Boys can be managed:
Schools' student composition and teacher efficacy, a multilevel approach

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Considerable research concerning determinants of teacher efficacy focuses on teachers' individual characteristics. School characteristics, such as the socioeconomic and gender composition of the school, are largely overlooked. The scant research including schools' student composition suggests that teachers feel less efficacious when teaching boys with a low socioeconomic status (SES). A multilevel analysis, using data from 1,247 teachers in 59 Flemish secondary schools, shows that teachers' feelings of efficacy do not appear to differ very much between schools, although many studies assumed that the greater part of variance in teacher efficacy could be found between schools. The socioeconomic composition of the school does not affect teacher efficacy. Gender composition, however, does influence teacher efficacy, as teachers display more efficacy in classroom management and experience more general efficacy when teaching mostly boys. The unexpected finding that teachers seem to feel more efficacious in classroom management when teaching mostly boys is discussed.

Keywords: teacher efficacy; socioeconomic status; gender differences; school composition

Introduction

Over the last two decades, considerable research has been engaged in studying teacher efficacy and its influence on students' motivation and achievement. Teacher efficacy influences teachers' effort to manage classroom difficulties and the academic performances of students (Fackler and Malmberg 2016). Because most authors use an individual-based approach, focusing on teacher characteristics to investigate the concept of teacher efficacy, there is a lack of research that examines this concept including contextual factors: classroom and school characteristics are largely overlooked (Fackler and Malmberg 2016; Skaalvik and Skaalvik 2017). Klassen and Chiu (2010) and Yeo and colleagues (2008), for example, studied correlates of teacher efficacy without taking school contextual factors into account. Moreover, Klassen and Chiu (2010) pointed out that future research should replicate their model with the addition of external factors such as students' socioeconomic status. Fackler and Malmberg (2016) confirm that most research on teacher efficacy has been carried out at the teacher level, while most of the unexplained variance might be found between schools. Knoblauch and Hoy (2008) also report that teacher efficacy is not uniform across school settings. For example, teachers can feel more efficacious in calm rural schools and less efficacious in dense urban schools (Knoblauch and Hoy 2008). Generally, few studies concerning teacher outcomes include external forces, such as the socioeconomic student composition of the school (Fackler and Malmberg 2016; Van Houtte 2011).

Students are affected in several ways by the socioeconomic composition of a school (e.g., Sellström and Bremberg 2006), but little is known about how school composition may affect teachers and their efficacy. Some studies have suggested that socioeconomic composition is associated with teacher efficacy (Auwarter and Aruguete 2008), as teachers in

schools with a high proportion of low-SES students feel less efficacious. Warren (2002) showed that exposure to underachievement of low-SES students and boys may cause teachers to develop expectations based on students' SES rather than their ability, which in turn affects teachers' sense of responsibility and efficacy. The ethnic diversity of schools affects teacher efficacy as well because teachers experience a more diverse classroom as more demanding (Knoblauch and Hoy 2008). Therefore, more diverse classrooms could implicate lower feelings of efficacy, although Geerlings, Thijs and Verkuyten (2018) found that lower feelings of efficacy only occur with a low proportion of minority students in the classroom. Other studies suggest that gender (composition) matters because low-efficacy feelings appear when teaching low-SES boys especially (Auwarter and Aruguete 2008). Again, when teachers believe student outcomes are predetermined by factors beyond their control, like SES or gender, teachers show little motivation to reach these students, which can lead to underachievement of low-SES boys (Diamond, Randolph and Spillane 2004). Auwarter and Aruguete (2008) suggest an interaction between gender composition and socioeconomic composition, and an interaction between the school's socioeconomic composition and the SES of an individual teacher. However, they have only tested this for teacher expectations.

As teacher efficacy is an important indicator of teachers' pedagogical decision making and teacher efficacy is affected by schools' student composition, scholars are calling for a greater focus on contextual factors when analysing teacher efficacy, such as socioeconomic student composition and gender composition (Fackler and Malmberg 2016, Summers, Davis and Hoy 2017). Moreover, research concerning effects of school composition often overlooks teacher outcomes (Van Houtte 2011). Therefore, in studying determinants of teacher efficacy, this study will combine individual teacher characteristics and school characteristics based on aggregated student characteristics. By means of a multilevel approach, we aim to reveal the

impact of schools' socioeconomic composition and gender composition on teacher efficacy, controlling for migrant composition.

Theoretical background

Teacher efficacy

Teachers hold beliefs about themselves and who they are in relation to their colleagues. They perceive their own strengths and weaknesses, values, and self-efficacy, including classroom events about which they feel responsible (Summers, Davis and Hoy 2017). Although those perceptions are subjective, teachers experience them as real and true. Subsequently, their beliefs shape their decision-making and behaviour in the classroom. One of the most powerful predictors of teachers' (pedagogical) decision-making and effectiveness is teachers' feelings of efficacy (Summers, Davis and Hoy 2017). In contemporary educational research, teacher efficacy refers to teachers' beliefs about what they can do or how certain they are that they can execute certain actions (Skaalvik and Skaalvik 2017).

