011). Since it is unknown, however, whether the self-perceived social-emotional functioning of students with SEBD differs between those who will later receive special education services in an inclusive classroom in regular education and those who will later be excluded and placed in exclusive special education, we set two opposing hypotheses. On the one hand, we hypothesized that students with SEBD would perceive their social-emotional functioning more negatively than typically developing students, while no differences between included and excluded students with SEBD were expected. Both subgroups of students with SEBD were assumed to experience equally negative situations while being in a regular education classroom without any additional support. On the other hand, we hypothesized that while both subgroups would report more negative social-emotional functioning than typically developing students, excluded students with SEBD would experience the most problems in social-emotional functioning and would therefore have even more negative self-perceptions than included students with SEBD.

## METHOD

### Participants

We recruited participants in collaboration with two independent committees who determined eligibility for additional support. These committees consist of, amongst others, an educational expert, a (school) psychologist, a youth physician, and a social worker. All committee members have substantive expertise in the field of SEBD and/or education. When schools and parents of students with SEBD applied for eligibility for additional support at these institutions, parents were first asked to participate in our study. As parents and schools could apply for eligibility across the school year, students with SEBD could enroll in our study at various moments across the school year of 2012-2013. When parents decided not to participate, they were asked written permission to use their application file for research purposes and the procedure was ended. When

parents agreed to participate, they returned a signed consent form and subsequently, we invited the schools of the students with SEBD to participate in our study. When schools declined participation, the respective parents were asked written permission to use the application files for research purposes and the procedure was ended.

When schools verbally consented to participate in (part of) the research, a school visit was planned. That is, the data were collected when the student with SEBD still resided in regular education without additional support, after parents and schools applied for additional support, but before eligibility for additional support was established. Full participation entailed two parts, conducted by the first author and/or trained undergraduate and graduate students: 1) a classroom survey session with all children in the concerning class and their group teacher, and 2) an individual testing session with the student with SEBD. In addition to that, we examined the application files of students with SEBD to collect data on their emotional and behavioral functioning and background variables (e.g., full-scale IQ and diagnoses). If full participation was too burdensome for either the student with SEBD, the classroom and/or the teacher, they discussed with the researchers in which part(s) they would be able to participate. Hence, not all data could be collected for all students.

When the classroom survey would be conducted, the schools sent parents of classmates of the students with SEBD an informative letter in which parents were asked to give passive consent for their child to participate in the classroom survey as part of our study. Students whose parents declined participation and students who did not assent to participate did not complete any of the study's measures.

After data-collection, independent committees determined whether students with SEBD were eligible for additional support. In the Netherlands, students with SEBD qualify to receive special education services for SEBD when they show severe emotional and behavioral problems at school and at home or in the community (either formally diagnosed or not); their participation in education is severely limited by their emotional and behavioral problems (i.e., they show impairments in learning and/or their interactions with school personnel and/or classmates); and the school's available support services are insufficient to meet the students' needs (LCTI, 2006; Meijer, 2003). The independent committees establish whether students with SEBD fulfill these criteria based on information on students' behavioral, social-emotional, and academic functioning provided by the schools (independent of the present research data). That is, severe emotional and behavioral problems are established based on standardized behavioral questionnaires (e.g., Child Behavior Checklist and Teacher Report Form; Verhulst & Van der Ende, 2013) and psychodiagnostic reports. Limitations in the participation in education and insufficient available support services are established based on an educational report composed by the school. This report contains

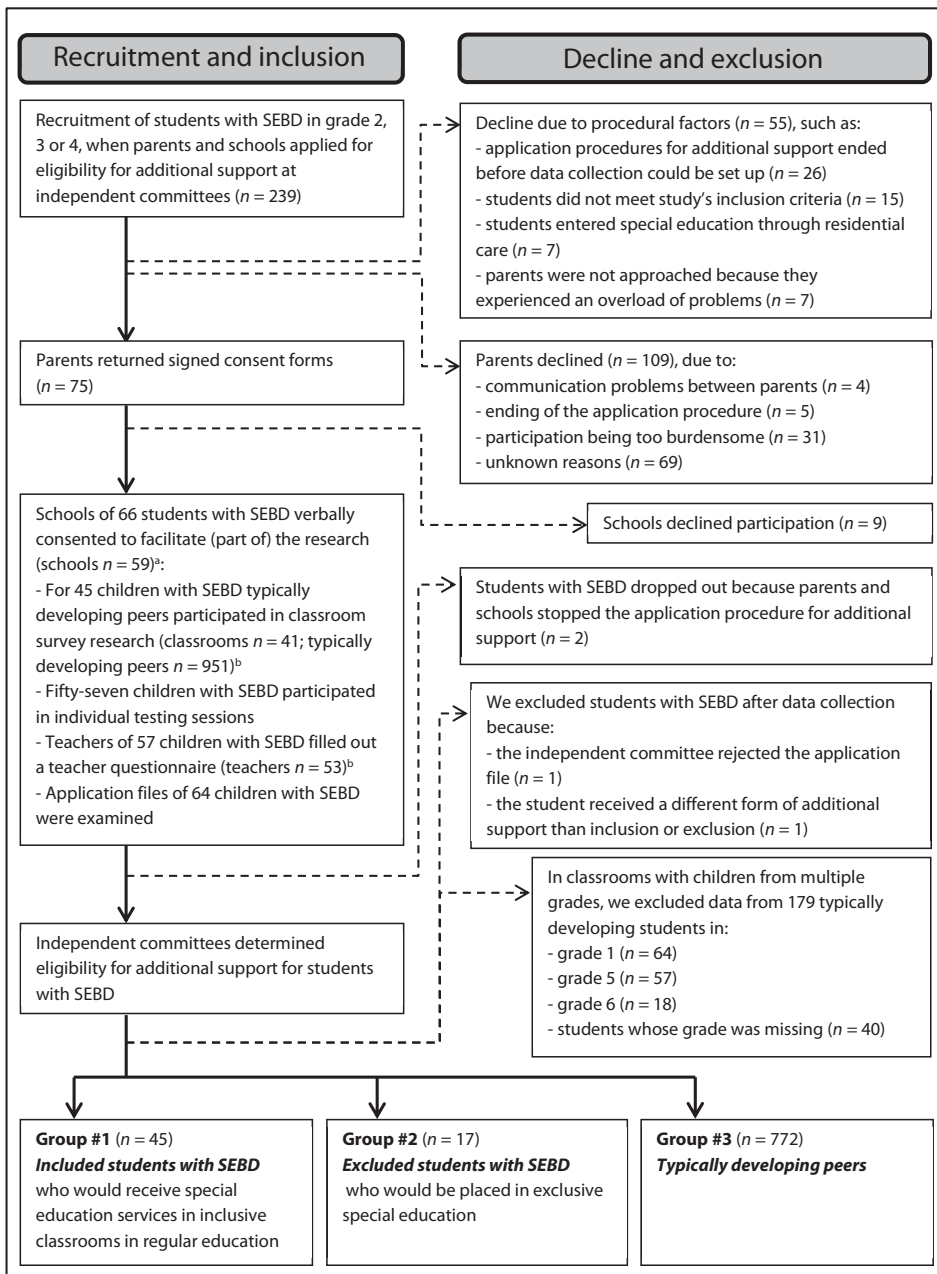
information on, amongst others, school achievement scores in various academic areas; suspension and expulsion reports; descriptions of students learning and task-related behavior; descriptions of students' interactions with school personnel and peers; and students' individual education plans. Furthermore, the educational report can be supplemented with psychodiagnostic reports from youth care. After eligibility for additional support was established, parents and schools agreed on the type of additional support provided: special education services in an inclusive classroom for regular education or placement in a school for exclusive special education. Based on these decisions, we retrospectively divided students with SEBD into two subgroups – *included* and *excluded* students with SEBD. With the inclusion of the typically developing peers, this resulted in three subgroups of students included in our study: 1) included students with SEBD, 2) excluded students with SEBD, and 3) typically developing peers. The flowchart in Figure 1 maps the steps taken from participant recruitment until final *n*'s included in each subgroup.

We included three subgroups of students in our study, which all came from schools for regular primary education, located in north ( $n = 36$ ) and middle ( $n = 19$ ) parts of The Netherlands:

- 1) Students with SEBD who would later receive special education services in inclusive classrooms in regular education (*included students with SEBD*;  $n = 45$ )
- 2) Students with SEBD who would be placed in exclusive special education (*excluded students with SEBD*;  $n = 17$ ), and
- 3) Typically developing classmates ( $n = 772$ )

The schools were both from rural (60%) and urban areas (40%) and varied in size and the proportion of students with special educational needs that they served. School sizes ranged from 34 to 936 students ( $M = 197$ ,  $SD = 159.30$ ). In addition, teachers identified 0% to 24% ( $M = 6$ ,  $SD = 7$ ) of the total student population in the schools as having various special educational needs (i.e., also including other disability categories than SEBD). All included and excluded students with SEBD had previously or currently been in contact with one or more youth care institutions and the majority (98.4%) fulfilled established diagnostic criteria for DSM-IV diagnoses (American Psychiatric Association, DSM-IV, 2000), with diagnoses made by psychiatrists/psychologists of these youth care institutions. Typically developing classmates had no known history of any emotional or behavioral disorder in their school administration data.

Preliminary chi-square analyses and *t*-tests examining background variables showed that the group of included students with SEBD contained significantly more boys than the group of typically developing students, while the group of excluded students with SEBD did not significantly differ from either group,  $\chi^2(2) = 22.79$ ,  $p < .001$ , Cramer's  $V = .167$ . We



**Figure 1** | Flowchart of recruitment procedure and inclusion and exclusion of participants. *Note.* <sup>a</sup> Seven schools contained two students with SEBD who participated in the study resulting in lower  $n$  for participating schools. <sup>b</sup> Four classrooms contained two students with SEBD who participated in the study resulting in lower  $n$ 's for participating classrooms and teachers.

**Table 1 |** Descriptive Statistics of the Samples

Sample	Included students with SEBD (n = 45)	Excluded students with SEBD (n = 17)	Typically developing students (n = 772) <sup>a</sup>	Test statistics
Sex distribution	84.4% boys; 15.6% girls	70.6% boys; 29.4% girls	49.8% boys; 50.2% girls	$\chi^2(2) = 22.79, p < .001$ , Cramer's $V = .167$ ; $n = 813$
Age in years	$M = 8.69$ ; $SD = 1.00$	$M = 8.53$ ; $SD = 1.07$	$M = 8.59$ ; $SD = .96$	$F(2,804) = .27, p = .768, \omega^2 = -.002$ ; $n = 807$
Class size	$M = 23.39$ ; $SD = 4.56$	$M = 22.85$ ; $SD = 5.13$	$M = 23.58$ ; $SD = 4.25$	$F(2,823) = .22, p = .802, \omega^2 = -.002$ ; $n = 826$
Ethnicity	97.8% Dutch 0% Surinamese/ Dutch Antillian 0% Turkish 2.2% other	100% Dutch 0% Surinamese/ Dutch Antillian 0% Turkish 0% other	97.2% Dutch 0.5% Surinamese/ Dutch Antillian 0.3% Turkish 2.0% other	$\chi^2(6) = .86, p = .990$ , Cramer's $V = .02$ ; $n = 814$
Grade	22.2% grade 2 44.4% grade 3 33.3% grade 4	35.3% grade 2 29.4% grade 3 35.3% grade 4	23.1% grade 2 46.0% grade 3 31.0% grade 4	$\chi^2(4) = 2.28, p < .684$ , Cramer's $V = .037$ ; $n = 834$
Full-scale IQ	$M = 100.47$ ; $SD = 13.98$	$M = 103.82$ ; $SD = 12.79$		$t(60) = -.862, p = .392$ , Cohen's $d = -.223$ ; $n = 62$
Diagnosis	57.8% ASD 51.1% ADHD 4.4% DBD 40.0% Learn 22.2% other	64.7% ASD 29.4% ADHD 11.8% DBD 23.5% Learn 23.5% other		$\chi^2(1) = .25, p < .620$ , Cramer's $V = .063$ ; $n = 62$ $\chi^2(1) = 2.35, p < .126$ , Cramer's $V = .195$ ; $n = 62$ $\chi^2(1) = 1.10, p < .295$ , Cramer's $V = .133$ ; $n = 62$ $\chi^2(1) = 1.46, p < .227$ , Cramer's $V = .154$ ; $n = 62$ $\chi^2(1) = .01, p < .913$ , Cramer's $V = .014$ ; $n = 62$ $\chi^2(3) = 2.58, p < .460$ , Cramer's $V = .204$ ; $n = 62$
Comorbidity (incl. learning problems)	2.2% undiagnosed 37.8% one 40.0% two 20.0% more	0% undiagnosed 52.9% one 41.2% two 5.9% more		$\chi^2(1) = .13, p < .714$ , Cramer's $V = .047$ ; $n = 60$
Psychotropic medication use	58.1%	52.9%		
Family composition	80.0% two parents 8.9% one parent 8.9% stepparent 2.2% other	64.7% two parents 17.6% one parent 17.6% stepparent 0% other		$\chi^2(3) = 2.44, p < .487$ , Cramer's $V = .198$ ; $n = 62$

Note. ASD = Autism Spectrum Disorders (including Pervasive Developmental Disorder – Not Otherwise Specified [PDD-NOS]); ADHD = Attention Deficit Hyperactivity Disorder; DBD = Disruptive Behavior Disorders; Learn = Learning problems (e.g., Dyslexia, Dyscalculia).

<sup>a</sup> Not all typically developing students were present during the classroom testing session. Peers also reported on absent classmates, but self-reports could not be collected, resulting in lower sample sizes for age, sex, and ethnicity.

found no differences between groups with respect to age, ethnicity or grade. Additional chi-square analyses and *t*-tests on background variables for both groups of students with SEBD showed that included and excluded students with SEBD did not significantly differ from each other with respect to full-scale IQ, diagnoses, comorbidity, medication use, and family composition. See Table 1 for descriptive characteristics of all samples.

Participating teachers were teaching the student with SEBD at least two days a week for a period of six weeks or longer. The sex distribution was 7 males : 46 females, ages ranged from 21 to 62 years old ( $M = 40.49$ ,  $SD = 12.64$ ), and their mean years of experience in education was 17.24 (range 1-44 years).

## Procedure

During the classroom survey session, we explained to classmates of the concerning student with SEBD that the classroom would participate in a study concerning school climate and social relationships and that one student was randomly drawn from the classroom to participate in an individual testing session. In grades 2 and 3 and for children with reading problems, the complete questionnaire was read out aloud. Students with SEBD and their typically developing peers reported on their self-perceived social-emotional functioning and their peers' social status. Teachers reported on the work attitude of the student with SEBD, the student-teacher relationship with the student with SEBD, and on teacher self-efficacy and teacher attitudes towards inclusive education. Teacher factors were not measured for typically developing peers. After a short break, we individually tested the student with SEBD with three standardized school achievement tests (see Measures). If the students' full-scale IQ score was not known from their application file, two subtests of an intelligence test (see Measures) were also conducted to estimate the student's full-scale IQ score. Aspects of student functioning were also not measured for typically developing students, since they did not have application files and they did not participate in individual testing sessions. The study was approved by the research ethics committee of the Utrecht University Faculty of Social Sciences, in accordance with the Dutch regulations for research with children.

## Measures

### *Emotional and behavioral functioning*

We derived scores for children's behavior problems from the files that schools and parents composed to apply for eligibility for additional support with the independent committees. The independent committees used either the Teacher Report Form (TRF; Verhulst & Van der Ende, 2013) or the Dutch Sociaal-Emotionele Vragenlijst (SEV) [social emotional questionnaire] (Scholte & Van der Ploeg, 2007) to measure behavior

problems in school (see supplementary material for a more elaborate explanation of both questionnaires). Most questionnaires (83.2%) were filled out within five months of data collection. For a small group (16.8%), the application procedure had to be extended with a few weeks to a few months; consequently, behavioral assessments were less recent.

Both questionnaires have been shown valid and reliable in previous research among typically developing students and students with social-emotional problem behavior (Scholte & Van der Ploeg, 2007; Tick, Van der Ende, & Verhulst, 2007; Verhulst & Van der Ende, 2013). Furthermore, validity of the TRF and reliability and validity of the SEV are also established according to the criteria of the Dutch Commissie Testaangelegenheden Nederland (COTAN) [committee for test affairs] (Evers, Lucassen, Meijer, & Sijtsma, 2010). The TRF and SEV subscales that measure corresponding social-emotional problems have been shown to correlate with each other (Scholte & Van der Ploeg, 2007). Students' application files thus contained data of different questionnaires. In addition, not all application files contained the raw TRF and SEV scores; however, most of them (91.9%) contained classification scores. Both the TRF and SEV classify behavior according to three categories: 'normal' (TRF percentiles 0-92; SEV percentiles 0-89), 'subclinical' (TRF percentiles 93-96; SEV percentiles 90-94), and 'clinical' behavior (TRF percentiles 97-100; SEV percentiles 95-100). Although the cut-off criteria differ slightly, we disregarded these small differences as the subclinical and clinical categories concern extremely high percentiles in both cases. To accommodate the different sources of info, we created new classification scores on a three-point scale (0 = *normal*, 1 = *subclinical*, 2 = *clinical*) for internalizing behavior problems (based on the rounded average classification on corresponding TRF Anxious-Depressed and Withdrawn-Depressed subscales; and SEV Anxiety, SEV Social Anxiety, and SEV Anxious-Depressed subscales), externalizing behavior problems (based on the rounded average classification on corresponding TRF Aggressive and Rule-Breaking subscales; and SEV Oppositional-Defiant, Aggressive, and Antisocial subscales), and attention-deficit hyperactivity problems (based on the rounded average classification on corresponding TRF Attention Problems subscale; and SEV Attention-Deficit, Hyperactivity, and Impulsivity subscales).

### ***Social functioning***

We measured student-teacher relationships with the teacher-reported Dutch Student-Teacher Relationship Scale (STRS), which has been shown reliable and valid in previous research with a representative Dutch student population, including students with various special educational needs (Koomen, Verschueren, & Pianta, 2007; Koomen, Verschueren, Van Schooten, Jak, & Pianta, 2012) and with research of the COTAN (Evers et al., 2010). The STRS consists of three dimensions: Closeness (11 items, e.g., "I share

an affectionate, warm relationship with this child”), Conflict (11 items, e.g., “This child easily becomes angry with me”), and Dependency (6 items, e.g., “This child needs to be continually confirmed by me”). Teachers had to rate on a 5-point scale (ranging from 1 = *definitely does not apply* to 5 = *definitely applies*) to what extent they thought each statement applied to their relationship with the student with SEBD. Cronbach’s alpha coefficients ranged from .86 to .91 across scales and Gutmann’s lambda coefficients ranged from .87 to .91 across scales.

In addition, we measured peer-reported peer relationships with sociometric ratings (Cillessen, 2009), which have been shown reliable and valid in previous research with typically developing students (Maassen, Van Boxtel, & Goossens, 2005; Maassen, & Verschueren, 2005). Furthermore, applicability of sociometric methods has been demonstrated in studies with children with emotional and behavioral problems as well (Breeman et al., 2015; Zakriski & Prinstein, 2001). Students had to rate all their classmates individually on a 5-point Likert scale (ranging from -2 = *not at all* to 2 = *very much*) with respect to how well they liked that particular student (acceptance/rejection) and how popular they perceived that particular student to be (perceived popularity). We set a minimum class participation rate of 60% in order to obtain acceptable sociometric scores (Marks, Babcock, Cillessen, & Crick, 2013). We summed the scores received by each pupil. Because of the unequal number of pupils in the different classes, and because of the unequal number of scores of pupils within classes, these sum scores were converted into mean scores by dividing them by the number of raters (minus one because we disregarded self-scores in these measures). These final scores indicate how well-liked and how popular participants are.

### ***Academic functioning***

We measured task-related behavior with the teacher-reported Conscientious Task Attitude subscale of the established Dutch Volginstrument Sociaal-Emotionele Ontwikkeling (VISEON) [monitoring instrument for social-emotional development], which has been shown reliable and valid with typically developing students and students with special educational needs in elementary school (Cito, 2011; Citogroep, 2004) and according to the criteria of the COTAN (Evers et al., 2010). The Conscientious Task Attitude subscale consists of 11 items (e.g., “Student usually finishes tasks”) and teachers had to rate to what extent one of two opposing statements applied to the student with SEBD on a 4-point scale (ranging from 1 = *right statement definitely applies* to 4 = *left statement definitely applies*). Cronbach’s alpha and Guttman’s lambda both were .93.

Furthermore, we measured academic performance with established Dutch school achievement tests during individual testing sessions with students with SEBD. *Reading*



*ability* was assessed with the BRUS Één-Minuut-Test (EMT) [one-minute reading fluency test] (Brus & Voeten, 2006). The test contains a word list with 116 words of increasing difficulty. The number of words that the participant is able to read within one minute is a measure of technical reading ability. *Spelling ability* was assessed with the PI-dictee [spelling dictation task] (Geelhoed & Reitsma, 2004). The researcher dictates a number of sentences and repeats the word that the participant has to write down. The test consists of 135 words of all spelling categories taught in elementary school. The words are grouped together in 9 sets of 15 words each. Each set corresponds with an increasing amount of received spelling education. The number of correctly written words is a measure of spelling ability. *Mathematics ability* was assessed with the Tempo Test Automatiseren (TTA) [arithmetic processing speed test] (De Vos, 2011). The test consists of four parts (addition, subtraction, multiplication, and division) with 50 sums of increasing difficulty. The participant has to calculate the answers without any aids. The number of sums that the participant is able to calculate within two minutes is a measure of processing speed of addition, subtraction, multiplication, and division. All school achievement tests have been shown reliable and valid with typically developing elementary school students (Brus & Voeten, 2006; De Vos, 2011; Geelhoed & Reitsma, 2004). Furthermore, reliability and validity of the EMT and PI dictee are also established according to the criteria of the COTAN (Evers et al., 2010). Although the TTA has not been evaluated by the COTAN yet, children in Dutch elementary schools regularly take the TTA as a measure of early mathematics acquisition. We conducted all school achievement tests individually and for each skill we looked up norm scores for children's individual scores in a table of norm data of students in the same grade.

### ***Teacher factors***

We used an adjusted version of the Teacher Professional Capability Scale (TPCS), which has been shown reliable and valid in previous research (Friedman & Kass, 2002). The TPCS assesses teacher self-efficacy and consists of the subscales Classroom Context (19 items, e.g., "I think that my teaching is flexible and adaptive") which measures teacher self-efficacy directly related to teaching and relationships with students, and School Context (11 items, e.g., "I have difficulty in making demands of the school administration") which measures teacher self-efficacy related to participation in school activities and organizational politics. Teachers had to rate on a 6-point scale (ranging from 1 = *never* to 6 = *always*) to what extent they agreed with the statements. Cronbach's alpha coefficients were .91 for the Classroom Context and .79 for the School Context and Guttman's lambda coefficients were .91 for the Classroom Context and .81 for the School Context.

To assess teacher attitudes towards inclusive education, we conducted an adjusted

version of the Principals' Attitudes Toward Inclusive Education (PATIE), which has been shown reliable and valid in previous research (Bailey, 2004, Bailey & Du Plessis, 1998). We used four subscales: Teacher Workload and Management (five items, e.g., "Students with special needs will take up too much of the teachers' time") which measures expected increases in main responsibilities due to inclusion; Inclusion Benefits and Level of Disability (six items, e.g., "Students with disabilities benefit academically from inclusion") which measures equity views and appraisal of inclusion; Learning Challenges in Inclusive Education (seven items, e.g., "Students with severe speech difficulties should not be included in regular classrooms") which measures functional challenges that students with disabilities present to teachers; and Excluded Students (three items, e.g., "Students who are continually aggressive towards school staff should not be included in regular classrooms") which measures behaviors/disabilities that teachers find difficult to manage. Teachers had to rate on a 5-point scale (ranging from 1 = *strongly disagree* to 5 = *strongly agree*) to what extent they agreed with the statements. Cronbach's alpha coefficients ranged from .64 to .86 and Guttman's lambda coefficients ranged from .66 to .86 across scales.

### ***Self-perceived social-emotional functioning***

We measured self-perceived social-emotional functioning with the student-reported Dutch Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015) and the student-reported established Dutch VISEON (Cito, 2011; Citogroep, 2004). The SPARTS has been shown reliable and valid with typically developing elementary school students, and students with internalizing problem behavior (Jellesma, Zee, & Koomen, 2015; Koomen & Jellesma, 2015; Zee & De Bree, 2017). The VISEON has been shown reliable and valid with typically developing elementary school students (Cito, 2011; Citogroep, 2004) and with research of the COTAN (Evers et al., 2010). The SPARTS consists of the three dimensions Closeness (eight items, e.g., "I tell my teacher things that are important to me"), Conflict (ten items, e.g., "I easily have quarrels with my teacher"), and Negative Expectations (seven items, e.g., "In the classroom my teacher doesn't know how I feel"). Students had to rate on a 5-point scale (ranging from 1 = *no, that is not true* to 5 = *yes, that is true*) to what extent they thought each statement applied to their relationship with the teacher. Both Cronbach's alpha coefficients and Guttman's lambda coefficients ranged from .65 to .75 across subscales. In addition, we used four VISEON subscales: Relationships with Peers (nine items, e.g., "When other children laugh, I think they laugh at me"), Task Attitude (nine items, e.g., "I pay attention during classes"), Self-esteem (seven items, e.g., "I get good grades for tests"), and Attitudes Towards School (eight items, e.g., "I feel safe in this school"). Students had to rate on a 4-point scale (ranging from 1 = *not true* to 4 = *true*) to what

extent the statements applied to them. Cronbach's alpha coefficients ranged from .73 to .80 and Guttman's lambda coefficients ranged from .74 to .81 across subscales.

### **Intelligence**

We obtained full-scale IQ scores from the application files in which intelligence was measured with established intelligence tests. For instance, the WISC III<sup>NL</sup> (Kort et al., 2005) or the WPPSI III – NL (Hendriksen & Hurks, 2009) were used, which both have been shown suitable for use with typically developing children and children with various social-emotional problem behavior (Hendriksen & Hurks, 2009; Kort et al., 2005) and with research of the COTAN (Evers et al., 2010). If full-scale IQ was not known from the student's file, we conducted the subtests Block Design and Vocabulary of the WISC III<sup>NL</sup> (Kort et al., 2005). Research has shown that this combination of Wechsler subtests is the most valid for estimating a child's cognitive capacities, even within a child psychiatric setting (Legerstee, Van der Reijden – Lakeman, Lechner-Van der Noort, & Ferdinand, 2004).

