



ISSN: 0885-6257 (Print) 1469-591X (Online) Journal homepage: <https://www.tandfonline.com/loi/rejs20>

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To cite this article: Albert W. Wienen, Laura Batstra, Ernst Thoutenhoofd, Elisabeth H. Bos & Peter de Jonge (2019) Do troublesome pupils impact teacher perception of the behaviour of their classmates?, European Journal of Special Needs Education, 34:1, 114-123, DOI: [10.1080/08856257.2017.1421600](https://doi.org/10.1080/08856257.2017.1421600)

To link to this article: <https://doi.org/10.1080/08856257.2017.1421600>



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Published online: 15 Jan 2018.



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SHORT REPORT

 OPEN ACCESS 

Do troublesome pupils impact teacher perception of the behaviour of their classmates?

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ABSTRACT

The widely supported wish for more inclusive education places ever greater expectations on teachers' abilities to teach all children, including those with special needs and challenging behaviours. The present study aimed at the question whether teachers judge pupil behaviour more negatively if there are more children with difficult behaviour in class. The teachers of 184 classes in 31 regular primary schools were asked to complete the Strength and Difficulties Questionnaire (SDQ-L) for 3649 pupils. Six linear mixed models were carried out with as independent variable the number of pupils that teachers perceived to have 'abnormal behaviour', and the class mean without these pupils as the dependent variable. For all SDQ-L subscales – emotional problems, behavioural problems, problems with hyperactivity, problems with peers, poor prosocial behaviour and total problems – the number of pupils perceived as problematic was associated with less favourable teacher perceptions of the rest of the class. The results of this study are a plea for a contextual perspective on pupil behaviour in class, both where teachers are asked to report on individual pupils, as well as where interventions are done on emotional and behavioural problems in class.

ARTICLE HISTORY

Received 2 November 2017
Accepted 15 December 2017

KEYWORDS

Inclusive education;
child behaviour; teacher
perception

Introduction

The pursuit of inclusive education is now, judging by the number of treaties and national policies, widely supported (Kirby 2017). Along with the wish for more inclusive education an expectation has arisen that teachers will be able to teach all pupils, including those with special needs and challenging behaviours. Both teachers and parents feel uncertain about this and are worried (Pijl 2010). Newly qualified teachers, for example, wonder whether they have enough time to attend additionally to pupils with special support needs, and also whether their knowledge of teaching is up to that task (Civitillo, De Moor, and Vervloed 2016).

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A study conducted by de Boer, Pijl, and Minnaert (2011) concluded that many of teachers assess inclusive education negatively. Indeed, parents are not roundly positive either (de Boer, Pijl, and Minnaert 2010). They wonder whether, for example, the achievements of pupils are negatively affected by the presence of pupils with special support needs (Gottfried 2014).

This question has occupied various researchers, also with respect to the general influence of inclusive education on school outcomes. Friesen, Hickey, and Krauth (2010) investigated the association between the presence of disabled peers on the exam results of the rest of class, and found minimal effects. Ruijs, Van der Veen, and Peetsma (2010) found a negligible association between the presence of special educational needs pupils and the educational achievements of peers. Fletcher (2010) found a small effect of the presence of pupils with emotional problems on the test scores of the rest of preschool class.

The effects that pupils with emotional and behavioural problems may have on how teachers perceive the behaviour of the rest of class has not been investigated so far. Research on inclusive education and behavioural problems in class has focused on the influence of contextual factors on perceived behaviour problems. For example, teachers appear more often to report problem behaviour when working in a less favourable school climate (O'Brennan, Bradshaw, and Furlong 2014), in disadvantaged school contexts (Lupton, Thrupp, and Brown 2010; McCoy, Banks, and Shevlin 2012) and in classes with a higher percentage of boys and a higher number of relatively young pupils (Gottfried 2014).

The focus of these earlier studies has been on factors that influence how troublesome pupils *themselves* are being perceived while in class. In the present study, that focus has been shifted to the *remaining* pupils in class. Here the question has instead become,

Does the number of pupils with problem behaviour, such as emotional problems, problems with hyperactivity, problems with peers, behavioural problems, total problems and poor prosocial behaviour, influence teachers' perception of the *other* pupils?

