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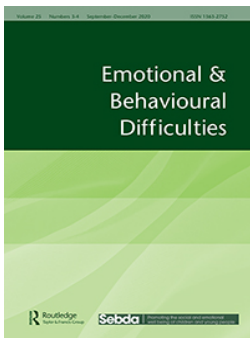
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ARTICLE



## Effects of Key2Teach on students' externalising and social-emotional problem behaviours, mediated by the teacher-student relationship

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### ABSTRACT

Teaching students with externalising problem behaviours is difficult for teachers, as it challenges the relationship that teachers engage in with their students. In this study, effects of Key2Teach on externalising and social-emotional problem behaviours and the mediating role of conflict in the teacher-student relationship were studied using a randomised controlled trial (RCT)-design. In two cohorts, 103 teacher-student dyads and peer-students ( $n = 1643$ ) were assessed two times during a school year. Fifty-three dyads received the intervention (experimental group), whereas 50 dyads received no intervention (control group). Data were collected on teacher-reported externalising and social-emotional problem behaviours in students, and on teacher-student conflict. For dyad-students, results showed a direct effect of Key2Teach on conduct problems and an indirect effect, via teacher-student conflict, for hyperactivity problems. No effects on social-emotional problems were established. For peer-students, results showed indirect effects on externalising problems and direct effects on social-emotional problems. Implications for practice and future research are discussed.

### KEYWORDS

Externalising problem behaviours; social-emotional problems; Key2Teach; teacher-student relationship

## Introduction

Teachers encounter different kinds of externalising behaviours in class, such as distractibility, hyperactivity, disobedience and aggression (Tsouloupas et al. 2010). To manage such behaviours effectively is one of the most difficult tasks for teachers, and research suggests that teachers experience a need for support in identifying and adapting to the special needs of struggling students (Shelemy, Harvey, and Waite 2019). Having to handle externalising behaviours is one of the main causes for stress, or even burnout symptoms, among teachers (Aloe et al. 2014). This deserves attention, especially as the international trend towards the promotion of inclusive education may bring new challenges with regard to behavioural difficulties and the associated special needs that teachers encounter (Malmqvist 2016). This trend is also seen in the Netherlands, where the adoption of the Dutch new legislation in 2014 has reduced the referral of students with special behavioural needs to schools for special education, suggesting that more of these students now remain included in regular settings (Koopman and Ledoux 2018). This highlights the need for interventions that

support teachers in providing a classroom environment enabling all students to develop optimally. This study will examine to what extent teacher-focused coaching intervention Key2Teach can support teachers to positively impact on the externalising and social-emotional problem behaviours of both students with externalising problem behaviours and their peer-students.

### The impact of classroom externalising problem behaviours

Externalising behaviours of students can have a significant impact on both teachers and students themselves. Student misbehaviour might force teachers to disrupt their lesson to reprimand the misbehaving student(s), reinstate order in the classroom, and then recompose themselves before carrying on with their teaching (Putnam et al. 2003). This places a great burden on teaching, and teaching students with externalising problem behaviours has been related to feelings of incompetence, emotional exhaustion, and even to job leave (Aloe et al. 2014; Tsouloupas et al. 2010). In addition, students who exhibit such behaviours are at increased risk of academic underachievement, poor school adaptation, peer victimisation, and even school dropout (Cannon et al. 2013; Lier et al. 2012; Stipek and Miles 2008). Those problems may subsequently lead to low self-esteem, and feelings of loneliness and depression (Crick and Grotpeter 1995).

In the Netherlands, various services are available to aid struggling students. Students may be eligible for extra support, or even special education services. Services may be provided within the present school or classroom or outside of the classroom in an exclusive school for special education (Breeman 2015). Eligibility for such services is determined by independent committees consisting of various disciplines, such as educational experts, (school) psychologists, youth physicians, and social workers (Zweers et al. 2020). To determine what level of services is appropriate for a specific student, the teacher's opinion is weighed heavily by the committee.

Furthermore, it is important to note that externalising problem behaviours may also impact other students in class. If teachers spend a lot of time correcting problem behaviours, this threatens the positive atmosphere, which may lead to emotional problems and problem behaviours among other students in class (Somersalo, Solantaus, and Almqvist 2002; Doumen et al. 2008), partly because classmates may copy such behaviours (Rambaran, Dijkstra, and Stark 2013). In addition, teachers who teach classes containing many students with problem behaviours will judge the behaviours of the other students more negatively (Wienen et al. 2019) and spend less time on instruction (Betts and Shkolnik 1999). Given the risks and consequences of these behaviours for everyone involved, both teachers and students can benefit greatly from teachers' ability to effectively handle externalising problem behaviours.

### The role of the teacher-student relationship

Teachers are not only affected by externalising problem behaviours in students, but research has shown that the teacher-student relationship plays a key role in the development of such problems (Archambault, Vandenbossche-Makombo, and Fraser 2017; Zee, Jong, and Koomen 2017). In his Conceptual Model of Teacher-Child Relationships (Pianta 1999; Pianta, Hamre, and Stuhlman 2003), which draws from research on social development as well as on basic work in attachment, Pianta conceptualises the teacher-student relationship as consisting of four components; (1) features of both individuals involved, such as their gender, age, previous experiences or temperament (2) the mental representation that both individuals have of their relationship, (3) the interaction patterns that take place between them, and (4) characteristics of the context in which the relationship occurs, such as the social relations in class, but also the school climate, and school neighbourhood.

In a problematic teacher-student relationship, often the second and the third component are threatened (Pianta and Hamre 2009). Teachers often develop a negative mental representation of students with externalising problem behaviours (Doumen et al. 2008; Roorda et al. 2013). Also, teachers' interactions with these students can be considered as dysfunctional, characterised by less sensitive and

more controlling behaviours and conflicts. Teachers therefore develop a cooler and less affective bond with these students (Roorda et al. 2013; Lei, Cui, and Chiu 2016). Teachers also play an important role when it comes to communication between students, such as preventing negative, bullying communication styles within the classroom (Elamé 2013). Furthermore, being involved, interested in students and providing emotional support, as opposed to a more conflict-inducing authoritarian style, may benefit positive outcomes, such as the prevention of early school leave (Downes 2013).

Research has shown that problems in the teacher-student relationship can lead to an increase in problem behaviours in students (Doumen et al. 2008; Roorda et al. 2013). Furthermore, the conflicted interactions that characterise this relationship may lead to exclusion by peers and less involvement in the learning and social situations in the class, thereby hampering not only children's behavioural development, but also their social and academic development (Kosir and Tement 2014; Mikami et al. 2012; Stipek and Miles 2008). This is in line with the fact that externalising problem behaviours and social-emotional problems often co-occurs (Lier et al. 2012).

Considering these mechanisms, the expectation is that an intervention that reduces teacher-student conflict may also lead to a reduction in externalising problem behaviours of students. Given that support within the teacher-student relationship could reduce students' social-emotional problems (Tennant et al. 2014), such an intervention may also have a positive impact on children's social-emotional well-being. Given the fact that children's behavioural and social functioning also impacts other students' well-being, effects of such an intervention may have a spill-over effect on classmates. A candidate intervention that has shown to improve the teacher-student relationship, and therefore may be further explored with regard to its effects on students' behavioural and social-emotional problems is Key2Teach.

## Key2Teach

The teacher-focused coaching intervention Key2Teach is developed as an intervention to improve the teacher-student relationship, consisting of two phases and four building blocks. The first phase (four sessions) is designed to improve teachers' insight into their mental representation of their relationship with students with externalising problem behaviours. To achieve this goal, a teacher-student dyad is selected, consisting of a teacher and a student with externalising problems who experience conflict in their relationship. Within the first phase of this intervention, Teacher Student Interaction Coaching (formerly known as 'Relationship-Focused Reflection Program' (RFRP); building block 1; Koomen and Spilt 2010-2016) and functional behaviour analysis (building block 2; Ellis 1991) are combined. Phase 1 starts with a semi-structured interview, the Teacher Relationship Interview (TRI; Pianta 1999; Koomen and Lont 2004), in which the teacher is asked to provide a narrative that includes classroom situations and emotions concerning a specific student. The outcome of this interview translates into a unique relationship profile (see also Koomen and Lont 2004), that serves as a starting point for more in-depth reflection. During the following sessions, the teacher and coach discuss behaviour, thoughts and feelings of the teacher and student using a videoclip of a classroom situation. Based on this, the teacher and coach articulate a temporary working hypothesis that is central to the coaching in phase 2.