The conceptualisation and operationalisation of teacher efficacy has been extensively documented (Armor et al. 1976; Kleinsasser 2014; Rotter 1966; Skaalvik and Skaalvik 2007). The first attempt goes back to the Rand measure, which is grounded in Rotter's social learning theory (Armor et al. 1976; Kleinsasser 2014; Skaalvik and Skaalvik 2007; Tschannen-Moran and Hoy 2001). In this theory, teacher efficacy is approached as the extent to which teachers believe that they control the consequences of their actions. If teachers are confident that they are in control, the 'locus of control' is internal. If teachers believe their actions are overruled by the environment, the 'locus of control' is external. The Rand-items measured teacher efficacy with these two loci in mind. As Tschannen-Moran and Hoy (2001) described, the teachers were asked to express their level of agreement with two items. The first Rand-item

was constructed to measure the extent to which the teacher believes a student's motivation and learning are in his/her hands (internal) or are externally controlled: "*When it comes right down to it, a teacher really can't do much because most of a student's motivation and performance depends on his/her home environment.*", which is labelled as general teacher efficacy. The second Rand-item measured the confidence a teacher has in his/her own ability to motivate even the most unmotivated students: "*If I try really hard, I can get through to even the most difficult or unmotivated students".* This aspect has been labelled as personal teaching efficacy (PSE). The concept of teacher efficacy triggered a wide array of measurements (Ashton, Webb, and Doda 1982; Rose and Medway 1981), mostly embedded in the social cognitive theory of Bandura (1977). In this sense, teacher efficacy is defined as the belief a teacher has in his/her capabilities to produce certain outcomes with the students (Bandura 1997). This definition adds the expectation to achieve outcomes. A measure that attempted to combine both the Rand-items and the theory of Bandura was the Gibson and Dembo's Teacher Efficacy Scale (=TES) (Gibson and Dembo 1984). Gibson and Dembo (1984) found two factors: 'personal teaching efficacy' (PTE) and '(general) teaching efficacy' (GTE). However, questions have been raised regarding the interpretation of this scale (Klassen et al. 2011) and clarity seemed to lack concerning the meaning of those two factors (Hoy and Spero 2005). In 2001, Tschannen-Moran and Hoy constructed a new scale, the Teachers' Sense of Efficacy Scale (TSES), which today is the scale mostly used for assessing teacher efficacy (Hoy and Spero 2005; Kleinsasser 2014). The TSES consists of three factors: (1) efficacy for instructional strategies, (2) efficacy for classroom management, and (3) efficacy for student engagement. The first factor refers to the amount of confidence the teacher has in his/her own capabilities to use efficient learning strategies. The second factor describes the ability of the teacher to handle disruptive behaviour and to maintain control. The last factor indicates

the competence of the teacher to motivate students (to learn), even when they are not motivated initially. Recently, Zee and colleagues (2016) constructed a domain-specific measure for teacher efficacy at the student level by adding a fourth domain of emotional support which focuses on individual students rather than students in general.

Teachers' efficacy beliefs affect the educational processes of students (Knoblauch and Hoy 2008). Teacher efficacy is associated with student achievement or with other student outcomes, such as motivation (Hoy and Spero 2005). The higher teachers' efficacy is, the higher students' (intrinsic) motivation and achievement are (Mojavezi and Tamiz 2012). Teachers with high feelings of efficacy will implement didactic innovations in the classroom more easily than teachers with low efficaciousness. Efficacious teachers are more likely to use classroom management approaches, support students with special learning needs, implement innovative teaching methods, and strengthen students' autonomy in class (Mojavezi and Tamiz 2012). These studies all affirm the importance of teacher efficacy, as it influences students in different ways. It is therefore important to examine which factors associate with teacher efficacy specifically. School features, for example, have been shown to influence both students and teachers (e.g., Sellström and Bremberg 2006; Wong et al. 2010), but those contextual effects are rarely explored in teacher efficacy research.

Teacher-student relationships

Efficacious teachers adjust their expectations about students when the characteristics of students change. In contrast, low-efficacy teachers tend to fixate on a single characteristic and take less responsibility for the outcomes of their own actions (Tournaki and Podell 2005). Teacher-student relationships differ depending on certain student characteristics, such as gender (Englehart 2009), ethnic background (Rumberger and Palardy 2005), and SES

(Goddard, Tschannen-Moran, and Hoy 2001), favouring, respectively, girls, natives, and high-SES students. This mechanism might, in turn, affect teachers' efficacy (Auwarter and Aruguete 2008; Warren 2002). Auwarter and Aruguete (2008) found that teachers feel less efficacious when teaching low-SES students, especially low-SES boys. Auwarter and Aruguete's (2008) explained that teachers who believe that SES is a predetermined factor for students' achievement will be more likely to feel ineffective when teaching low-SES students, especially when teaching low-SES boys. These lower efficacy feelings might implicate fewer teaching efforts and perpetuate low student achievement. Moreover, teachers feel more efficacious with low-SES female students than with high-SES female students, while feelings of efficacy were lower with low-SES male students than with high-SES male students. The interaction between gender and SES shows that low-SES girls have an advantage concerning teachers' feelings of efficacy (Benner and Mistry 2007). Auwarter and Aruguete (2008) state that these lower feelings of efficacy may result in reduced teaching efforts and therefore lower student achievement. As low feelings of efficacy perpetuate low student achievement and teachers hold higher expectations towards girls, boys might be disadvantaged because of those prejudices. However, the socioeconomic variation in schools in the Auwarter and Aruguete study (2008) was constructed by creating theoretical scenarios about hypothetical students who varied on gender and SES in the experimental design of the study.