In other words, this study asks whether the concerns that parents and teachers have about a classroom-wide influence of pupils with behavioural problems are *justifiable* – at least with respect to teachers' perception of the behaviour of the remaining pupils in class. Since percentage of boys, age (Gottfried 2014), and class size (Skalická et al. 2015) are known to influence teacher perception, we also examined moderating effects of these variables.

Method

Design

The research design was a cross-sectional survey in which teachers completed a questionnaire for each individual pupil in class.

Respondents

Data were collected from 184 classes in 31 regular schools for primary education in Drenthe. There are 270 primary schools in Drenthe (a province in the North of the Netherlands) and the participating schools were randomly selected and all the classes of the schools participate in this study. Of the 184 classes, 63% were single year groups, while 38% were combined year groups. In 85 classes (46%), there were two teachers in co-teaching situations. In these cases, each teacher completed half of the questionnaires for that class. The smallest class

contained 5 pupils, while the largest class had 35 pupils, with an average of 19.8 ($SD = 5.7$). The total number of pupils for whom a questionnaire was completed was 3649, the average number of boys per class was 51.3% and the average age of the pupils was 7.7 ($SD = 2.5$).

Procedure

Teachers were asked to complete a questionnaire for each pupil in class. The questionnaire was sent to the participating teachers by email, and was completed digitally. There were no missing data.

Instruments and variables

Teachers' perceptions of pupil behaviour were assessed with the teacher version of the Strengths and Difficulties Questionnaire (SDQ-L). The SDQ was developed on the basis of common child behaviours described in the Diagnostic and Statistical Manual of Mental Disorders (DSM; American Psychiatric Association 2013). This questionnaire has shown a relatively high reliability (Goodman, Lampung, and Ploubidis 2010). For the Dutch context, Goedhart, Treffers, and Widenfelt (2003) judged the internal consistency of the questionnaire as 'good' and Diepenmaat et al. (2014) judged the internal and external validity of the SDQ-L between sufficient and good. The SDQ-L includes the following subscales: emotional symptoms (range 0–10), behavioural problems (range 0–10), hyperactivity/attention deficits (range 0–10), problems with peers (range 0–10), and prosocial behaviour (range 0–10). Each subscale consists of five questions and the first four subscales collectively comprise the sum scale 'total problem score' (range 0–40). All items are scored on a three-point Likert scale containing the response options 'not true' (0), 'somewhat true' (1) and 'surely true' (2). SDQ-L items code behaviours through such expressions as 'restless, overly active, can't sit still for very long' and 'rather introvert, tends to play alone'. In Table 1 the reliability scores are presented, computed for the level of child (Nezlek 2016).

Analysis

We first calculated, per class, the number of pupils whose perceived behaviour was above a suitable cut-off score on the SDQ-L. The most extreme cut-off score, 'significantly raised risk / abnormal behaviour' was used, since research conducted by Diepenmaat et al. (2014) showed that, with respect to norm samples representative of Dutch classroom situations, that score suits the identification of problem behaviour. The cut-off scores are presented in Table 2, based on the 95-percentile score (Goodman 1997) in a Dutch norm group (Diepenmaat et al. 2014). The next step was to calculate average SDQ scores per class and

Table 1. Reliability for the child level.

	Level child
Emotional problems	.68
Behavioural problems	.68
Problems with hyperactivity	.85
Problems with peers	.61
Pro-social behaviour	.74
Total problem score	.80

Table 2. Cut-off scores based on the SDQ-L.

	Male	Female
Emotional problems	5	5
Behavioural problems	5	3
Problems with hyperactivity	9	7
Problems with peers	5	4
Prosocial behaviour	3	5
Total problems	18	15

Note: Prosocial behaviour has an inverted scale.

Cut-off based on Goodman (1997)

for each respective subscale, omitting the pupils with scores above the determined cut-off score. Predictor variables were centred by subtracting the average from the scores, for sake of interpretability of the main effects in the presence of interaction effects.