### **Data-analyses**

To analyze our data, we used the software BIEMS – Bayesian Inequality and Equality constrained Model Selection (Mulder et al., 2009; Mulder, Hoijtink, & Klugkist, 2010; Mulder, Hoijtink, & De Leeuw, 2012). We used informative hypothesis testing by means of Bayes Factors (Hoijtink, 2012) for two reasons. First, with Bayesian statistics we were able to directly test the amount of support for conflicting hypotheses derived from previous research. In that way, we were able to integrate the previous mixed findings with current results. Second, while studies examining students with SEBD have often been limited by small sample sizes (e.g., Becker et al., 2011; Farmer & Hollowell, 1994; Lane et al., 2005), Bayesian statistics have provided possibilities to handle small samples with greater accuracy. Below, we only provide a brief introduction of the statistical method that we used, because a full explanation is beyond the scope of our research. Interested readers are referred to Hoijtink (2012), Hoijtink, Klugkist and Boelen (2008), and Van de Schoot et al. (2011a) for a gentle introduction to Bayesian analyses and to Klugkist, Laudy and Hoijtink (2005) for a more technical introduction.

With BIEMS, applied researchers can directly test the amount of support in favor of competing hypotheses that they derived from previous literature. First, each hypothesis has to be translated into a statistical model using inequality constraints on the means to specify the expected differences between the groups of students for each variable. We wanted to compare *included* and *excluded* students with SEBD, and we thus used a Bayesian alternative for the frequentist *t*-test. For aspects of student functioning, we hypothesized that *included* students with SEBD (i.e., who were included in regular

education with special education services) generally performed better behaviorally, socially, and academically than *excluded* students with SEBD (i.e., who were placed in exclusive special education), except for reading on which both groups were expected to perform equally – the *Included Performs Better (IPB) hypothesis* ( $H_1$ ). We contrasted this hypothesis with a hypothesis in which both groups of students with SEBD were expected to perform equally – the *Equal Performance (EP) hypothesis* ( $H_2$ ). Both hypotheses are presented in Table 2.

**Table 2** | Hypotheses on whether Student Functioning, Teacher Factors, and Self-Perceptions were Related to Placement Choices for Students with SEBD

Indicators	Hypotheses		
Student functioning	$H_1$ : Included Performs Better (IPB) Hypothesis	$H_2$ : Equal Performance (EP) Hypothesis	
	Included > Excluded	Included = Excluded	
Teacher self-efficacy	$H_1$ : Included Performs Better (IPB) Hypothesis	$H_2$ : Equal Performance (EP) Hypothesis	$H_3$ : Excluded Performs Better (EPB) Hypothesis
	Included > Excluded	Included = Excluded	Included < Excluded
Teacher attitudes towards inclusive education	$H_1$ : Included Performs Better (IPB) Hypothesis	$H_2$ : Equal Performance (EP) Hypothesis	
	Included > Excluded	Included = Excluded	
Self-perceptions	$H_1$ : Typically Developing Performs Better (TDPB) Hypothesis	$H_2$ : Excluded Performs Worst (EPW) Hypothesis	$H_3$ : Equal Performance (EP) Hypothesis
	TD > INCL = EXCL	TD > INCL > EXCL	TD = INCL = EXCL

For teacher factors, we also wanted to compare *included* and *excluded* students with SEBD – again we used a Bayesian alternative for the frequentist *t*-test. Because previous research on self-efficacy has shown mixed findings, we examined the association between teacher self-efficacy and placement choices exploratory. To this end we tested three conflicting hypotheses. The first hypothesis was that teachers of included students with SEBD would report higher self-efficacy than teachers of excluded students with SEBD – the *Included Performs Better (IPB) hypothesis* ( $H_1$ ). The second hypothesis was that teachers of included and excluded students with SEBD would report similar self-efficacy levels – the *Equal Performance (EP) hypothesis* ( $H_2$ ). Because the more recent studies showed no associations between teacher self-efficacy and placement choices, we did not want to exclude a third hypothesis in which we hypothesized that teachers of included students with SEBD would report lower self-efficacy than teachers of excluded students with SEBD – the *Excluded Performs Better (EPB) hypothesis* ( $H_3$ ) (see Table 2). For teacher attitudes towards inclusive education we hypothesized that students with SEBD of teachers with more positive attitudes would be included in regular education

while students with SEBD of teachers with more negative attitudes would be placed in exclusive special education – the *Included Performs Better (IPB) hypothesis* ( $H_1$ ). We contrasted this hypothesis with a hypothesis in which teachers of both groups of students with SEBD were expected to perform equally – the *Equal Performance (EP) hypothesis* ( $H_2$ ) (see Table 2).

For students' self-perceptions, we wanted to compare three student groups: *included* and *excluded* students with SEBD and typically developing peers. Therefore, we used a Bayesian alternative for a frequentist ANOVA. As previous research suggested that students with SEBD would perceive their social-emotional functioning more negatively than typically developing students, but it is unknown whether the self-perceived social-emotional functioning of students with SEBD differs between those who will later receive special education services in an inclusive classroom in regular education and those who will later be excluded and placed in exclusive special education, we formulated two opposing hypotheses. On the one hand, we hypothesized that students with SEBD would perceive their social-emotional functioning more negatively than typically developing students, while no differences between included and excluded students with SEBD were expected – the *Typically Developing Performs Better (TDPB) hypothesis* ( $H_1$ ). On the other hand, we hypothesized that while both subgroups would report more negative social-emotional functioning than typically developing students, excluded students with SEBD would experience the most problems in social-emotional functioning and would therefore have even more negative self-perceptions than included students with SEBD – the *Excluded Performs Worst (EPW) hypothesis* ( $H_2$ ). We contrasted both hypotheses with a third hypothesis in which we hypothesized that all three student groups would perform equally – the *Equal Performance (EP) hypothesis* ( $H_3$ ) (see Table 2).

Before testing our hypotheses against each other, we first evaluated whether each hypothesis had a sufficient fit to the data by comparing each hypothesis against a hypothesis containing no constraints on the means of the groups of students, the so-called unconstrained hypothesis ( $H_0$ ). To what extent the data support one hypothesis over another is quantified by Bayes factors (BF). In order to compute these Bayes factors, BIEMS requires a prior distribution of the parameters. Because all constrained models (i.e., the hypotheses that we specified based on the literature) are nested in the unconstrained model, BIEMS only needs a single prior under the unconstrained model, the so-called conjugate expected-constrained posterior prior (see Mulder et al., 2012). This implies that, by using the default settings of BIEMS, priors for each hypothesis have equal probabilities (see Klugkist et al., 2005, Appendix C, p.493, Equation C3, for an explanation). In addition, BIEMS uses a very noninformative prior (i.e., objective prior; Mulder et al., 2012) by default, to refrain from adding subjective information to the

analysis. A full explanation of the techniques used in the analyses is beyond the scope of our research. Interested readers are referred to Van de Schoot et al. (2011b) for a gentle introduction to the evaluation of informative hypotheses and to Mulder et al. (2009) for a more technical introduction.

By using the software's default settings, we thus computed the relative support for each hypothesis based on the literature against the same 'baseline' statistical model (i.e., the unconstrained model). When the BF is equal (or close to) 1, both the specified (i.e., constrained) hypothesis and the unconstrained hypothesis receive an equal amount of support from the data. If the  $BF > 1$  then the specified hypothesis receives more support from the data (e.g., a Bayes factor of  $BF_{1u} = 3$  indicates that model 1 receives three times more support from the data than the unconstrained model). When  $BF < 1$  the unconstrained hypothesis receives more support from the data (e.g., a Bayes factor of  $BF_{1u} = 0.25$  indicates that model 1 receives four times less support from the data than the unconstrained model). 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 to avoid, what they call, BF-hacking (a.k.a. P-hacking) (see Konijn, Van de Schoot, Winter, & Ferguson, 2015).

Thus, we first compared each hypothesis (i.e.,  $H_1$ ,  $H_2$ , and  $H_3$ ) against the unconstrained hypothesis ( $H_u$ ) to see whether the hypothesis was supported by the data at all. Next, we tested our specified hypotheses against each other. When multiple constrained hypotheses (reflecting conflicting theories) are considered, the amount of support for one hypothesis over another can be computed by dividing the BFs of the separate comparisons to the unconstrained hypotheses by each other. For student functioning, we first conducted 12 separate analyses for each aspect of students' behavioral, social, and academic functioning. Subsequently, we entered all aspects of student functioning in one overall analysis to compare the amount of support for each overall hypothesis (i.e., all inequality and equality constrained hypotheses of a single model at once) with the unconstrained hypothesis. Lastly, we computed the BFs of each specified hypothesis by each other to see which hypothesis was most supported by the data. For teacher factors, we only conducted six separate analyses for each teacher factor to compare the amount of support for each hypothesis with the unconstrained hypothesis and with each other. Due to mixed findings in the literature for self-efficacy, we could not specify overall hypotheses for teacher factors. For self-perceived social-emotional functioning, we first conducted seven separate analyses for each aspect of self-perceived social-emotional functioning. Subsequently, we entered all aspects of self-perceived social-emotional functioning in one analysis to compare the amount of support for each overall hypothesis with the unconstrained hypothesis. Lastly, we computed the BFs of

each specified hypothesis by each other to see which hypothesis was most supported by the data.

## RESULTS

### Student functioning

Results showed that for all aspects of student functioning the Equal Performance (EP) hypothesis received more support from the data than the unconstrained hypothesis and the Included Performs Better (IPB) hypothesis (see Table 3). Although the BFs of the constrained hypotheses and the hypothesis comparisons were reasonably low, the results seem to suggest that included and excluded students with SEBD generally do not differ in student functioning.

When we at once entered all aspects of student functioning in the EP hypothesis and IPB hypothesis respectively (see last row of Table 3), however, the BFs of both constrained hypotheses dropped below 1. This indicates that although the results of each separate analysis pointed in the direction of the EP hypothesis, the data of our small samples of included and excluded students with SEBD could not provide support for our complex EP and IPB hypotheses in which we considered all aspects of behavioral, social, and academic functioning at once. Therefore, differences in BFs for separate aspects of student functioning should be interpreted with caution.

### Teacher factors

Results for teacher self-efficacy depended on the specific context of self-efficacy. That is, for self-efficacy *in the classroom context*, the Excluded Performs Better (EPB) hypothesis received more support from the data over the other hypotheses. For teacher self-efficacy *in the school context*, in contrast, the Equal Performance (EP) hypothesis received more support from the data over the other hypotheses (see Table 4). Although the BFs of the constrained hypotheses and the hypothesis comparisons were reasonably low, the results seem to suggest that teachers with higher self-efficacy *in the classroom context* (i.e., “the sense of professional efficacy pertaining to teaching, educating and motivating students, as well as controlling inter-relations with students”, Friedman & Kass, 2002, p. 681), were more likely to refer students with SEBD to exclusive special education as compared to teachers with lower self-efficacy *in the classroom context*. Teacher self-efficacy *in the school context* (i.e., “involvement in school activities, participation in decision-making and influencing school organizational politics”, Friedman & Kass, 2002, p.681), however, did not seem to be related to placement choices for students with SEBD.

For teacher attitudes towards inclusive education, results showed that the Included

**Table 3** | Descriptive Statistics for Behavior Problems, Social Relationships, Task-related Behavior, and School Achievement for both Subsamples of Students with SEBD

	Included students with SEBD (n = 45)		Excluded students with SEBD (n = 17)		H <sub>1</sub> : Included performs better hypothesis	H <sub>2</sub> : Equal performance hypothesis	Hypothesis comparison
	M <sup>a</sup>	SD <sup>a</sup>	M <sup>a</sup>	SD <sup>a</sup>	BF <sub>1u</sub>	BF <sub>2u</sub>	BF <sub>21</sub>
INT	1.21	.95	1.27	.96	1.14	3.00	3.00/1.14 = 2.63
EXT	1.21	.84	1.27	.88	1.08	2.79	2.79/1.08 = 2.58
ADHD	1.09	.97	1.20	.94	1.30	2.82	2.82/1.30 = 2.17
CL <sub>t</sub>	3.72	.73	3.98	.88	0.34	1.46	1.46/0.34 = 4.29
CO <sub>t</sub>	2.45	.91	2.36	1.02	0.78	2.26	2.26/0.78 = 2.90
DE	2.89	1.07	2.96	.84	1.18	2.30	2.30/1.18 = 1.95
SP <sup>b</sup>	.20	.65	.23	.76	0.91	2.16	2.16/0.91 = 2.37
POP <sup>b</sup>	-.63	.43	-.47	.49	0.42	1.49	1.49/0.42 = 3.55
TA <sub>t</sub>	2.22	.72	1.96	.94	1.66	1.68	1.68/1.66 = 1.01
READ <sup>c</sup>	8.65	3.53	9.17	3.43	N/A	1.97 <sup>e</sup>	
SPEL <sup>c</sup>	17.80	22.82	13.77	23.04	1.40	1.82	1.82/1.40 = 1.30
MATH <sup>c</sup>	25.40	22.54	25.08	22.92	1.03	2.20	2.20/1.03 = 2.14
Total (n = 38)					0.25 <sup>f</sup>	0.32	0.32/0.25 = 1.28

Note. Asymptotic significances are presented. INT = Internalizing behavior problems; EXT = Externalizing behavior problems; ADHD = Attention Deficit Hyperactivity Disorder symptoms; CL<sub>t</sub> = Closeness (teacher-reported); CO<sub>t</sub> = Conflict (teacher-reported); DE = Dependency; SP = Social preference; POP = Popularity; TA<sub>t</sub> = Task attitude (teacher-reported); READ = Reading achievement; SPEL = Spelling achievement; MATH = Math achievement; BF = Bayes factor; <sub>u</sub> = unconstrained hypothesis.

<sup>a</sup> Posterior sample means and variances can be found in the supplementary material. <sup>b</sup> 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. <sup>c</sup> 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. <sup>d</sup> Exact significance is presented for this test. <sup>e</sup> Since we expected equal performance for reading in both hypotheses, only one hypothesis ( $\mu_1 = \mu_2$ ) was tested against the unconstrained hypothesis. <sup>f</sup> In the total IPB hypothesis included students are hypothesized to perform better, except for reading on which both groups perform equally.



Performs Better (IPB) hypothesis generally received more support from the data than the unconstrained hypothesis and the EP hypothesis, except for the subscale Learning challenges in inclusive education for which the EP hypothesis received more support from the data over other hypotheses (see Table 4). Although the BFs of the constrained hypotheses and the hypothesis comparisons were reasonably low, the results seem to suggest that teachers with generally more positive attitudes towards inclusive education were more likely to include students with SEBD in regular education with special education services as compared to teachers with generally less positive attitudes towards inclusive education. Teacher attitudes towards learning challenges in inclusive education, however, did not seem to be related to placement choices for students with SEBD.

### **Self-perceived social-emotional functioning**

Results showed that for all aspects of self-perceived social-emotional functioning the Typically Developing Performs Best (TDPB) hypothesis received more support from the data than the unconstrained hypothesis, the Equal Performance (EP) hypothesis, and the Excluded Performs Worst (EPW) hypothesis (see Table 5). Although the BFs of the EP hypotheses were almost 0, and the BFs of the EPW hypotheses were reasonably low, the BFs of the TDPB hypotheses were quite substantial, which suggests that while included and excluded students with SEBD do not differ in self-perceived social-emotional functioning, they perceive their social-emotional functioning more negatively than typically developing peers.

When at once all aspects of self-perceived social-emotional functioning were entered as an overall EP hypothesis, TDPB hypothesis, and EPW hypothesis respectively (see last row of Table 5), however, the BFs of both the TDPB hypothesis and the EPW hypothesis tremendously increased. This indicates that both constrained hypotheses are strongly supported by the data. Even though the BF of the hypothesis comparison between the TDPB and EPW hypotheses is reasonably low, the results convincingly indicate that students with SEBD have more negative self-perceptions about their social-emotional functioning than typically developing students, while both subgroups of students with SEBD do not differ in their self-perceived social-emotional functioning.

**Table 4 |** Descriptive Statistics for Teacher Self-Efficacy and Teacher Attitudes Towards Inclusive Education for Included and Excluded Students with SEBD

	Included students with SEBD ( <i>n</i> = 45)		Excluded students with SEBD ( <i>n</i> = 17)		<i>H</i> <sub>1</sub> : Included performs better hypothesis		<i>H</i> <sub>2</sub> : Equal performance hypothesis		<i>H</i> <sub>3</sub> : Excluded performs better hypothesis		Hypothesis comparison	
	<i>M<sup>a</sup></i>	<i>SD<sup>a</sup></i>	<i>M<sup>a</sup></i>	<i>SD<sup>a</sup></i>	<i>BF<sub>1u</sub></i>		<i>BF<sub>2u</sub></i>		<i>BF<sub>3u</sub></i>		<i>BF</i>	
Class	4.77	.49	5.05	.34	0.10		0.59		1.91		<i>BF<sub>32</sub></i> 1.91/0.59 = 3.24 <i>BF<sub>31</sub></i> 1.91/0.10 = 19.10	
School	4.74	.53	4.87	.41	0.45		1.72		1.54		<i>BF<sub>21</sub></i> 1.72/0.45 = 3.82 <i>BF<sub>23</sub></i> 1.72/1.54 = 1.12	
Workload	2.79	.79	2.48	.62	1.76		1.13		N/A		<i>BF<sub>12</sub></i> 1.76/1.13 = 1.56	
Benefits	3.61	.50	3.33	.49	1.87		0.66		N/A		<i>BF<sub>12</sub></i> 1.87/0.66 = 2.83	
Challenges	3.26	.68	3.21	.47	1.17		2.15		N/A		<i>BF<sub>12</sub></i> 1.17/2.15 = 0.54	
Excluded	2.11	.69	1.67	.41	1.93		0.35		N/A		<i>BF<sub>12</sub></i> 1.93/0.35 = 5.51	

*Note.* Asymptotic significances are presented. Class = Teacher self-efficacy in the classroom context; School = Teacher self-efficacy in the school context; Workload = Teacher workload and management; Benefits = Inclusion benefits and level of disability; Challenges = Learning challenges in inclusive education; Excluded = Excluded students; BF = Bayes factor; <sub>u</sub> = unconstrained hypothesis.

<sup>a</sup> Posterior sample means and variances can be found in the supplementary material.

**Table 5 |** Descriptive Statistics for Self-Perceived Social-Emotional Functioning of Typically Developing Students and Included and Excluded Students with SEBD

	Typically developing students (n = 772)				Included students with SEBD (n = 45)		Excluded students with SEBD (n = 17)		H <sub>1</sub> : Typically developing performs better hypothesis	H <sub>2</sub> : Excluded performs worst hypothesis	H <sub>3</sub> : Equal performance hypothesis	Hypothesis comparison
	M <sup>a</sup>	SD <sup>a</sup>	M <sup>a</sup>	SD <sup>a</sup>	M <sup>a</sup>	SD <sup>a</sup>	M <sup>a</sup>	SD <sup>a</sup>	BF <sub>10</sub>	BF <sub>20</sub>	BF <sub>30</sub>	BF <sub>12</sub>
CL <sub>s</sub>	3.64	.79	3.18	.71	3.35	.97			4.24	1.44	0.02	4.24/1.44 = 2.94
CO <sub>s</sub>	1.67	.59	2.10	1.00	2.27	.84			4.88	4.44	0.00	4.88/4.44 = 1.10
Neg. Exp.	1.85	.71	2.13	.80	2.08	.98			5.11	2.38	0.40	5.11/2.38 = 2.15
RP	3.34	.58	2.91	.74	3.06	.61			3.99	1.24	0.01	3.99/1.24 = 3.22
TA <sub>s</sub>	2.96	.54	2.46	.56	2.45	.57			5.49	2.73	0.00	5.49/2.73 = 2.01
SE	2.96	.63	2.69	.73	3.01	.69			1.82	0.42	0.52	1.82/0.42 = 4.33
ATS	3.35	.55	3.03	.72	2.98	.87			5.97	3.35	0.01	5.97/3.35 = 1.78
Total									655.12	320.16	0.00	655.12/320.16 = 2.05

Note. CL<sub>s</sub> = Closeness (student-reported); CO<sub>s</sub> = Conflict (student-reported); Neg. Exp. = Negative expectations; RP = Relationships with peers; TA<sub>s</sub> = Task attitude (student-reported); SE = Self-esteem; ATS = Attitude towards school; BF = Bayes factor; <sub>10</sub> = unconstrained hypothesis.

<sup>a</sup> Posterior sample means and variances can be found in the supplementary material.

## DISCUSSION

While placement choices are deemed important for the development of students with SEBD, it is unclear which factors are related to placement choices for inclusive or exclusive education of these students. Results of our study show that students with SEBD who are included in regular education and those who are placed in special education seem similar in all aspects of student functioning. In contrast, both subgroups seem to differ in several characteristics of their teachers: teachers of students who were later included in regular education reported lower teacher self-efficacy in the classroom context and more positive attitudes towards inclusive education than teachers of students who were later placed in exclusive special education. Furthermore, students with SEBD perceived their social-emotional functioning more negatively than typically developing students, while included and excluded students with SEBD did not differ in their self-perceptions.

Surprisingly, aspects of student functioning were not related to placement choices for students with SEBD. This contrasts with most previous research that indicates that included students with SEBD perform better in various developmental areas than students with SEBD who were placed in exclusive special education (Bijstra, 2004; Drost & Bijstra, 2008; Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009; Stoutjesdijk et al., 2012). An explanation for these findings might be that students who experienced more severe problems and who consequently might have been placed in exclusive special education more often declined participation in our study. For instance, parents and schools who declined participation often indicated that participation would be too burdensome for their child. This may partly explain the fact that we did not find any evidence that student functioning was related to placement choices.

However, the finding that student functioning is not a major determining factor in placement choices for students with SEBD in a possibly selective sample with less severe SEBD problems, is informative by itself. For these students – who do fulfill the eligibility criteria for special education services, but have relatively less severe problems – placement choices might have been less clear from the start and our findings may specifically hold for this group. While students with SEBD showing extreme problems in student functioning might be placed in exclusive special education more often (e.g., Bijstra, 2004), we hypothesize that for those students with SEBD who have relatively less severe problems, aspects of student functioning did not seem to be a determining factor for either type of placement and teacher factors might have played a more important role.

Teachers who later included students with SEBD in their regular classroom reported lower self-efficacy in the classroom context than teachers who later referred students with SEBD to exclusive special education. Teachers did not differ in self-efficacy in the

school context. These results are in contrast with previous studies which either showed that higher teacher self-efficacy was associated with fewer referrals to exclusive special education (e.g., Hughes et al., 1993; Meijer & Foster, 1988; Soodak & Podell, 1993), or that teacher self-efficacy and referral rates were not related (e.g., Egyed & Short, 2006; Gibbs & Powell, 2012; Tejeda-Delgado, 2009). Given that teachers find the problem behaviors of students with SEBD the most difficult behaviors to deal with in the classroom (Meijer, 2001; Goei & Kleijnen, 2009), we speculate that teachers with high self-efficacy (i.e., who feel confident in their own skills to educate, motivate, and support students) might realize that the student needs more support than he/she can provide in the regular classroom, resulting in referral to exclusive special education. Teachers with low self-efficacy, in contrast, may question their own abilities more and might feel the need to try harder or to search for more support within their school. Since teachers are predominantly confronted with disruptive behavior of students with SEBD in the classroom context (e.g., Goei & Kleijnen, 2009), it seems reasonable that differences in teacher self-efficacy were found in the classroom context only.

Placement choices for students with SEBD were also related to teachers' attitudes towards inclusive education. Teachers who included students with SEBD in their regular classroom experienced a smaller increase in workload due to inclusion than teachers who referred students with SEBD to exclusive special education; they also had stronger equity views and perceived more benefits of inclusion. This is in line with previous research and lends support to the assumption that teachers with more positive attitudes towards inclusion are more likely to deal with the special educational needs of students with SEBD in the regular education context (Avramidis & Norwich, 2002; Meijer, 2001; Van der Veen et al., 2010). This might also relate to research that finds that teachers in regular education often perceive themselves not to be adequately prepared to teach students with special educational needs in their classrooms (Solis, Vaughn, Swanson, & McCulley, 2012). Teachers of both groups did not differ in their attitudes regarding the practical problems that students with disabilities present to teachers (e.g., classroom accessibility for students with physical disabilities and alternative communication for students with hearing disabilities). We hypothesize that this finding may suggest that practical problems present more generally-perceived objective challenges to teachers (i.e., "evaluations in the professional sphere of responsibility", see Bailey, 2004, p. 78), whereas workload and equity views may reflect teachers' individually-varying subjective experiences to a higher extent (i.e., "personal attitudes", see Bailey, 2004, p. 78).

The self-perceived social-emotional functioning of students differed between typically developing students and students with SEBD: when they resided in regular education classrooms without additional support, students with SEBD perceived their social-emotional functioning more negatively than typically developing students. This

is consistent with previous research (Chansky & Kendall, 1997; Ekornås et al., 2011) and indicates that students with SEBD – like their parents and teachers – experience problems in their social-emotional functioning themselves. Students' self-perceptions were however not related to placement choices: included and excluded students with SEBD held equally negative self-perceptions of their social-emotional functioning. We hypothesize that irrespective of later inclusion or placement in exclusive special education, before placement choices are made, both subgroups acknowledge that they do not function well, which seems to confirm their need for additional support.

### **Strengths, limitations, and implications for practice**

This study contributes to the literature in several ways. First, we showed in which ways students with SEBD, who were retrospectively divided in two subgroups of included and excluded students, were similar or different before placement choices had been made. Second, we used multi-informant data and we integrated various domains of student functioning (i.e., behavioral, social, and academic), while previous studies often used fewer informants and examined fewer domains. Third, we combined student characteristics (i.e., aspects of student functioning) and contextual characteristics (i.e., teacher factors) when examining the relationships with placement choices for students with SEBD. Fourth, we investigated self-perceptions of students with SEBD, which is rarely done among this special population. Last, the use of innovative Bayesian statistical procedures allowed us to test to what extent our data supported conflicting hypotheses based on mixed findings in the literature. Therefore, we were able to draw preliminary conclusions based on a relatively small sample from a special population.