The second phase (eight sessions) is designed to improve teachers' interaction skills. To this end, video interaction guidance (VIG; building block 3; Allen 1967; Hayes et al. 2001) and synchronous coaching (building block 4; Coninx, Kreijns, and Jochems 2012; Rock et al. 2009) are incorporated in the intervention. Video Interaction Guidance (building block 3) is used to discuss interaction patterns of the teacher and the student in relation to the previously formulated working hypothesis. Subsequently, coach and teacher select appropriate keywords, which are short, specific and represent goal-oriented behaviour (Coninx, Kreijns, and Jochems 2012), which are used during the following synchronous coaching (building block 4) sessions (Coninx, Kreijns, and Jochems 2012; Rock et al. 2009). These sessions are videotaped and are discussed afterwards using VIG (building block 3). For more information see Hoogendijk et al. (2020).

In previous research, Key2Teach has been shown to impact the teacher-student relationship, teachers' emotional exhaustion and their sense of self-efficacy (Hoogendijk et al. 2018, 2020). A positive effect of

Key2Teach was found on teachers' mental representation of their relationship with dyad-students, reflected by an increase in closeness and a decrease in conflict. No effect was found of Key2Teach on general interaction skills of the teacher (Hoogendijk et al. 2020). Furthermore, a direct effect was found on teachers' sense of self-efficacy for instructional strategies, and an indirect effect was found on teachers' sense of self-efficacy for classroom management and student engagement, via an improvement in teacher-student closeness. Lastly, an effect was found on teachers' emotional exhaustion at the start of the subsequent school year (Hoogendijk et al. 2018). The aim of the current study is to expand these findings, and examine to what extent Key2Teach has a positive impact on students' behavioural and social-emotional problem behaviours.

## The present study

This study will examine the effects of Key2Teach on student problem behaviours in a Randomised Controlled Trial (RCT). First this study focused on the effects of Key2Teach on the externalising and social-emotional problem behaviours of dyad-students. In addition this study will explore the effects of Key2Teach on problem behaviours of their classmates. Because a previous study indicated that Key2Teach reduces conflict in the teacher-student relationship (Hoogendijk et al. 2020), this study will take into account the indirect effect of Key2Teach on problem behaviours through teacher-student conflict.

The two main research questions are:

Firstly, what is the effect of Key2Teach on students' externalising and social-emotional problem behaviours? This study will examine whether and to what extent this was the case for dyad-students, and for their classmates. The hypothesis is that Key2Teach decreases students' externalising and social-emotional problems.

Secondly, to what extent was the effect of Key2Teach on students' externalising and social-emotional problem behaviours mediated by conflict in the teacher-student relationship (see Figure 1)? This study will examine whether and to what extent this was the case for dyad-students, and for their classmates. The hypothesis is that a decrease in externalising and social-emotional problem behaviours would be partly mediated by a reduction in conflict between students and teachers.

## Method

### Design

Effects of Key2Teach were examined using an RCT-design, comparing teachers and their students who received the Key2Teach intervention to teachers and students who received educational support as usual (Dutch Trial Register: NTR3811). Two cohorts of primary school teachers and their students were included (school year 2013–2014 and school year 2014–2015). For more information on the inclusion procedure see Hoogendijk et al. (2020).

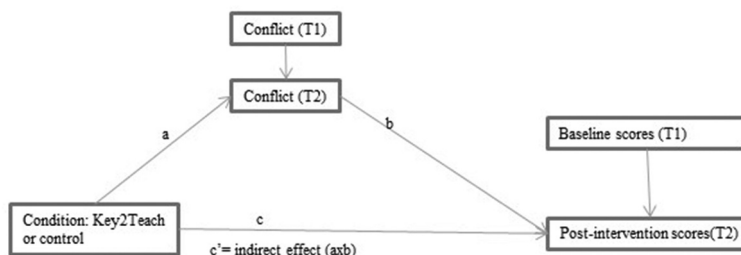


Figure 1. Model of indirect effect of KeyTeach on externalizing and social-emotional problem behaviours, through the conflictful teacher-student relationship

Inclusion of teachers and students took place between June and September 2013 (first cohort) and March and September 2014 (second cohort). Due to reasons of feasibility, power and expected dropout, inclusion ended when a number of 150 teachers were reached. Twenty-three teachers withdrew before the start of the study, because they considered it too much of a time investment or were too busy with other tasks.

At the start of the study, students and teachers were screened and teacher-student dyads were determined. Students included in the teacher-student dyad had (sub)clinical levels of externalising problem behaviours (at least above the 90<sup>th</sup> percentile on conduct and/or hyperactivity scales of the SDQ-T) and the highest teacher-student conflict levels in class (at least above the 50<sup>th</sup> percentile, measured by the STRS). The research protocol was approved by the Medical Ethics Committee Southwest Holland (METC-ZWH, 13–023).

Pre-intervention data (T1) were collected in the fall; at least six weeks after the start of the school year and before the intervention started. When Key2Teach was completed, the post-intervention measurement (T2) took place in June. Teachers and students separately completed questionnaires during both measurements. Teachers had access to a website where they could complete the questionnaires digitally. Students filled out their questionnaires on paper during classroom measurement sessions, and were supported by trained research-assistants.

### Participants

The screening was completed by 127 teachers. After screening and randomisation, 24 teachers dropped out for the following reasons: no dyad-student because of withdrawal of student permission ( $n = 11$ ), a lack of externalising problem behaviours in students ( $n = 7$ ) and a lack of conflict levels higher than the 50<sup>th</sup> percentile ( $n = 6$ ). Thus, our final sample consisted of 103 teachers: 46 teachers in the first cohort (2013–2014) and 57 in the second cohort (2014–2015).

After randomisation, the experimental group consisted of 53 teacher-student dyads and the control group consisted of 50 dyads. The control group did not significantly differ from the experimental group at the start of the study with regard to teachers' age ( $t(101) = .58, p = .56$ ), students' age ( $t(101) = .42, p = .67$ ), teachers' years of working experience ( $t(101) = .10, p = .92$ ), teachers' gender ( $\chi^2(1) = 2.16, p = .14$ ) and students' gender ( $\chi^2(1) = 2.16, p = .14$ ) or any of the outcome variables, except for the SDQ-T subscales for peer-students (see Table 1).

**Table 1.** Means and standard deviations at T1 and T2 and test of pre-intervention measurement differences (T1) between conditions on all outcome variables.

	Control				Experimental				Test of baseline (T1) differences		
	T1		T2		T1		T2		t	df	p
	N	M (SD)	N	M (SD)	N	M (SD)	N	M (SD)			
<b>Dyad-student</b>											
<i>Teacher-rated</i>											
Conduct problems	50	3.10 (2.00)	37	3.03 (2.36)	53	3.00 (1.84)	45	2.00 (1.78)	0.26	101	.36
Hyperactivity	50	7.54 (1.97)	37	6.46 (2.68)	53	7.30 (2.22)	45	5.62 (2.91)	0.58	101	.92
Emotional problems	50	2.16 (2.12)	37	2.08 (2.30)	53	2.34 (2.39)	45	1.69 (2.03)	-0.40	101	.58
Problems with peers	50	2.08 (2.15)	37	1.51 (1.80)	53	2.53 (2.20)	45	1.84 (1.77)	-1.05	101	.72
STRS-Conflict	50	32.70 (10.12)	37	26.81 (11.20)	53	30.55 (9.39)	45	21.58 (8.19)	1.12	101	.27
<b>All students</b>											
<i>Teacher-rated</i>											
Conduct problems	802	0.85 (1.39)	625	0.89 (1.60)	818	0.70 (1.21)	691	0.66 (1.19)	2.37	1579.59	.02
Hyperactivity	802	2.90 (2.81)	625	2.86 (2.86)	818	2.60 (2.77)	691	2.30 (2.65)	2.18	1618.00	.03
Emotional problems	802	1.32 (1.86)	625	1.41 (1.97)	818	1.08 (1.71)	691	0.83 (1.45)	2.70	1601.13	.01
Problems with peers	802	1.20 (1.69)	625	1.21 (1.77)	818	0.96 (1.44)	691	0.72 (1.39)	3.12	1570.39	.002
STRS-Conflict	802	15.08 (7.10)	625	15.96 (8.54)	818	14.91 (7.24)	691	14.14 (6.69)	0.47	1618.00	.64

In the 103 participating classes, a total number of 2367 students were eligible for inclusion, averaging 23 students per classroom (ranging between 6 and 32 students). After parental consent was provided, in total (dyad-students and peer-students) 1746 students (74%) participated in the study.