Linear mixed models were used because observations were nested in schools. Six linear mixed models were carried out, with the number of pupils scoring above the cut-off score as independent variable and the class means without these pupils as dependent variable. This was done for the outcomes measures 'total problem score', 'problems with hyperactivity', 'behavioural problems', 'emotional problems', 'problems with peers' and 'prosocial behaviour'. The models were tested for interactions with the centred variables total number of pupils in class, the percentage of boys and age. For the variable age, we used a weighted average for the combined year groups. Non-significant interactions were removed from the model one by one. To allow for heterogeneity in the effects, a random intercept as well as a random slope were included, but removed if they reduced model fit. The optimal model for each outcome measure was determined on the basis of the Bayesian Information Criterion (BIC). Interactions, random intercept and random slope will be reported only where they were significant. The distribution of the data was inspected on the basis of histograms. Most outcome measures were normally distributed, with the exception of 'behavioural problems'. Therefore, bootstrapped confidence intervals (1000 bootstrap replications) were calculated in the models for the outcome measure 'behavioural problems'. The effect sizes were calculated with the formula: $B \times sd(x) / sd(y)$.

Results

Table 3 shows the outcome measure scores used in the analysis. Note that 'prosocial behaviour' has an inverted scale.

The results of the linear mixed models are shown in Table 3. Significant positive associations were found between the number of pupils above the cut-off score and the average perceived problem behaviour of the remaining pupils in class, for emotional problems ($B = 0.14$, 95% CI 0.11–0.17, $p < .001$), behavioural problems ($B = 0.04$, 95% CI 0.01–0.08, $p < .001$), problems with hyperactivity ($B = 0.08$, 95% CI 0.01–0.14, $p = .02$), problems with peers ($B = 0.08$, 95% CI 0.04–0.12, $p < .001$), and total problems ($B = 0.44$, 95% CI 0.31–0.57, $p < .001$). A negative association was found for prosocial behaviour ($B = -0.16$, 95% CI –0.19 to –0.12, $p < .001$). This latter association means that the more pupils showed poor prosocial behaviour in a class (in the perception of teachers involved), the less prosocial behaviour the teachers perceived in the remaining pupils in class. Further, a positive association was found between the percentage of boys and total problem score, and a negative association between the percentage of boys and prosocial behaviour. Thus, in classes with a relatively high number of boys, teachers more often report overall problems and less prosocial

Table 3. Perceived problem behaviour scores for all the pupils and separately for pupils above and below the cut-off.

	All			Pupils below cut-off			Pupils above cut-off		
	N	M	SD	N	M	SD	N	M	SD
Emotional problems	3649	1.30	1.81	3386	0.93	1.22	263 (7.2%)	6.06	1.29
Behavioural problems	3649	0.80	1.49	3306	0.42	0.79	343 (9.4%)	4.47	1.69
Problems with hyperactivity	3649	2.69	2.89	3234	1.96	2.11	415 (11.4%)	8.46	1.10
Problems with peers	3649	1.26	1.74	3331	.86	1.10	318 (8.7%)	5.51	1.45
Prosocial behaviour	3649	7.97	2.73	2866	8.60	1.81	783 (21.5%)	5.64	2.29
Total problems	3649	6.06	5.65	3354	4.90	4.09	295 (8.1%)	19.2	3.78

Note: Prosocial behaviour has an inverted scale; N = 3649 pupils in 184 classes.

behaviour. A significant interaction between the number of pupils above the cut-off score and the percentage of boys in class was found in the model for emotional problems, which means that for classes with relatively many boys, the association between the number of pupils above the cut-off score and emotional problems was stronger. No significant random slopes were found, which means that there was no heterogeneity in the effects across schools. Table 4 includes effect sizes, which are defined according to Cohen (1988): small effect size = 0.1; medium effect size = 0.3; and large effect size = 0.5. For emotional problems, a large effect size was found. For prosocial behaviour, problems with peers and total problems medium effect sizes were found. For the other behaviours, the effect sizes were small.