Additionally, Diamond, Randolph and Spillane (2004) showed that teachers' perception of their students are lower in low-SES schools. The schools' socioeoconomic composition, teacher expectations and teachers' sense of responsibility are strongly associated. Teachers' sense of responsibility is a concept that consists out of three dimensions: teachers' internalisation of responsibility for student learning, teachers' willingness to adapt teaching practices to students' needs, and teachers' sense of efficacy.

Teachers show a lower sense of responsibility in low-SES schools and hold lower expectations toward their students, which in turn is associated with lower feelings of efficacy (Diamond, Randolph, and Spillane 2004). Mullola (2012) found a similar mechanism when looking at gender composition as teachers hold lower expectations in schools with mainly boys. Those negative perceptions might, in turn, contribute to lower feelings of efficacy. A particular expression of teacher expectations is teachers' teachability perceptions. It expresses teachers' beliefs that students meet teachers' normative and academic expectations (Kornblau 1982). Teachers in low-SES schools and schools with mostly boys often show lower teachability perceptions toward their students, which is, in turn, associated with lower feelings of efficacy (Diamond, Randolph, and Spillane 2004; Hoy, Hoy, and Kurz 2008). Diamond, Randolph and Spillane (2004) explained these associations by looking at teachers in a low-income school. Those teachers seemed to believe that students' family backgrounds limited their ability to effectively teach them. Teachers perceived their students as incapable, or in other words less teachable, and they did not feel responsible for what students learned; the blame was placed on students (low sense of responsibility). These findings indicate that schools' socioeconomic composition, teachers' teachability perceptions and teacher efficacy, as an important dimension of teachers' sense of responsibility, cannot be seen separately from each other.

Contextual effects on teacher efficacy

Research concerning the effect of a school's socioeconomic composition on students is abundant (e.g., Sellström and Bremberg 2006; Van Houtte 2011). However, socioeconomic composition affects teachers as well, and research on this association is scarce. A more diverse school environment is defined as more demanding because the teacher must handle more diverse needs (Fackler and Malmberg 2016). Yet, a link with the socioeconomic composition

has not been made. Wong and colleagues (2010) asserted that this relationship needs to be studied further as (collective) efficacy in relationship with the school context has not received much research interest. Fackler and Malmberg (2016) included school and principal characteristics. They showed that teachers in private schools are more efficacious than teachers in public schools. Characteristics of the parents of the students account for this difference. Private schools are favoured by parents who are highly educated and more prosperous, and who want their children to be highly educated as well (Fackler and Malmberg 2016). Although these parental characteristics are related to SES, a link was not made.

Knoblauch and Hoy (2008) revealed that teacher behaviour differs between urban and rural schools, yet the literature regarding the contextual impact on efficacy is scarce. If teachers feel more efficacious in rural than in urban schools, this difference again is likely caused by the student composition of the school. Student populations in urban schools are more diverse than they are in rural schools. Therefore, teachers usually score higher on teacher efficacy in rural schools. Raudenbush, Rowan, and Cheong (1992) included (class) context in their study and concluded that teachers who teach high-track students feel more efficacious. But again, no association with SES was made.

Nevertheless, research has shown that high-SES students are higher academic achievers than low-SES students. Therefore, when teachers are exposed to the underachievement of low-SES students, they develop expectations about students' potential based on the students' SES. Pas, Bradshaw, and Hershfeldt (2012) added the structural aspects of a school, such as the concentration of student poverty, school size, and behavioural problems, to their model. These aspects may increase demands on teachers, which in turn may affect teachers' efficacy, but Pas and colleagues (2012) concluded that these contextual effects were not present.

A limited amount of research investigated specifically the association between the schools' socioeconomic composition and teacher efficacy. Kang (2017) found that teachers feel more efficacious in high-SES schools. The estimation of the mean SES of the school was based on the free and reduced-price meals rates of the school. Belfi and colleagues (2015) demonstrated that the relationship between schools' socioeconomic composition and collective teacher efficacy could be partly explained by teachers' perceptions of school-based social capital, which includes teachers' perceptions of so-called social resources, or existing norms that support student learning (Belfi et al. 2015).

Geerlings, Thijs and Verkuyten (2018) focused on the influence of ethnically diverse classrooms and found that teachers initially felt less efficacious when teaching a low proportion of minority students, and teachers reported higher feelings of efficacy in highly diverse classrooms. Geerlings, Thijs and Verkuyten (2018) indicated that teachers in highly diverse classrooms have more experience with teaching culturally different students which could make them feel more efficacious in teaching minority group students. As the authors indicated, ethnic minority students also had considerably lower SES backgrounds (Geerlings, Thijs and Verkuyten 2018). Lower feelings of efficacy when teaching minority students are often linked with students' externalizing behavioural problems as minority students show more behavioural problems (Stevens et al. 2003), however, findings concerning the association between problematic behaviour and ethnic minority status are often inconsistent (Geerlings, Thijs and Verkuyten 2018, Tsouloupas et al. 2010). These findings might indicate that the associations between schools' socioeconomic, ethnic composition and teacher efficacy are not as straightforward as expected and more research concerning these mechanisms is desirable.