### Teachers

Of the participating teachers ( $n = 103$ ), 76.7% were female, and teachers were on average 38.5 years old (ranging between 23 and 62 years). On average, they had 12.6 years of working experience (ranging between 0 and 38 years). Almost all teachers ( $n = 101$ ) were born in the Netherlands, except for one teacher who was born in South Africa and one in Pakistan. These teachers were divided over 44 schools (the amount of dyads per school ranged 1–5, 33 schools with two dyads, two schools with one dyad, and nine schools with more than two dyads). The socio-economic status of the neighbourhoods of 52% these schools ( $n = 23$ ) was below the Dutch mean, and the neighbourhoods of all participating schools had a mean SES-score of 0.42 (SD: 1.64; range:  $-2.10$ – $3.89$ ; Dutch mean is set to zero; Volksgezondheidszorg.info 2017).

With regard to the school population, all schools received extra funding for students with parents with a low level of education. In 77% of participating schools ( $n = 34$  schools) funding was received for <25% of their students; 11% ( $n = 5$ ) for 25–50% of their students; 7% ( $n = 3$ ) for 50–75% of their students, and 5% ( $n = 2$ ) for >75 of their students. On average, schools in the Netherlands receive funding for 10.90% of their students (Dienst Uitvoering Onderwijs, 2020).

Of the 103 teachers participating in the pre-intervention measurement, nine dropped out over the course of the study. Dropout was not related to condition ( $\chi^2(1) = .01, p = .93$ ), teachers' age ( $t(101) = 1.00, p = .32$ ) or teachers' gender ( $\chi^2(1) = .00, p = 1.00$ ).

### Dyad-students

Of the 103 dyad-students, 77.0% were boys. These students were on average 10.1 years old (ranging between 7.3 and 14.1 years). On average, students attended grade 4 (ranging between grades 3–6).

### Peer-students

Of the 1643 peer-students, 48.0% were boys. Participating peer-students were on average 9.67 years old (ranging between 6.3 and 13.1 years). Over the course of the study 168 students (10.2%) dropped out of the study. Study dropout was not related to condition ( $\chi^2(1) = 1.29, p = .26$ ) or students' gender ( $\chi^2(1) = .00, p = 1.00$ ). Dropout was however significantly related to students' age ( $t(1641) = -4.32, p = .00$ , mean dropout = 9.31, mean remained = 9.71).

## Implementation of the Key2Teach intervention

Key2Teach consists of 12 sessions. Sessions were conducted using a specified protocol, which contains information about the theoretical background of the programme, and instructions for every meeting for coach and teacher. All participating coaches were already certified School-Video Interaction Guidance (S-VIG) coaches before they were trained to use the Key2Teach intervention (LBBO, 2016). Coaches were trained by the research team to use Key2Teach using a standardised protocol (Van Veen et al. 2015), and attended intervision meetings during the course of the study. Implementation fidelity is studied by registering exposure-rate and protocol adherence. With regard to exposure, 43 of all 53 teachers in the experimental condition attended all 12 sessions, two teachers attended only two sessions, and two teachers attended four sessions, but these latter four teachers dropped out of the study after the first phase. With regard to protocol adherence, on average, 69% (range 51–88%, SD 11%) of the core elements of Key2Teach were conducted correctly by teachers and coaches. See Hoogendijk et al. (2020) for more information on the fidelity of implementation and training of coaches.



## Measures

### *Externalising and social-emotional problem behaviours*

Teachers' perception of students' externalising and social-emotional problem behaviours were measured using the subscales Conduct Problems ( $\alpha = .65$ ), Hyperactivity ( $\alpha = .87$ ), Emotional Problems ( $\alpha = .77$ ) and Peer Problems ( $\alpha = .66$ ) of the Strengths and Difficulties Questionnaire for the teachers (SDQ-T; Van Widenfelt et al. 2003). Teachers rated items such as 'Often fights with other children or bullies them' on a three-point scale on which 0 = not true, 1 = sometimes true, and 2 = completely true. Internal consistency and correlations with other behavioural questionnaires (CBCL/YSR) have been evaluated as sufficient in previous studies (Goodman 2001; Van Widenfelt et al. 2003). Evidence indicates that the SDQ is sensitive in detecting changes over time (Mason, Chmelka, and Thompson 2012) and in measuring intervention effects (Muratori et al. 2012).

Students' perception of their own behaviours was measured using the subscales Conduct Problems ( $\alpha = .51$ ), Hyperactivity ( $\alpha = .70$ ), Emotional Problems ( $\alpha = .60$ ) and Peer Problems ( $\alpha = .37$ ) of the Strengths and Difficulties Questionnaire for students (SDQ-S; Van Widenfelt et al. 2003). Students rate themselves on a 3-point Likert scale ranging from 0 (not true) to 2 (completely true). Due to the low internal consistency and a large amount of missing data (51.9% at post-test), the student-rated SDQ-subcales were not used in this study.

### *Teachers' mental representation of the teacher-student relationship*

Teachers' perception of the conflict levels in the teacher-student relationship was measured using the Conflict subscale of the Dutch version of the Teacher-student Relationship Scale (STRS; (Koomen, Verschueren, and Pianta 2007). This subscale ( $\alpha = .89$ ) consists of 11 items (e.g. 'This child and I always seem to be struggling with each other') assessing the extent to which the teacher experiences conflict in relation to a specific child. Items are scored on a 5-point Likert-scale ranging from definitely does not apply to definitely apply. Construct validity and convergent validity of this scale are supported by correlations with child and peer reports of the same construct (Doumen et al. 2009; Koomen, Verschueren, and Pianta 2007).

## Demographic variables

Using supplemental questionnaires, several demographic variables on both students and teachers were collected. Information regarding age at baseline, gender, and years of working experience was collected for teachers. Data on gender and age at the pre-intervention measurement were collected for students.

## Data-analysis

All analyses were performed using Structural Equation Modelling in Mplus 8.0 (Muthén and Muthén 1998-2017). To examine the direct effects of Key2Teach (the first research question), post-intervention scores (T2) of the dyad-students were regressed on their baseline scores (T1) and study condition. To assess the effects for all peer-students, post-intervention scores of peer-students (T2) were regressed on their baseline scores (T1) and study condition, correcting for the nesting of data within classrooms, using the 'type = two level' and 'cluster = ' command in Mplus. To examine the indirect effects of Key2Teach (the second research question), post-intervention scores (T2) of the dyad-students were regressed on their baseline scores (T1), study condition and teacher-student conflict (T2). These analyses were also conducted for peer-students.

For every outcome variable separate models were estimated. None of the demographic covariates were included in the analyses, as there were no significant differences between the experimental and control condition at baseline. Baseline data were included in the model to ensure that initial differences

at pre-test did not influence our results (Cole and Maxwell 2003). We used maximum likelihood estimation with robust standard errors (MRL), because this allows for the analysis of missing data by full information maximum likelihood (FIML). Missing data, as a consequence of non-response, on teacher-reported questionnaires for all students (STRS and SDQ-T) was 1.4% at pre-test and 11.3% at post-test. There were no significant differences between participants with or without missing data with regard to teachers' age, work experience, or gender or for students' age or gender. The FIML approach uses all of the available information in the data to produce robust parameter estimates for the missing data (Muthén and Muthén 1998-2017; Peeters et al. 2015).