With a small sample size caution must be applied, as the Bayes Factors for our separate analyses of student functioning and teacher factors were low. This indicates only weak support in favor of the hypotheses under consideration. When all student functioning variables were simultaneously considered in a single, more complex hypothesis, the data did not support the respective hypothesis anymore. More research with larger samples needs to be undertaken to uncover hypotheses that receive substantial support of the data over other hypotheses and to rule out unconsidered hypotheses, weak data, or other explanations; however, the results of the current study may be used to direct future research questions in this field. In addition, we were not able to examine school level factors, while school level factors like school systems, administrative support, school policies, school size, school attractiveness and facilities, the implementation of school wide programs, the presence or lack of the implementation of evidence-based practices, and the proportion of students with special educational needs in a school could play a direct role or indirect role (e.g., by influencing teachers' self-efficacy and attitudes towards inclusive education) in placement decisions. Consequently, the

conclusions that can be drawn about teacher factors are limited.

Furthermore, our study is limited by several methodological concerns. We used several measures that have only been validated by the authors of the instrument instead of by multiple sources of evidence; the PATIE has not yet been validated for use among teachers; the norms of some of our measures were outdated (e.g., EMT and PI-dictee); our Excluded Students and Negative Expectations subscales showed insufficient reliability; and the use of our newly created classification scores based on TRF and SEV classification scores was not validated by procedural or psychometric studies. Furthermore, although we used the most reliable and validated self-report measures of the constructs we studied, there is little research on the psychometric qualities of self-report measures with students with SEBD. Directions for future research would therefore be to develop high-quality measurement tools for research and practice that have been experimentally validated for use among students with SEBD and, when these are lacking, to sufficiently address how these issues related to reliability and validity limit the study's findings.

Finally, the generalizability of our findings was limited by the restricted region where data was collected (i.e., only northern and middle parts of The Netherlands participated), sex effects (i.e., a limited number of participating girls), ethnicity effects (i.e., a limited number of participants of various backgrounds), and selection effects (i.e., a relatively high non-participation rate, suggesting that the students who experienced the most severe problems in multiple areas declined). Furthermore, we could not examine the representativeness of our study sample, since we did not have any data on the non-participating students with SEBD. In addition, from an international perspective, the eligibility criteria for special education services in The Netherlands differ from those in the United States. For instance, in the US, students whose emotional and behavioral problems can be explained by other conditions or specific developmental disorders, such as ASD or CD, do not automatically fulfill the requirements for eligibility for placement. In The Netherlands, however, the additional exclusion criteria are less strict, which leads to the inclusion of students with comorbid disorders (e.g., ASD or CD) and students who have been involved in the justice system to the SEBD population in The Netherlands and not in the United States. Although one could expect significant overlap between populations due to the severe common problems that students with SEBD face across countries (e.g., Breeman et al., 2015; Cannon et al., 2013; Lynn, Carroll, Houghton, & Cobham, 2013; Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005), the differences may prevent direct comparisons between students with EBD in the US and students with SEBD in The Netherlands, for example. Future research would benefit from a more in-depth consideration of variations across sexes, ethnicities, countries, and geographical regions in larger samples.

Despite the limitations, our findings suggest that at least for students with SEBD who fulfill the criteria for additional support, but who might not show the most severe problems in student functioning, aspects of student functioning may not be determining factors in placement choices, while teacher factors do seem to play a role. This indicates that we might need to focus not only on student functioning but also on how teacher factors – and relatedly school factors – may influence placement choices. To this end, we might need different and/or additional measures to examine which school and teacher factors play an important role in the management of disruptive behavior in the classroom, before students need to apply for special education services. School and teacher factors might be at play in any situation in which student disruptive behavior is considered unmanageable. If certain school and teacher factors play a role, schools and teachers may possibly try to alter these factors with evidence-based methods first.

Moreover, as teachers in regular education often perceive themselves not to be adequately prepared to teach students with special educational needs in their classrooms (Solis et al., 2012), another step to take first might be to support these teachers in school. Specifically, teachers might be supported to adequately assess various aspects of student functioning and to evaluate to what extent their own personal beliefs might play a role in monitoring and managing students with SEBD in the classroom. By effectively supporting these teachers, they might acquire both skills to better manage disruptive student behavior in the classroom and to better evaluate which students can be supported in inclusive regular education and which students may benefit more from exclusive special education. Ways to effectively support teachers might be to have specialists (e.g., special education teachers and school psychologists) coordinate curriculum changes such as the use of alternative grouping in pairs or small groups to facilitate learning in the classroom (Solis et al., 2012); to use highly-valued and effective methods for professional development such as coaching on the job, peer supervision, and consulting colleagues (Bruggink, 2015; Inspectorate of Education, 2013b; Walraven, Kieft, & Broekman, 2011); and to facilitate teachers in time for communication and planning with their direct colleagues (Solis et al., 2012). Combined with findings on the development of students in different educational settings, our findings may also contribute to the development of clear guidelines to inform future placement choice processes. Longitudinal research will be needed to examine if specific factors can be distinguished that predict the development of students with SEBD in both educational settings.

Furthermore, our study showed that students with SEBD, like their parents and teachers, experience problems in their social-emotional functioning. This indicates that students with emotional and behavioral problems do acknowledge problems in social-emotional functioning in school. Self-reported screening instruments could thus



be used to identify students at risk and the school monitoring systems that schools are obliged to use to follow student development in various areas, can conveniently be used to identify these vulnerable students. Although self-perceptions were not related to placement choices, future research examining self-perceptions of students with SEBD in both settings for inclusive regular education and settings for exclusive special education may shed more light on students' self-perceived social-emotional development after they have received a certain amount of special education services.



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

The supplementary material to this chapter is available at: [goo.gl/LcEdss](https://goo.gl/LcEdss)

Author contributions: I. Zweers conceptualized the study, N. T. Tick, and J. O. Bijstra gave advice and feedback. I. Zweers and trained graduate students collected the data.

I. Zweers analyzed the data and wrote the manuscript. R. van de Schoot provided feedback on the analyses and the manuscript. N. T. Tick and J. O. Bijstra provided feedback on the manuscript.

## 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, we found support for the hypothesis that excluded students function better socially and academically than comparable included students with SEBD. Exclusive special education thus seems to be equipped to support at least some students with SEBD in their social-emotional and learning development – better than current regular education – which may be a counter argument against the ‘inclusion for all’ perspective on educational needs.

**Keywords:** social-emotional/behavioural difficulties, social functioning, academic functioning, Bayesian statistics

## INTRODUCTION

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, & 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 adverse outcomes.

In the Netherlands, eligibility for special education 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). In inclusive schools for regular education, students with SEBD are educated with their typically developing peers. In exclusive schools for special education, they are educated solely with other students with special educational needs. In exclusive settings, a more structured daily educational program is provided, classrooms consist of fewer students and students are supported by teachers trained to predict, understand, and replace disruptive and inappropriate behaviour (Lane, Wehby, Little, & Cooley, 2005).

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. Several 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 (under review) however showed that included and excluded students with SEBD did not differ in social, emotional, behavioural and academic functioning prior to placement.

Placement choices about which educational setting best meets the needs of a specific

student with SEBD can be difficult, given that choices for 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 important for making 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 (United Nations, 2006; Oh-Young & Filler, 2015), some have come to believe that exclusive settings are never appropriate and that inclusive settings have to be aimed for. Several studies have indeed shown that students with SEBD included in regular education perform better than excluded students with SEBD in task-related behaviour, reading, spelling, and math and to have more positive social relationships with teachers and peers than 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, Anastasiou, Badar, Travers, & Wiley, 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.b). 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 larger project on the development of students with SEBD in primary education. Therefore, 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, students participated after they received 1,5 years of special education services. After their schools gave verbal consent, schools sent out informative letters in 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).

**Table 1 |** Descriptive Statistics of the Students with SEBD

Diagnosis in %					Comorbidity in %				IQ
ASD	ADHD	DBD	LD	other	undiagnosed	one	two	more	$M (SD)$
56.9	47.1	5.9	33.3	25.5	2.0	43.1	39.2	15.7	102.00 (13.59)

*Note.* 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 contains 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  $> .05$ ).

**Table 2 |** Descriptive Statistics of the Subsamples

	Sex		$n$ per Grade				Class size <sup>a*</sup>	Age in years	Ethnicity
	boys	girls	5	6	7	8	$M (SD)$	$M (SD)$	% Dutch
Included SEBD	30	6	1	15	11	9	23.23 (5.65)	10.19 (1.01)	97.2
Excluded SEBD	10	5	2	3	5	5	11.93 (1.87)	9.93 (.96)	100

*Note.* <sup>a</sup> One missing in the included students with SEBD group. <sup>\*</sup> Classrooms of excluded students with SEBD contained significantly fewer students than classrooms of included students with SEBD,  $F(1,48) = 56.65$ ,  $p < .001$ .

## 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 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 = *not at all* to 2 = *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 = *right statement definitely applies* to 4 = *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.

### ***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<sup>NL</sup> (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), using the software's default settings. BIEMS enabled us to test our conflicting hypotheses as coherent models instead of testing a set of null hypotheses. In BIEMS a single test directly indicated which one of our conflicting hypotheses received most support from the data. In addition, while studies examining 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. 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 3 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 ( $H_0$ ). 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 3. 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 3. 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. Results of our study indicate that excluded students with SEBD function better socially and academically than included students with SEBD, thereby supporting the Excluded Performs Better hypothesis. Exclusive special education is apparently equipped in such a way that students with SEBD are well-supported in their social-emotional and learning development – and better supported than in current regular education.

Our findings contrast with most previous studies showing that included students with SEBD either perform better academically and socially (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

**Table 3** | Descriptive Statistics for Social and Academic Functioning for both Subsamples of Students with SEBD

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

Note. *CL*<sub>1</sub> = Closeness (teacher-reported); *CO*<sub>1</sub> = Conflict (teacher-reported); *DE* = Dependency; *SA* = Social acceptance; *POP* = Perceived popularity; *SCS* = Social-Cognitive Skills; *TA*<sub>1</sub> = Task attitude (teacher-reported); *READ* = Reading achievement; *SPEL* = Spelling achievement; *MATH* = Math achievement; *BF* = Bayes factor; <sub>*u*</sub> = unconstrained hypothesis.

<sup>a</sup> 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. <sup>b</sup> 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.

functioning (e.g., Ledoux et al., 2012; Reid et al., 2004; Stoutjesdijk & Scholte, 2009) – the Equal Performance hypothesis. Our results are in line with findings by Useche et al. (2014), who also found that students with SEBD performed better socially in exclusive settings. To our knowledge, we conducted the first study comparing students with SEBD in these two school settings who were comparable *before* placement. This unique feature of the present study allows for stronger conclusions on effects of inclusion and exclusion than previous cross-sectional studies.

Especially given the recent discussion going on in many countries, promoting inclusive regular education over exclusive special education (United Nations, 2006; Oh-Young & Filler, 2015), it is notable that our findings supported 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). Exclusive special education may thus provide the students with SEBD with the necessary support to show progress in both their social-emotional and learning development.

Alternatively, for social functioning, teachers and peers in special education contexts may have different reference points for normative behaviour. That is, they are used to the problematic behaviour of the student with SEBD population, whereas teachers and peers in regular education have a reference point for normative skills as generally defined by society. 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). Nevertheless, different normative perspectives cannot explain differences in academic performance, because similar standardized academic tests were used.

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, the results should be interpreted with some caution, since only small samples of included and excluded students with SEBD were included in our study.

Nevertheless, although larger samples need to be studied to replicate these findings, our findings provide a counter argument against the international tendency to promote inclusive education (United Nations, 2006; Oh-Young & Filler, 2015). Special education services in exclusive settings may thus afford certain benefits, not typically found in regular education, which promote both the social-emotional as well as the learning development of students with SEBD. Therefore, when additional support is needed for students with SEBD, exclusive settings should not be disregarded, but should be seriously considered as an option as well.







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## **MONITORING SOCIAL-EMOTIONAL FUNCTIONING OF ELEMENTARY SCHOOL STUDENTS: TESTING MEASUREMENT INVARIANCE ACROSS STUDENT GROUPS AND OVER TIME**

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Submitted as: Zweers, I., Boom, J., & Tick, N. T.

*Monitoring social-emotional functioning of elementary school students: Testing measurement invariance across student groups and over time.*

The supplementary material to this chapter is available at: [goo.gl/eP9no2](https://goo.gl/eP9no2)

Author contributions: I. Zweers conceptualized the study, N. T. Tick, and J. Boom gave advice and feedback. I. Zweers and trained graduate students collected the data. I. Zweers analyzed the data and wrote the manuscript. J. Boom provided feedback on the analyses and the manuscript. N. T. Tick provided feedback on the manuscript.

## ABSTRACT

Dutch schools keep records and compare achievements of all students with national norms and over time. We tested measurement invariance of the VISEON subscales Self-esteem, Work attitude, and Attitude towards school – an often-used instrument to measure social-emotional functioning – across two student groups (typically developing students and students with social-emotional and behavioural difficulties [SEBD]) and over time. Measurement invariance across student groups was tenable, but only partial invariance (i.e., loading invariance) over time was tenable. Our results suggest that the VISEON can be used for comparing the achievements of typically developing students with those of students with SEBD. This study provided less support for the use of the VISEON in a longitudinal student monitoring system.

**Keywords:** social/emotional/behavioural difficulties, measurement invariance, self-perceptions, social-emotional functioning

## INTRODUCTION

Schools play an important role in raising healthy children by fostering both their cognitive development and their social-emotional development (Crnic & Neece, 2015). To know whether schools attain these goals, primary schools in The Netherlands are obliged to use a student monitoring system (SMS) (Rijksoverheid, n.d.a). As monitoring data underlies important student-related decisions, such as referral to special education services, decent monitoring instruments are essential.

The Dutch questionnaire *VolgInstrument Sociaal-Emotionele ONtwikkeling* (VISEON) [student monitoring instrument for social-emotional development] (Citogroep, 2004) is a frequently-used instrument for assessing Dutch students' social-emotional functioning. With the VISEON, students report on their own social-emotional functioning (see Methods for an elaborate explanation). Schools have to undertake action to support low-scoring students.

Monitoring data may thus be especially relevant for students in high need of support, such as students with social-emotional and behavioural difficulties (SEBD). These students show internalizing and externalizing behaviour problems, social problems, and impaired academic performance (Landrum, 2011; Ledoux, Roeleveld, Van Langen, & Smeets, 2012). However, the use of self-report systems to identify such needs among these students may be questioned (e.g., Ekornås et al., 2011). That is, there may be differences in how typically developing students and students with SEBD perceive their social-emotional functioning and/or interpret questions (i.e., measurement variance), impacting the comparability with normative data. Therefore, measurement invariance across student groups should be tested.

While the psychometric properties of the VISEON have been found acceptable to good with typically developing students (Citogroep, 2004), these studies did not examine the factor structure of the VISEON and its subscales, let alone the similarity of the factor structure across various student populations. Furthermore, scores on the VISEON are used to record students' social-emotional development, as well as the impact of support over time. Yet, the interpretation of the concepts in a questionnaire can change over time, for instance over the course of psychological treatment (e.g., Fokkema, Smits, Kelderman, & Cuijpers, 2013) or, likewise, over the course of provision of special education services. More insight about measurement invariance of the VISEON over time is needed.

The current study investigated measurement invariance of the VISEON subscales Self-esteem, Task attitude, and Attitude towards school across two different student groups (students with SEBD and typically developing peers) and two measurement occasions (before and after students with SEBD received special education services). Only if

measurement invariance can be established, students' self-perceived social-emotional functioning will be meaningfully compared between student groups and measurement occasions.

## METHODS

### Procedure

Two institutions, who determined eligibility for additional support, invited parents to participate in our study when parents applied for eligibility for additional support for their child with SEBD. Parents agreed by signing a consent form. Subsequently, we invited the schools of the students with SEBD to participate. After verbal consent, schools sent out informative letters in 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 data during two subsequent classroom survey sessions. Researchers gave verbal instructions after which students completed the questionnaires. Study procedures were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki declaration.

During the first measurement, students with SEBD resided in regular education without additional support. Subsequently, independent committees decided whether students with SEBD were eligible for additional support, and parents and schools decided whether the student with SEBD would receive special education services in an inclusive classroom for regular education (*included students*) or in a school for exclusive special education (*excluded students*). During the second measurement, students with SEBD had received additional support of either form for approximately 8 months. The flowchart in Figure 1 maps the steps taken from recruitment until final *n*'s for each subgroup.

### Participants

Fifty-nine Dutch elementary students with SEBD and 821 typically developing classmates participated in this study. The majority of students with SEBD fulfilled diagnostic criteria for DSM-IV diagnoses (American Psychiatric Association, DSM-IV, 2000) (see Table 1 for additional descriptive statistics). Typically developing classmates had no known history of any emotional or behavioural disorder in their school administration data. Preliminary analyses examining background variables showed that the students with SEBD at T1 contained significantly more boys than the typically developing students,  $\chi^2(1) = 24.00$ ,  $p < .001$ . No other differences between groups were found (see Table 2).

Measure

The student version of the Dutch VISEON (Citogroep, 2004) measures five dimensions of the student’s social-emotional functioning underlying student behaviour in the school context. We used three dimensions: Self-esteem, Task Attitude, and Attitudes Towards School (see supplementary materials for complete subscales). Students had to rate on a 4- point Likert scale (ranging from 1 = *not true* to 4 = *true*) to what extent the statements applied to them. Cronbach’s alpha coefficients were .78 and .83 for Self-esteem, .74 and .81 for Task attitude, and .80 and .82 for Attitude towards school for T1 and T2, respectively.

**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>
57.9	47.4	3.5	38.6	21.1	1.8	42.1	40.4	15.8	101.00 (13.87)

*Note.* All demographic variables were assessed at T1. 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 Subsamples

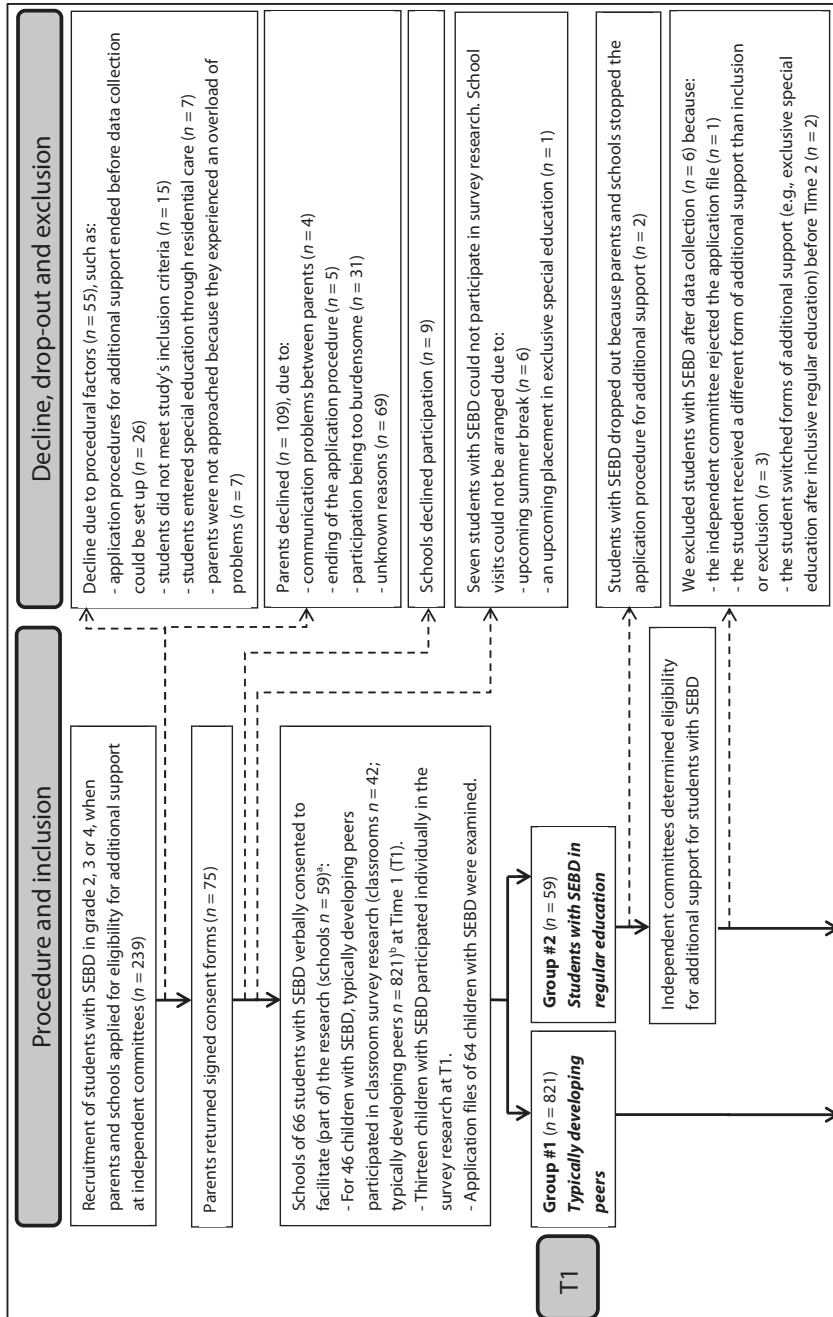
T1 Samples	Sex <sup>a</sup>		<i>n</i> per Grade <sup>b</sup>							Class size	Age in years	Ethnicity
Students	boys	girls	1	2	3	4	5	6	<i>M (SD)</i>	<i>M (SD)</i>	% Dutch	
Typically developing	409	408	25	166	319	233	57	18	23.66 (4.52)	8.75 (1.19)	97.5	
SEBD	49	10	0	14	26	19	0	0	23.19 (4.59)	8.66 (0.99)	96.6	

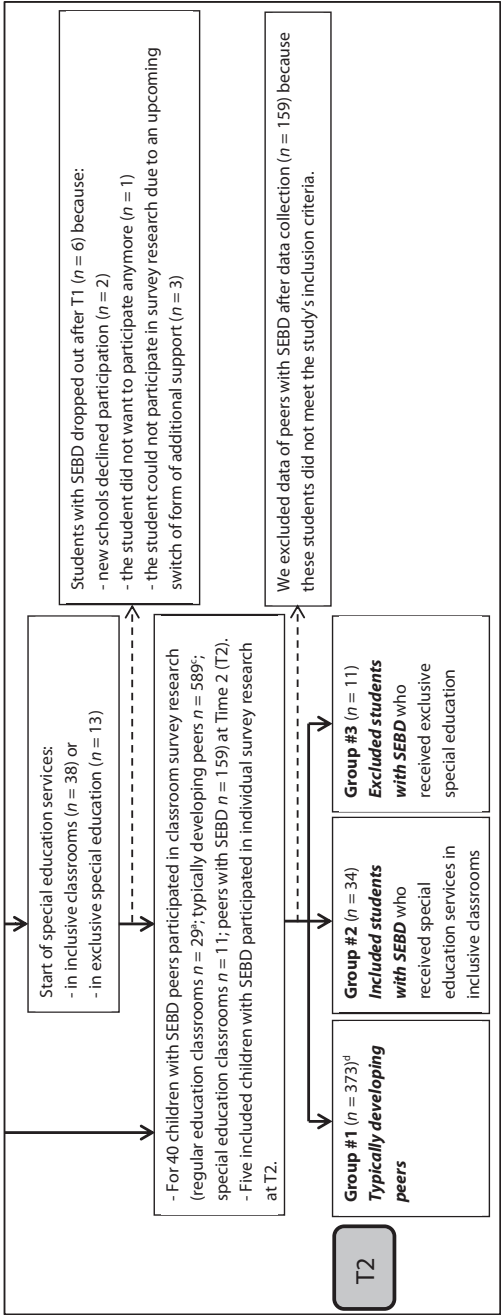
*Note.* All demographic variables were assessed at T1. <sup>a</sup> Four missings in the typically developing student group. <sup>b</sup> Three missings in the typically developing student group. \* The group of students with SEBD contained significantly more boys than the group of typically developing students,  $\chi^2(1) = 24.00, p < .001$ .

Data-Analyses

We first conducted a confirmatory factor analysis (CFA) for categorical data, both in the total sample of T1 and in the two subgroups separately, using WLSMV and the theta parameterization in Mplus v7.4 (Muthén & Muthén, 1998-2015). Subsequently, we tested measurement invariance (MI) across the two student groups at T1 and MI over time. We reported CFI, TLI, and RMSEA.

For both types of MI, we followed the procedure as described in Verhulp, Stevens, Van de Schoot, & Vollebergh (2014) backwards. We considered the model resulting from our CFA as our baseline model. In this first model, all parameters were fixed across groups (or over time), with factor means fixed at 0 and variances fixed at 1. In the second model, factor means and variances were freed across groups (or over time). In the third model, instead of freeing factor means and variances, thresholds were freely estimated across





**Figure 1** | Flowchart of recruitment procedure, inclusion and exclusion of participants, and drop-out during data collection.  
Note. <sup>a</sup> Several schools contained two students with SEBD who participated in the study resulting in lower n's for participating schools. <sup>b</sup> Four classrooms contained two students with SEBD who participated in the study resulting in lower n's for participating classrooms. <sup>c</sup> Only typically developing peers of included students with SEBD at T2 were included. This implied that some typically developing peers who already participated in the study at T1 also participated at T2, and that some new classmates of included students with SEBD participated at T2 only. Typically developing peers of students with SEBD who received exclusive special education dropped out of the study. <sup>d</sup> Only typically developing peers who were present at T1 and T2 could be included in the analyses of measurement invariance over time. Typically developing peers who participated only a single measurement time were excluded from the analyses.

groups (or over time), while loadings were fixed across groups (or over time). In the fourth model, factor loadings and factor means and variances were freed across groups (or over time), with thresholds fixed across groups (or over time). In the fifth and final model, instead of freeing factor means and variances, thresholds were freely estimated across groups (or over time) and factor loadings were freely estimated across groups (or over time). We considered MI tenable if models 1 and/or 2 fitted the data better than models 3, 4 and/or 5. We considered partial MI tenable – in decreasing order – if model 3 (i.e., loading invariance) or model 4 (i.e., threshold invariance) fitted the data better than the other models, and we considered MI not reasonable if model 5 fitted the data better than the other models.

## RESULTS

### Model Fitting

The results of the CFA with the three VISEON subscales showed mediocre fit (Little, 2013) in our total sample. We added two covariances between two items of the latent Attitude Towards School factor and between two items of the latent Task Attitude factor. This modified model shows acceptable fit in our total sample and in our subsample of typically developing students, although only mediocre fit was found in our sample of students with SEBD (see Table 3).