Relevant teacher characteristics

Besides the SES of the students, the SES of the teachers might matter. Most teachers are middle-class (Bourdieu 2003, 2010; Hughes 2012) and the social distance between middle-class teachers and low-SES students may influence teacher efficacy (Dunne and Gazeley 2008). The impact of socioeconomic composition on feelings of efficacy may vary among teachers whose SES differs, as the relationship with their students varies (Auwarter and Aruguete 2008; Englehart 2009). High-SES students commonly have a better relationship with their teachers than low-SES students (Auwarter and Aruguete 2008; Englehart 2009). Although most studies have not included teachers' SES in teacher efficacy research, low-SES teachers may feel more efficacious, even when teaching low-SES students, because they are more aware of the prejudices that may occur (Englehart 2009; Goddard, Tschannen-Moran, and Hoy 2001). The unintentional bias that mostly high-SES teachers have, which may not be present in low-SES teachers, in turn influences their efficacy. Therefore, an interaction effect could be present, with the SES of the teacher moderating the association between the socioeconomic composition of the school and teachers' efficacy. So, teachers in low-SES schools may experience lower feelings of efficacy and high-SES teachers will feel even less efficacious because of the mismatch between the school's socioeconomic composition and the individual teachers' SES.

Other teacher factors have been shown to influence teacher efficacy too. Male teachers feel more efficacious than female teachers (Fackler and Malmberg 2016). Some studies have found that teachers' experience may influence their feelings of efficacy, with older and more experienced teachers feeling more efficacious (e.g., Giallo and Little 2003). A high workload seems to be related to a higher sense of efficacy (Klassen and Chiu 2010), while teachers' stress seems negatively associated with teachers' efficacy (Skaalvik and Skaalvik

2017). However, Skaalvik and Skaalvik (2017) state that, so far, no firm conclusions can be drawn as only a few longitudinal studies have explored this relationship. They therefore suggest to distinguish between workload (referring to teaching preparations and administration) and teacher stress. Somech and Drach-Zahavy (2000) and Skaalvik and Skaalvik (2010) found a (strong) positive association between job satisfaction and teacher efficacy: teachers feel more efficacious when they are more satisfied with their job.

Current study

The suggestion that the socioeconomic and gender composition of the school influence teacher efficacy (Auwarter and Aruguete 2008; Pas et al. 2012; Warren 2002) shapes our main research question: Does the socioeconomic and gender composition of the school affect teacher efficacy? We hypothesise that teachers in schools with mainly high-SES students feel more efficacious than teachers in schools with mainly low-SES students (Auwarter and Aruguete 2008; Pas et al. 2012). Furthermore, we expect that teachers feel less efficacious in schools with mainly boys, because of a less favourable relationships between teachers and boys (Diamond, Randolph, and Spillane 2004; Hoy et al. 2008). As gender composition may affect teacher efficacy, especially in low-SES schools, we ask whether gender composition moderates the effect of socioeconomic composition on teacher efficacy? We expect that teachers will feel less efficacious in schools with mostly low-SES boys (Englehart 2009; Fackler and Malmberg 2016). Additionally, we investigate the role of teachers' perceptions in the relationship of schools' socioeconomic and gender composition with teacher efficacy. Teachers might have lower teachability perceptions in low-SES schools and in schools with mostly boys, which might in turn be related to lower feelings of efficacy. Previous research has suggested a possible impact of a teacher's SES on the relation between socioeconomic

composition of the school and teacher efficacy. We suspect that the association between a low-SES composition and lower feelings of efficacy will be even stronger for high-SES teachers (Auwarter and Aruguete 2008; Englehart 2009).

Methods

Data

We used data from the 'Teaching in the Bed of Procrustes' project, gathered during the school years 2012–2013 and 2013–2014, based on surveys taken by students and teachers in the seventh and eighth grades of secondary schools.

A sample of 59 schools, representative of Flemish secondary schools, participated (response rate 47.6%). Schools in Flanders are swamped with research requests, which explains the lower response rate. Nevertheless, analyses showed no systematic biases. The schools are representative of the Flemish context (Van Houtte 2016). The project followed the students through the seventh and eighth grade. A total of 6,380 students filled out the questionnaire (response rate 96.6%). The study design guaranteed data from students from various backgrounds and from several regions, making these data representative of twelve- to thirteen-year-olds in Flanders (Van Houtte 2016). This study will mostly focus on the first wave, which is the most complete, and the focus will be confined to teachers. The first wave was gathered in the first half of the 2012-2013 school year. The second wave was gathered in the second half of the 2012–2013 school year. In the first wave, 1,247 teachers completed the survey (response rate 69.5%). The second wave of the data collection was used to operationalise the variable *teachability* because this instrument was missing in the first wave.

Variables

Teacher efficacy was measured using the Teachers' Self-Efficacy Scale (Tschannen-Moran and Hoy 2001, 2007), consisting of 12 items with three underlying dimensions: teacher efficacy for instructional strategies (TEIS) (1), classroom management (TECM) (2), and student engagement (TESE) (3). Examples of items are 'To what extent can you craft good questions for the students?' (1); 'How much can you do to calm a student who is disruptive or noisy?' (2); and 'How much can you do to motivate students who show low interest in schoolwork?' (3). A confirmatory factor analysis was conducted to validate the underlying dimensions. The three factors of teacher efficacy achieved an acceptable fit (*RMSEA* = .08; *SRMR* = .07; *CFI* = .92; *TLI* = .89) (Hu and Bentler 1999). A general scale of teacher self-efficacy (GTE) was constructed as well, which combines all dimensions into one scale (see Table 1). Given the novelty of the measurement of Zee and colleagues (2016), our data did not allow us to include this fourth domain of emotional support in the analyses.