An alpha of 5% was used for all tests of statistical significance. Effect sizes of standardised path coefficients with values less than 0.10 indicate small effects, values around 0.30 indicate medium effects, and values around 0.50 indicate large effects (Kline 2016). For dyad-students, mediation was tested using model indirect commands in Mplus and using bias-corrected bootstrapped 90% confidence intervals (bootstrapped = 5000) as these provide the most accurate types I and II error rates (Preacher and Hayes 2008). Interpretation of all results is based on the decision tree for establishing and understanding types of mediation and nonmediation of Zhao, Lynch, and Chen (2010).

## Results

### *Teacher-reported direct effects of Key2Teach*

The direct effects of Key2Teach on all teacher-reported outcomes are shown in Table 2 (see supplementary materials on Open Science Framework; [https://osf.io/t5m4u/?view\\_only=32c765ef25774dcaa5817ee1556848a2](https://osf.io/t5m4u/?view_only=32c765ef25774dcaa5817ee1556848a2)). With regard to the externalising problem behaviours of dyad-students, an effect of Key2Teach on conduct problems was found (see Table 1 for average scores and standard deviations in both conditions at all time-points). This indicates that conduct problems of dyad-students decreased as a result of Key2Teach compared to dyad-students who did not receive the intervention, indicating an almost medium effect ( $\beta = -.25, p = .01$ ). For hyperactivity and social-emotional problems of dyad-students no direct effects were found.

For peer-students in class, a direct effect of Key2Teach on their social-emotional problems was established. This means that emotional problems and problems with peers decreased for students in Key2Teach-classes as compared to students in classes that did not receive Key2Teach, indicating a small effect (emotional problems:  $\beta = -.09, p = .01$ , problems with peers  $\beta = -.09, p = .02$ ). This study did not find a difference in externalising problem behaviours between students in Key2Teach-classes and students in classes without Key2Teach coaching.

Previously research showed an effect of Key2Teach on the amount of conflict in the relationship between teachers and dyad-student, indicating less conflicts between teachers and dyad-students in Key2Teach classes (Hoogendijk et al. 2020). The present study established a positive, direct, small effect of Key2Teach on all teacher-student relationships in classes ( $\beta = -.08, p = .02$ ), indicating that teachers who received Key2Teach on average experienced less conflict in the relationship with the peer-students as compared to teachers who did not receive coaching.

### *Teacher-reported indirect effects of Key2Teach through teacher-student conflict*

With regard to the second research question, an indirect effect of Key2Teach through the conflict levels in the relationship between teacher and dyad-student on students' externalising problem behaviours was found (see, Figure 2 and Table 3, see for Table 3 supplementary materials on Open Science Framework; [https://osf.io/t5m4u/?view\\_only=32c765ef25774dcaa5817ee1556848a2](https://osf.io/t5m4u/?view_only=32c765ef25774dcaa5817ee1556848a2)). This effect indicates that Key2Teach significantly reduced conflict in the relationship between teachers and dyad-students ( $\beta = -.20, p = .02$ ), which in turn positively predicted the dyad-students' hyperactivity problems ( $\beta = .37, p = .00$ ). This small, indirect effect of Key2Teach was significant ( $\beta = -.07, p = .04$ , bias-corrected 95% CI =  $-.14; -.01$ ). No significant indirect effects of Key2Teach on dyad-students' conduct problems,

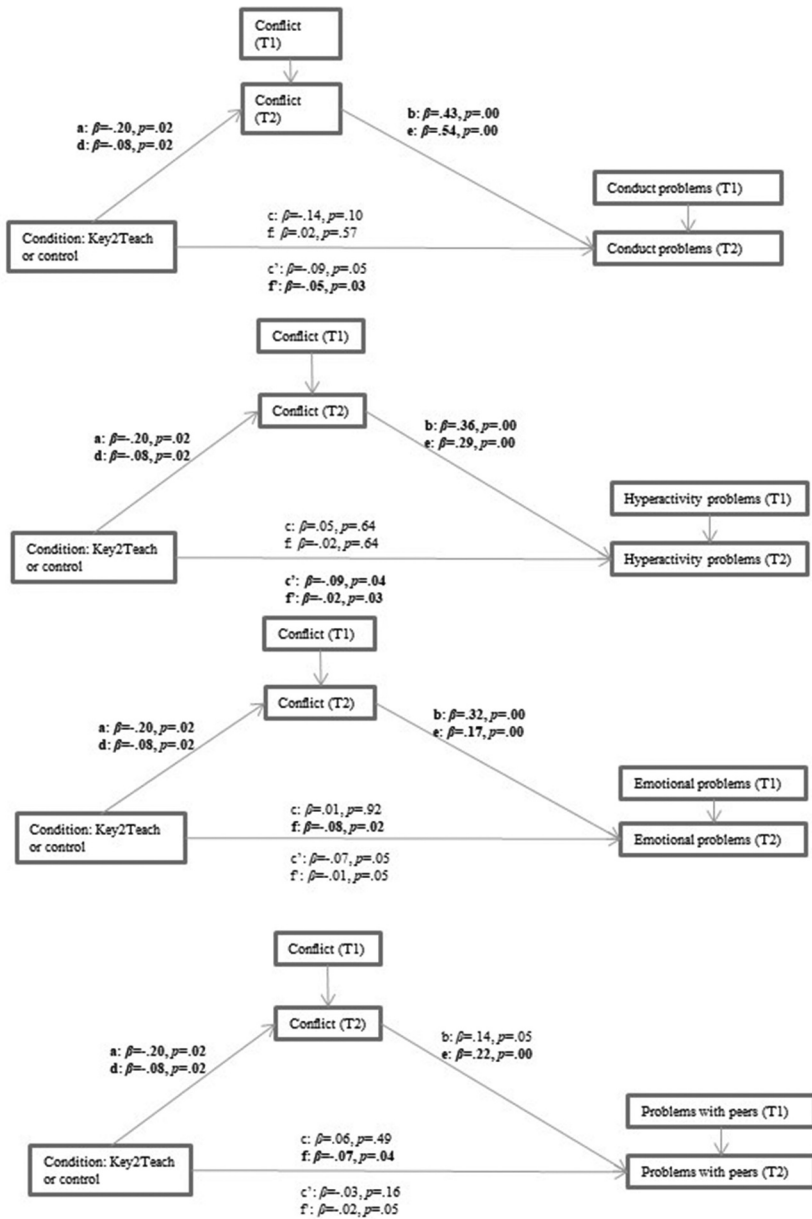


Figure 2. Direct and indirect effects of KeyTeach on externalizing and social-emotional problem behaviours for dyad-students (direct: a,b,c and indirect: c') and peer-students (direct: d,e and indirect: f'). Significant effects in bold.

emotional problems and problems with peers were found, suggesting that Key2Teach does not impact these problem behaviours through the level of conflict in the teacher-student relationship.

With regard to peer-students in class, some indirect effects of Key2Teach through the decreasing amount of conflict in the relationship on externalising and social-emotional problem behaviours were found. Key2Teach significantly reduced conflict levels in the relationship between teachers and peer-students in the classroom ( $\beta = -.08, p = .02$ ), which in turn positively impacted the following outcomes:

First, the decrease in conflict in the teacher-student relationships in class was related to peer-students' conduct problems scores ( $\beta = .41, p = .00$ ). This (negative) small indirect effect of Key2Teach

was significant ( $\beta = -.05, p = .03, CI = -.09; -.004$ ), indicating that a decreased level of conflict in the teacher-student relationship due to Key2Teach was associated with a decrease in conduct problems among peer-students.