**Table 3 |** Model Fit Indices for the Three Factor Model of the VISEON Subscales Self-Esteem, Task Attitude, and Attitudes Towards School in the Total Sample and the Different Student Groups at T1

	$\chi^2$	$p$	CFI	TLI	RMSEA
T1 Total sample original	1176.381	< .000	.899	.888	.066
T1 Total sample modified <sup>a</sup>	971.059	< .000	.921	.912	.058
T1 Typically developing students <sup>a</sup>	851.380	< .000	.926	.917	.055
T1 Students with SEBD <sup>a</sup>	343.228	< .000	.882	.869	.082

*Note.* <sup>a</sup> Based on the modification indices shown by Mplus for the three factor model when considering the data of T1, T2 and T1 and T2 simultaneously, we have added a covariance between two items of the latent Attitude Towards School factor and a covariance between two items of the latent Task Attitude factor to improve our model fit to acceptable standards (Little, 2013).

### Measurement Invariance across Groups

To examine MI across student groups, we examined five models in the total student sample of T1 (see Table 4). The second model – the strict factorial invariant model allowing for mean differences – fitted the data best as indicated by the highest CFI/TLI values and the lowest RMSEA value. Therefore, we assumed measurement invariance



across groups to be tenable. A comparison of latent mean scores across student groups showed that students with SEBD showed significantly lower factor mean scores on the VISEON Task attitude and Attitude towards school subscales than typically developing peers (see Table 5). No mean-level differences were found between groups for the VISEON Self-esteem subscale.

**Table 4 |** Model Fit Indices for the Modified Models Used for Testing Measurement Invariance Across Groups

Modified model			CFI	TLI	RMSEA
1 <sup>a</sup>	No differences allowed	strict factorial invariance	.925	.930	.045
2 <sup>a</sup>	Mean differences allowed	strict factorial invariance	.936	.940	.042
3 <sup>a</sup>	Threshold differences allowed	partial (loading) invariance	.932	.929	.046
4 <sup>a</sup>	2 <sup>a</sup> + Loading differences allowed	partial (threshold) invariance	.925	.926	.047
5 <sup>a</sup>	3 <sup>a</sup> + Loading differences allowed	no invariance	.928	.921	.048

*Note.* Model 1: factor loadings and thresholds fixed across groups (for both groups means and variances fixed at 0 and 1, respectively); Model 2: factor loadings and thresholds fixed across groups (for typically developing group mean and variance fixed at 0 and 1, respectively; for SEBD group mean and variance freely estimated); Model 3: thresholds freely estimated across groups (for both groups means and variances fixed at 0 and 1, respectively); Model 4: factor loadings freely estimated across groups (for typically developing group mean and variance fixed at 0 and 1, respectively; for SEBD group mean and variance freely estimated); Model 5: factor loadings and thresholds freely estimated across groups (for both groups means and variances fixed at 0 and 1, respectively). <sup>a</sup> Based on the modification indices shown by Mplus for the three factor model when considering the data of T1, T2 and T1 and T2 simultaneously, we have added a covariance between two items of the latent Attitude Towards School factor (i.e., “If we will move houses, I would like to stay in my current school” and “I am happy to be in this school”) and a covariance between two items of the latent Task Attitude factor (i.e., “I talk during classroom instruction” and “During classroom instruction I am good at keeping quiet”) to improve our model fit to acceptable standards (Little, 2013). In addition, we conducted the same analyses with the original three factor model and similar results were found.

**Table 5 |** Factor Means (i.e., Logits) of the VISEON Subscales Self-Esteem, Task Attitude, and Attitude Towards School for the Two Student Groups at T1

	TD students		Students with SEBD	
	<i>M</i>	<i>(SE)</i>	<i>M</i>	<i>(SE)</i>
Self-Esteem	.00	(.00)	-.229	.172
Task Attitude	.00	(.00)	-.799 <sup>a</sup>	.161
Attitude Towards School	.00	(.00)	-.548 <sup>a</sup>	.190

*Note.* Typically developing students are the reference group for the comparison and therefore estimates are fixed to be zero. TD = typically developing students; INCL = included students with SEBD. <sup>a</sup> Group differs significantly from typically developing peers at  $p < .001$ .

## Measurement Invariance over Time

To examine MI over time, we examined five models for testing MI over time in the total student sample and in the samples of typically developing students and included students with SEBD (see Table 6). MI could not be tested among excluded students, because this subsample was too small.

**Table 6 |** Model Fit Indices for the Modified Models Used for Testing Measurement Invariance Over Time in the Total Sample and in the Typically Developing and Included SEBD subsamples

Modified model	Total sample			TD sample			Included SEBD sample		
	CFI	TLI	RMSEA	CFI	TLI	RMSEA	CFI	TLI	RMSEA
<b>1<sup>a</sup></b>	.900	.903	.038	.889	.892	.047	.801	.807	.079
<b>2<sup>a</sup></b>	.899	.902	.038	.888	.891	.047	.806	.811	.078
<b>3<sup>a</sup></b>	.906	.902	.038	.896	.893	.047	.798	.790	.082
<b>4<sup>a</sup></b>	.888	.888	.041	.876	.876	.050	.834	.834	.073
<b>5<sup>a</sup></b>	.901	.895	.039	.889	.882	.049	.840 <sup>b</sup>	.831 <sup>b</sup>	.074 <sup>b</sup>

*Note.* Model 1 (measurement invariance): factor loadings and thresholds fixed over time (for both T1 and T2 means and variances fixed at 0 and 1, respectively); Model 2 (measurement invariance allowing for mean differences): factor loadings and thresholds fixed over time (for T1 mean and variance fixed at 0 and 1, respectively; for T2 mean and variance freely estimated); Model 3 (loading invariance): thresholds freely estimated over time (for both T1 and T2 means and variances fixed at 0 and 1, respectively); Model 4 (threshold invariance): factor loadings freely estimated over time (for T1 mean and variance fixed at 0 and 1, respectively; for T2 mean and variance freely estimated); Model 5 (pattern invariance): factor loadings and thresholds freely estimated over time (for both T1 and T2 means and variances fixed at 0 and 1, respectively).

<sup>a</sup> Based on the modification indices shown by Mplus for the three factor model when considering the data of T1, T2 and T1 and T2 simultaneously, we have added a covariance between two items of the latent Attitude Towards School factor (i.e., "If we will move houses, I would like to stay in my current school" and "I am happy to be in this school") and a covariance between two items of the latent Task Attitude factor (i.e., "I talk during classroom instruction" and "During classroom instruction I am good at keeping quiet") to improve our model fit to acceptable standards (Little, 2013). In addition, we conducted the same analyses with the original three factor model and similar results were found. <sup>b</sup> Threshold values of one item of the latent Self-Esteem factor and the latent Attitude Towards School factor were fixed at -3 and -4 respectively in order for the model to run.

For both the total student sample and the typically developing sample, all models show mediocre to acceptable fit (Little, 2013) and none of the models clearly outperformed the others. Nevertheless, the third model – the partial (loading) invariant model – had the highest CFI value and the lowest RMSEA value. For the sample of included students with SEBD, results could not be interpreted, because all models showed poor fit (Little, 2013).

## DISCUSSION

To establish whether major decisions for the future educational careers of students in need of additional support can be made based on students' achievements in student monitoring systems, we examined measurement invariance across groups and over time for the VISEON – an often-used instrument for assessing and monitoring Dutch students' social-emotional functioning (Citogroep, 2004). Our study showed that the items of the VISEON subscales Self-esteem, Work attitude, and Attitude towards school (Citogroep, 2004) were interpreted similarly across student groups, which suggests that the VISEON can be used to meaningfully assess and compare the achievements of typically developing students and students with SEBD. Consistent with previous research (Ekornås et al., 2011; Ledoux et al., 2012) we found that students with SEBD reported more negative attitudes towards work and school than typically developing peers. Although the same tendency of lower self-esteem scores for students with SEBD was found, this result was not significant, which may be due to the small sample size of this group.

For measurement invariance over time, none of the models tested clearly outperformed the others. This finding let us to conclude, however, in the context of considerations of parsimony together with the small differences that still were found, that the measurement variant models were not more plausible than the measurement invariant models. So, some degree of measurement invariance (i.e., partial [loading] invariance) is plausible or at least could not be rejected. Although this does not entirely support the use of the VISEON over time, this does not suggest that its use should be discouraged.

Some limitations need to be considered. First, measurement invariance was only established with typically developing students and students with SEBD. As classrooms often contain students with various special educational needs (e.g., physical or cognitive difficulties), future research may establish measurement invariance across these various populations. Furthermore, the results should be interpreted with some caution, since only a small sample of students with SEBD was included. Larger samples need to be studied to replicate these findings.



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## **SIMILAR DEVELOPMENT IN SEPARATE EDUCATIONAL CONTEXTS?**

### DEVELOPMENT OF SOCIAL RELATIONSHIPS AND SELF-ESTEEM IN STUDENTS WITH SOCIAL-EMOTIONAL AND BEHAVIORAL DIFFICULTIES IN INCLUSIVE CLASSROOMS AND EXCLUSIVE SCHOOLS FOR SPECIAL EDUCATION

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*Similar development in separate educational contexts? Development of social relationships and self-esteem in students with social-emotional and behavioral difficulties in inclusive classrooms and exclusive schools for special education.*

The supplementary materials to this chapter are available at: [goo.gl/EosQHJ](https://goo.gl/EosQHJ)

Author contributions: I. Zweers conceptualized the study, R. van de Schoot, S. Depaoli, B. Orobio de Castro, and J. O. Bijstra gave advice and feedback. I. Zweers and trained graduate students collected the data. I. Zweers and J. P. Clifton analyzed the data. R. van de Schoot and S. Depaoli provided feedback on the analyses. I. Zweers wrote the manuscript. R. van de Schoot, N. T. Tick, B. Orobio de Castro, and J. Bijstra provided feedback on the manuscript.

## ABSTRACT

This study investigated developmental trajectories and differences in levels of student-teacher conflict, peer acceptance, and self-esteem among students with social-emotional and behavioral difficulties (SEBD) included in regular education, excluded students with SEBD in exclusive special education, and typically developing peers. Thirty-six *included* and 15 *excluded* students with SEBD, and 1270 *typically developing* peers participated in our study. We collected data when students with SEBD resided in regular education without additional support. After provision of special education services, we followed the development of included and excluded students with SEBD for 1,5 years with three additional measurements in either inclusive regular education classrooms or in exclusive special education. Data of typically developing peers were collected when they resided in a classroom of a participating student with SEBD. Using Bayesian statistics, we found that excluded students with SEBD had more conflictual relationships with their teachers than typically developing peers, but these relationships improved over time. Included students with SEBD were less accepted among peers than typically developing students and peer acceptance was stable over time for all three groups. Self-esteem and development in self-esteem over time did not differ between groups.

The social context in which students with SEBD are educated appears to influence their social-emotional development in school. For some students with SEBD in regular education, special education services in settings for exclusive special education may improve their relationships with teachers and peers.

**Keywords:** social-emotional/behavioral difficulties, student-teacher relationship, peer acceptance, self-esteem, Bayesian statistics

## INTRODUCTION

Research has consistently shown that during the elementary school years, students' social relationships with teachers and peers and high self-esteem are all important factors for students' adjustment in later life (Hosogi, Okada, Fujii, Noguchi, & Watanabe, 2012; Ladd & Burgess, 2001; Pianta & Stuhlman, 2004). Students with social-emotional and behavioral difficulties (SEBD) face difficulties in establishing and maintaining satisfying interpersonal relationships with teachers and peers (Furlong, Morrison, & Jimerson, 2004; Gresham & Kern, 2004) and are at risk for lower self-esteem than typically developing students (Hosogi et al., 2012). Because of their internalizing and externalizing behavior problems, problems in social functioning, and impaired academic performance (e.g., Furlong et al., 2004; Gresham & Kern, 2004; Landrum, 2011), they face the worst prospects of any student group during and after their school career (Bradley, Doolittle, & Bartolotta, 2008; Lane, Wehby, Little, & Cooley, 2005). Without intervention, these adversities in students with SEBD's development will stay stable or even deteriorate over time (Breeman et al., 2015; Mikami, Griggs, Reuland, & Gregory, 2012; Useche, Sullivan, Merk, & Orobio de Castro, 2014), which indicates that these students seriously are at risk.

When the social-emotional and behavioral difficulties that students with SEBD show severely limit their participation in education, schools can provide special education services. These services are predominantly aimed at supporting the learning development and behavioral functioning of the student with SEBD in school. We do not exactly know how the provision of special education services affects the social-emotional development of students with SEBD in school, although schools play an increasingly important role in fostering not only students learning development, but also their social-emotional development (Crnic & Neece, 2015). These special education services can either be provided in regular education classrooms (*inclusive regular education*) or in exclusive schools for special education (*exclusive special education*). Some researchers and practitioners emphasize the benefits of inclusive regular education while others emphasize the benefits of exclusive special education for the social-emotional development of students with SEBD (Crnic & Neece, 2015; Kauffman & Badar, 2014; Lane et al., 2005). Reasons to include students with SEBD are that inclusion in the regular curriculum supposedly facilitates learning and skill improvement and that inclusive classrooms provide students with SEBD with ample opportunities to learn from their social encounters with typically developing peers. Reasons to place students with SEBD in exclusive schools for special education, in contrast, are that students with SEBD may benefit from highly specialized environments in which instruction is tailored to their unique needs and in which professional and paraprofessional behavioral/

therapeutic support is available in the school. In these exclusive schools for special education, however, the social encounters of students with SEBD are with peers with SEBD, and not much is known about how this affects the social-emotional development of students with SEBD.

Although the international political tendency in the last decades has been to include students who need special education services in the regular classroom (Ledoux, Roeleveld, Van Langen, & Smeets, 2012; Oh-Young & Filler, 2015; United Nations Educational Scientific and Cultural Organization [UNESCO], 1994), there is no agreement on which educational context is best for the development of social relationships and self-esteem in students with SEBD. Research into the development of students with SEBD in various educational settings is sparse and most of it has only focused on academic progress (Carlberg & Kavale, 1980; Oh-Young & Filler, 2015; Schneider & Leroux, 1994; Wang & Baker, 1985-1986), so even less is known about the social-emotional development of these students (Breeman, et al., 2015; Useche et al., 2014).

### **Present study**

The present study compared the development of social relationships and self-esteem of elementary school students with SEBD in regular education classrooms with those in exclusive special education classrooms and with their typically developing peers in regular education. Specifically, we investigated three developmental aspects – the conflict dimension of the student-teacher relationship, social acceptance among peers, and students' self-esteem in school – for which we examined developmental trajectories and differences between student groups.

To this end, we set up a three phase growth curve model (see Figure 1). In phase one, we set up a growth curve model for the total group. In phase two, we examined the growth curve models for each subgroup separately to see whether included and excluded students with SEBD and typically developing peers differed in their initial levels (i.e., intercept) and/or development over time (i.e., slope). In phase three, we zoomed in on the two subgroups of students with SEBD only, to see whether we could find factors – present before students with SEBD received special education services – that could predict development in student-teacher conflict, peer acceptance, and self-esteem.

### **Bayesian statistics**

As the subgroups of included and excluded students with SEBD comprise small numbers, conventional statistics cannot be used to examine development over time (McNeish, 2016; Van de Schoot, Broere, Perryck, Zondervan-Zwijnenburg, & Van Loey, 2015). To this end, we used Bayesian statistics to analyze our data in which prior knowledge about probable relationships between variables is incorporated in the analyses to aid in the

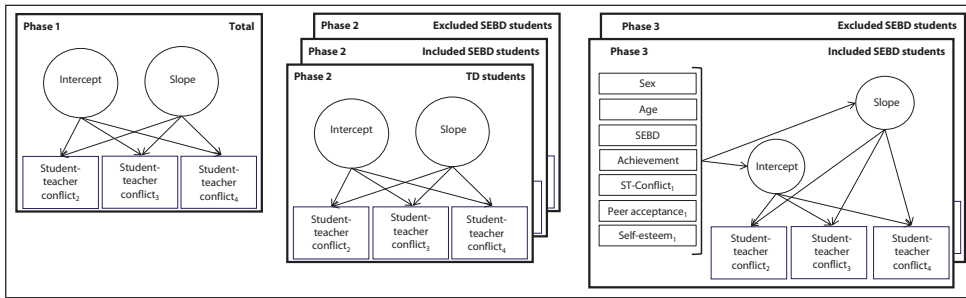


estimation of our models (see Van de Schoot, Denissen, Neyer, Kaplan, Asendorpf, & Van Aken, 2014 for a gentle introduction to Bayesian statistics). For each parameter in the model, for instance an intercept or slope, the researcher specifies a distribution of likely values (i.e., a prior distribution), with the variance of the distribution reflecting the researcher's level of (un)certainly about the hypothesized value of the parameter of interest. Next, the prior distribution is combined with the data that the researcher has collected, using an iterative sampling procedure. The result is a posterior distribution that reflects the researcher's updated knowledge, balancing background knowledge with observed data. To ensure proper implementation and reporting of Bayesian methods, we followed the WAMBS-checklist of Depaoli and Van de Schoot (2017).

### ***Prior information***

Before estimating our model, we specified prior distributions for each parameter in our model. To search for background information we followed the decision tree of Zondervan-Zwijnenburg, Peeters, Depaoli, and Van de Schoot (in press). Namely, first, we established that our exceptional groups would comprise fewer than 200 participants. Second, we used the study of Zondervan-Zwijnenburg, Depaoli, Peeters, and Van de Schoot (submitted) to determine that we would need prior information to run our models. Third, for each developmental aspect that we examined (i.e., student-teacher conflict, peer acceptance, and self-esteem), we conducted a literature search in two scientific search engines for recent meta-analyses. Fourth, as the recent meta-analyses that we found did not cover our parameters with the required degree of specificity, we searched for additional reviews and supplemented these with empirical studies.

We derived values for our prior distributions from the meta-analyses, reviews, and empirical studies that we found in our literature search. That is, for typically developing students we specified a normal distribution for the intercept of student-teacher conflict, because this is a commonly used distribution in psychological research. Mean and variance values were derived from the study of Zweers, Bijstra, Orobio de Castro, Tick, and Van de Schoot (under review) because our study used similar measures for student-teacher conflict and our study examined the same student samples. In addition, the values in Zweers et al. were similar to those found in the study of Jellesma, Zee, and Koomen (2015), who used the same measure for student-teacher conflict among typically developing students. For the slope of student-teacher conflict for typically developing students, we again specified a normal distribution. Because all studies (but one) from our literature search indicated stable mean student-teacher conflict over time with individual increases and decreases over time, we specified a zero slope value with a large variance to depict this variation. Derived prior distributions for all our parameters in our models, including graphical illustrations, explanations and justifications for the



**Figure 1 |** Three-phase Growth Curve Model for Student-Teacher Conflict Examining Initial Levels (i.e., Intercepts) and Development over Time (i.e., Slope) for the Total Sample (Phase 1), the Three Student Samples (Phase 2), and the Two Samples of Students with SEBD Including Predictors (Phase 3).

*Note.* Subscripts 1 to 4 refer to variables measured at measurement time 1 to 4, respectively.

chosen values, and sources of background information, are presented in tables S1 to S9 in the supplementary material. A very short summary is presented below.

For student-teacher relationships, we expected students with SEBD to have more conflictual relationships with their teachers than typically developing students (e.g., Ledoux et al., 2012; Little & Kobak, 2003), with student-teacher relationships being highly stable over time for all subgroups (e.g., McGrath & Van Bergen, 2015; Breeman et al., 2015; Eisenhower, Blacher, & Bush, 2015). We had no expectations about differences between included and excluded students with SEBD in either initial levels or development over time. For peer relationships, we hypothesized that included students with SEBD were less accepted among peers than excluded students with SEBD and typically developing students (e.g., Bierman, Kalvin, & Heinrichs, 2015; Mikami et al., 2015; Warren, Jones, & Frederickson, 2015), who were not expected to differ from each other (e.g., Breeman et al., 2015; Useche et al., 2014). The latter two groups were expected to show stable peer acceptance over time (e.g., Breeman et al., 2015; Mikami et al., 2012; Useche et al., 2014), while for included students with SEBD, peer acceptance was expected to slightly decrease over time (e.g., Mikami et al., 2012; Useche et al., 2014). For self-esteem, we expected typically developing students to have the highest initial levels of self-esteem, which would decrease over time (e.g., Hosogi et al., 2012). For students with SEBD, we expected lower self-esteem, with included students with SEBD having the lowest self-esteem scores (e.g., Cambra & Silvestre, 2003; Festinger, 1954; Sukumaran, Vickers, Yates, & Garralda, 2003). For both groups, we expected increased self-esteem over time as a consequence of the support they are provided with, with no specific differences between groups expected in development over time (e.g., Hosogi et al., 2012; Sukumaran, Vickers, Yates, & Garralda, 2003; Yeo & Choi, 2011).

## METHODS

### Procedure

This study is part of a larger project on the development of students with SEBD in primary education. To this end, a complete description of the procedure and participants can be found in chapter 1 of this dissertation and a brief summary will be provided here.

Two institutions who determined eligibility for additional support invited parents to participate in our study when parents applied for eligibility for additional support for their child with SEBD. Parents agreed by signing a consent form. Subsequently, we invited the schools of the students with SEBD to participate. After schools consented verbally, they sent out informative letters in which parents of classmates of the students with SEBD were asked to give passive consent for their child to participate in a classroom survey on social-emotional development.

The first author and/or trained (under)graduate students collected data during four subsequent (a) classroom survey sessions and (b) individual testing sessions with the student with SEBD over a period of approximately two years. Teacher-reported scores for behavioral functioning, diagnoses, and IQ scores were retrieved from the students' application files. If an application file did not contain IQ scores, two subtests of an intelligence test (see Measures) were also conducted during the individual testing session to estimate the student's IQ score. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

The first measurement time was when students with SEBD still resided in regular education without additional support. Subsequently, independent committees determined whether students with SEBD were eligible for additional support and parents and schools decided whether the student with SEBD would receive special education services in an inclusive classroom for regular education or in a school for exclusive special education. Based on these decisions, we divided students with SEBD into two subgroups: *included* and *excluded* students with SEBD. The development of included and excluded students with SEBD was followed for approximately 1,5 years with three additional measurements in either educational context. Data of typically developing peers and peers with SEBD were only collected when they resided in a classroom of a participating student with SEBD.

### Participants

We included three subgroups of students in our study: included students with SEBD (n = 36), excluded students with SEBD (n = 15), and typically developing classmates

( $n = 1270$ )<sup>1</sup>. All included and excluded students with SEBD were eligible for additional support because they showed severe emotional and behavioral problems at school and at home or in the community (either formally diagnosed or not); their participation in education was severely limited by their emotional and behavioral problems (i.e., they showed impairments in learning and/or their interactions with school personnel and/or classmates); and the school's available support services were insufficient to meet the students' needs (LCTI, 2006; Meijer, 2003). The majority (98.0%) fulfilled established diagnostic criteria for DSM-IV diagnoses (American Psychiatric Association, DSM-IV, 2000), such as Autism Spectrum Disorder, Disruptive Behavior Disorder, and Attention-Deficit Hyperactivity Disorder, made by psychiatrists/psychologists of youth care institutions independent of our study. Typically developing classmates had no known history of any emotional or behavioral disorder in their school administration data. Classmates with SEBD in special education ( $n = 279$ )<sup>1</sup> who had previously been considered eligible for special education for students with SEBD by the independent committees, were included in part of the analyses to increase the sample size of the excluded students with SEBD group. Descriptive statistics of each subsample are depicted in Table 1.

## Measures

### *Student-teacher relationship*

We measured student-reported student-teacher relationship with the Conflict dimension of the Dutch Student Perception of Affective Relationship with Teacher Scale (SPARTS; Koomen & Jellesma, 2015). Children had to rate on a 5-point Likert scale (ranging from 1 = *No, that is not true* to 5 = *Yes, that is true*) to what extent they thought each of 10 statements (e.g., I easily have quarrels with my teacher) applied to their relationship with the teacher. Reliability of the scale was satisfactory: Cronbach's alpha ranged from .74-.84 for the four measurements.

### *Peer acceptance*

Peer-reported peer acceptance was measured using sociometric ratings (Cillessen, 2009). Students had to rate all their classmates individually on a 5-point Likert scale (ranging from -2 = *not at all* to 2 = *very much*) with respect to how well they liked that particular student. A minimum class participation rate of 60% was set in order to obtain acceptable sociometric scores (Marks, Babcock, Cillessen, & Crick, 2013). We summed the scores received by each pupil and divided this score by the number of raters (minus one because we disregard self-scores in these measures) to control for the unequal

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<sup>1</sup> Present during at least one measurement time.

number of scores of pupils within classes. These final scores indicate the level of peer acceptance among classmates.

### ***Self-esteem***

We measured student-reported self-esteem with the Self-Esteem subscale of the Dutch school monitoring instrument for social-emotional development (*Volginstrument voor social-emotionele ontwikkeling*; VISEON; Citogroep, 2004). Students had to rate on a 4-point Likert scale (ranging from 1 = *Not true* to 4 = *True*) to what extent seven statements apply to them (e.g., I get good grades for tests). The reliability of the scale was satisfactory: Cronbach's alpha ranged from .78-.82 for the four measurements.

### ***Emotional and behavioral problems***

We derived scores for students' emotional and behavioral problems from their application files. Students' behavior problems in school were either measured with the Teacher Report Form (Verhulst & Van der Ende, 2013) or the Dutch Sociaal-Emotionele Vragenlijst (SEV) [social emotional questionnaire] (Scholte & Van der Ploeg, 2007) and subscales of both questionnaires that measure corresponding social-emotional problems have been shown to correlate with each other (Scholte & Van der Ploeg, 2007). While not all application files contained the raw TRF and SEV scores, most of them (91.8%) contained classification scores for 'normal' (TRF percentiles 0-92; SEV percentiles 0-89), 'subclinical' (TRF percentiles 93-96; SEV percentiles 90-94), and 'clinical' behavior (TRF percentiles 97-100; SEV percentiles 95-100). We disregarded the small differences in cut-off criteria, because both TRF and SEV subclinical and clinical categories concern very high percentiles. To accommodate both sources of info, we created new classification scores on a three-point scale (0 = *normal*, 1 = *subclinical*, 2 = *clinical*) based on the rounded average classifications on corresponding TRF and SEV subscales. For internalizing behavior problems we used TRF Anxious-Depressed and Withdrawn-Depressed subscales and SEV Anxiety, Social Anxiety, and Anxious-Depressed subscales. For externalizing behavior problems we used TRF Aggressive and Rule-Breaking subscales and SEV Oppositional-Defiant, Aggressive, and Antisocial subscales. For attention-deficit hyperactivity problems we used TRF Attention Problems subscale and SEV Attention-Deficit, Hyperactivity, and Impulsivity subscales.

