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Teacher and school determinants of perceived classroom discipline: a multilevel analysis of TALIS 2013

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Abstract

Classroom discipline is a significant concern in most educational systems and a critical element of an effective learning environment. In this article, we present a multilevel analysis of teachers' perceived classroom discipline (PCD) in Portugal, using data from the TALIS 2013. Portuguese teachers perceived slightly more classroom discipline problems than the mean of OECD countries, with classroom variables explaining PCD much better than school-related variables. The percentage of low achievers in the classroom, teacher's self-efficacy, and teacher's need for training in classroom management were the best predictors of PCD. Still, student-related factors (e.g., low achievement) were better predictors of PCD than teacher-related factors (e.g., teacher experience or teacher gender).

Keywords Classroom discipline · Learning environment · Low achievement · School climate · Self-efficacy · Multilevel analysis

Introduction

Classroom discipline (or classroom order) is imperative for teaching and learning (Lopes et al. 2017; Simón and Alonso-Tapia 2016). While student learning is the ultimate goal of schools, classroom discipline contributes to a learning environment where learning is likely to occur. It is, therefore, a crucial issue for teachers, students, administrators, parents and, ultimately, the community as a whole (Busquets et al. 2015; Gaskins et al. 2012).

While there might be many factors that interfere with teaching and learning, students' misbehavior far exceeds any other negative classroom incident, partly because the teacher cannot ignore classroom misbehavior (Tsouloupas et al. 2014). Teachers know that not interfering with students' misbehavior might encourage further misbehavior and might trigger a misbehavior domino effect in other students (Ding et al. 2010; Scherzinger and Wettstein 2019). Teachers also know that they have to spend considerable time and energy with classroom order to achieve students' commitment and a positive learning environment (Gaskins et al. 2012; OECD 2013).

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Classroom order involves several specific issues: (1) the synomorphy, that refers to the compatibility between a specific program of action and the physical features of the setting; (2) the establishment of rules and procedures which allow students to know what behaviors are expected from them in the classroom; (3) the establishment of routines that allow students to perform several self-regulated behaviors and prevent teachers from repeating classroom rules again and again; (4) the orchestration of classroom activities through monitoring processes, keeping adequate pace, organizing group lessons and seatwork, managing classroom transitions, etc. (Lopes et al. 2017; Doyle 1986; Simonsen et al. 2008). Consistent classroom order and management prevent classroom disruption, providing an effective learning environment (Lee and Kim 2019; Uibu and Kikas 2014).

The failure to establish order and routines in the classroom increases the likelihood of classroom disruption, which is one of the leading causes of teachers' turnover and resignations (Tsouloupas et al. 2010), mainly in situations where teachers perceive high classroom indiscipline and low support from administrators (Kersaint et al. 2007). This is by no means a new problem. For example, Haberman and Rickards (1990) found that discipline was the second most-important concern for a sample of teachers, before teaching, but was their first concern by the time when they resigned from teaching. Ingersoll (2001) found that discipline is the leading cause of teacher dissatisfaction and career movement for 18% of teacher movers and 30% of teacher leavers.

Classroom discipline is a rather complex issue because of, amongst other things, the multidetermined nature of students' and teachers' behavior in the classroom (Kato and Ota 2016; Scherzinger and Wettstein 2019). The variables that determine, control and shape classroom behaviors stem from the classroom learning environment itself, but also the school climate, the school neighborhood, and broad societal institutions, such as governments (through the organization of the educational system or accountability politics, for instance) (Davidov and Khoury-Kassabri 2013). Culture, for example, has long been recognized as a relevant macrostructural determinant of classroom behaviors (Biggs 1998; Lewis et al. 2008), although mediated by the school culture, the school climate or the school ethos (Glover and Coleman 2005; Rudasill et al. 2018; Seashore Louis and Lee 2016). Although sometimes used interchangeably with school culture and school climate, school ethos can be considered as the perceived (not factual) school culture (Glover and Coleman 2005).