Secondly, the decrease in conflict in the teacher-student relationships in class was related to peer-students' hyperactivity scores ( $\beta = .29, p = .00$ ). This (negative) small indirect effect of Key2Teach was significant ( $\beta = -.02, p = .03, CI = -.04; -.003$ ), indicating that a decreased level of conflict in the teacher-student relationship due to Key2Teach was associated with a decrease in peer-students' hyperactivity problems.

Thirdly, the decrease in conflict in the teacher-student relationships in class was related to the emotional problems scores of peer-students ( $\beta = .17, p = .00$ ). However, the indirect effect of Key2Teach via student-teacher conflict was not significant. The direct effect of Key2Teach on all students' emotional problems remained significant ( $\beta = -.08, p = .02$ ), indicating that Key2Teach was related to less emotional problems among peer-students in class.

Fourthly, the decrease in conflict in the teacher-student relationships in class was related to the problems with peers scores of peer-students ( $\beta = .22, p = .00$ ). Again, the indirect effect of Key2Teach via student-teacher conflict was not significant, whereas the direct effect of Key2Teach remained significant ( $\beta = -.07, p = .04$ ). This indicates that Key2Teach was related to less problems with peers among peer-students in class.

## Discussion

Supporting teachers in effectively handling externalising problem behaviours can be beneficial to teachers, students and peer-students in classrooms. Previous research has shown that using teacher-focused coaching intervention Key2Teach to improve the teacher-student relationship has positive effects on teachers' occupational well-being (Hoogendijk et al. 2018, 2020). In this study, the effects of Key2Teach on externalising and social-emotional problem behaviours of students with externalising behaviours were examined. The effects of Key2Teach on problems of the peer-students in class were also investigated, by exploratory analysis. Key2Teach consists of two phases and aims to provide teachers with insight into their relationship with students with externalising problem behaviours and to improve their corresponding interaction skills. Several direct and indirect effects on dyad-students' and peer-students' problem behaviours were found.

### *Effects on students' externalising problem behaviours*

Evidence of an effect of Key2Teach was found with regard to the externalising problem behaviours of dyad-students and their peers. Using the decision tree of Zhao, Lynch, and Chen (2010) for interpreting mediation analyses, an indirect-only mediation effect of Key2Teach for dyad-student's hyperactivity problem behaviours through teacher-student conflict was found. This suggests that a reduction in the conflict levels in the relationships that teachers engage in with students with externalising behaviours, as a result of Key2Teach, is associated with a decrease in hyperactivity problem behaviours of these students.

Furthermore, a direct effect of Key2Teach on dyad-students' conduct problems was found. After adding teacher-student conflict as a mediator, this direct effect disappeared and there was no statistically significant indirect effect either. It is likely that the lack of (indirect) effects of Key2Teach on conduct problems was due to insufficient statistical power, especially as the indirect effect was borderline significant, with a near medium effect size.

It is remarkable that Key2Teach reduced the conduct problems of dyad-students directly, and the hyperactivity problems only indirectly, through conflict in the relationship. This difference may be explained by the different underlying mechanisms with regard to these problem behaviours: can these behaviours be considered a consequence of the student's inability to control him- or herself (hyperactivity) or an intentional violation of the rules and expectations of behaviours in the classroom (conduct). The fact

that Key2Teach directly targets a teacher's misconceptions about conduct problems of students may help teachers to gain more insight into the function of students' behaviours, and thereby perceive these problems differently. As hyperactivity problem behaviours refer more to a student-characteristic, as these concerns restless, inattentive, and unconcentrated behaviours, these may initially be more difficult to change directly with a teacher-focused coaching intervention like Key2Teach. However, a reduction of conflict may help teachers to adequately adapt to the specific needs of these students as well.

For peer-students indirect effects for both hyperactivity and conduct problem behaviours were found. This suggests that Key2Teach positively impacts all teacher-student relationships in class, which was associated with a decrease of externalising problem behaviours in peer-students. This finding is supported by research by Doumen et al. (2008), who showed that teachers' judgement of conflict levels in the relationships in class is associated with the judgement of externalising problem behaviours of these students. Also, research of Archambault, Vandenbossche-Makombo, and Fraser (2017) and Zee, Jong, and Koomen (2017) supported the link between conflict in teacher-student relationships and externalising problem behaviours in class. A possible explanation for our finding may be that if there were less conflicts in the classroom due to Key2Teach, this led to a more positive atmosphere and attitude, which reduced the externalising problem behaviours of all students. These students may have been able to concentrate better, feel more supported, and have a better understanding of behavioural expectations. This may have led to a lower perception or prevalence of externalising behaviours by teachers (Somersalo, Solantaus, and Almqvist 2002; Doumen et al. 2008).

### *Effect on students' social-emotional problem behaviours*

By including dyad-students with (sub)clinical levels of externalising problem behaviours, some comorbidity on social-emotional problems was expected (Lier et al. 2012). As social-emotional problems and the quality of social relationships are negatively related (Hammen 2006), it is very likely that these students also benefit from less conflicted and more supportive relationships in the classroom. Exploratory analyses were conducted to examine to what extent Key2Teach, and an associated reduction of conflict in the relationship between teachers and students, had a positive impact on dyad-students' social-emotional problems and on their peers. No such effects were found for dyad-students. This study did however find evidence for an effect of Key2Teach on the social-emotional problem behaviours of peer-students in their class. This effect was not associated with a reduction of conflict in the teacher-student relationship.

These findings are not in line with findings from Roorda et al. (2013), who identified developmental links between the level of conflict in the teacher-student relationship and social-emotional problem behaviours for preschool boys at risk for developing externalising problem behaviours. However, these boys were younger than the students in current study (Roorda et al. 2011). However, Zee and Roorda (2018), have also pointed out that, in an age group similar to the current study, they found no relation between emotional problems, and the quality of the teacher-student relationship. It is thus likely that other possible mediators explain the effect of Key2Teach on social-emotional problems of peer-students. Students with internalising problem behaviours are likely to be less close with their teachers than typically developing children (Henricsson and Rydell 2004). Maybe not teacher-student conflict specifically, but other aspects of the relationship, such as closeness, dependence or specific interaction patterns, are more linked to students social-emotional problems well-being, and are more likely to have a mediating effect (Pianta, Hamre, and Stuhlman 2003). Perhaps a reduction of externalising problem behaviours led to a more positive atmosphere for students in which they could prosper socially and emotionally. It is important to note, that due to our screening procedure for dyad-students, the scores on social-emotional problems for dyad-students did not reach the level for (sub)clinical problems in that area. For that reason, it may have been hard to detect effects of Key2Teach on these types of problems among these students. Further research may explore the effects of Key2Teach on students with a more diverse and broader spectrum of behavioural and other problems, and provide more insight into the value of this intervention for all children in class.

### *Comparing the effects for dyad- and peer-students*

Overall, some interesting differences between effects of Key2Teach on dyad-students versus peer-students were found. It seems that Key2Teach is more effective at decreasing dyad-students' externalising problem behaviours than it is for peer-students, apart from some small indirect effects. For social-emotional problems however, Key2Teach seemed to have a bigger effect on peer-students than on dyad-students. Reductions of teacher-student conflict levels only played a role for the former, signifying the importance of teacher-student conflict in the case of externalising problem behaviours, but less when it comes to student's social-emotional well-being. The absence of an effect on social-emotional problems for dyad-students in contrast to their peers may be explained by the fact that the dyad-students in this study did not reach the level for (sub)clinical problems and have less variation in their social-emotional problems than their peers. Nevertheless, further research may shed more light on the different effects of Key2Teach on various types of problem behaviours of students, and on the importance of different aspects of the teacher-student relationship. More qualitative measures, such as diary data (Ruiter et al. 2020), and qualitative interviews may help with obtaining more insight into the subjective experiences of students and student behaviour, and the associated the effects of the Key2Teach intervention. This is important when it comes to the implementation of this intervention among a variety of students and teachers in practice.