### ***Academic performance***

We measured academic performance during individual testing sessions with established Dutch school achievement tests. Reading, spelling and math were measured with the BRUS Één-Minuut-Test [one-minute reading fluency test] (Brus & Voeten, 2006), the PI-dictee [spelling dictation task] (Geelhoed & Reitsma, 2004), and the Tempo Test

**Table 1** | Descriptive Statistics of the Samples at T4

Sample	Typically developing students <i>n</i> = 664	Included students with SEBD <i>n</i> = 36	Excluded students with SEBD <i>n</i> = 15	Classmates with SEBD <i>n</i> = 158
Sex distribution <sup>a</sup>	49.0% boys ; 51.0% girls	83.3% boys ; 16.7% girls	66.7% boys ; 33.3% girls	78.5% boys ; 21.5% girls
Age in years <sup>a</sup>	<i>M</i> = 9.92; <i>SD</i> = 1.10	<i>M</i> = 10.19; <i>SD</i> = 1.01	<i>M</i> = 9.93; <i>SD</i> = .96	<i>M</i> = 10.18; <i>SD</i> = 1.21
Class size	<i>M</i> = 24.17; <i>SD</i> = 5.36	<i>M</i> = 23.23; <i>SD</i> = 5.65	<i>M</i> = 11.93; <i>SD</i> = 1.87	<i>M</i> = 12.36; <i>SD</i> = 1.81
Ethnicity <sup>a</sup>	98.0% Dutch; 2.0% other	97.2% Dutch; 2.8% other	100% Dutch; 0% other	96.8% Dutch; 3.2% other
Grade	12.7% Grade 3 34.0% Grade 4 37.4% Grade 5 15.8% Grade 6	2.8% Grade 3 41.7% Grade 4 30.6% Grade 5 25.0% Grade 6	13.3% Grade 3 20.0% Grade 4 33.3% Grade 5 33.3% Grade 6	19.0% Grade 3 10.8% Grade 4 41.1% Grade 5 29.1% Grade 6
IQ		<i>M</i> = 100.75; <i>SD</i> = 13.81	<i>M</i> = 105.00; <i>SD</i> = 13.01	
Diagnosis		52.8% ASD 55.6% ADHD 2.8% DBD	66.7% ASD 26.7% ADHD 13.3% DBD	
		38.9% Learn 25.0% Other	20.0% Learn 26.7% Other	
Comorbidity (incl. learning problems)		2.8% Undiagnosed 38.9% One 38.9% Two 19.4% More	0% Undiagnosed 53.3% One 40.0% Two 6.7% More	

Note. ASD = Autism Spectrum Disorders (including Pervasive Developmental Disorder – Not Otherwise Specified [PDD-NOS]); ADHD = Attention Deficit Hyperactivity Disorder; DBD = Disruptive Behavior Disorders; Learn = Learning problems (e.g., Dyslexia, Dyscalculia)

<sup>a</sup> Not all typically developing students were present during the classroom testing session. Peers also reported on absent classmates, but self-reports could not be collected, resulting in lower sample sizes for age, sex, and ethnicity.

Automatiseren [arithmetic processing speed test] (De Vos, 2011), respectively. Children's individual scores for each skill were converted to norm scores with tables of norm data of students in the same grade.

### ***Intelligence***

We derived IQ scores from students' application files in which intelligence was measured with established intelligence tests (e.g., WISC III<sup>NL</sup>). If the application file did not contain any IQ score, we conducted the subtests Block Design and Vocabulary of the WISC III<sup>NL</sup> during individual testing sessions. Research has shown that, even within child psychiatric settings, this combination of Wechsler subtests is the most valid for estimating a child's cognitive capacities (Legerstee, Van der Reijden – Lakeman, Lechner – Van der Noort, & Ferdinand, 2004).

### **Data-analyses**

The three phase growth curve model is depicted in Figure 1. In phase one, we set up a growth curve model for the total group. Individual growth trajectories were captured by a single growth trajectory for the total sample with an intercept (initial levels) and a slope (development over time), indicating overall rate of change across participants. The observed variables are represented as squares and the latent growth factors of the overall estimated growth trajectory (intercept and slope) are represented as circles. That is, we see three measures of student-teacher conflict, representing measurement times two to four in the study, and two growth factors (intercept and slope), representing the overall growth trajectory across all students. In phase two, we set up separate growth curve models for included and excluded students with SEBD and for typically developing peers. That is, we modelled separate growth trajectories for each student group to see whether the student groups differed in their initial levels (intercepts) and/or development over time (slopes). In phase three, in addition to separate growth trajectories for included and excluded students with SEBD, we modelled observed predictors (indicated by squares) to examine which factors could predict initial levels (intercepts) and development (slopes) in student-teacher conflict. Similar three phase growth curve models were created for peer acceptance and self-esteem.

We used Bayesian estimation in the statistical software Mplus version 7.4 (Muthén & Muthén, 1998-2015). Four MCMC chains were specified, each with random starting values and seed values of 20. Chain convergence was obtained with 400.000 total iterations<sup>2</sup>, with the first half removed as burn-in. With the Gelman and Rubin Potential

<sup>2</sup> Note that chain convergence was obtained according to the Gelman and Rubin potential scale reduction factor already at 200.000 total iterations in the chain.

Scale Reduction factor (PSR) we examined chain convergence. We considered the four chains converged if the PSR value was smaller than 1.01 for the entire post-burnin phase.

Moreover, visual inspections of the trace-plots exhibited stability in the chains, the histograms and kernel density plots showed smooth, approximately normally distributed posteriors, and the chains exhibited a decreasing degree of autocorrelation. Results of these checks, including graphical illustrations, are presented in tables S11 to S19 in the supplementary material. Furthermore, we checked whether convergence remained and results were stable after doubling the number of iterations. That is, we estimated the model again with 800.000 total iterations<sup>3</sup>, with the first half removed as burn-in. Again, we examined convergence with the PSR value smaller than 1.01 and visual inspections of the plots were consistent with these findings. We computed relative deviation scores for the estimates of the analyses with a doubled number of iterations compared to the initial analyses (Depaoli & Van de Schoot, 2017, p. 249). We generally found relative deviation scores smaller than 5%, which indicates that the estimates found with a doubled number of iterations deviated less than 5% of the estimates in the original analyses. Results of these checks are presented in tables S20 to S28 in the supplementary material.

Subsequently, a set of sensitivity analyses, containing three additional checkpoints, was conducted to assess how much of an impact the researcher's prior knowledge had on the results. The model was retested multiple times with two upward and two downward adjusted parameter values, and two smaller and two larger variances (indicating more and less certainty, respectively), to see how they altered the results. In general, the results of the growth curve model for the total sample (phase 1) and the three student groups (phase 2) were stable from a sensitivity analysis. That is, estimates of the analyses with adjusted parameter values and variances for the prior distributions showed relative deviation scores smaller than 5%, although some relative deviation scores larger than 5% were found for some estimates from analyses with extremely, and unrealistically small variances (i.e., variance = .01, reflecting a high level of certainty about the hypothesized value of the parameter of interest).

The results of the growth curve model for included and excluded students with SEBD with predictors (phase 3) were less stable from a sensitivity analysis. That is, estimates of the analyses with upward and downward adjusted parameter values deviated slightly from the original analyses and estimates of the analyses with extremely, and unrealistically small variances deviated largely from the original analyses and sometimes could not even be computed. This implies that the analyses in phase 3 contain a some

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3 Note that chain convergence was obtained according to the Gelman and Rubin potential scale reduction factor at 400.000 total iterations in the chain.



degree of instability, which means that the posterior results depend to a large extent on the prior information of the researchers and the (un)certainly surrounding it. This should be taken into account when interpreting the substantive results. The results of the sensitivity analyses are presented in Tables S29 to S37 in the supplementary material.

## RESULTS

Results are presented in terms of Bayesian 95% credibility intervals. Final model estimates for student-teacher conflict, peer acceptance, and self-esteem are presented in Tables 2 and 3, in Tables 4 and 5, and in Tables 6 and 7, respectively.

### Student-teacher conflict

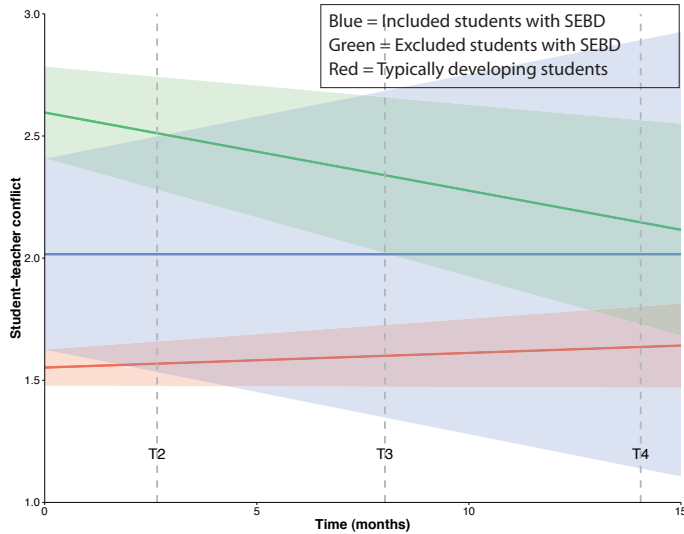
Phase one was only used for setting up the overall growth curve model. To this end, results for the total sample were not interpreted. In phase two, we examined the growth curve models for each subgroup separately to see whether included and excluded students with SEBD and typically developing peers differed in their initial levels (intercepts) and/or development over time (slopes). The results showed that the 95% Bayesian credible intervals of the intercepts and variances of the intercepts of excluded students with SEBD (95% CI 2.373–2.818 and 95% CI 1.070–2.103, respectively) and typically developing students (95% CI 1.464–1.640 and 95% CI .571–.983) did not overlap. This indicated that excluded students with SEBD had higher initial levels of student-teacher conflict with a higher variability between students than typically developing students. Included students with SEBD did not significantly differ from either group with respect to initial levels (95% CI 1.544–2.482) and variability (95% CI .542–2.730) between students. Yet, for excluded students with SEBD student-teacher conflict decreased over time (95% CI  $-.051 - .012$ ), while student-teacher conflict of typically developing students stayed stable over time (95% CI  $-.002 - .014$ ). Again, included students with SEBD (95% CI  $-.041 - .042$ ) did not significantly differ from either group. Figure 2 shows the developmental trajectories (i.e., estimated growth trajectories) for participants in each student group, with 95% confidence bands added to show the uncertainty associated with the average trajectory.

In phase three, we zoomed in on the two subgroups of students with SEBD to see whether we could find predictors for initial levels and/or development in student-teacher conflict. Results showed that previous student-teacher conflict and sex predicted initial levels of student-teacher conflict among both groups of students with SEBD (95% CI .240–1.839 and 95% CI .289–4.146 for each predictor, respectively). That is, higher levels of student-teacher conflict in regular education, before students

**Table 2** | Final Model Results for the Latent Growth Curve Model on Student-Teacher Conflict in the Total Sample (Phase 1) and the Subsamples (Phase 2), based on 200,000 MCMC Iterations

	Phase 1: Total sample			Phase 2: TD			Phase 2: INCL SEBD			Phase 2: EXCL SEBD		
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval		
<b>Intercept (<math>I_{cos}</math>)</b>												
Mean	1.766 (.043)	1.682–1.852	1.552 (.045)	1.464–1.640	2.016 (.238)	1.544–2.482	2.596 (.114)	2.373–2.818				
Variance	1.122 (.132)	0.873–1.388	0.776 (.106)	.571–.983	1.445 (.597)	.542–2.730	1.553 (.266)	1.070–2.103				
<b>Slope (<math>S_{cos}</math>)</b>												
Mean	-.001 (.004)	-.008–.007	.006 (.004)	-.002–.014	.000 (.021)	-.041–.042	-.032 (.010)	-.051 – -.012				
Variance	.002 (.001)	.000–.004	.001 (.001)	.000–.002	.008 (.004)	.001–.017	.005 (.002)	.001–.009				
<b>Correlations</b>												
$I_{cos}$ with $S_{cos}$	-.638 (.100)	-.868 – -.438	-.536 (.201)	-.946 – -.142	-.694 (.184)	-.931 – -.288	-.636 (.117)	-.831 – -.380				
<b>Residual Variances</b>												
T2COs	.376 (.073)	.233–.517	.411 (.058)	.294–.523	.411 (.058)	.294–.523	.411 (.058)	.294–.523				
T3COs	.628 (.046)	.543–.722	.596 (.043)	.515–.683	.596 (.043)	.515–.683	.596 (.043)	.515–.683				
T4COs	.602 (.081)	.441–.754	.609 (.066)	.476–.737	.609 (.066)	.476–.737	.609 (.066)	.476–.737				

Note. COs = Student-teacher conflict; TD = Typically developing students; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T2COs = Student-teacher conflict at time 2; T3COs = Student-teacher conflict at time 3; T4COs = Student-teacher conflict at time 4.



**Figure 2 |** Estimated Growth Trajectories for Student-Teacher Conflict in each Student Group with 95% Confidence Bands Showing Uncertainty Associated with the Average Trajectory<sup>4</sup>.

with SEBD were provided with additional support, predicted higher levels of student-teacher conflict after students with SEBD were provided with special education services in regular education and in special education. Furthermore, girls with SEBD had more conflictual relationships with teachers than boys. None of the other factors predicted initial levels and/or development in student-teacher conflict.

### Peer acceptance

Phase one was only used for setting up the overall growth curve model and results for the total sample were not interpreted. In phase two, we examined differences in initial levels and/or development over time of peer acceptance between included and excluded students with SEBD and typically developing peers. The results indicated that included students with SEBD (95% CI .027-.525) had lower initial levels of peer acceptance than typically developing students (95% CI .598-.688), while no differences in variability between students within groups were found (95% CI .029-.627 and 95% CI .347-.455 for included students with SEBD and typically developing students, respectively). Excluded students with SEBD did not significantly differ from either group with respect to initial levels (95% CI .437-.652) or variability between students (95% CI .282-.665).

<sup>4</sup> The 95% confidence bands surrounding the average estimated growth trajectory are based on the 95% credibility intervals of each student group's intercept and slope. Because uncertainty increases over time, the 95% confidence bands diverge over time, as can be seen in the figure.

**Table 3 |** Final Model Results for the Latent Growth Curve Model with Standardized Predictors on Student-Teacher Conflict in the Included SEBD and Excluded SEBD Subsamples (Phase 3), based on 200,000 MCMC Iterations

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
<b>Intercept (<math>I_{cos}</math>)</b>				
Mean	.001 (.029)	-.056-.058	1.631 (.653)	.334-2.927
Variance	4.345 (1.765)	1.679-8.150	2.088 (3.034)	.003-8.349
<b>Slope (<math>S_{cos}</math>)</b>				
Mean	.158 (.027)	.104-.209	.005 (.049)	-.091-.104
Variance	.034 (.016)	.010-.069	.009 (.014)	.000-.039
<b>Predictors of intercept</b>				
T1COs	1.054 (.405)	.240-1.839	1.054 (.405)	.240-1.839
Sex	2.250 (.982)	.289-4.146	2.250 (.982)	.289-4.146
T1Age	-.004 (.318)	-.637-.618	-.004 (.318)	-.637-.618
T1EXT	.457 (.392)	-.326-1.218	.457 (.392)	-.326-1.218
T1INT	-.328 (.331)	-.976-.330	-.328 (.331)	-.976-.330
T1ADHD	.368 (.426)	-.440-1.235	.368 (.426)	-.440-1.235
T1EMT	-.801 (.485)	-1.734-.167	-.801 (.485)	-1.734-.167
T1PI	.329 (.471)	-.610-1.246	.329 (.471)	-.610-1.246
T1TTA	-.049 (.349)	-.751-.621	-.049 (.349)	-.751-.621
T1PA	.843 (.512)	-.197-1.815	.843 (.512)	-.197-1.815
T1SE	.360 (.390)	-.416-1.116	.360 (.390)	-.416-1.116
<b>Predictors of slope</b>				
T1COs	-.040 (.034)	-.107-.029	-.040 (.034)	-.107-.029
Sex	-.115 (.087)	-.285-.060	-.115 (.087)	-.285-.060
T1Age	-.006 (.026)	-.058-.047	-.006 (.026)	-.058-.047

Table 3 | Continued

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
T1EXT	.002 (.034)	-.065-.068	.002 (.034)	-.065-.068
T1INT	.025 (.028)	-.031-.080	.025 (.028)	-.031-.080
T1ADHD	-.020 (.036)	-.091-.048	-.020 (.036)	-.091-.048
T1EMT	.061 (.039)	-.015-.138	.061 (.039)	-.015-.138
T1PI	-.021 (.037)	-.096-.052	-.021 (.037)	-.096-.052
T1TTA	.001 (.029)	-.056-.058	.001 (.029)	-.056-.058
T1PA	-.043 (.043)	-.126-.043	-.043 (.043)	-.126-.043
T1SE	-.031 (.032)	-.094-.033	-.031 (.032)	-.094-.033
<b>Correlations</b>				
$I_{COs}$ with $S_{COs}$	-.935 (.058)	-.993 -- -.811	-.848 (.353)	-1.000-.073
<b>Residual Variances</b>				
T2COs	.349 (.340)	.000-1.082	.349 (.340)	.000-1.082
T3COs	.602 (.172)	.298-.967	.602 (.172)	.298-.967
T4COs	.167 (.185)	.000-.577	.167 (.185)	.000-.577

Note: COs = Student-teacher conflict; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T1COs = Student-teacher conflict at time 1; T1Age = Age at time 1; T1EXT = Externalizing behavior problems at time 1; T1INT = Internalizing behavior problems at time 1; T1ADHD = Attention-deficit hyperactive-impulsive behavior problems at time 1; T1EMT = reading achievement at time 1; T1PI = spelling achievement at time 1; T1TTA = math achievement at time 1; T1PA = Peer acceptance at time 1; T1SE = Self-esteem at time 1; T2COs = Student-teacher conflict at time 2; T3COs = Student-teacher conflict at time 3; T4COs = Student-teacher conflict at time 4.

**Table 4 |** Final Model Results for the Latent Growth Curve Model on Peer Acceptance in the Total Sample (Phase 1) and the Subsamples (Phase 2), based on 200,000 MCMC Iterations

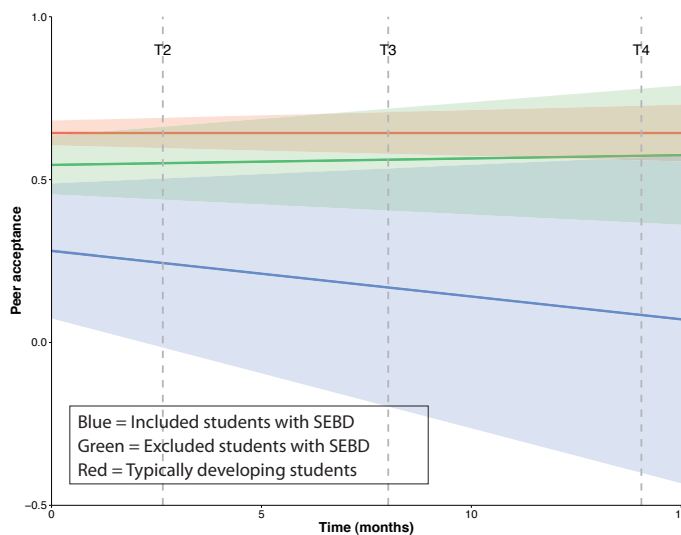
	Phase 1: Total sample			Phase 2: TD			Phase 2: INCL SEBD			Phase 2: EXCL SEBD		
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval		
<b>Intercept(<math>I_{PA}</math>)</b>												
Mean	.612 (.021)	.570–.654	.643 (.023)	.598–.688	.281 (.126)	.027–.525	.545 (.055)	.437–.652				
Variance	.423 (.030)	.364–.483	.401 (.027)	.347–.455	.292 (.164)	.029–.627	.466 (.098)	.282–.665				
<b>Slope(<math>S_{PA}</math>)</b>												
Mean	.000 (.002)	-.003–.003	.000 (.002)	-.003–.003	-.014 (.012)	-.037–.009	.002 (.005)	-.007–.012				
Variance	.001 (.000)	.001–.002	.001 (.000)	.001–.001	.002 (.001)	.000–.004	.002 (.001)	.000–.004				
<b>Correlations</b>												
$I_{PA}$ with $S_{PA}$	-.587 (.038)	-.657 – -.510	-.613 (.036)	-.679 – -.539	-.672 (.300)	-.999–.020	-.544 (.149)	-.769 – -.229				
<b>Residual Variances</b>												
T2PA	.040 (.015)	.012–.069	.017 (.011)	.000–.038	.114 (.082)	.000–.277	.138 (.054)	.032–.245				
T3PA	.104 (.008)	.088–.121	.066 (.007)	.053–.079	.135 (.059)	.042–.263	.227 (.034)	.164–.296				
T4PA	.031 (.015)	.005–.059	.023 (.012)	.000–.044	.133 (.092)	.000–.312	.097 (.058)	.000–.204				

Note: PA = Peer acceptance; TD = Typically developing students; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T2PA = Peer acceptance at time 2; T3PA = Peer acceptance at time 3; T4PA = Peer acceptance at time 4.

Moreover, peer acceptance appeared to be stable over time for all three student groups (included students with SEBD 95% CI  $-.037 - .009$ ; excluded students with SEBD 95% CI  $-.007 - .012$ ; and typically developing students 95% CI  $-.003 - .003$ ). Figure 3 shows the developmental trajectories for participants in each student group, with 95% confidence bands added to show the uncertainty associated with the average trajectory.

In phase three, we zoomed in on the two subgroups of students with SEBD to see whether we could find predictors for initial levels and/or development in peer acceptance. We found no significant predictors of initial levels of peer acceptance, but previous self-esteem predicted development in peer acceptance over time (95% CI  $-.055 - .000$ ). That is, higher levels of self-esteem in regular education, before students with SEBD were provided with additional support, predicted less development in peer acceptance after students with SEBD were provided with special education services in regular education and special education. None of the other predictors of development in peer acceptance over time were significant.

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**Figure 3 |** Estimated Growth Trajectories for Peer Acceptance in each Student Group with 95% Confidence Bands Showing Uncertainty Associated with the Average Trajectory<sup>4</sup>.

**Table 5** | Final Standardized Model Results for the Latent Growth Curve Model with Predictors on Peer Acceptance in the Included SEBD and Excluded SEBD Subsamples (Phase 3), based on 200,000 MCMC Iterations

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
<b>Intercept (<math>I_{pA}</math>)</b>				
Mean	.008 (.013)	-.018-.034	.908 (.359)	.215-1.642
Variance	.285 (.221)	.005-.744	.657 (.864)	.001-2.417
<b>Slope (<math>S_{pA}</math>)</b>				
Mean	.006 (.007)	-.009-.020	-.001 (.031)	-.056-.059
Variance	.002 (.002)	.000-.006	.004 (.006)	.000-.016
<b>Predictors of intercept</b>				
T1PA	.237 (.198)	-.169-.612	.237 (.198)	-.169-.612
Sex	.259 (.398)	-.540-1.030	.259 (.398)	-.540-1.030
T1Age	.053 (.132)	-.213-.311	.053 (.132)	-.213-.311
T1EXT	-.001 (.170)	-.337-.338	-.001 (.170)	-.337-.338
T1INT	-.019 (.141)	-.290-.268	-.019 (.141)	-.290-.268
T1ADHD	-.133 (.203)	-.542-.258	-.133 (.203)	-.542-.258
T1EMT	.288 (.195)	-.106-.663	.288 (.195)	-.106-.663
T1PI	-.253 (.198)	-.637-.146	-.253 (.198)	-.637-.146
T1TTA	.003 (.141)	-.273-.284	.003 (.141)	-.273-.284
T1COS	.035 (.155)	-.279-.335	.035 (.155)	-.279-.335
T1ISE	.111 (.153)	-.197-.406	.111 (.153)	-.197-.406
<b>Predictors of slope</b>				
T1PA	-.009 (.018)	-.044-.027	-.009 (.018)	-.044-.027
Sex	-.024 (.038)	-.099-.051	-.024 (.038)	-.099-.051
T1Age	-.006 (.012)	-.029-.018	-.006 (.012)	-.029-.018



Table 5 | Continued

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
<b>Predictors of slope</b>				
T1EXT	-.007 (.016)	-.038-.024	-.007 (.016)	-.038-.024
T1INT	-.005 (.013)	-.030-.021	-.005 (.013)	-.030-.021
T1ADHD	.007 (.018)	-.028-.043	.007 (.018)	-.028-.043
T1EMT	-.029 (.017)	-.063-.005	-.029 (.017)	-.063-.005
T1PI	.028 (.018)	-.008-.063	.028 (.018)	-.008-.063
T1TTA	.008 (.013)	-.018-.034	.008 (.013)	-.018-.034
T1COs	-.009 (.015)	-.039-.021	-.009 (.015)	-.039-.021
T1SE	-.028 (.014)	-.055-.000	-.028 (.014)	-.055-.000
<b>Correlations</b>				
$I_{PA}$ with $S_{PA}$	-.899 (.201)	-1.000 – -.477	-.897 (.285)	-1.000 – -.210
<b>Residual Variances</b>				
T2PA	.128 (.095)	.000-.317	.281 (.389)	.000-1.108
T3PA	.125 (.055)	.039-.247	.232 (.182)	.000-.601
T4PA	.117 (.079)	.000-.270	.165 (.238)	.000-.658

Note: PA = Peer acceptance; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T1PA = Peer acceptance at time 1; T1Age = Age at time 1; T1EXT = Externalizing behavior problems at time 1; T1INT = Internalizing behavior problems at time 1; T1ADHD = Attention-deficit hyperactive-impulsive behavior problems at time 1; T1EMT = reading achievement at time 1; T1PI = spelling achievement at time 1; T1TTA = math achievement at time 1; T1COs = Student-teacher conflict at time 1; T1SE = Self-esteem at time 1; T2PA = Peer acceptance at time 2; T3PA = Peer acceptance at time 3; T4PA = Peer acceptance at time 4.