Table 1. Descriptives dependent and independent variables

Teacher level	***N***	**Mean (*SD*)**
Teacher efficacy		
Instructional strategies	1178	24.207 (3.686)
Classroom management	1178	26.202 (3.151)
Student engagement	1204	17.862 (2.663)
General teacher efficacy	1222	71.410 (9.013)
Experience	1225	14.720 (9.874)
SES teacher	1219	4.950 (1.630)
Job satisfaction	1180	38.495 (5.783)
Workload	1050	15.849 (5.123)
Stress	1216	2.069 (1.653)
Teachability	1053	75.002 (13.928)
Gender	1244	
Male	355	
Female	889	
School level	***N***	**Mean (*SD*)**
Socioeconomic composition	59	5.031 (.871)
Gender composition	59	.458 (.186)
Migrant composition	59	.201 (.220)

Note: *N* = number of observations

The school's *socioeconomic composition* was measured by taking the mean SES of students for each school (Rumberger and Palardy 2005). The students' SES was measured using the occupation of the parents (Erikson, Goldthorpe, and Portocarero 1979). In case of unemployment, the most recent occupations were considered. The individual SES scores were aggregated by taking the mean (Table 1).

Migrant composition was measured by calculating the proportion of students with a migrant background at each school. As is common practice, 'native' is understood to be someone with a Western European birthplace (Timmerman, Hermans, and Hoornaert 2002). The principal criterion was the birthplace of the students' maternal grandmothers. In case of missing data, the mothers' and fathers' nationalities were considered. If these data were missing as well, other criteria were consulted, such as language spoken at home (other than Dutch), religion (i.e., Islam) and the students' name (cf. Felouzis 2003). A dichotomous variable (1 = migrant background) was aggregated, which creates the proportion of migrant students in a school. The same calculations were applied to measure the *gender composition* of each school, which creates a variable that shows the proportion of girls at each school (Table 1).

Information about teachers' *experience* ("How many years have you been teaching?"), *gender* (male/female), and *SES* was obtained (Table 1). Teachers' SES was measured using the highest SES of their parents, as teachers all share the same occupation (Erikson, Goldthorpe, and Portocarero 1979). In case of unemployment, the most recent occupations were considered to determine the SES.

Job satisfaction was measured by 9 items that determined general professional well-being (Aelterman et al. 2007). Examples of those items are 'I am happy with my job as a teacher', 'I like to teach', and 'There is no better job than being a teacher'.

Job stress was measured by 1 item that determined the stress level of the teacher: 'I experience physical discomfort because of stress at school' (Aelterman et al. 2007).

Workload was calculated by 6 items based on the scale used by Aelterman and colleagues (2007). An example of an item in the 'pressure of work' scale is 'I am assigned too many tasks at school'.

Teachability is measured using 31 items from Kornblau's (1982) 'Teachable Pupil Survey'. It reflects teachers' perceptions of the teachability of their students.

Analytical strategy

The data are a clustered sample, teachers nested within schools, which requires a multilevel analysis (Hox, Moerbeek, and van de Schoot 2018). The analyses were conducted using MLwiN (version 3.02). Each model was generated for every dimension of teacher efficacy and for general teacher efficacy. First, an unconditional model was estimated to determine school-level variance in teacher efficacy (Table 2a). In the next model (Model 1), socioeconomic composition was added. In Model 2, gender composition and migrant composition were included at the school level. The variables socioeconomic composition and migrant composition were integrated simultaneously to investigate the net effects of those two variables. In Model 3, at the teacher level, years of experience, SES, job satisfaction, workload, stress, and gender were added. Then, teachability was added (Table 2b, Model 4). The subsequent two models tested the possible interaction effects. First, the interaction between socioeconomic composition and gender composition was added (Model 5). Subsequently, the interaction between gender composition and the individual SES of the teacher was analysed (Model 6). All metric variables were grand mean centred. Residual analyses and assumption checks were carried out to inspect heteroscedasticity, linearity, normality and

multicollinearity (Hox, Moerbeek and van de Schoot 2018). No gross violations of those assumptions were found[1].

Results

The nullmodel (Table 2a) showed that a low, but significant, amount of variance was situated between schools for almost each dimension of teacher efficacy and for general teacher efficacy (GTE). Only for teacher efficacy in student engagement the variance between schools was not significant. Even though the amount of variance at the school level was rather low, given the significance for the other dimensions, a multilevel approach was preferred.

When adding socioeconomic composition (Table 2a, Model 1), the submodels of every dimension improved significantly. The effect was not significant for any dimension of teacher efficacy. Only the school-level variance of teacher efficacy in classroom management remained significant ($\sigma^2_{\mu 0}$ = .359; *SE* = .176).

When adding the other school-level variables (Table 2a, Model 2), the submodels did not improve significantly, yet the effect of socioeconomic composition became significant (*B* = .408) for teacher efficacy in classroom management. Schools with mainly high-SES students produce higher efficacy feelings in classroom management. Gender composition significantly affected this dimension of teacher efficacy as well (*B* = -1.541). Teachers feel less efficacious in classroom management in schools with mostly girls. No significant effects were found for the other dimensions of teacher efficacy nor for general teacher efficacy.