### *Limitations*

The results of the present study should be interpreted with several limitations in mind. First, the mediator (teacher-student conflict) and the dependent variable (conduct problems) may not have been distinctive enough. For teachers, who provide data on both these variables, it may be difficult to distinguish whether behaviours they encounter refer to conflict they experience with the student, or can be interpreted as an intentional transgression from the behaviour expectations in the classroom. Teacher-reported behaviour problems and teacher-reported student-teacher conflict indeed show strong correlations in other studies (Silver et al. 2005). However, in a previous study, Doumen et al. (2008) have been able to distinguish teacher-reported teacher-student conflict from teacher-reported problem behaviours as two different constructs. Future research could study the mechanism by which Key2Teach has an effect on conduct problem of students.

Secondly, there are some key considerations with regard to pre-intervention measurement differences for the peer-students in our study. There were significant differences between students in control classes and in intervention classes with regard to the externalising and social-emotional problems of peer-students. Although we corrected for the pre-intervention measurement in all analyses, the fact that the students in these two conditions show clear differences with regard to their problems may still have influenced comparability of the students in both conditions and therefore our findings. Furthermore, it should also be noted that students who dropped out were significantly younger than retained students.

Another limitation regards the high withdrawal rate of participating teachers. Both in future research and practice, involvement with the project could be increased by paying extra attention to the encouraging role of the school principal in providing these teachers with the support but also the time they need to participate (Han and Weiss 2005). This could be enhanced by using strategies such as teacher- or school buy-in.

Moreover, assessments of intervention effects were teacher-reported, whereas the intervention focused on the teacher as the mechanism of change. This study also included student-reported measures of behaviour problems, but the scales of these self-reports showed insufficient reliability. This makes it difficult to distinguish to what extent Key2Teach really impacted student's problem behaviours, or rather teachers' (potentially biased) perception of these behaviours. It is advisable to include more objective measurements in future research, such as parent- or observer-reported data, to study the effects of Key2Teach. Nevertheless, one needs to bear in mind that a teachers' perception of problem behaviours is

of great importance, as it is strongly related to their sense of wellbeing, but also plays a central role in determining the need for additional support for students, such as the referral to special education services. Therefore, a decrease in teacher-reported problems can be considered a relevant finding which may have a direct impact on the educational setting for students with problem behaviours.

### **Practical implications and conclusion**

In conclusion, this study shows that the teacher-focused coaching intervention Key2Teach impacts the externalising problem behaviours of dyad-students and peer-students by decreasing conflict in the teacher-student relationship. Furthermore, although Key2Teach did not seem to impact the social-emotional problems of dyad-students, the intervention reduced social-emotional problems in their classmates. The amount of conflict in the teacher-student relationship does not mediate these effects, but perhaps other qualities of the teacher-student relationship, such as the amount of closeness involved, may have played a role. Following the Conceptual model of Pianta (1999), besides the mental representation and the interaction patterns between teacher and student, features of the individuals and the context in which the relationship occurs can impact the teacher-student relationship. Therefore, it may be promising to further explore what student characteristics, teacher characteristics, and other contextual factors relating to the teacher-student relationship impact the effectiveness and embedding of relationship-focused interventions like Key2Teach, and may subsequently impact student and teacher functioning. School climate, for example, can be seen as an important background dimension when it comes to the characteristics of the relations that are shaped within the school (Downes 2013).

The effectiveness of Key2Teach on students' problem behaviours is important, as effectively managing externalising problem behaviours in classrooms is one of the most difficult tasks for teachers, and many teachers communicate a need for support with regard to this topic. It is important to note that the results of Key2Teach are in line with other effects of other relationship-focused teacher-coaching interventions, such as Banking Time (Driscoll and Pianta 2010), which was shown to decrease the conduct problems of students as well. However, there are some key differences between Key2Teach and Banking Time, as Banking Time consist of one-to-one meetings between teacher and student while within Key2Teach, the teacher is coached to improve his or her interaction skills within the context of the classroom. Other classroom interventions that focus on teachers' classroom management skills, such as the Good Behaviour Game, have also been shown to lead to a decrease of emotional and problem behaviours in students (Lier et al. 2004). The Positivity & Rules Program, a behaviours-focused teacher programme, has been shown to decrease hyperactivity problems among students (Veenman et al. 2016).

The findings of this study thus add to a broader evidence base, suggesting that promoting teacher skills using teacher-focused classroom interventions can have beneficial effects in terms of children's problem behaviours. Although we did not look into the differential effects for teachers' years of experience, elements of this intervention, such as the focus on the student-teacher relationship in relation to students' behaviour, as well as systematic relationship-focused reflection as a base for video-guided improvement, may be included in initial teacher education when it comes to social-emotional and behavioural in class. Especially as the management of such difficult behaviours concerns a prominent day-to-day challenge for beginning teachers.

Further research, using different informants and assessment methods, may further investigate what aspects of the teacher-relationship can be improved on to promote the social, emotional and behavioural development of those students who need it most. Moreover, including more qualitative research methods, such as diary data or qualitative interviews, may provide us with more insight into different experiences that teachers, students and coaches have with Key2Teach and may help refine the execution as well as the embedding of the intervention within individual schools.

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No potential conflict of interest was reported by the authors.

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## References

- Allen, D. 1967. *Microteaching: A Description*. Palo Alto: CA: Stanford Teacher Education Program.
- Aloe, A. M., S. M. Shisler, B. D. Norris, A. B. Nickerson, and T. W. Rinker. 2014. "A Multivariate Meta-analysis of Student Misbehavior and Teacher Burnout." *Educational Research Review* 12: 30–44. doi:10.1016/j.edurev.2014.05.003.
- Archambault, I., J. Vandenbosche-Makombo, and S. Fraser. 2017. "Students' Oppositional Behaviors and Engagement in School: The Differential Role of the Student-Teacher Relationship." *Journal of Child and Family Studies* 26 (6): 1702–1712. doi:10.1007/s10826-017-0691-y.
- Baker, J. A., S. Grant, and L. Morlock. 2008. "The Teacher-student Relationship as a Developmental Context for Children with Internalizing or Externalising Behavior Problems." *School Psychology Quarterly* 23 (1): 3–15. doi:10.1037/1045-3830.23.1.3.
- Betts, J. A., and J. L. Shkolnik. 1999. "The Behavioral Effects of Variations in Class Size: The Case of Math Teachers." *Educational Evaluation and Policy Analysis* 21 (2): 193–213. doi:10.3102/01623737021002193.
- Breeman, L. (2015). "A Special Need for Others: Social Classroom Relationships and Behavioral Problems in Children with Psychiatric Disorders." Rotterdam, the Netherlands: Doctoral dissertation, Department of Psychology, Erasmus University of Rotterdam.
- Cannon, M., H. Coughlan, M. Clarke, M. Harley, and I. Kelleher. 2013. *The Mental Health of Young People in Ireland: A Report of the Psychiatric Epidemiology Research across the Lifespan (PERL) Group*. Dublin: Royal College of Surgeons in Ireland.
- Cole, D. A., and S. E. Maxwell. 2003. "Testing Mediation Models with Longitudinal Data: Questions and Tips in the Use of Structural Equation Modeling." *Journal of Abnormal Psychology* 112 (4): 558–577. doi:10.1037/0021-843X.112.4.558.
- Coninx, N., K. Kreijns, and W. Jochems. 2012. "The Use of Keywords for Delivering Immediate Performance Feedback on Teacher Competence Development." *European Journal of Teacher Education* 35: 1–19.
- Crick, N., and J. Grotpeter. 1995. "Relational Aggression, Gender, and Social-Psychological Adjustment." *Child Development* 66 (3): 710–722. doi:10.2307/1131945.
- Dienst Uitvoering Onderwijs, m. v. 2020, 11 05. "01. Leerlingen Bo-gewicht, Leeftijd - 2014–2015." [www.duo.nl: https://duo.nl/open\\_onderwijsdata/databestanden/po/leerlingen-po/bo-sbo/po-owssoort-leeftijd.jsp](https://duo.nl/open_onderwijsdata/databestanden/po/leerlingen-po/bo-sbo/po-owssoort-leeftijd.jsp)
- Doumen, S., K. Verschueren, E. Buyse, S. Munter, K. Max, and L. Moens. 2009. "Further Examination of the Convergent and Discriminant Validity of the Student-Teacher Relationship Scale." *Infant and Child Development* 18 (6): 502–520. doi:10.1002/icd.635.
- Doumen, S., K. Verschueren, E. Buyse, V. Germeijs, K. Luyckx, and B. Soenens. 2008. "Reciprocal Relations between Teacher-child Conflict and Aggressive Behavior in Kindergarten: A Three-wave Longitudinal Study." *Journal of Clinical Child & Adolescent Psychology* 37: 588–599. doi:10.1080/15374410802148079.
- Downes, P. 2013. "Developing a Framework and Agenda for Students' Voices in the School System across Europe: From Diametric to Concentric Relational Spaces for Early School Leaving Prevention." *European Journal of Education* 48 (3): 346–362. doi:10.1111/ejed.12035.