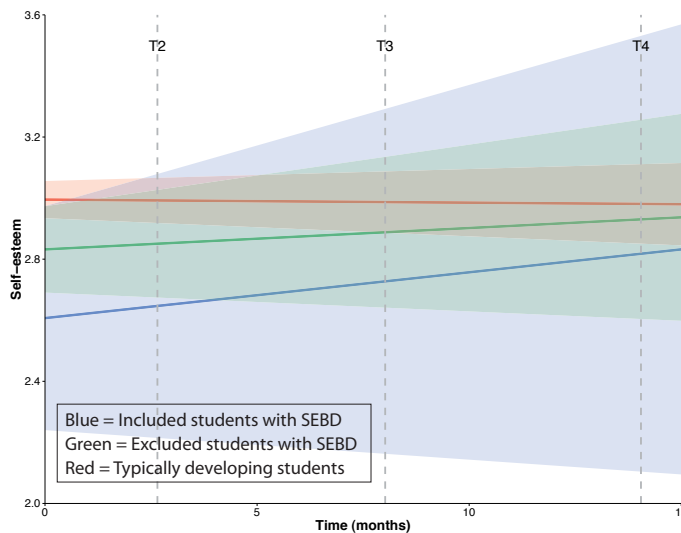
**Table 6** | Final Model Results for the Latent Growth Curve Model on Self-Esteem in the Total Sample (Phase 1) and the Subsamples (Phase 2), based on 200,000 MCMC Iterations

Phase 1: Total sample			Phase 2: TD		Phase 2: INCL SEBD		Phase 2: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
Intercept ( $I_{SE}$ )								
Mean	2.946 (0.034)	2.879–3.013	2.995 (.037)	2.921–3.067	2.607 (.223)	2.165–3.045	2.832 (.086)	2.663–3.002
Variance	.741 (.077)	.593–.894	.718 (.079)	.567–.874	1.611 (.543)	.778–2.775	1.032 (.181)	.699–1.403
Slope ( $S_{SE}$ )								
Mean	.001 (.003)	-.004–.007	-.001 (.003)	-.007–.005	.015 (.015)	-.014–.046	.007 (.008)	-.009–.022
Variance	.003 (.001)	.001–.004	.002 (.001)	.001–.003	.006 (.002)	.002–.011	.007 (.002)	.004–.011
Correlations								
$I_{SE}$ with $S_{SE}$	-.433 (.085)	-.569 – -.254	-.348 (.112)	-.517 – -.109	-.575 (.162)	-.834 – -.231	-.755 (.055)	-.848 – -.638
Residual Variances								
T2SE	.255 (.044)	.171–.342	.224 (.043)	.141–.309	.224 (.043)	.141–.309	.224 (.043)	.141–.309
T3SE	.273 (.023)	.230–.320	.276 (.023)	.232–.322	.276 (.023)	.232–.322	.276 (.023)	.232–.322
T4SE	.141 (.048)	.048–.236	.120 (.047)	.030–.213	.120 (.047)	.030–.213	.120 (.047)	.030–.213

Note. SE = Self-esteem; TD = Typically developing students; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T2SE = Self-esteem at time 1; T3SE = Self-esteem at time 2; T4SE = Self-esteem at time 4.

## Self-esteem

Phase one was only used for setting up the overall growth curve model and results for the total sample were not interpreted. In phase two, we examined differences between the student groups in initial levels of self-esteem and/or development over time. The results indicated that included and excluded students with SEBD and typically developing students showed similar initial levels of self-esteem (included students with SEBD 95% CI 2.165-3.045; excluded students with SEBD 95% CI 2.663-3.002; and typically developing students 95% CI 2.921-3.067) which were all stable over time (included students with SEBD 95% CI -.014 - .046; excluded students with SEBD 95% CI -.009 - .022; and typically developing students 95% CI -.007 - .005). Figure 4 shows an illustration of the developmental trajectories for participants in each student group, with 95% confidence bands added to show the uncertainty associated with the average trajectory. Furthermore, we did not find significant predictors of initial levels or development of self-esteem over time.



**Figure 4 |** Estimated Growth Trajectories for Self-Esteem in each Student Group with 95% Confidence Bands Showing Uncertainty Associated with the Average Trajectory<sup>4</sup>.

**Table 7** | Final Standardized Model Results for the Latent Growth Curve Model with Predictors on Self-Esteem in the Included SEBD and Excluded SEBD Subsamples (Phase 3), based on 200,000 MCMC Iterations

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
<b>Intercept (<math>I_{SE}</math>)</b>				
Mean	-.014 (.023)	-.059-.033	2.581 (.513)	1.563-3.596
Variance	8.216 (2.636)	4.200-13.845	.747 (1.444)	.001-3.664
<b>Slope (<math>S_{SE}</math>)</b>				
Mean	.141 (.035)	.069-.210	.038 (.039)	-.039-.117
Variance	.019 (.014)	.001-.048	.007 (.010)	.000-.027
<b>Predictors of intercept</b>				
T1SE	.386 (.365)	-.325-1.121	.386 (.365)	-.325-1.121
Sex	1.761 (.982)	-.206-3.664	1.761 (.982)	-.206-3.664
T1Age	-.160 (.308)	-.757-.462	-.160 (.308)	-.757-.462
T1EXT	.365 (.403)	-.451-1.144	.365 (.403)	-.451-1.144
T1INT	-.029 (.335)	-.689-.633	-.029 (.335)	-.689-.633
T1ADHD	-.214 (.394)	-.997-.654	-.214 (.394)	-.997-.654
T1EMT	-.168 (.399)	-.950-.628	-.168 (.399)	-.950-.628
T1PI	.296 (.379)	-.447-1.057	.296 (.379)	-.447-1.057
T1TTA	.186 (.355)	-.497-.908	.186 (.355)	-.497-.908
T1COS	-.077 (.392)	-.881-.675	-.077 (.392)	-.881-.675
T1PA	.005 (.440)	-.868-.880	.005 (.440)	-.868-.880
<b>Predictors of slope</b>				
T1SE	-.009 (.025)	-.057-.040	-.009 (.025)	-.057-.040

Table 7 | Continued

	Phase 3: INCL SEBD		Phase 3: EXCL SEBD	
	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval	Bayesian Parameter Estimate (Posterior Standard Deviation)	95% Bayesian Credible Interval
<b>Predictors of slope</b>				
Sex	-.106 (.065)	-.241-.017	-.106 (.065)	-.241-.017
T1Age	.001 (.020)	-.039-.041	.001 (.020)	-.039-.041
T1EXT	-.025 (.025)	-.075-.026	-.025 (.025)	-.075-.026
T1INT	-.003 (.021)	-.045-.040	-.003 (.021)	-.045-.040
T1ADHD	.002 (.027)	-.051-.054	.002 (.027)	-.051-.054
T1EMT	.007 (.027)	-.045-.061	.007 (.027)	-.045-.061
T1PI	-.013 (.028)	-.068-.041	-.013 (.028)	-.068-.041
T1TTA	-.014 (.023)	-.059-.033	-.014 (.023)	-.059-.033
T1COs	.014 (.026)	-.039-.065	.014 (.026)	-.039-.065
T1PA	.000 (.029)	-.059-.056	.000 (.029)	-.059-.056
<b>Correlations</b>				
$I_{SE}$ with $S_{SE}$	-.910 (.107)	-.999 -- -.715	-.846 (.392)	-.1,000-.230
<b>Residual Variances</b>				
T2SE	.770 (.426)	.000-1.558	.770 (.426)	.000-1.558
T3SE	.230 (.131)	.002-.479	.230 (.131)	.002-.479
T4SE	.103 (.107)	.000-.336	.103 (.107)	.000-.336

Note. SE = Self-esteem; INCL SEBD = Included students with SEBD; EXCL SEBD = Excluded students with SEBD; T1SE = Self-esteem at time 1; T1Age = Age at time 1; T1EXT = Externalizing behavior problems at time 1; T1INT = Internalizing behavior problems at time 1; T1ADHD = Attention-deficit hyperactive-impulsive behavior problems at time 1; T1EMT = reading achievement at time 1; T1PI = spelling achievement at time 1; T1TTA = math achievement at time 1; T1COs = Student-teacher conflict at time 1; T1PA = Peer acceptance at time 1; T2SE = Self-esteem at time 1; T3SE = Self-esteem at time 2; T4SE = Self-esteem at time 4.

## DISCUSSION

To gain insight into the social-emotional development of elementary students with SEBD, we compared the initial levels and development of student-teacher conflict, peer acceptance and self-esteem of students with SEBD included in regular education with students with SEBD in exclusive special education, and their typically developing peers in regular education. Results indicated that differences between student groups could indeed be found. In line with previous research (e.g., Ledoux et al., 2012; Little & Kobak, 2003), excluded students with SEBD had more conflictual relationships with their teachers than typically developing students. Included students with SEBD, however, did not differ from either group with respect to student-teacher conflict. These results were stable from a sensitivity analysis, and they might relate to the commonly found difference in severity of the problem behavior between included and excluded students with SEBD. That is, students with SEBD who are placed in exclusive special education generally show more severe problem behavior than included students with SEBD (Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009). Because teachers find the disruptive and rule-breaking behavior and problems with task-related behavior the most difficult behaviors to deal with in the classroom (Buttner, Pijl, Bijstra, & Van den Bosch, 2016; Meijer, 2001), this results in more conflictual student-teacher relationships for excluded students with SEBD. While included students with SEBD also show severe problem behavior, their problem behavior may still be manageable in a regular education classroom, which may make them more similar to their typically developing peers.

Student-teacher conflict of excluded students with SEBD decreased over time, while previous research has indicated that student-teacher relationships are highly stable over time (e.g., McGrath & Van Bergen, 2015; Breeman et al., 2015; Eisenhower et al., 2015), which indeed was found for typically developing students and included students with SEBD. The results were stable from a sensitivity analysis, pointing at a promising result for excluded students with SEBD: with the provision of special education services in exclusive special education, excluded students with SEBD seem to develop a more positive student-teacher relationship over time. A possible explanation for this result is that teachers in exclusive special education are better trained to predict, understand, and replace disruptive and inappropriate behavior of students with SEBD (Kauffman & Badar, 2014; Lane et al., 2005), resulting in less student-teacher conflict, whereas teachers in regular education may feel unprepared to support students with SEBD (e.g., Jones & Chronis-Tuscano, 2008). Another possibility is that the smaller classrooms in exclusive special education provide teachers with more opportunities for individual attention for students with SEBD, which may positively impact their student-teacher relationship as well.

For acceptance among peers we found that, in line with previous research (e.g., Bierman et al., 2015), included students with SEBD were less accepted among peers than typically developing students, while excluded students with SEBD did not differ from either group. The results were stable from a sensitivity analysis and may be explained by the theory of social comparison processes (Festinger, 1954). In regular education, included students with SEBD are surrounded by typically developing peers and their disruptive and rule-breaking behavior is unusual in a regular education setting. That is, in regular education classrooms, students with SEBD deviate from their classmates, resulting in low peer acceptance or even peer rejection. Excluded students with SEBD, in contrast, are surrounded by peers with SEBD in exclusive special education. In such a setting, disruptive and rule-breaking behavior is more common and may not result in low peer acceptance (e.g., Mikami et al., 2012; Useche et al., 2014).

Furthermore, we found peer acceptance to be stable over time in all student groups. For typically developing students and excluded students with SEBD, this is in line with previous research (e.g., Breeman et al., 2015; Mikami et al., 2012), but for included students with SEBD previous research has shown decreased peer acceptance over time (Mikami et al., 2012; Useche et al., 2014). Our results were stable from a sensitivity analysis, indicating that although included students with SEBD were low in peer acceptance, their social status did not deteriorate over time. Although speculative, this may indicate that the inclusion of various students with special educational needs in regular education has started to alter typically developing students' attitudes towards deviant behavior of peers and thereby promoting peer acceptance. Yet, we have to be cautious with such a positive interpretation, because the developmental trajectory for peer acceptance in included students with SEBD shows a decreasing trend – although not significant – and previous research also has shown decreasing peer acceptance over time for included students with SEBD (e.g., Mikami et al., 2012; Useche et al., 2014). Future research examining peer acceptance of included students with SEBD in larger groups and/or over larger time periods could shed more light on this issue.

For self-esteem we found no differences between student groups, which contrasts with previous research showing that students with SEBD had lower self-esteem than typically developing students, with included students with SEBD having the lowest self-esteem levels (e.g., Cambra & Silvestre, 2003; Festinger, 1954; Sukumaran et al., 2003). The results were stable from a sensitivity analysis and paint a more positive picture than expected: students with SEBD in included education and exclusive special education have similar initial levels of self-esteem as typically developing peers. One explanation might be that students with SEBD experience enough opportunities for accomplishments in academic, social, and emotional areas, like typically developing students, leading to higher self-esteem. Another possibility is that students with SEBD

experience fewer opportunities for accomplishments due to the social-emotional and behavioral difficulties that they face, but that they evaluate the goals that they accomplish more positively than their typically developing peers. That is, they may value their achievements higher, because they have to put more effort into tasks.

Furthermore, we found self-esteem to be stable over time for all student groups. In contrast with our expectations, the provision of special education services does not increase included and excluded students with SEBD's self-esteem. Yet, given that self-esteem levels of students with SEBD were as high as among typically developing peers, it might be possible that the special education services were not directly aimed at increasing self-esteem. An alternative explanation might be that special education services would be more effective in improving observable behavior (e.g., decrease in disruptive and rule-breaking behavior and increase in task-related behavior) than altering subjective or internal phenomena such as self-esteem (Ogier & Hornby, 1996). Another possibility might be that changes in self-esteem will only occur as a consequence of improvements in other areas, such as improved performance in academic subjects, and therefore should be examined over longer time periods.

The second aim of the study was to zoom in on the two subgroups of students with SEBD only, to see whether we could find factors – present before students with SEBD received special education services – that could predict initial levels of student-teacher conflict, peer acceptance, and self-esteem, and development in these areas. We found predictors for initial levels of student-teacher conflict and for development of peer acceptance, and no predictors for self-esteem.

Students with SEBD who had higher levels of student-teacher conflict before they were provided with special education services (i.e., in regular education without additional support), also had higher levels of student-teacher conflict after they were provided with special education services and girls had higher levels of student-teacher conflict than boys. The latter result is remarkable, because boys usually have been found to have higher student-teacher conflict than girls (e.g., McGrath & Van Bergen, 2015; Spilt, Koomen, & Jak, 2012). Yet, the studies that we derived our priors from, all concerned typically developing students. It may be that student-teacher conflict is perceived differently for girls with SEBD. That is, whereas for boys in elementary school externalizing behavior is to some extent considered more as normative behavior than for girls (e.g., Björkqvist, Lagerspetz, & Kaukiainen, 1992). Disruptive and rule-breaking behavior displayed by girls may thus be perceived more deviant by teachers than when the same behavior were to be displayed by a boy. Girls with SEBD, who break through these sex-typical normative behavior patterns, may consequently end up having higher levels of student-teacher conflict as compared to boys, whereas among typically developing students one might observe the opposite pattern. Another explanation



might be that since externalizing behavior is less common among girls (e.g., Crick & Zahn-Waxler, 2003), teachers may find this behavior more difficult to handle. Yet, the sensitivity analyses showed posterior parameter estimates were less stable between informative and uninformative priors for these special subsamples. Hence, results should be interpreted with caution.

For peer acceptance, we found that students with SEBD who had higher levels of self-esteem before they were provided with special education services, showed less development in peer acceptance over time after they were provided with special education services. This finding may be explained by the tendency of some aggressive children to idealize and to inflate ratings of competence (Hughes, Cavell, & Grossman, 1997; Orobio de Castro, Brendgen, Van Boxtel, Vitaro, & Schaeppers, 2007). That is, although students with SEBD may fail to experience accomplishments in academic, social, and emotional areas, they may still experience high self-esteem as a protective defense against the reality of persistent failure. Consequently, this distorted high self-esteem may interfere with the ability to adjust maladaptive behavior, resulting in decreased peer acceptance over time. Another explanation may be that these inflated ratings of competence may be perceived negatively by peers. Research has indeed found that reactions to self-enhancers were increasingly negative over time (Paulhus, 1998). Yet, our results were less stable from a sensitivity analysis, indicating that results should be interpreted with caution.

All in all, included students with SEBD were less accepted by peers than typically developing students. Also, while excluded students initially had more conflicts with teachers than typically developing students, which seemed a continuation of their conflictual teacher relationships before placement, over time, these conflicts tended to decrease. This seems to indicate that placing students with SEBD in exclusive special education may possibly have a positive impact on these students' social well-being. It is, however, important to note that, although different developmental trajectories for student-teacher conflict, peer acceptance, and self-esteem can be estimated for students within different educational contexts, still a great deal of variance still cannot be explained. In addition, although we found several predictors for initial levels and development over time in student-teacher conflict, peer acceptance, and self-esteem, the results appeared not very stable from a sensitivity analysis. This indicates a mismatch between the prior information and the observed data. Therefore, both the representativeness of the prior information, used to derive the hypotheses for our developmental models from, as well as the sample data should be carefully considered when drawing conclusions on what factors may determine students' development. Apparently, there are many factors that influence the social-emotional development of included and excluded students with SEBD in school, that go beyond the scope of our

study, which emphasizes not only the need for more research into these mechanisms, but also the need for a careful examination of which factors are important for each individual student within his/her individual educational context.

### **Strengths, limitations, and implications for practice**

This study adds to the literature on the developmental trajectories of social relationships and self-esteem among students with SEBD in both inclusive regular education and exclusive special education in comparison with their regular education peers. We have implemented innovative Bayesian inference with informed priors to examine our data, which is especially attractive in the field of special education, since special populations often consist of small samples. Although results were unstable from a sensitivity analysis and therefore should be interpreted with caution, the implementation of Bayesian statistics enabled us to explore predictors of social-emotional development in these small, special samples of students with SEBD.

Some limitations need to be considered as well. First, we do not know whether the self-reported and peer-reported measures that we used provide equally accurate self-reports of students with SEBD as of typically developing students. Future research would benefit from the development of high-quality measurement tools for use among students with SEBD. Furthermore, sex effects (i.e., a limited number of girls with SEBD participated), ethnicity effects (i.e., a limited number of participants from various backgrounds participated), and the restricted region where data was collected (i.e., only the northern and middle part of The Netherlands participated) limited the generalizability of our results. Directions for future research are to include a larger and more diverse sample in which variations across sexes, ethnicities and geographical regions could also be examined.

Despite these limitations, several implications for practice can be derived from this study. First, the social-emotional development of students with SEBD in inclusive regular education or exclusive special education generally is stable over time. Given that decisions to provide special education services are predominantly based on the learning development and behavioral functioning of students with SEBD in school, without knowing the consequences for students' social-emotional development, we may conclude that being identified as a student with SEBD in need of additional support does not necessarily lead to worse social-emotional development over time. That is, at least no worse social-emotional development over time that cannot be countered by the special education services provided to the student. Although we cannot draw conclusions about causality, our results may suggest that both forms of additional support prevent that the problems in social-emotional functioning of students with SEBD – which they showed in regular education when they were not yet provided with additional support

– will escalate over time. In fact, for excluded students with SEBD – who seem to start off worse than included students with SEBD – their student-teacher relationships even improved over time and may eventually even reach levels similar to those of included students with SEBD, which may be an argument to sustain special education services in settings for exclusive special education for some students with SEBD. Moreover, the decreasing levels of student-teacher conflict could indicate that excluded students with SEBD may show increasingly manageable behavior in the classroom over time, thereby positively impacting the student-teacher relationship, which may signal one of the first steps to a tentative perspective of return to the original school for regular education. Yet, the fact that student-teacher relationships slowly improve over time and only seem to reach levels similar to those of included students with SEBD, may indicate that prolonged provision of special education services is needed in case of these persistent problems.

Second, the social context in which students with SEBD are educated appears to influence their social-emotional development in school. As described above, student-teacher relationships show a different developmental pattern for included and excluded students with SEBD, but peer relationships differ as well. That is, the fact that included students with SEBD show lower peer acceptance than typically developing peers or excluded students with SEBD, suggests that for students with SEBD in regular education who face major difficulties in peer relationships, a transition to exclusive special education may lead to increased peer acceptance and improved peer relations, which again may be an argument to sustain special education services in settings for exclusive special education for some students with SEBD. Yet, decisions about the provision of special education services in inclusive or exclusive education should always be made in line with what is best for the student's educational development.

Third, although we were only able to draw tentative conclusions about the predictors of initial levels of student-teacher conflict and development in self-esteem, directions for future research can be derived from our results. That is, girls seem to comprise a special group of students with SEBD, and more research should focus on these girls to examine to what extent they differ from boys with SEBD. Furthermore, future research could shed more light on the relationship between self-esteem and social-emotional development in students with SEBD.



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## GENERAL DISCUSSION

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## GENERAL DISCUSSION

Whether students with social-emotional and behavioral difficulties (SEBD) should be provided with special education services in inclusive or exclusive settings is an important issue in education today. This question has been asked for many years (Oh-Young & Filler, 2015; United Nations, 2006), and is important for students, teachers, and schools. Teachers find these students the most difficult to teach and support (Buttner, Pijl, Bijstra, & Van den Bosch, 2016; Goei & Kleijnen, 2009; Van Grinsven & Van der Woud, 2016) and the provision of special education services in inclusive regular education or exclusive special education may have far-reaching consequences for these students' futures (De Roos & Bloem, 2014). The aim of the current dissertation was to extend our knowledge on the characteristics of students with SEBD in primary education (i.e., grades 2 to 6) and on how these students develop over time when they receive special education services – either in inclusive settings for regular education or exclusive settings for special education.

Conflicting ideological perspectives exist on what is best for the social-emotional and learning development of students with SEBD. Although current national and international policy aims towards inclusive education for all students (Oh-Young & Filler, 2015; United Nations, 2006), the other perspective states that although some students' needs can be met with special education services implemented in inclusive classrooms for regular education, other students' needs are individualized to such an extent that they can be met only in exclusive settings for special education (e.g., Kauffman, Anastasiou, Badar, Travers, & Wiley, 2016). Empirical evidence supporting one perspective over the other is lacking, and the limited number of studies that have compared included and excluded students with SEBD do not provide a definite conclusion either. Consequently, we do not know which students with SEBD participate in and benefit from inclusive regular education or exclusive special education in terms of academic progress and social-emotional development.

To clarify this issue, the present dissertation examined the various trajectories of additional support that students with SEBD followed over time (chapter 1); the social-emotional and academic characteristics of students with SEBD both before (chapter 2) and after they received special education services in schools for inclusive regular education or in schools for exclusive special education (chapter 3); whether the instruments that we regularly use in schools to assess students' social-emotional functioning are suitable to compare various student groups and to compare student performance over time (chapter 4); and how social relationships with teachers and peers and self-esteem of students with SEBD develop over time in comparison with typically developing peers (chapter 5).

## SUMMARY OF STUDY FINDINGS

### What is characteristic of students with SEBD?

Students for whom special education services for their social-emotional and behavioral difficulties are requested, comprise a heterogeneous population with a variety of problems at school and at home or in the community. At the time of application for eligibility for special education services, students with SEBD in the current study showed amongst others severe internalizing and externalizing problems, and attention problems – either formally diagnosed or not. In addition, they showed problems in establishing and maintaining satisfying interpersonal relationships with adults and peers and they showed impaired task-related behavior and academic performance (chapters 1 to 3). This is worrisome, as this variety of problems in various contexts may warrant professional (youth) care and may result in adverse prospects in later life (e.g., Cannon, Gregory, & Waterstone, 2013). Due to their problems, the participation in education of the students with SEBD in our sample was severely limited at the time of application for eligibility for special education services. The majority of the applying schools had opportunities to directly or indirectly provide support to their students with SEBD, such as support for the teacher by someone in or outside of school, the use of additional materials, and additional staff support for the student with SEBD within the school. Yet, the application for and allocation of special education services to the students with SEBD indicated that the schools' available facilities at the time of application were insufficient to meet these students' needs (chapter 1).

### Which school for whom?

After eligibility for special education services was established by independent committees, a *placement choice* was made, grossly between two possibilities: special education services would be provided either in schools for inclusive regular education or in schools for exclusive special education. Given the importance of this decision process, we examined which characteristics of students and teachers were predictive of placement choices (chapter 2). Surprisingly, the students with SEBD who were later placed in inclusive or exclusive settings did not differ regarding aspects of student functioning before placement choices were made (i.e., when both groups still resided in regular education without additional support). In contrast, teachers of both student groups differed on several factors. That is, teachers of students who were later included in regular education reported lower teacher self-efficacy in the classroom context, but more positive attitudes towards inclusive education than teachers of students who were later placed in exclusive special education. Thus, placement choices seemed to depend on teacher factors instead of on student characteristics.



### **Which trajectories of additional support do students follow over time?**

With regard to the various trajectories of additional support that students with SEBD followed over time (chapter 1), we found that the majority of the students with SEBD received special education services in inclusive classrooms for regular education, and stayed there over time (i.e., *included* students with SEBD). The second most prevalent trajectory comprised students with SEBD who received special education services in exclusive classrooms for special education, and stayed there over time (i.e., *excluded* students with SEBD). In addition to these two main trajectories, we found a few exceptions. For instance, some students with SEBD first received special education services in inclusive classrooms for regular education, and later switched to placement in exclusive classrooms for special education.

### **Do students with SEBD fare better or worse after the provision of 1,5 year of special education services in inclusive or exclusive settings?**

Although included and excluded students with SEBD did not differ in student functioning when both groups still resided in the same context of regular education (i.e., before placement choices had been made), differences between students who were provided with special education services in inclusive and exclusive settings had emerged after 1,5 year (chapter 3). Specifically, excluded students with SEBD performed better socially and academically than included students with SEBD. Students in exclusive special education had more positive relationships with their teachers and peers and showed better social-cognitive functioning, task-related behavior and academic performance than students in inclusive regular education.

### **Can social-emotional functioning be compared across student groups and over time?**

We examined the social-emotional development of students with SEBD longitudinally. In our study, we used student monitoring systems (SMS) that are often used in daily practice to assess whether students attain cognitive and social-emotional educational targets (Rijksoverheid, n.d.). Yet, in practice, we often do not know whether these instruments show measurement invariance – that is, whether they measure the same constructs across student groups and over time.

In chapter 4, we examined measurement invariance across groups and over time for the VISEON – an often-used instrument for assessing and monitoring Dutch students' social-emotional functioning (Citogroep, 2004). The items of the VISEON subscales Self-esteem, Work attitude, and Attitude towards school (Citogroep, 2004) appeared to be interpreted similarly across student groups, which suggests that the VISEON can be used to meaningfully assess and compare the achievements of typically developing

students and students with SEBD. For measurement invariance over time, however, no conclusive answer could be provided. In the context of considerations of parsimony together with the small differences between measurement variant and measurement invariant models, we concluded that the use of the VISEON over time was neither entirely supported nor completely discouraged.