Model 3 (Table 2a) includes the teacher-level variables. Concerning teacher efficacy in classroom management, the effect of gender composition persisted (*B* = -1.572) when

[1] Residual analyses and assumption checks can be acquired by request.

accounting for individual characteristics of the teacher, whereas the effect of socioeconomic composition dropped out of significance. No other significant effects were found for the other dimensions of teacher efficacy nor for general teacher efficacy.

In the next model (Model 4, Table 2b), we added teachability to the submodels of teacher efficacy. Teachers feel more efficacious in classroom management when they perceive their students as teachable (*B* = .027). The gender effect on teacher efficacy in classroom management persisted when adding teachability. Moreover, the effect of gender composition on general teacher efficacy became significant (*B* = -4.252). Thus, teachers feel more efficacious (in classroom management and experience more general efficacy) when teaching students they perceive to be more teachable, but they score higher on general teacher efficacy and efficacy in classroom management when teaching boys, even though boys are perceived as less teachable. Teachability suppressed a positive effect of teaching mainly boys.

In the last two models (Models 5 and 6, Table 2b), we tested the two interaction effects. In Model 5, we tested for the moderation of gender composition on the relation between socioeconomic composition and teacher efficacy, but this was not significant. In Model 6, the effect of teachers' SES on the relation between socioeconomic composition and teacher efficacy was tested, but no significant moderation was found.

Finally, some teacher characteristics showed significant associations with teacher efficacy. Feelings of efficacy for every dimension are stronger for teachers who experience greater job satisfaction (TEIS: *B* = .120; TECM: *B* = .125; TESE: *B* = .109). Teachers feel more efficacious in classroom management and student engagement when they are more experienced (TECM: *B* = .065; TESE: *B* = .050).

Table 2a. Multilevel analysis for teacher efficacy

	Nullmodel				Model 1				Model 2				Model 3			
Variables	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)
Intercept	24.221***	25.954***	17.874***	72.015***	24.162***	25.945***	17.805***	71.798***	24.163***	25.944***	17.805***	71.795***	23.931***	26.165***	17.762***	71.568***
	(.139)	(.125)	(.088)	(.336)	(.145)	(.136)	(.047)	(.343)	(.143)	(.127)	(.092)	(.339)	(.238)	(.205)	(.159)	(.542)
School level																
Socioec.					.002	.233	.047	.178	.061	.408*	.062	.492	-.010	.343	-.099	.082
comp.					(.169)	(.157)	(.107)	(.399)	(.221)	(.197)	(.143)	(.526)	(.212)	(.190)	(.137)	(.484)
Gender									.709	-1.541*	-.085	-.915	.312	-1.593*	-.256	-1.740
comp.									(.778)	(.693)	(.507)	(1.839)	(.757)	(.675)	(.493)	(1.719)
Migrant									.744	.399	.057	1.655	.567	.523	-.260	.643
comp.									(.850)	(.755)	(.551)	(2.012)	(.813)	(.728)	(.529)	(1.848)
Teacher level																
Experience													.013	.059***	.051***	.144***
													(.012)	(.010)	(.008)	(.028)
SES teacher													.125	.050	.066	.271
													(.074)	(.062)	(.050)	(.166)
Job													.109***	.121***	.108***	.400***
satisfaction													(.018)	(.015)	(.012)	(.041)
Workload													.009	.033	.004	.030
													(.023)	(.020)	(.016)	(.053)
Stress													.206*	.043	.072	.446*
													(.088)	(.074)	(.059)	(.198)
Sex (female)													.317	-.205	.081	.385
													(.271)	(.228)	(.185)	(.615)
Teachability																
Variance	.414*	.335*	.096	2.532*	.335	.359*	.073	1.871	.307	.257	.073	1.763	.199	.225	.056	1.108
school level	(.200)	(.162)	(.079)	(1.176)	(.199)	(.176)	(.078)	(1.113)	(.193)	(.153)	(.078)	(1.089)	(.172)	(.140)	(.071)	(.898)
Variance	13.199***	10.947***	6.988***	72.453***	13.616***	10.712***	6.989***	73.774***	13.609***	10.726***	6.989***	73.784***	13.284***	9.483***	6.200***	65.605***
teacher level	(.555)	(.453)	(.291)	(3.097)	(.611)	(.475)	(.311)	(3.361)	(.610)	(.475)	(.311)	(3.361)	(.614)	(.435)	(.285)	(3.082)
ICC	.030	.030	.014	.034	.024	.032	.010	.025	.022	.023	.010	.023	.015	.023	.009	.017
-2LL	6453.513	6404.348	5771.830	8204.157	5676.127	5563.228	5040.643	7215.940	5674.196	5558.641	5040.610	7215.147	5317.576	5085.654	4605.166	6676.928

Note: [a]TEIS = Teacher efficacy in instructional strategies. [b]TECM = Teacher efficacy in classroom management. [c]TESE = Teacher efficacy in student engagement. [d]GTE = General teacher efficacy.
*Significance test: *** p ≤ .001, ** p ≤ .01, * p ≤ .05.*