Discussion

The introduction of inclusive education has worried parents and teachers because of the possible negative effects that pupils with problem behaviours may have on others in their class. This study of 184 classes and data on 3649 pupils shows that these worries appear to have some justification: the more pupils in a class a teacher perceives to have severe emotional problems, behavioural problems, problems with hyperactivity, problems with peers and poor prosocial behaviour, the more negatively s/he will perceive the behaviour of the remaining pupils in class. Strengths of this study are the large sample size and the multilevel analysis. Limitations of this study are the absence of data about actual student behaviour and information about teacher characteristics and context variables of the schools.

Explanations

At least two explanations may be offered for this result. Firstly, pupils with severe problem behaviours are known to cause stress in their teachers (Hastings and Bham 2003; Friedman-Krauss et al. 2014). This stress influences the resilience and tolerance of teachers for coping with the behaviour of the remaining pupils. The stress of the teachers hence spawns more negative and conflictual interactions with other pupils (Curbow et al. 2000; Jennings and Greenberg 2009), which in turn causes the teacher relationships with the pupils to

Table 4. Association between the number of pupils in class above the cut-off score and average perceived problem behaviour of remaining pupils in class.

		Estimate	95% confidence interval	P	Effect size
Emotional problems	Number above cut-off score	0.14	0.11 to 0.17	<0.001	0.50
	Age	0.00	-0.02 to 0.03	0.74	
	Total number of pupils in class	-0.01	-0.02 to 0.01	0.29	
	Percentage of boys	0.01	-0.00 to 0.01	0.05	
	Number above cut-off score * percentage of boys	0.003	0.00 to 0.01	0.01	
Behavioural problems	Number above cut-off score	0.04	0.01 to 0.08	<0.001	0.25
	Age	0.00	-0.02 to 0.01	0.75	
	Total number of pupils in class	0.00	-0.01 to 0.00	0.42	
	Percentage of boys	0.00	-0.00 to 0.00	0.72	
Problems with	Number above cut-off score	0.08	0.01 to 0.14	0.02	0.18
	Age	-0.04	-0.09 to 0.01	0.08	
	Total number of pupils in class	0.00	-0.02 to 0.02	0.81	
Hyperactivity	Percentage of boys	0.01	0.00 to 0.02	0.16	
	Number above cut-off score	0.08	0.04 to 0.12	<0.001	0.31
	Age	-0.03	-0.06 to 0.00	0.06	
	Total number of pupils in class	0.00	-0.02 to 0.01	0.46	
Problems with peers	Percentage of boys	0.00	-0.01 to 0.01	0.96	
	Number above cut-off score	-0.16	-0.19 to -0.12	<0.001	-0.49
	Age	-0.01	-0.05 to 0.03	0.69	
	Total number of pupils in class	0.01	-0.01 to 0.03	0.20	
Prosocial behaviour	Percentage of boys	-0.02	-0.03 to -0.01	<0.001	
	Number above cut-off score	0.44	0.31 to 0.57	<0.001	0.43
	Age	-0.05	-0.15 to 0.05	0.35	
	Total number of pupils in class	-0.04	-0.08 to 0.00	0.08	
Total problem score	Percentage of boys	0.03	0.01 to 0.06	<0.001	
	Age	-0.05	-0.15 to 0.05	0.35	
	Total number of pupils in class	-0.04	-0.08 to 0.00	0.08	
	Percentage of boys	0.03	0.01 to 0.06	<0.001	

Note: Estimates for fixed effects from linear mixed models with 95% confidence intervals. N = 184 classes in 31 schools. Significant values are shown in bold.

deteriorate, further adding to the teachers' stress level (Spilt, Koomen, and Thijss 2011). So, a vicious circle arises that stresses teachers ever more while losing further resilience and tolerance in each cycle, so that teachers will develop an ever more negative view of their pupils.