### **How do social relationships with teachers and peers and self-esteem of students with SEBD develop over time in inclusive settings for regular education and exclusive settings for special education?**

To gain insight into the social-emotional development of students with SEBD over time, we compared the development of student-teacher conflict, peer acceptance and self-esteem of included and excluded students with SEBD and their typically developing peers in regular education. We found that excluded students with SEBD initially had more conflictual relationships with their teachers than typically developing students, while included students with SEBD did not differ from either group. Yet, these conflictual student-teacher relationships of excluded students with SEBD improved over time, while conflict in the student-teacher relationships was highly stable among typically developing students and included students with SEBD. For acceptance among peers we found that included students with SEBD were less accepted among peers than typically developing students, while excluded students with SEBD did not differ from either group. In addition, peer acceptance was stable over time in all student groups. Contrary to what was expected, self-esteem and development in self-esteem did not differ between student groups.

Lastly, we zoomed in on included and excluded students with SEBD to see whether we could find factors – present before students with SEBD received special education services – that could predict initial levels of student-teacher conflict, peer acceptance, and self-esteem, and development in these areas. We found that higher levels of student-teacher conflict at the start of the provision of special education services were predicted by being a girl and higher levels of student-teacher conflict before students with SEBD received special education services. In addition, higher self-esteem before students with SEBD received special education services, predicted less development in peer acceptance after students with SEBD were provided with special education services in regular education and special education. No predictors for the initial levels or the development of self-esteem were found.

## IMPLICATIONS OF STUDY FINDINGS

This study aimed to extend our knowledge on the characteristics of students with SEBD in primary education who applied for special education services and on how these students develop over time when they receive such services – either in inclusive settings for regular education or exclusive settings for special education. Knowledge about these topics could inform the debate on whether special education services should preferably be provided in inclusive or in exclusive settings. To this end, the following section will go beyond the study's findings to address several practical implications.

First of all, to answer the question whether we can 'shape sort students' we found that aspects of student functioning may not be determining factors in placement choices, while teacher factors did seem to play a role. This indicates that the metaphor of shape sorting students based on their 'individual shape' does not do justice to the fact that contextual issues seem to play an important role in current placement choices. This intriguing finding suggests that the transition to receiving special education services, which is accompanied by substantial changes in a student's educational career – especially in the case of placement in exclusive settings – depends to some extent on characteristics of their teachers rather than on their own school functioning. This suggests that – when placement choices for students with SEBD have to be made – it is important to also pay serious attention to what the teacher, the school, and the specific teacher-student dyad need in terms of special education services, rather than to focus predominantly on student functioning. Ironically, the positive findings for social-emotional and academic functioning of excluded students with SEBD suggest that the support for teachers should not only be focused on managing disruptive student behavior in their classroom, but also on evaluating in which situations placement in exclusive settings is warranted.

The finding that teacher factors play an important role in placement choices may not seem surprising at first sight, because several studies have indicated large differences between individual teachers' competence to manage students with special educational needs in their classroom (e.g., Buttner, Pijl, Bijstra, & Van den Bosch, 2015). Yet, it is surprising that we found that included and excluded students with SEBD show similar student functioning before placement choices have been made, since this contrasts with most previous research that indicates that included students with SEBD perform better in various developmental areas than students with SEBD who were placed in exclusive special education (Bijstra, 2004; Drost & Bijstra, 2008; Lane, Wehby, Little, & Cooley, 2005; Ledoux, Roeleveld, Van Langen, & Smeets, 2012; Stoutjesdijk & Scholte, 2009; Stoutjesdijk, Scholte, & Swaab, 2012). We therefore stress that when a possible need for special education services is considered, we might need to focus more on

contextual factors that may impact disruptive behavior in the classroom. If certain school and teacher factors play a role, schools and teachers may possibly try to better equip teachers in schools. Teachers in regular education often feel unprepared to teach students with special educational needs in their classrooms (Solis, Vaughn, Swanson, & McCulley, 2012). By effectively supporting teachers, teachers might acquire skills to better manage disruptive student behavior in the classroom and skills to better evaluate which students can be supported in inclusive regular education and which students may benefit more from exclusive special education. Ways to effectively support teachers might be to have specialists (e.g., special education teachers and school psychologists) coordinate curriculum changes such as the use of alternative grouping in pairs or small groups to facilitate learning in the classroom (Solis et al., 2012); to use highly-valued and effective methods for professional development such as coaching on the job, peer supervision, and consulting colleagues (Bruggink, 2015; Inspectorate of Education, 2013b; Walraven, Kieft, & Broekman, 2011); and to facilitate teachers in time for communication and planning with their direct colleagues (Solis et al., 2012). One could also think of, for instance, the implementation of a tiered system of behavioral support in the school, such as School-Wide Positive Behavior Support (SWPBS; Bradshaw, Mitchell, & Leaf, 2010; McIntosh, Chard, Boland, & Horner, 2006). Teachers are more likely to be able to manage students with SEBD in inclusive settings if such a tiered system of behavioral support is available (Barrett, Bradshaw, & Lewis-Palmer, 2008; Bradshaw et al., 2010).

Second of all, included and excluded students with SEBD did not differ in student functioning before placement choices were made, but after special education services had been provided for 1,5 year in inclusive and exclusive settings, excluded students with SEBD performed better on average than included students with SEBD. This does not imply that receiving special education services in exclusive settings would have been better for all students with SEBD. Given that we only examined mean differences between student groups, we do not know what would have been best for each individual student with SEBD. It could be that special education services in inclusive settings suits the needs of some individual students better. In addition, we do not know whether there were subtle initial differences between student groups that we have not measured in our study. Yet, the positive findings for social-emotional and academic functioning of excluded students with SEBD suggest that we may have to look at placement choices differently. Placement in exclusive settings may be perceived negatively given that the policy of *Passend Onderwijs* aims to include students with special educational needs whenever possible, and to provide as few students as possible with special education in exclusive settings. However, instead of perceiving it as negative, placement in exclusive settings may be a preferable option for some students with SEBD who have unique

educational needs with regard to their academic and social-emotional development.

Note, however, that an important explanation for the emergence of differences between included and excluded students with SEBD is that the social context in which they are educated may have influenced their social-emotional development in school. Specifically, teachers in exclusive special education are better trained to predict, understand, and replace disruptive and inappropriate behavior of students with SEBD (Kauffman & Badar, 2014; Lane et al., 2005) and smaller classrooms in exclusive special education may provide teachers with more opportunities for individual attention for students with SEBD. This may positively impact their student-teacher relationship. Teachers in regular education, in contrast, may feel unprepared to support students with SEBD (e.g., Jones & Chronis-Tuscano, 2008). In addition, the disruptive and rule-breaking behavior of included students with SEBD may be perceived as unusual in an inclusive regular education setting by teachers and peers, whereas the disruptive and rule-breaking behavior of excluded students with SEBD may be more common. Therefore, disruptive behavior of students with SEBD may to a lesser extent result in low peer acceptance and in less student-teacher conflict in exclusive settings (e.g., Mikami, Griggs, Reuland, & Gregory, 2012; Useche, Sullivan, Merk, & Orobio de Castro, 2014).

With regard to the trajectories of additional support that students with SEBD followed over time (chapter 1), we found that the majority of the students with SEBD received special education services in the setting of their initial choice, but we also found several exceptions. For instance, several students with SEBD who first received special education services in inclusive classrooms for regular education, later switched to placement in exclusive classrooms for special education. This may reflect the current transition from a dual system of special education services (i.e., inclusive regular education vs. exclusive special education) into a continuum of special education services for students with SEBD in The Netherlands within collaborative networks of regular and special education schools (De Boer & Van der Worp, 2016). Remarkable, however, is that we did not have a single trajectory in which a student with SEBD who received special education services ‘switched back’ to regular education without additional support. This is in line with reports indicating that the percentage of children switching back to regular education without additional support is relatively low (Inspectorate of Education, 2013a, 2014, 2015, 2016), and seems to indicate that many students with SEBD have such severe problems that continuous provision of special education services – either in inclusive or in exclusive settings – is necessary (De Boer & Van der Worp, 2016).

Concerning education policies, this study shows that placement choices as to where students with SEBD should be provided with special education services – in inclusive settings for regular education or exclusive settings for special education – seem to be predominantly guided by teacher factors such as teacher self-efficacy and teacher

attitudes towards inclusive education. This suggests that referring students with SEBD for special education services to exclusive settings could improve the well-being of their teachers, as their teachers do not have to manage the students' disruptive behavior in the regular classroom anymore. Specifically, teachers find students with SEBD the most difficult to teach and support (Buttner et al., 2016; Goei & Kleijnen, 2009; Van Grinsven & Van der Woud, 2016), which could cause feelings of incompetence (Lane, Wehby, & Barton-Arwood, 2005) and eventually burn-out in teachers (Friedman, 2003) and problematic relations with these teachers for the students. Therefore, placement choices based on teacher factors may to some extent be considered legitimate choices, although they do not necessarily reflect what is best for the students with SEBD involved. Based on our findings that on average excluded students with SEBD show better social-emotional and academic functioning than included students with SEBD, one could argue that exclusive schools for special education make an important contribution to the educational development of students with SEBD. Yet, providing more students with SEBD with special education services in exclusive settings is not in line with the current national and international movement towards inclusive education (Oh-Young & Filler, 2015; United Nations, 2006). Given these trends, it seems important to equip schools for regular education to manage and support the special educational needs of students with SEBD.

## **STRENGTHS, LIMITATIONS, AND FUTURE RESEARCH DIRECTIONS**

The research in this dissertation adds to the literature on the social-emotional and academic functioning of students with SEBD in both inclusive regular education and exclusive special education in comparison with their typically developing peers. First, this is the first study, to our knowledge, that recruited students with SEBD before they received special education services in either setting, and followed their school development from that point on. This allowed us to disentangle student effects and selection effects due to context. Previous studies without such baseline information cannot separate student characteristics from being in a specific educational context, because these studies only assessed students with SEBD when they had already been placed in inclusive or exclusive settings. Second, we used multi-informant data and we integrated various domains of student functioning (i.e., behavioral, social-emotional, and academic), while previous studies often used fewer informants and examined fewer domains. Third, we combined student characteristics (i.e., aspects of student functioning) and contextual characteristics (i.e., teacher factors) when examining the relationships with placement choices for students with SEBD. Fourth, the research in this

dissertation investigated self-perceptions of students with SEBD, which is rarely done among this special population. Last, we used innovative Bayesian statistical procedures to handle our small samples with greater accuracy and to directly test to what extent our data supported different theoretical hypotheses based on conflicting findings in the literature. To this end, we were able to draw preliminary conclusions based on a relatively small sample from a very special student population.

The research in this dissertation also has its limitations. First of all, although we examined the characteristics and developmental trajectories among included and excluded students with SEBD with innovative statistical procedures, our sample sizes are limited and affected by the willingness to participate. We recruited students with SEBD, their parents and schools during the often stressful and burdensome process of applying for additional support, and consequently many parents and students with SEBD denied participation in our study. It may have been that specifically those students who experienced more severe problems, both at school and at home – and who consequently might have been placed in exclusive special education more often – declined participation in our study. For instance, parents and schools who declined participation often indicated that participation would be too burdensome for their child. This may have influenced our results, for instance, the fact that we did not find any evidence that student functioning was related to placement choices. If we had collected data with a sample that included more students with SEBD with the most severe problem behavior – and possibly relatedly the most severe problems in the home context – we might have found that excluded students with SEBD showed more severe problems in student functioning before placement. In addition, more severe problems in the home context could also have influenced the social-emotional and academic progress in school negatively, resulting in less positive developmental trajectories for excluded students with SEBD. Yet, our results suggest that in a possibly selective sample of students who do fulfill the eligibility criteria for special education services, but have relatively less severe problems, receiving special education services in exclusive settings benefits their social-emotional and academic development. In order to be able to examine the characteristics and developmental trajectories in larger samples of included and excluded students with SEBD, it would be beneficial to monitor these students and the special education services provided by default, as is done in professional health care (Ministry of Public Health, Well-being, and Sports, 2016). Students with SEBD also show severe, pervasive, and chronic problems, like youth involved in professional health care, resulting in bad prospects during and after their school career (Bradley, Doolittle, & Bartolotta, 2008; Cannon et al., 2013; Lane et al., 2005). Since special education services are provided to prevent adverse outcomes for students with SEBD, it is important to monitor its quality and effectiveness, for instance

as part of the obligatory student monitoring systems.

Second, as parents and schools could apply for eligibility across the school year, students with SEBD enrolled in our study at various moments across the school year. In addition to that, differences in the duration of the application process were found. This resulted in the fact that students with SEBD were measured at different points in time and that the time periods between the subsequent waves of data collection differed to some extent too (e.g., due to the timing of summer break between waves of data collection). With our small samples, it was not possible to control for these timing issues and consequently we do not know they may have affected our results. Given that we set the start of the provision of special education services in inclusive or exclusive settings as starting point for each individual student with SEBD to model developmental trajectories, we attempted to control for the most important timing issues in our data.

Third, although we do not have much evidence indicating that one cannot measure academic performance and self-reports among students with SEBD, there is little research on the psychometric qualities of academic measures and in particular self-report measures with students with SEBD. For instance, with regard to assessment of academic performance in student monitoring systems, it has been found that students with SEBD show a remarkable variety in academic outcomes within students leading to questions about the reliability of the assessment methods among students with SEBD (Van der Worp-Van der Kamp, Pijl, Post, Bijstra, & Van den Bosch, 2016). The students' characteristics may affect the quality and adequacy of our assessments (Fore, Boon, & Martin, 2007). In addition, the instruments we used to measure self-reported student-teacher relationships and self-reported social-emotional functioning have been shown reliable and valid with typically developing elementary school students (Cito, 2011; Citogroep 2004; Koomen & Jellesma, 2015; Zee & De Bree, 2017), students with internalizing problem behavior in a typically developing population (Jellesma, Zee, & Koomen, 2015), and students with a variety of mild special educational needs such as learning problems, cognitive problems, and problems in task-related behavior (although they may also have mild behavioral problems) (Cito, 2011; Citogroep 2004), yet not among students with SEBD specifically. Given that self-reports require a certain level of language skills and introspection, which may be difficult for some students with SEBD, this may lead to questions about the reliability of self-reported measures too. Yet, students with SEBD are assessed frequently during their educational career, especially in the situation in which parents and schools have to build up the students' application file to apply for additional support. Future research on specific measurement issues for academic assessments and self-reports among students with SEBD seems thus necessary to enhance the sensitivity of such measurements for this population. Directions for future research would therefore be to develop high-quality measurement



tools for research and practice that have been experimentally validated for use among students with SEBD.

Lastly, some remarks should be made regarding the generalizability of our findings. From an international perspective, special education systems and eligibility criteria for special education services differ between The Netherlands and other countries. For instance, in the United States, eligibility criteria are established by law and students whose emotional and behavioral problems are related to other conditions or specific developmental disorders, such as Autism Spectrum Disorder (ASD) or Conduct Disorder (CD), do not automatically fulfill the requirements for eligibility for placement. In The Netherlands, however, eligibility is established by independent committees who base their decisions on information on students' behavioral, social-emotional, and academic functioning provided by the schools. The additional exclusion criteria are less strict, which leads to the inclusion of a wide variety of disorders, such as ASD or CD. Such international differences may prevent direct comparisons between students with SEBD who receive special education services in various countries. Yet, both Dutch and international research shows that students with SEBD face severe common problems in various areas, such as maladaptive and disruptive behavior, inappropriate interactions with adults and peers, and impaired academic performance (Cannon et al., 2013; Furlong, Morrison, & Jimerson, 2004; Gresham & Kern, 2004; Landrum, 2011). In addition, studies from different countries depict comparable difficulties faced by this population, including comorbid disorders (Breeman et al., 2015; Lynn, Carroll, Houghton, & Cobham, 2013; Magyar & Pandolfi, 2012; Stoutjesdijk et al., 2012; Wagner, Kutash, Duchnowski, Epstein, & Sumi, 2005). Furthermore, serious risks for adverse prospects in later life, such as school drop-out, involvement in the justice system, and psychiatric hospitalization (Bradley et al., 2008; Cannon et al., 2013) have consistently been found. Considering these common problems, one could expect overlap in populations of students with SEBD in The Netherlands and other western countries.

Furthermore, we started our research in a changing system of Dutch special education services. That is, we recruited our participants in the situation in which the Dutch special educational system still comprised four clusters for special education services and in which the funding policy *Leerlinggebonden Financiering* (LGF; a personal budget for students with special educational needs) (Besluit Leerlinggebonden Financiering, 2003) was still in effect. Yet, regular and special education schools already prepared for the new educational policy of *Passend Onderwijs* (i.e., Suitable Education) (Ministry of Education, Culture, and Science, 2014) by organizing into collaborative networks and setting up their own independent committees. It is unclear how these changes may have affected our results. It is possible that the instigation of the policy of *Passend Onderwijs* may have led regular education schools to be reluctant to apply for special education

services, because under this policy, their collaborative network had to carry the costs for these services. Regular schools may have tried to support students with SEBD as long as possible to prevent the financial burden of providing special education services. Consequently, the needs of several students with SEBD may potentially not have been adequately met, resulting in lower academic and social-emotional functioning of included students with SEBD. This could be reflected in the findings of the current dissertation that excluded students with SEBD showed better social-emotional and academic functioning than included students with SEBD.

While the findings from this dissertation shed more light onto the characteristics of students with SEBD and their developmental trajectories in inclusive and exclusive settings, several recommendations for future research can be made. Future research would benefit from integrating both social-emotional and academic developmental trajectories in school. As schools play a dual role in fostering both students' academic and social-emotional development (Crnic & Neece, 2015), research that combines social-emotional and academic development would provide greater insight into what complete school development students with SEBD will go through in both inclusive and exclusive settings. In addition, the integration of both academic and social-emotional development in school could also shed more light on how development in both domains influences each other.

In addition, it would be important to examine school level factors (e.g., school policies, administrative support, and the implementation of evidence-based practices) and specific aspects of special education services (e.g., type, pace, duration, intensity, and frequency). These factors could play a direct or indirect role in placement decisions, the availability of additional support, and the school development of students with SEBD.

Moreover, it would be important to relate the school development of students with SEBD before and after they are provided with special education services, to their development at home. Topics for future research would therefore be to examine how factors in the home context are related to placement decisions and how the provision of special education services in school would affect the social-emotional and behavioral functioning of students with SEBD at home, as we know from practice that high demands in the school context could lead to emotional discharge at home (e.g., Eenhoorn, 2012). Furthermore, support from professional (youth) care at home could, in addition to improvements in the home context, also influence the social-emotional and behavioral functioning of students with SEBD at school (e.g., Anderson, Meyer, & Somers, 2006).

## RESEARCH AMONG SPECIAL NEEDS POPULATIONS

As research forms the basis of teacher education and new scientific insights are used to improve the professionalism of teachers working in practice (Martens, 2012), we need the willingness of schools, teachers, parents, and students to participate in educational research. The many requests to participate in research have put a severe strain on schools, teachers, student and parents (Van Braak & Vanderlinde, 2012; Van Efferen-Wiersma, Van der Stege, Nelen, Van Zoest, De Swart, & Scholte, 2017). In addition, particularly in our study among students with SEBD, we recruited participants during the often stressful and burdensome process of applying for additional support, leading to a high decline rate.

Yet, it is very important to monitor student development in educational practice, especially in case of students with SEBD. Monitoring the development of students with SEBD by default, as is done with youth involved in professional health care (Ministry of Public Health, Well-being, and Sports, 2016) and as is implied by the recent Dutch law concerning social safety in schools, may inform us about the individual students' needs and the effectiveness of the special education services provided. Even though the population size of these students is limited (i.e., students with SEBD comprise approximately 1,5% of the total student population; CBS, 2017), their impact is large. That is, adverse prospects for students with SEBD, such as unemployment, involvement in the justice system, psychiatric hospitalization and residential treatment (e.g., Bradley et al., 2008; Cannon et al., 2013), pose significant personal, social, and economical costs to the individuals involved and society as a whole. More knowledge is therefore needed regarding how to support students with SEBD to prevent adverse outcomes, especially considering that teachers find students with SEBD the most difficult to teach and support (Buttner et al., 2016; Goei & Kleijnen, 2009; Van Grinsven & Van der Woud, 2016). One possibility is to incorporate quality and effectiveness measures for special education services in the current obligatory student monitoring systems that have already been used in educational practice (Rijksoverheid, n.d.b). In addition, even research with small samples can provide valuable information on how to support these students in their school development.

To this end, several guidelines as to maximize success in conducting research among special needs populations can be derived from our study (and see Van Efferen-Wiersma et al., 2017, for guidelines for conducting research in general educational practice). First of all, it was important to formulate research questions that were relevant to educational practice. This helped us to overcome the resistance against participation in research to some extent.

Second, for two reasons we attempted to use measures that matched with those

that were already used in elementary schools and in application procedures for special education. One reason was to limit the burden of participation in our study as much as possible, to increase the willingness among participants to take part in our research. The second – and more important reason – was that we wanted to conduct research that was as ecologically valid as possible. To this end, our conclusions would directly relate to educational practice, which in turn would increase participants' willingness to take part in our research as well.

Third, it appeared important to be able to adjust to schools', parents' and students' needs. If full participation was too burdensome for either the student with SEBD, the classroom and/or the teacher, we discussed with concerning parties in which part(s) they would be able to participate. Hence, not all data could be collected for all students, but the majority of our participants (91.5%) was retained during the full study.

Last, it was important to intensively invest in collaboration with institutions, schools, teachers, parents, and students. Even though the process of applying for special education services and subsequent provision of services – and relatedly a possible switch of schools – may be an stressful and intense period in students' educational careers, almost all participants that we recruited continued to participate until the study ended.

Our intensive, longitudinal, multi-informant approach of these small samples led us to collect extensive data about our special population of students with SEBD. By using advanced statistical methods, we were able to draw tentative conclusions about the characteristics of these students and their specific developmental trajectories, whereas this would not have been possible with a superficial, large-scale, single-informant, cross-sectional study.

## CONCLUSION

The research in this dissertation shows that excluded students with SEBD perform better than included students with SEBD in various developmental areas – even though both student groups showed similar student functioning prior to placement. We have to be aware that, although there is a trend in current educational policy to move towards inclusive education (Ministry of Education, Culture, and Science, 2014; Oh-Young & Filler, 2015; United Nations, 2006), special education services provided in exclusive settings can have important benefits to both the academic and social-emotional functioning of students with SEBD who are at risk for a variety of bad prospects (Bradley et al., 2008; Cannon et al., 2013; Lane et al., 2005). Simply including all students with SEBD in regular education thus does not seem something that we should aim for.

It is important to note that the research in this dissertation does not provide any guidelines as to whether we should place students with SEBD in exclusive settings more often or that inclusive regular education should be changed to better suit the needs of students with SEBD. Yet, that both inclusive and exclusive settings are necessary to adequately support this diverse group of students seems evident. The benefits of exclusive settings for the development of many of these students are not sufficiently acknowledged by our current educational policy (Ministry of Education, Culture, and Science, 2014). This stresses the need to better equip schools for regular education with similar services, facilities, and professional expertise to manage and support students with SEBD.



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## **SAMENVATTING (SUMMARY IN DUTCH)**

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### **EEN “SORTEERBOX” VOOR LEERLINGEN MET EXTRA ONDERWIJSBEHOEFTE**

EEN STUDIE NAAR PLAATSINGSKEUZE  
EN LEERLINGFUNCTIONEREN VAN  
LEERLINGEN MET SOCIAAL-EMOTIONELE  
EN GEDRAGSPROBLEMEN IN HET  
REGULIER EN SPECIAAL ONDERWIJS

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## INLEIDING

In Nederland en veel andere landen wordt al jarenlang discussie gevoerd over de vraag of leerlingen met extra onderwijsbehoeften aanvullende ondersteuning zouden moeten krijgen in het regulier onderwijs of in het speciaal onderwijs (Bakker, Noordman, & Rietveld – Van Wingerden, 2006; Ministerie van Onderwijs, Cultuur en Wetenschap, 2014; Oh-Young & Filler, 2015; Verenigde Naties, 2006). Met name als het gaat om leerlingen met sociaal-emotionele en gedragsproblemen (in het vervolg: leerlingen met gedragsproblemen) is deze vraag relevant, aangezien de keuze tussen extra ondersteuning in het regulier of speciaal onderwijs belangrijke gevolgen heeft voor leraren, scholen en leerlingen met gedragsproblemen zelf. Dat wil zeggen, veel leraren ervaren handelingsverlegenheid in het omgaan met en ondersteunen van deze leerlingen (Buttner, Pijl, Bijstra, & Van den Bosch, 2016; Goei & Kleijnen, 2009); plaatsing in het regulier dan wel speciaal onderwijs kan dus gevolgen hebben voor het welbevinden van leraren en voor de schoolontwikkeling en verdere ontwikkeling van de leerling met gedragsproblemen zelf (De Roos & Bloem, 2014).

Er bestaan zowel nationaal als internationaal twee visies op wat het beste is voor de didactische en sociaal-emotionele ontwikkeling van leerlingen met gedragsproblemen. Met het ondertekenen van de Salamanca Statement (UNESCO, 1994) hebben veel landen, waaronder Nederland, uitgesproken dat alle leerlingen – ook leerlingen met extra onderwijsbehoeften – de mogelijkheid moeten hebben om onderwijs te volgen in het regulier onderwijs. Er valt voldoende te zeggen voor deze visie van ‘inclusie voor alle leerlingen’. Het volgen van het reguliere curriculum zou de schoolprestaties van leerlingen met gedragsproblemen verhogen; en daarnaast zou de interactie met reguliere leerlingen veel mogelijkheden bieden voor de ontwikkeling van sociale vaardigheden, terwijl de interactie met andere leerlingen met gedragsproblemen zou leiden tot verergering van die gedragsproblemen (Dishion, Spracklen, Andrews, & Patterson, 1996; Snyder et al., 2010).

Naast de visie van ‘inclusie voor alle leerlingen’ is er een tweede visie die stelt dat de extra onderwijsbehoeften van sommige leerlingen met gedragsproblemen zo sterk geïndividualiseerd zijn dat enkel het speciaal onderwijs hierin kan voorzien (Kauffman, Anastasiou, Badar, Travers, & Wiley, 2016) – de visie ‘regulier als het kan, speciaal als het moet’. Vanuit deze visie zou extra ondersteuning in het regulier onderwijs geboden moeten worden wanneer mogelijk, maar voor leerlingen voor wie dit niet volstaat moet de mogelijkheid blijven bestaan om onderwijs te volgen in de sterk gespecialiseerde context van het speciaal onderwijs. In deze onderwijscontext wordt instructie aangepast aan de unieke onderwijsbehoeften van de leerlingen en is professionele gedragsondersteuning beschikbaar in de school (Lane, Wehby, Little, & Cooley, 2005;

Tankersley, Landrum, & Cook, 2004). Deze visie vormt de basis voor *Passend Onderwijs* (Ministerie van Onderwijs, Cultuur en Wetenschap, 2014).