Table 2b. Multilevel analysis for teacher efficacy

	Model 4				Model 5				Model 6			
Variables	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)	**TEIS[a]** b (SE)	**TECM[b]** b (SE)	**TESE[c]** b (SE)	**GTE[d]** b (SE)
Intercept	23.829***	26.063***	17.743***	71.208***	23.932***	26.041***	17.692***	71.248***	23.805***	26.044***	17.689***	71.126***
	(.283)	(.243)	(.189)	(.648)	(.303)	(.261)	(.203)	(.698)	(.282)	(.242)	(.188)	(.646)
School level												
Socioec. comp.	-.215	.259	-.141	-.414	-.094	.232	-.200	-.368	-.232	.248	-.151	-.416
	(.247)	(.223)	(.162)	(.566)	(.276)	(.252)	(.182)	(.638)	(.244)	(.222)	(.159)	(.560)
Gender comp.	-.513	-2.309**	-.765	-4.252*	-1.214	-2.153*	-.439	-4.522	-.447	-2.268**	-.749	-4.104*
	(.834)	(.757)	(.548)	(1.906)	(1.114)	(1.025)	(.731)	(2.581)	(.826)	(.752)	(.530)	(1.876)
Migrant comp.	.367	.740	.059	.745	.435	.722	.020	.768	.366	.727	-.004	.813
	(.889)	(.810)	(.582)	(2.032)	(.881)	(.811)	(.579)	(2.037)	(.878)	(.804)	(.561)	(1.998)
Teacher level												
Experience	.014	.065***	.050***	.151***	.013	.065***	.051***	.151***	.014	.065***	.050***	.150***
	(.014)	(.012)	(.010)	(.032)	(.014)	(.012)	(.010)	(.032)	(.014)	(.012)	(.009)	(.032)
SES teacher	.110	.045	.095	.258	.105	.046	.098	.256	.104	.043	.089	.228
	(.084)	(.070)	(.057)	(.191)	(.084)	(.071)	(.057)	(.191)	(.089)	(.070)	(.063)	(.215)
Job satisfaction	.120***	.125***	.109***	.411***	.120***	.125***	.109***	.411***	.121***	.125***	.111***	.413***
	(.022)	(.018)	(.014)	(.049)	(.021)	(.018)	(.014)	(.049)	(.022)	(.018)	(.014)	(.049)
Workload	.033	.046	.013	.102	.035	.045	.012	.103	.032	.045	.012	.097
	(.028)	(.023)	(.019)	(.064)	(.028)	(.023)	(.019)	(.064)	(.028)	(.023)	(.019)	(.064)
Stress	.180	.080	.051	.365	.174	.081	.053	.363	.173	.077	.043	.344
	(.103)	(.086)	(.070)	(.234)	(.103)	(.086)	(.070)	(.234)	(.103)	(.086)	(.069)	(.233)
Sex (female)	.529	-.106	.111	.873	.515	-.104	.119	.868	.558	-.090	.153	.964
	(.328)	(.273)	(.222)	(.747)	(.328)	(.273)	(.223)	(.748)	(.328)	(.273)	(.221)	(.745)
Teachability	.033**	.027**	.025**	.106***	.033**	.027**	.025**	.106***	.033**	.027**	.024**	.105***
	(.012)	(.010)	(.008)	(.028)	(.012)	(.010)	(.008)	(.028)	(.012)	(.010)	(.008)	(.028)
Socioec. comp.*					-1.506	.336	.720	-.587				
Gender comp.					(1.634)	(1.493)	(1.077)	(3.787)				
Socioec. comp.*									.111	.091	.129	.310
SES teacher									(.106)	(.085)	(.075)	(.255)
Variance school level	.122	.221	.026	.766	.101	.216	.020	.762	.096	.208	.021	.664
	(.196)	(.169)	(.082)	(1.041)	(.191)	(.168)	(.080)	(1.040)	(.190)	(.166)	(.081)	(1.021)
Slope variance									.002	.000	.043	.278
									(.076)	(.000)	(.037)	(.436)
Covariance									.028	.000	.031	.373
									(.065)	(.000)	(.034)	(.393)
Variance teacher level	13.443***	9.394***	6.255***	67.132***	13.445***	9.396***	6.257***	67.133***	13.368***	9.388***	6.155***	66.085***
	(.729)	(.505)	(.337)	(3.689)	(.729)	(.506)	(.337)	(3.689)	(.742)	(.505)	(.339)	(3.721)
ICC	.009	.023	.004	.011	.007	.022	.003	.011				
-2LL	3909.280	3726.096	3398.937	4945.466	3908.441	3726.046	3398.495	4945.442	3908.000	3724.961	3393.791	4942.534

Note: [a]TEIS = Teacher efficacy in instructional strategies. [b]TECM = Teacher efficacy in classroom management. [c]TESE = Teacher efficacy in student engagement. [d]GTE = General teacher efficacy.
*Significance test: *** p ≤. 001, ** p ≤ .01, * p ≤ .05.*

Discussion

This study aimed to examine contextual predictors of teacher efficacy, and demonstrates that teacher efficacy is mainly unaffected by the school context, as the variance between schools was small. We hypothesised that teachers would feel more efficacious in schools with mainly high-SES students. The analysis indeed shows that teachers feel more efficacious in classroom management in schools with mostly high-SES students, but this effect disappears when controlling for individual teacher characteristics. This was unexpected, as the socioeconomic (and migrant) composition has been an important predictor of student outcomes (e.g., Demanet and Van Houtte 2011; Sellström and Bremberg 2006) and of other teacher outcomes, such as teacher-student relationships (Goddard, Tschannen-Moran, and Hoy 2001; Rumberger and Palardy 2005). As far as we know, teacher efficacy research has seldom included school-level variables. Fackler and Malmberg (2016) conducted one of the few studies that included the school environment in the analysis of teacher efficacy, but they did not include socioeconomic composition or other compositional characteristics. They concluded that teachers feel more efficacious in private (high-SES) schools than in public (low-SES) schools.