- Driscoll, K. C., and R. C. Pianta. 2010. "Banking Time in Head Start: Early Efficacy of an Intervention Designed to Promote Supportive Teacher-child Relationships." *Early Education and Development* 21 (1): 38–64. doi:10.1080/10409280802657449.
- Elamé, E. 2013. *Discriminatory Bullying. A New Intercultural Challenge*. Venice, Italy: Springer.
- Ellis, A. 1991. "The Revised ABC's of Rational-emotive Therapy (RET)." *Journal of Rationale-Emotive & Cognitive-Behavior Therapy* 9 (3): 139–172. doi:10.1007/BF01061227.
- Ferguson, D. L. 2008. "International Trends in Inclusive Education: The Continuing Challenge to Teach Each One and Everyone." *European Journal of Special Needs Education* 23 (2): 109–120. doi:10.1080/08856250801946236.
- Goodman, R. 2001. "Psychometric Properties of the Strengths and Difficulties Questionnaire." *Journal American Academy of Child and Adolescent Psychiatry* 40 (11): 1337–1345. doi:10.1097/00004583-200111000-00015.
- Hammen, C. 2006. "Stress Generation in Depression: Reflections on Origins, Research, and Future Directions." *Journal of Clinical Psychology* 62 (9): 1065–1082. doi:10.1002/jclp.20293.
- Han, S., and B. Weiss. 2005. "Sustainability of Teacher Implementation of School-based Mental Health Programs." *Journal of Abnormal Child Psychology* 33 (6): 665–679. doi:10.1007/s10802-005-7646-2.
- Harrison, J., K. Vannest, J. Davis, and C. Reynolds. 2012. "Common Problem Behaviors of Children and Adolescents in General Education Classrooms in the United States." *Journal of Emotional and Behavioral Disorders* 55 (1): 55–64. doi:10.1177/1063426611421157.
- Hayes, B., S. Richardson, S. Hindle, and K. Grayson. 2001. "Developing Teaching Assistants' Skills in Positive Behaviour Management: An Application of Video Interaction Guidance in a Secondary School." *Educational Psychology in Practice* 28: 255–269.
- Henricsson, L., and A. M. Rydell. 2004. "Elementary School Children with Behavior Problems: Teacher-child Relations and Self-perception. A Prospective Study." *Merrill-Palmer Quarterly* 50 (2): 111–138. doi:10.1353/mpq.2004.0012.
- Hoogendijk, C., J. G. Holland, N. T. Tick, W. H. Hofman, S. E. Severiens, P. Vuijk, ... A. F. Van Veen. 2020. "Effect of Key2Teach on Dutch Teachers' Relationships with Students with Externalising Problem Behaviour: A Randomized Controlled Trial." *European Journal of Psychology of Education* 35: 111-135. <https://doi.org/10.1007/s10212-019-00415-x>.
- Hoogendijk, C., N. T. Tick, W. H. Hofman, J. G. Holland, S. E. Severiens, P. Vuijk, and A. F. van Veen. 2018. "Direct and Indirect Effects of Key2Teach on Teachers' Sense of Self-efficacy and Emotional Exhaustion, a Randomized Controlled Trail." *Teaching and Teacher Education* 76: 1–13. doi:10.1016/j.tate.2018.07.014.
- Kaakinen, M. 2017. "The Conceptualisation of Pupils' Problems by Finnish and Norwegian Primary School Teachers: Performance, Welfare and Behaviour." *Teachers and Teaching* 23 (6): 704–716. doi:10.1080/13540602.2016.1211103.
- Kline, R. B. 2016. *Principles and Practice of Structural Equation Modeling*. New York: Guilford Press.
- Koomen, H., K. Verschueren, and R. Pianta. 2007. *LLRV Leerling Leerkracht Relatie Vragenlijst Handleiding*. Houten: Bohn Stafleu van Loghum.
- Koomen, H. M., and J. L. Spilt. 2010-2016. LLInC training manual. Unpublished manuscript, Department of Child Development and Education, University of Amsterdam, Amsterdam, the Netherlands.
- Koomen, H. M., and T. A. Lont (2004). "Teacher Relationship Interview Qualitative Coding Manual." Ongepubliceerde Nederlandse vertaling: Universiteit van Amsterdam.
- Koopman, P., and G. Ledoux. 2018. *Trends in Verwijzingen Speciaal Onderwijs 2011-2017*. Amsterdam: Kohnstamm Instituut.
- Košir, K., and S. Tement. 2014. Teacher-student relationship and academic achievement: a cross-lagged longitudinal study on three different age groups. *European Journal of Psychology of Education* 29: 409–428. doi:10.1007/s10212-013-0205-2
- LBBO. (2016). SVIB- school video interactie begeleiding. Retrieved from: <http://www.lbbb.eu/wat-is-lbbb/svib-school-video-interactiebegeleiding>.
- Lei, H., Y. Cui, and M. M. Chiu. 2016. "Affective Teacher-Student Relationships and Students' Externalising Behavior Problems: A Meta-Analysis." *Frontiers in Psychology* 7: 1311. doi:10.3389/fpsyg.2016.01311.
- Lier, P. A., B. O. Muthén, R. M. Sar, and A. A. Crijnen. 2004. "Preventing Disruptive Behavior in Elementary Schoolchildren: Impact of a Universal Classroom-based Intervention." *Journal of Consulting and Clinical Psychology* 73 (3): 467–478. doi:10.1037/0022-006X.72.3.467.
- Lier, P. A., F. Vitaro, E. D. Barker, M. Brendgen, R. E. Tremblay, and M. Boivin. 2012. "Peer Victimization, Poor Academic Achievement, and the Link between Childhood Externalising and Internalizing Problems." *Child Development* 83: 1775–1788. doi:10.1111/j.1467-8624.2012.01802.x.
- Malmqvist, J. 2016. "Working Successfully Towards Inclusion-or excluding Pupils? A Comparative Retrospective Study of Three Similar Schools in Their Work with EBD." *Emotional and Behavioural Difficulties* 21 (4): 344–360.
- Mason, W. A., M. B. Chmelka, and R. W. Thompson. 2012. "Responsiveness of the Strengths and Difficulties Questionnaire (SDQ) in a Sample of High-Risk Youth in Residential Treatment." *Child & Youth Care Forum* 41 (5): 479–492. doi:10.1007/s10566-012-9179-5.
- Mikami, A. Y., M. S. Griggs, M. Reuland, and A. Gregory. 2012. "Teacher Practices as Predictors of Children's Classroom Social Preference." *Journal of School Psychology* 50: 95–111. doi:10.1016/j.jsp.2011.08.002.
- Muratori, P., J. Lochman, I. Bertacchi, C. Giuli, S. Pisano, A. Gallani, and I. Mammarella. 2012. "Universal Coping Power for Pre-schoolers: Effects on Children's Behavioral Difficulties and Pre-academic Skills." *School Psychology International* 40: 128–144. doi:10.1177/01430343118814587.