Beide visies zijn voornamelijk gebaseerd op ideologische standpunten. Er zijn geen wetenschappelijke onderzoeken beschikbaar waarin vergelijkbare groepen leerlingen met gedragsproblemen in het regulier en speciaal onderwijs over tijd gevolgd zijn en die helderheid verschaffen over de vraag welke van de twee visies de beste resultaten oplevert voor de sociaal-emotionele en cognitieve ontwikkeling van leerlingen met gedragsproblemen. Het beperkte aantal wetenschappelijke studies dat leerlingen met gedragsproblemen in het regulier en speciaal onderwijs cross-sectioneel vergeleken heeft kan ook geen uitsluitsel bieden. Sommige van deze studies laten zien dat leerlingen met gedragsproblemen in het regulier onderwijs beter presteren op lezen (Lane et al., 2005; Ledoux, Roeleveld, Van Langen, & Smeets, 2012), spelling (Lane et al., 2005; Stoutjesdijk & Scholte, 2009), rekenen (Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009) en taakgerelateerd gedrag en dat leerlingen met gedragsproblemen in het regulier onderwijs positievere sociale relaties met leraren en leeftijdsgenoten hebben dan leerlingen met gedragsproblemen in het speciaal onderwijs (bijv. Ledoux et al., 2012). Andere studies laten echter zien dat prestaties op lezen, spelling en rekenen niet verschillen tussen leerlingen met gedragsproblemen in het regulier en in het speciaal onderwijs (Ledoux et al., 2012; Reid, Gonzalez, Nordness, Trout, & Epstein, 2004; Stoutjesdijk & Scholte, 2009).

Er is tot op heden dus geen eenduidig antwoord op de vraag hoe leerlingen met gedragsproblemen in het regulier en het speciaal onderwijs van elkaar verschillen wanneer ze zich in deze onderwijscontexten bevinden en we weten niet hoe de twee groepen leerlingen van elkaar verschillen voordat de keuze voor plaatsing in het regulier of speciaal onderwijs gemaakt wordt. Ook weten we weinig over wat scholen doen om hen te ondersteunen, welke trajecten voor extra ondersteuning ze volgen over tijd, en welke ontwikkeling de leerlingen op didactisch en/of sociaal-emotioneel gebied doormaken met de geboden ondersteuning. Dit proefschrift beoogt deze vragen te beantwoorden om daarmee richting te geven aan de vraag wat het beste is voor leerlingen met gedragsproblemen: extra ondersteuning in het regulier onderwijs of plaatsing op een school voor speciaal onderwijs?

## METHODEN

In dit proefschrift zijn leerlingen met gedragsproblemen gevolgd, die bij de start van het onderzoek in groep 4 tot en met 6 van het regulier onderwijs zaten en bij wie ouders en school signaleerden dat zij zich niet naar behoren ontwikkelden in het regulier

onderwijs. Ouders en school besloten daarom gezamenlijk een aanvraag te doen voor extra ondersteuning. Nadat onafhankelijke commissies hadden vastgesteld dat deze leerlingen recht hadden op extra ondersteuning, maakten ouders en school een gezamenlijke keuze waar de ondersteuning geboden zou worden. Sommige leerlingen bleven in het regulier onderwijs en kregen daar extra ondersteuning; andere leerlingen werden verwezen naar het speciaal onderwijs en kregen daar extra ondersteuning.

De gegevens over de leerlingen zijn verzameld tijdens vier schoolbezoeken waarin de leerlingen, hun leraar en hun klasgenoten deelnamen aan klassikaal vragenlijstonderzoek. Daarnaast werden de schoolprestaties en het sociaal-cognitief functioneren van de leerlingen met gedragsproblemen in kaart gebracht. Ook zijn er gegevens uit het leerlingvolgsysteem en de aanmelddossiers van de leerlingen verzameld. Het eerste schoolbezoek vond plaats in het regulier onderwijs, voordat er een keuze voor plaatsing in het regulier of speciaal onderwijs was gemaakt – dus voordat de leerlingen extra ondersteuning kregen. Vervolgens zijn beide groepen leerlingen tijdens de drie overige schoolbezoeken anderhalf jaar in het regulier dan wel speciaal onderwijs gevolgd om hun schoolse ontwikkeling in kaart te brengen. De leerlingen zaten zodoende aan het eind van het onderzoek in de groepen 6 tot en met 8.

## **SAMENVATTING VAN DE RESULTATEN**

### **Kenmerken**

Leerlingen met gedragsproblemen vormen een heterogene populatie. De leerlingen in dit onderzoek voldeden allen aan de vijf criteria voor een cluster 4 indicatie (deze criteria waren nog geldig ten tijde van de start van het onderzoek): (1) er was sprake van ernstige internaliserende en/of externaliserende gedragsproblemen en/of aandachtsproblemen – al dan niet met een psychiatrische diagnose (hoofdstuk 1 t/m 3); (2) de problemen deden zich voor op school, thuis en/of tijdens vrijetijdsbesteding; (3) er werd gerichte hulpverlening voor de problematiek geboden; (4) de onderwijsparticipatie van de leerlingen werd ernstig beperkt, doordat leerlingen problemen vertoonden in hun leergedrag en schoolprestaties, problemen vertoonden in het aangaan en onderhouden van interpersoonlijke relaties met onderwijzend personeel en klasgenoten en/of het onderwijsleerproces van klasgenoten belemmerden; en (5) hoewel scholen over het algemeen verschillende mogelijkheden hadden om de leerlingen direct of indirect te ondersteunen (bijv. met extra materialen of ondersteuning voor de leraar), bleken deze mogelijkheden na tenminste een half jaar onvoldoende om tegemoet te komen aan de extra onderwijsbehoeften van de leerlingen met gedragsproblemen (hoofdstuk 1).

## Plaatsingskeuzes

In hoofdstuk 2 is onderzocht of aspecten van leerlingfunctioneren en leraarfactoren de keuze voor plaatsing in het regulier of speciaal onderwijs konden voorspellen. Verrassend genoeg bleek dat beide groepen leerlingen met gedragsproblemen niet verschilden in leerlingfunctioneren toen allen zich nog in het regulier onderwijs bevonden zonder extra ondersteuning. De leraren van beide groepen verschilden daarentegen wel op verschillende factoren. Leraren van leerlingen met gedragsproblemen die in het regulier onderwijs bleven rapporteerden een lager vertrouwen in eigen effectiviteit en eigen kennen en kunnen in de klas – een lagere *self-efficacy*<sup>1</sup> in de klas – maar positievere attitudes ten aanzien van inclusief onderwijs dan leraren van leerlingen met gedragsproblemen die naar het speciaal onderwijs werden verwezen.

## Ondersteuningstrajecten

Nadat een plaatsingskeuze was gemaakt, is onderzocht of de leerlingen met gedragsproblemen in dezelfde onderwijscontext bleven of nog van type ondersteuning veranderden (hoofdstuk 1). De meerderheid van de leerlingen met gedragsproblemen kreeg extra ondersteuning in het regulier onderwijs en dat bleef zo over tijd. Een tweede grote groep leerlingen met gedragsproblemen werd in het speciaal onderwijs geplaatst en bleef daar ook over tijd. Slechts een minderheid van de leerlingen wisselde van type ondersteuning gedurende de looptijd van het onderzoek. Een voorbeeld daarvan was dat een aantal leerlingen eerst extra ondersteuning in het regulier onderwijs kreeg en vervolgens in het speciaal onderwijs werd geplaatst.

## Schools functioneren na anderhalf jaar ondersteuning

De twee groepen leerlingen die ondersteuning bleven ontvangen in het regulier en het speciaal onderwijs werden vervolgens na anderhalf jaar opnieuw vergeleken op het gebied van schools functioneren (hoofdstuk 3). Hoewel beide groepen leerlingen met gedragsproblemen vóór de plaatsingskeuze niet verschilden in schools functioneren, waren er na anderhalf jaar wel verschillen. De leerlingen met gedragsproblemen in het speciaal onderwijs functioneerden beter dan de leerlingen met gedragsproblemen in het regulier onderwijs, zowel wat betreft schoolse prestaties als wat betreft sociaal-emotioneel functioneren.

## Metten van sociaal-emotioneel functioneren

In de vorige subparagrafen hebben we de twee groepen steeds op één tijdstip met elkaar

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1 “... de mate waarin een leraar ervan overtuigd is dat hij/zij het gedrag en de didactische prestaties van zijn/haar leerlingen kan beïnvloeden, in het bijzonder van leerlingen met extra onderwijsbehoeften of van leerlingen met een lage motivatie” (Friedman & Kass, 2002, p. 675).



vergeleken. Daarnaast hebben we gekeken hoe de leerlingen met gedragsproblemen zich op het gebied van sociaal-emotioneel functioneren ontwikkelden over tijd. Hiervoor hebben we onder andere gebruik gemaakt van instrumenten die vaak in leerlingvolgsystemen op scholen gebruikt worden om de opbrengsten van het onderwijs in kaart te brengen (Rijksoverheid, z.d.). Hoewel we deze instrumenten dus wel in de praktijk gebruiken en er belangrijke beslissingen voor de schoolse carrière van leerlingen van afhangen, weten we vaak niet of deze instrumenten meetinvariant zijn. Dat wil zeggen, we weten niet of deze instrumenten dezelfde constructen meten op verschillende tijdstippen (bijvoorbeeld over verschillende leerjaren) of bij verschillende groepen leerlingen (bijvoorbeeld als we reguliere leerlingen en leerlingen met extra onderwijsbehoeften vergelijken). Daarom hebben we in hoofdstuk 4 gekeken of het VolgInstrument Sociaal-Emotionele Ontwikkeling (VISEON; Citogroep, 2004) – een veelgebruikt instrument om de sociaal-emotionele ontwikkeling van leerlingen in kaart te brengen – meetinvariant was.

De vragen van de VISEON subschalen Zelfvertrouwen, Werkhouding en Schoolbeeld (Citogroep, 2004) werden op eenzelfde manier geïnterpreteerd door reguliere leerlingen en leerlingen met gedragsproblemen. Dit veronderstelt dat de VISEON gebruikt kan worden om de prestaties van reguliere leerlingen en leerlingen met gedragsproblemen betekenisvol te toetsen en te vergelijken. Wat betreft meetinvariantie over tijd, leverde het onderzoek geen duidelijke conclusie: het gebruik van de VISEON over tijd werd noch duidelijk gerechtvaardigd noch duidelijk weerlegd.

## Sociaal-emotionele ontwikkeling

Om meer inzicht te krijgen in de sociaal-emotionele ontwikkeling van leerlingen met gedragsproblemen, hebben we de ontwikkeling van leerlingen met gedragsproblemen in het regulier onderwijs, leerlingen met gedragsproblemen in het speciaal onderwijs en hun reguliere klasgenoten met elkaar vergeleken (hoofdstuk 5). We hebben specifiek gekeken naar conflicten in de leerling-leerkrachtrelatie, acceptatie onder leeftijdsgenoten en zelfvertrouwen. We vonden dat leerlingen met gedragsproblemen in het speciaal onderwijs bij de start meer conflictsituaties met hun leraren hadden dan reguliere leerlingen, terwijl leerlingen met gedragsproblemen in het regulier onderwijs niet van beide groepen verschilden. De leerling-leerkrachtrelaties van leerlingen met gedragsproblemen in het speciaal onderwijs verbeterden over tijd, terwijl reguliere leerlingen en leerlingen met gedragsproblemen in het regulier onderwijs een stabiel niveau van conflict in hun leerling-leerkrachtrelaties lieten zien over tijd. Wat betreft acceptatie door leeftijdsgenoten bleek dat leerlingen met gedragsproblemen in het regulier onderwijs minder geaccepteerd werden dan reguliere leerlingen, terwijl leerlingen met gedragsproblemen in het speciaal onderwijs niet van beide groepen

verschilden. Acceptatie door leeftijdsgenoten bleek over tijd stabiel in alle groepen. In tegenstelling tot onze verwachtingen bleek het niveau van zelfvertrouwen en de ontwikkeling van zelfvertrouwen over tijd niet te verschillen tussen de drie groepen leerlingen.

Ook hebben we gekeken naar welke predictoren – dus aanwezige voorspellers voordat leerlingen extra ondersteuning kregen – de ontwikkeling van leerling-leerkrachtrelaties, acceptatie door leeftijdsgenoten en het zelfvertrouwen van leerlingen met gedragsproblemen konden voorspellen. Omdat de resultaten van deze predictoren instabiel bleken, kunnen we geen conclusies trekken over welke factoren de sociaal-emotionele ontwikkeling van leerlingen met gedragsproblemen kunnen voorspellen.

## **PRAKTISCHE IMPLICATIES**

Het onderzoek in dit proefschrift leverde enkele belangrijke en soms ook verrassende resultaten op die implicaties hebben voor de onderwijspraktijk. In de eerste plaats blijkt dat aspecten van leerlingfunctioneren geen bepalende factoren zijn voor de keuze van plaatsing van leerlingen met gedragsproblemen, terwijl leraarfactoren wel een belangrijke rol blijken te spelen. Gerelateerd aan de titel van dit proefschrift, geven deze resultaten aan dat het 'sorteren van leerlingen' op basis van hun 'individuele vorm' geen recht doet aan het feit dat contextuele factoren een belangrijke rol spelen in de plaatsingskeuze voor leerlingen met gedragsproblemen. Het resultaat dat contextuele factoren een rol spelen is op zich niet verrassend, aangezien verschillende onderzoeken hebben aangetoond dat er grote verschillen zijn tussen leraren in hun vaardigheid in het omgaan met leerlingen met gedragsproblemen (bijv. Buttner, Pijl, Bijstra, & Van den Bosch, 2015). Het is echter wel verrassend dat we in deze studie vonden dat beide groepen leerlingen met gedragsproblemen niet verschilden in leerlingfunctioneren voorafgaand aan het maken van een plaatsingskeuze, omdat eerder onderzoek aangetoond heeft dat leerlingen met gedragsproblemen in het regulier onderwijs op verschillende vlakken beter functioneren dan leerlingen met gedragsproblemen in het speciaal onderwijs (Bijstra, 2004; Drost & Bijstra, 2008; Lane et al., 2005; Ledoux et al., 2012; Stoutjesdijk & Scholte, 2009; Stoutjesdijk, Scholte, & Swaab, 2012). We willen zeker niet suggereren dat plaatsingskeuzes arbitraire keuzes zijn, gebaseerd op leraarfactoren en daaraan gerelateerd op schoolfactoren. Het is echter wel belangrijk om bij een keuzemoment rond plaatsing niet alleen naar het functioneren van de leerling te kijken, maar ook naar hoe school- en leraarfactoren een rol spelen in het omgaan met probleemgedrag in de klas.

In de tweede plaats suggereren de resultaten over de ontwikkeling van leerling-leerkrachtrelaties, relaties met klasgenoten en zelfvertrouwen dat extra ondersteuning in het speciaal onderwijs de sociaal-emotionele ontwikkeling van leerlingen met gedragsproblemen meer ten goede komt dan extra ondersteuning in het regulier onderwijs. De vergelijking van het didactisch functioneren en sociaal-emotioneel functioneren van leerlingen met gedragsproblemen in het regulier en speciaal onderwijs na anderhalf jaar ondersteuning wijst in diezelfde richting. Dit roept de vraag op of leerlingen met gedragsproblemen in elk geval wat betreft hun sociaal-emotionele ontwikkeling, maar wellicht ook wat betreft hun didactische ontwikkeling, wellicht beter af zijn in het speciaal onderwijs...

Een belangrijke overweging is echter dat de sociale context waarin leerlingen met gedragsproblemen onderwijs volgen, hun sociaal-emotionele ontwikkeling op school kan hebben beïnvloed. Leraren in het speciaal onderwijs zijn getraind in het voorspellen, begrijpen en vervangen van storend en ongewenst gedrag van leerlingen met gedragsproblemen (Kauffman & Badar, 2014; Lane et al., 2005). De kleinere klassen in het speciaal onderwijs bieden leraren tevens meer mogelijkheden om leerlingen met gedragsproblemen individuele aandacht te geven. Dit kan de leerling-leerkrachtrelatie positief beïnvloeden. Leraren in het regulier onderwijs voelen zich daarentegen vaak onvoldoende voorbereid om leerlingen met gedragsproblemen te ondersteunen in de reguliere klas (Jones & Chronis-Tuscano, 2008). Daarnaast wordt het storende en grensoverschrijdende gedrag van leerlingen met gedragsproblemen in het regulier onderwijs vaker als afwijkend ervaren door zowel leraren als klasgenoten, terwijl ditzelfde gedrag in het speciaal onderwijs vaker voorkomt en daardoor minder als afwijkend gezien wordt. Hetzelfde storende gedrag van leerlingen met gedragsproblemen leidt hierdoor in het speciaal onderwijs mogelijk tot minder afwijzing door leeftijdsgenoten en minder conflicten in de leerling-leerkrachtrelatie (Mikami, Griggs, Reuland, & Gregory, 2012; Useche, Sullivan, Merk, & Orobio de Castro, 2014).

In de derde plaats blijkt dat wat betreft de ondersteuningstrajecten verreweg de meeste leerlingen met gedragsproblemen extra ondersteuning bleven ontvangen op dezelfde plek, terwijl slechts een minderheid van type ondersteuning wisselde gedurende de looptijd van het onderzoek. Opvallend was dat geen enkele leerling met gedragsproblemen teruggeplaatst werd in het regulier onderwijs *zonder extra ondersteuning*. Dit is in overeenstemming met rapportages van de Onderwijsinspectie (2013a, 2014, 2015, 2016) die laten zien dat het percentage leerlingen dat terugstroomt naar het regulier onderwijs zonder extra ondersteuning relatief laag is. Dit suggereert dat veel leerlingen met gedragsproblemen dermate ernstige problematiek laten zien dat continue extra ondersteuning – in het regulier of in het speciaal onderwijs – nodig is (De Boer & Van der Worp, 2016).

## CONCLUSIE

Dit proefschrift laat zien dat leerlingen met gedragsproblemen op verschillende ontwikkelingsgebieden in het speciaal onderwijs gemiddeld genomen beter presteren dan in het regulier onderwijs, hoewel ze niet in functioneren verschilden vóór plaatsing in deze twee onderwijscontexten. Deze bevinding is verrassend én van belang omdat hij niet strookt met de huidige trend richting steeds meer inclusief onderwijs (Ministerie van Onderwijs, Cultuur en Wetenschap, 2014; Oh-Young & Filler, 2015; Verenigde Naties, 2006). Eenvoudigweg alle leerlingen met gedragsproblemen in het regulier onderwijs handhaven lijkt niet nastrevenswaardig, omdat plaatsing in het speciaal onderwijs het sociaal-emotioneel en didactisch functioneren van leerlingen met gedragsproblemen duidelijk kan bevorderen.

Of we leerlingen met gedragsproblemen vaker naar het speciaal onderwijs zouden moeten verwijzen of dat we het regulier onderwijs zouden moeten veranderen om beter aan de extra onderwijsbehoeften van leerlingen met gedragsproblemen te voldoen, wijst dit proefschrift niet uit. Dat één van beide – of allebei – nodig is lijkt echter evident. Meer verwijzen naar het speciaal onderwijs is niet in lijn met het huidige onderwijsbeleid (Ministerie van Onderwijs, Cultuur en Wetenschap, 2014). Gegeven het huidige beleid lijkt het daarom noodzakelijk dat reguliere scholen beter in staat gesteld worden om met de extra onderwijsbehoeften van leerlingen met gedragsproblemen om te kunnen gaan.





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## ABOUT THE AUTHOR

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Inge Schrooten was born on August 31<sup>st</sup> 1987 in Haaksbergen, The Netherlands. After having completed secondary education (VWO, Het Assinklyceum in Haaksbergen) in 2005, she studied Pedagogical Sciences at the Radboud University in Nijmegen. During her master's she did a clinical internship at a school for secondary special education for adolescents with emotional and/or behavioral disorders, and she received her basic psychodiagnostic registration (*diagnostiekaantekening*). Following her clinical master's degree in Pedagogical Sciences, Family and Behaviour (2008-2009; *bene meritum*) she did the research master Behavioural Sciences (2009-2011; *cum laude*), also at the Radboud University in Nijmegen. During her research master's she did a research internship under the supervision of prof. dr. Shelley Hymel at the Department of Educational and Counselling Psychology, and Special Education at the University of British Columbia, Vancouver, Canada (2011). During her studies she was a board member of the study association Postelein for Pedagogical Sciences (2007-2008) and she had several jobs as a teaching assistant and research assistant at the department of Methodology and Statistics (2008-2009) and at the University Medical Centre (2009-2010).

In september 2011, Inge started working at de Ambelt, both as a clinical psychologist at a psychodiagnostic research team (*Ambelt Diagnostiek*) and as a PhD-candidate. Her PhD project was conducted at Ambelt and RENN4 schools, supervised by dr. Nouchka Tick (Utrecht University), dr. Jan Bijstra (Regional Centre of Expertise for SEBD schools), dr. Rens van de Schoot (Utrecht University), and prof. dr. Bram Orobio de Castro (Utrecht University), and concerned the development of students with social-emotional and behavioral difficulties in primary education. During her PhD, Inge attended several national and international conferences, among which meetings of the International Society for the Study of Behavioural Development (ISSBD, Edmonton, Canada, 2012), the Onderwijs Research Dagen (Groningen, The Netherlands, 2014), the International Conference on Child Development in School & Community Settings (Rotterdam, The Netherlands, 2014), the Vereniging Nederlandse OntwikkelingenPsychologen Conference (Wageningen, The Netherlands, 2016), and the European Conference on Developmental Psychology (Utrecht, The Netherlands, 2017). In 2016, she visited dr. Sarah Depaoli at the University of California, Merced, for 1,5 month via an Utrecht University Travel Grant to work on a collaborative project on Bayesian statistics as part of her PhD. In addition to her PhD duties, Inge has supervised several theses of master's students (2013-2015) and internships of students at applied universities (2012-2015) and she has been an active member in the PhD council of the Faculty of Social Sciences at Utrecht University (2015-2016).



Since August 2017, Inge works as a lecturer in bachelor's and master's education at the department of Psychology, Health and Technology at Twente University.



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## PUBLICATIONS

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## PUBLICATIONS

\* Publications with an asterisk are included in this dissertation.

### International publications

Zweers, I., Scholte, R. H. J., & Didden, R. C. (2017). Bullying among youth with autism spectrum disorders. In J. B. Leaf (Ed.). *Handbook of Social Skills and Autism Spectrum Disorder: Assessment, Curricula, and Intervention (Autism and Child Psychopathology Series)* (pp. 45-61). Cham, Switzerland: Springer International Publishing AG 2017.

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### Manuscripts under review

- \* Zweers, I., Bijstra, J. O., Orobio de Castro, B., Tick, N. T., & Van de Schoot, A. G. J. (under review). Which school for whom? Placement choices for students with social-emotional and behavioral difficulties in primary education.
- \* Zweers, I., Tick, N. T., Bijstra, J. O., Orobio de Castro, B., & Van de Schoot, A. G. J. (submitted). How do Included and Excluded Students with SEBD function socially and academically after 1,5 Year of Special Education Services?
- \* Zweers, I., Boom, J., & Tick, N. T. (submitted). Monitoring social-emotional functioning of elementary school students: Testing measurement invariance across student groups and over time.
- \* Zweers, I., Van de Schoot, R., Tick, N. T., Depaoli, S., Clifton, J. P., Orobio de Castro, B., & Bijstra, J. O. (submitted). Similar development in separate educational contexts? Development of social relationships and self-esteem in students with social-emotional and behavioral difficulties in inclusive classrooms and exclusive schools for special education.

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- Orobio de Castro, B., & Schrooten, I. (2012). Tot elke prijs echt passend onderwijs. *Hoe maken wij passend onderwijs tot een succes?* (pp. 53-61). Zwolle: De Ambelt.

### **Contributions to international and national conferences**

- Zweers, I., Van de Schoot, R., Tick, N. T., Depaoli, S., Clifton, J. P., Orobio de Castro, B., & Bijstra, J. O. (01.09.2017). Application of Bayesian LGCM to study students with SEBD. *Bayesian Estimation for SEM with Small Samples: Advantages, Precautions, and Empirical Applications*. Paper presented at the European Conference of Developmental Psychology, Utrecht, The Netherlands.
- Schrooten, I., Bijstra, J. O., & Orobio De Castro, B. (18.05.2016). Which school for whom? Placement choices for students with emotional and behavioral disorders in primary education. *Education- and Family Oriented Interventions for Children with Emotional and/or Behavioral Problems*. Paper presented at the VNOP Conference, Wageningen, The Netherlands.
- Schrooten, I., Orobio De Castro, B., & Bijstra, J. O. (12.06.2014). *De ontwikkeling van zorgleerlingen met gedragsproblemen in het primair onderwijs*. Poster session presented at the Onderwijs Research Dagen, Groningen, The Netherlands.
- Schrooten, I., Orobio De Castro, B., & Bijstra, J. O. (27.06.2014). *The development of special educational needs students with behavior problems in primary education*. Poster session presented at the Conference on Child Development in School & Community Settings, Rotterdam, The Netherlands.
- Schrooten, I., Scholte, R. H. J., Hymel, S., & Cillessen, A. H. N. (11.07.2012). *Participant Roles in Bullying among Adolescents with Autism Spectrum Disorders*. Poster presented at the biennial meeting of the International Society for the Study of Behavioural Development (ISSBD), Edmonton, Canada.

# "SHAPE SORTING" STUDENTS FOR SPECIAL EDUCATION SERVICES?

Schools play an important role in fostering students' cognitive and social-emotional development. Some students, such as students with social-emotional and behavioral difficulties (SEBD), have special educational needs: they require individual attention and a tailored approach to their unique educational needs. Whether their needs are best met by providing special education services in inclusive settings for regular education (*included students with SEBD*) or in exclusive settings for special education (*excluded students with SEBD*), is subject to debate. Yet, we know surprisingly little about the characteristics of students with SEBD, what schools do to support them, and what results are yielded with the additional support provided.

This dissertation shows that students with SEBD did not differ in student functioning before placement in inclusive or exclusive settings. After they had been provided with 1,5 year of special education services, excluded students with SEBD performed better socially and academically than included students with SEBD. These findings tentatively suggest that for some children the international policy to promote inclusive regular education over exclusive special education could be counterproductive. Therefore, the fundamental changes that were started with the instigation of inclusive education (*Passend Onderwijs*), seem rather premature, given that empirical evidence with regard to what is best for the social-emotional and learning development of students with SEBD is still scarce and inconclusive.



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