Gender composition of the school affects both teacher efficacy in classroom management and teachers' general efficacy. Teacher efficacy in classroom management (and general efficacy) is lower in schools with mainly girls. This contradicts the hypothesis that teachers feel less efficacious in schools with mostly boys like the majority of studies suggest, namely that teachers develop prejudiced expectations towards boys and therefore hold lower expectations in schools with mainly boys,

unfavourable perceptions that are associated with lower feelings of efficacy (Diamond, Randolph, and Spillane 2004). It is pivotal to investigate these associations as it has been demonstrated that lower feelings of efficacy are not only a powerful predictor of teachers' decision making and effectiveness (Summers, Davis and Hoy 2017), but it also negatively influences students' outcomes and other educational processes (Knoblauch and Hoy 2008).

We found higher levels of efficacy with higher proportions of boys, which might be explained by Bandura's social learning theory (1977, 1997), that states that 'mastery of difficult tasks heightens feelings of efficacy'. Previous studies suggested that teachers feel less efficacious when teaching (low-SES) boys, but, if teachers can handle these more demanding situations, it may boost their efficacy. Knoblauch and Hoy (2008) turned to Bandura's self-efficacy theory (Bandura 1997) to explain the higher feelings of efficacy of teachers located in urban settings: teachers feel more efficacious in more demanding urban schools. When we apply this theory to the effect of gender composition, we could say that this more demanding context is present in schools with mostly boys, thus boosting feelings of efficacy in schools with a higher proportion of boys (explaining the negative effect of proportion of girls).

Following Bandura, we would also expect a negative effect of teachability on teachers' efficacy, because students perceived as less teachable represent a more demanding environment, which may boost teacher efficacy. Instead, our results indicate that teachers feel more efficacious when they perceive their students as more teachable. Previously scholars have linked teaching girls with more favourable teachability perceptions and higher feelings of efficacy. However, when we look at general teacher efficacy (GTE), teachers display higher efficaciousness when teaching

boys, who are mostly perceived as less teachable. Yet, perceiving the students as teachable might not be the best measurement for a demanding situation, as the results show a positive association between teachability and teacher efficacy. Perceiving the students as teachable, which we could interpret as a less demanding situation, results in higher feelings of efficacy, regardless of the students' gender composition. An explanation of the gender effect might be more complicated.

Our results indicate that gender composition not only affects the students (e.g., Demanet et al. 2013) but the teachers as well, especially regarding classroom management. This finding is another reason for research and secondary schools to focus more on gender composition and gender issues. The results can be used in teacher education programs as it is known that previous research mainly focused on negative outcomes when teaching low-SES boys. Research seldom considers positive outcomes when teaching mostly boys. Novice teachers should be aware of the possible impact of school composition on their development as schools with mostly low-SES boys induce negative outcomes for students and teachers. This study adds that a concentration of boys in schools might induce positive outcomes for teachers' efficacy in classroom management and general efficacy. Future research should investigate the effect of gender composition to reveal why teachers feel more efficacious when teaching mostly boys, since teacher efficacy is such an important predictor of teachers' behaviour in classrooms and students' educational processes and outcomes. If teachers' feelings of efficacy differ according to students' gender, gender-based student outcomes might be perpetuated. We also expected gender composition to moderate the relation between socioeconomic composition and teacher efficacy (Auwarter and Aruguete 2008; Warren 2002), but found no significant interaction.

Teachers' SES and gender did not affect any dimension of teacher efficacy, although research had found that male teachers felt more efficacious (Fackler and Malmberg 2016). The claim that the cultural distance between middle-class teachers and low-SES students results in lower feelings of efficacy can be rejected too, as we observed no such interaction. Years of experience positively affects teacher efficacy in classroom management and student engagement (Giallo and Little 2003). As expected, job satisfaction is related to all three dimensions of teacher efficacy (Skaalvik and Skaalvik 2011; Somech and Drach-Zahavy 2000).

Limitations

We used a cross-sectional study design, while longitudinal research could contribute to better understanding causality for variables such as job satisfaction, workload, stress, and teachability. Teachability, for instance, was operationalised as teachers' perception of how teachable students are. It is possible, however, that this perception may change over time and differs from how teachable students are in reality. Using a different indicator for 'a more demanding situation', such as students' motivation or misconduct, could provide an alternative approach for measuring how demanding students are. Another limitation could be the self-reporting by teachers of their sense of efficacy since self-reporting could cause (minor) biases. Nevertheless, self-reporting is the most used and most reliable method available (Tschannen-Moran and Hoy 2001), although there are potential differences between 'feelings of efficacy' and actual efficacy. A qualitative in-depth case study could be useful to explain the unexpected effect of gender composition. Moreover, future research could replicate our model with more recent data, as our data collection dates back to 2013 already.

Conclusion

The most notable finding of this study is the small impact of the school context on teacher efficacy. Few studies have investigated the influence of the school context, and in particular the student composition of the school, although many studies have asserted that the greater part of variance in teacher efficacy could be found between schools. A small proportion of the variance is situated between schools. Gender composition is the only school-level variable with a significant impact on teacher efficacy. This finding could be a steppingstone for future research as the negative effect of a higher proportion of girls was rather unexpected. Future research could investigate the extent to which this finding is supported as this can be an added value for schools.

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