- Muthén, L. K., and B. O. Muthén. 1998-2017. *Mplus User's Guide*. Los Angeles, CA: Muthén & Muthén.
- Peeters, M., M. Zondervan-Zwijenburg, G. Vink, and R. Schoot. 2015. "How to Handle Missing Data: A Comparison of Different Approaches." *European Journal of Developmental Psychology* 12: 377–394. doi:10.1080/17405629.2015.1049526.
- Pianta, R. C. 1999. *Enhancing Relationships between Children and Teachers*. Washington, DC: American Psychological Association.
- Pianta, R. C., B. K. Hamre, and M. Stuhlman. 2003. "Relationships between Teachers and Children." In *Handbook of Psychology*, edited by W. Reynolds and G. Miller, 199–234. Hoboken, NJ: John Wiley & Sons.
- Pianta, R. C., and B. K. Hamre. 2009. "Conceptualization, Measurement, and Improvement of Classroom Processes: Standardized Observation Can Leverage Capacity." *Educational Researcher* 38: 109–119. doi:10.3102/0013189X09323274.
- Preacher, K. J., and A. F. Hayes. 2008. "Asymptotic and Resampling Strategies for Assessing and Comparing Indirect Effects in Multiple Mediator Models." *Behavior Research Methods* 40: 879–891. doi:10.3758/BRM.40.3.879.
- Putnam, R. F., J. K. Luiselli, G. L. Handler, and G. L. Jefferson. 2003. "Evaluating Student Discipline Practices in a Public School through Behavioral Assessment of Office Referrals." *Behavior Modification* 27: 505–523. doi:10.1177/0145445503255569.
- Rambaran, A. J., J. Dijkstra, and T. H. Stark. 2013. "Status-Based Influence Processes: The Role of Norm Salience in Contagion of Adolescent Risk Attitudes." *Journal of Research on Adolescence* 23 (3): 574–585. doi:10.1111/jora.12032.
- Ratcliff, N. J., C. R. Jones, R. H. Costner, E. Savage-Davis, and G. H. Hunt. 2010. "The Elephant in the Classroom: The Impact of Misbehavior on Classroom Climate." *Education* 131 (2): 306ev.
- Rock, M. L., M. Gregg, B. K. Thead, S. E. Acker, R. A. Gable, and N. P. Zigmond. 2009. "Can You Hear Me Now? Evaluation of an Online Wireless Technology to Provide Real-time Feedback to Special Education Teachers-in-training." *Teacher Education and Special Education* 32: 64–82. doi:10.1177/0888406408330872.
- Roorda, D. L., H. M. Koomen, J. L. Spilt, and F. J. Oort. 2011. "The Influence of Affective Teacher-student Relationships on Students' School Engagement and Achievement: A Meta-analytic Approach." *Review of Educational Research* 81 (4): 493–529. doi:10.3102/0034654311421793.
- Roorda, D. L., H. M. Koomen, J. M. Spilt, J. T. Thijs, and F. J. Oort. 2013. "Interpersonal Behaviors and Complementarity in Interactions between Teachers and Kindergartners with a Variety of Externalising and Internalizing Behaviors." *Journal of School Psychology* 51: 143–158. doi:10.1016/j.jsp.2012.12.001.
- Ruiter, J., A. Poorthuis, K. Aldrup, and H. Koomen. 2020. "Teachers' Emotional Experiences in Response to Daily Events with Individual Students Varying in Perceived past Disruptive Behavior." *Journal of School Psychology* 82: 85–102. doi:10.1016/j.jsp.2020.08.005.
- Shelemy, L., K. Harvey, and P. Waite. 2019. "Supporting Students' Mental Health in Schools: What Do Teachers Want and Need?" *Emotional and Behavioural Difficulties* 24 (1): 100–116. doi:10.1080/13632752.2019.1582742.
- Silver, R., J. Measelle, J. Armstrong, and M. Essex. 2005. "Trajectories of Classroom Externalising Behavior: Contributions of Child Characteristics, Family Characteristics, and the Teacher-child Relationship during the School Transition." *Journal of School Psychology* 43: 39–60. doi:10.1016/j.jsp.2004.11.003.
- Somersalo, H., T. Solantaus, and F. Almqvist. 2002. "Classroom Climate and the Mental Health of Primary School Children." *Nordic Journal of Psychiatry* 56 (4): 285–290. doi:10.1080/08039480260242787.
- Spilt, J. L., and H. M. Koomen. 2009. "Widening the View on Teacher-child Relationships: Teachers' Narratives Concerning Disruptive versus Non-disruptive Children." *School Psychology Review* 38: 86–101. doi:10.1080/02796015.2009.12087851.
- Sroufe, L. A., and J. Fleeson. 1988. "The Coherence of Family Relationships." In *Relationships within Families: Mutual Influences*, edited by R. A. Hinde and J. Stevenson-Hinde, 27–47. Oxford: University Press.
- Stipek, D., and S. Miles. 2008. "Effects of Aggression on Achievement: Does Conflict with the Teacher Make It Worse?" *Child Development* 79: 1721–1735. doi:10.1111/j.1467-8624.2008.01221.x.
- Tennant, J. E., M. K. Demaray, C. K. Malecki, M. N. Terry, M. Clary, and N. Elzinga. 2014. "Students' Ratings of Teacher Support and Academic and Social-emotional Well-being." *School Psychology Quarterly* 30 (4): 1-19. <http://dx.doi.org/10.1037/spq0000106>.
- Tsoulopas, C. N., R. L. Carson, R. Matthews, M. J. Grawitch, and L. K. Barber. 2010. "Exploring the Association between Teachers' Perceived Student Misbehaviour and Emotional Exhaustion: The Importance of Teacher Efficacy Beliefs and Emotion Regulation." *Educational Psychology: An International Journal of Experimental Educational Psychology* 30: 173–189. doi:10.1080/01443410903494460.
- Van Veen, A. F., J. G. Holland, C. Hoogendijk, W. Clements, M. Reith, J. Scheltens, ... P. Vuijk. 2015. *Key2Teach, Multi-Method Coaching: Trainingshandleiding*. Amsterdam, The Netherlands: Inholland University of Applied Sciences.
- Van Widenfelt, B. M., A. W. Goedhart, P. D. Treffers, and R. Goodman. 2003. "Dutch Version of the Strengths and Difficulties Questionnaire (SDQ)." *European Child & Adolescent Psychiatry* 12: 281–289. doi:10.1007/s00787-003-0341-3.
- Veenman, B., M. Luman, J. Hoeksma, K. Pieterse, and J. Oosterlaan. 2016. "A Randomized Effectiveness Trial of A Behavioral Teacher Program Targeting ADHD Symptoms." *Journal of Attention Disorders* 23: 293–304. doi:10.1177/1087054716658124.
- Volksgezondheidzorg.info. 2017, z.d.. "Socialeconomische Status." Volksgezondheidzorg.info: <https://www.volksgezondheidzorg.info/onderwerp/socialeconomische-status/regionaal-internationaal/regionaal#>
- Wienen, A. W., L. Batstra, E. Thoutenhoofd, E. H. Bos, and P. 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.

- Zee, M., and D. L. Roorda. 2018. "Student-teacher Relationships in Elementary School: The Unique Role of Shyness, Anxiety, and Emotional Problems." *Learning and Individual Differences* 67: 156–166. doi:10.1016/j.lindif.2018.08.006.
- Zee, M., P. F. Jong, and H. M. Koomen. 2017. "From Externalising Student Behavior to Student-specific Teacher Self-efficacy: The Role of Teacher-perceived Conflict and Closeness in the Student-teacher Relationship." *Contemporary Educational Psychology* 3: 37–50. doi:10.1016/j.cedpsych.2017.06.009.
- Zhao, X., J. Lynch, and Q. Chen. 2010. "Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis." *Journal of Consumer Research* 37 (2): 197–206. doi:10.1086/651257.
- Zweers, I., R. Schoot, N. Tick, S. Depaoli, J. Clifton, B. Orobio de Castro, and J. Bijstra. 2020. "Social-emotional Development of Students with Social- Emotional and Behavioral Difficulties in Inclusive and Exclusive Special Education." *International Journal of Behavioral Development*. Advanced online publication. <https://doi.org/10.1177/0165025420915527>.