Secondly, pupils with problem behaviours may also encourage other pupils to act likewise, so that further pupils do indeed – and not merely in the perception of their teachers – begin to show more problem behaviour in their turn. Pupils can thus negatively affect one another once negative behaviour is initiated and imitated (Gottfried 2014; Houser and Waldbesser 2017). Pupils can of course also do the inverse and influence one another in positive ways towards more positive behaviour (O'Brennan, Bradshaw, and Furlong 2014; Poulou 2014). The more frequent a particular type of behaviour is displayed among a group of pupils, the more likely it is that such behaviour will become the norm within the group (Ang et al. 2010). This has been demonstrated for example in relation to aggressive behaviour (Farmer et al.

2007; Thomas et al. 2011), bullying (Sentse et al. 2015) and also prosocial behaviour (Chang 2004). Pupils with severe behavioural problems therefore influence both the behaviour of their classmates and the behaviour and perception of their teachers. The observed association has various implications, in relation to identifying problem behaviour in classrooms as well as in relation to treating it.

Identifying problem behaviours

The finding that a pupil who is surrounded by pupils with problem behaviours is more likely to be considered as troublesome by their teacher than does a pupil in a quiet classroom can have formal repercussions when teachers are asked to report on individual pupils as qualified informants, for example in the context of diagnosis (Dwyer, Nicholson, and Battistutta 2006; APA 2013). Care staff, psychologists and psychiatrists should therefore probably be made aware of the context-dependency of teacher perceptions and that the results might affect data-based decision-making of practicing school psychologists. They should in each case pay special consideration to the more *general* judgements of the teacher in the *particular* context of the wider classroom dynamics. This context-awareness may for example be achieved by undertaking classroom observations and interpreting the judgements of teachers against the particular background of his or her classroom. The results emphasise the importance of multifaceted assessment when making decision about individuals.

The findings of this study may also help explain the often found difference between the perceptions of parents and teachers in relation to a child's behaviour (van der Ende, Verhulst, and Tiemeier 2012; Graves, Blake, and Kim 2012). Teachers appear to be contextually influenced by the behaviour of other pupils when judging the behaviour of any one particular pupil, whereby the context of the classroom strongly deviates from the context of the family. Quite logically, the same observation is likely to apply to parents being influenced in their judgements of their children's behaviour by particularities of the home situation. Tensions relating to different perceptions can easily arise between parents and teachers where the behaviour of pupils is concerned (Mautone, Carson, and Power 2014), while being more aware of what causes differences in perceptions may help to appease such tensions.

It should be noted that in this study we only studied one factor of the context in which teachers do their work, i.e. the percentage of pupils in their class with problem behaviour. As mentioned in the introduction, research suggests that also other contextual factors may influence teacher perception, for example the school's sociocultural nature (Lupton, Thrupp, and Brown 2010; McCoy, Banks, and Shevlin 2012; Gottfried 2014; O'Brennan, Bradshaw, and Furlong 2014). Future studies may improve upon this study by simultaneously investigating more contextual factors that may influence teacher perception.

Dealing with problem behaviour in classrooms

The results of this study suggest that problems arising in classrooms with pupil behaviour have an interactional character, and so plead for interventions that are suited to the particular context of the classroom (O'Brennan, Bradshaw, and Furlong 2014). The classroom should be viewed as necessary context to behavioural problems (Bendor and Swistak 2001; Gottfried 2014).



The findings are equally relevant in further implementing inclusive education and supporting teachers in the transition towards inclusive education. The study has made it plausible that teachers working in inclusive education environments are likely to judge the behaviour of other pupils more negatively when the number of pupils with behavioural problems in class increases. The consequences of overly negative perceptions can be very real, since after all teacher perceptions in part determine the expectations that teachers develop in relation to their pupils (Timmermans, de Boer, and van der Werf 2016), while their expectations in turn influence both the educational achievements and, recursively, the behaviour of their pupils (Kelly and Carbonaro 2012).

It seems important to make teachers aware of the wider interaction mechanism that is involved in creating their perceptions and judgements of all individual pupils, and so alert them to the possibility that their perception of pupil behaviour is likely affected by the problem behaviour of a number of pupils in class.

Disclosure statement

No potential conflict of interest was reported by the authors.

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