In Portugal, as in many other countries, classroom discipline is a relevant issue for teachers and schools. The TALIS report (OECD 2014a, b) shows that, in 2013, Portugal was among the countries with more discipline problems. Forty percent of lower-secondary education Portuguese teachers stated that they had to wait quite a long time for students to quieten down (43% in Spain, 38% in France, 22% in Italy, 29% in all TALIS countries). Teachers lost much time (40%) because of students' interruptions (39% in Spain, 30% in France, 13% in Italy, 26% in all TALIS countries) and 31% complained about too much noise in the classroom (39% in Spain, 30% in France, 13% in Italy, 26% in all TALIS countries). Portuguese teachers also wasted more time (16%) than the average of TALIS countries (13%) with general classroom discipline (15% in Spain, 16% in France, and 13% in Italy). Other studies (e.g., Lopes et al. 2017) found that Portuguese teachers do not seem to have significant problems with students' aggressiveness. Still, teachers seem to have substantial problems with high-frequency, low-impact behaviors (e.g., inattention, saying jokes, talking out of turn).

Although classroom discipline seems to be a significant problem, teachers' preservice or inservice training about classroom discipline or classroom management does not seem to reflect teachers' concerns. Lopes et al. (2017), for instance, found that 60% of their 2905 teacher participants received no training in classroom discipline strategies or classroom

management. However, 90% of the participants asserted that disciplinary problems worsen in the previous five years. Still, 74% of the participants stated to have a high or a very high level of preparation to keep order and discipline in the classroom. The fact that 90% of the participants hold parents responsible for classroom indiscipline might explain such conflicting statements.

The debate about classroom indiscipline in Portugal, as in other countries, is passionate and often politicized. On the one hand, there seems to be broad agreement that time spent with indiscipline decreases students' opportunity to learn and increases the likelihood of teacher exhaustion (Elliott 2014). Still, there is wide disagreement about the factors involved in classroom indiscipline and the best way to deal with the problem (at least partly because empirical research is scarce) (Lopes et al. 2017).

Currently, there seems to be a trend to consider that classroom indiscipline reflects parents' and teachers' loss of authority towards children (Del Moral et al. 2019; Ibabe 2015). This trend could justify that, in Portugal, government laws (e.g., Law 51/2012), not school or classroom regulations, are perceived as important tools, if not the most important tools, to control indiscipline. However, as mentioned, Lopes et al. (2017) found that, even with the hardening of the law, about 90% of their participant teachers ($n = 2803$) considered that classroom indiscipline worsened in the previous five years, while none mentioned that it improved. In other countries (e.g. USA), zero-tolerance policies towards indiscipline were adopted, but these policies were controversial. Moreover, some studies revealed that schools rarely adopted zero-tolerance policies fully (Curran 2019; Lacoe and Steinberg 2018).

Numerous strategies directed to classroom indiscipline seem to assume that outside school influences are challenging teachers' authority. Some authors (e.g., Arum 2003) have long suggested that teachers refuse to exert their moral authority because courts have decided against them in many instances or because of social disapproval. This context might explain why government laws seem to be a practical approach to classroom indiscipline. In Portugal, while several government laws passed, claiming the strengthening of the authority of teachers, there is almost no teacher training in classroom organization and management, with teachers themselves not seeming to value such training (Lopes et al. 2017).

In summary, classroom indiscipline harms the learning environment, reducing students' opportunity to learn. The magnitude of the problem poses both a theoretical and a practical problem. From a theoretical point of view, it is essential to understand how empirical research holds in the context of the ideological debate over indiscipline and authority. Is indiscipline mainly related to out-of-classroom factors (e.g., poor school climate, parents' inadequate supervision) or to classroom factors (e.g., teacher's management skills, students' academic achievement)? From a practical point of view, it is critical to define the best approach to classroom indiscipline. Laws and regulations, classroom strategies, or both?

Although researchers and practitioners keep looking for the best answers to the above issues, data from TALIS and other studies suggest that we might be far from that goal and that a better conceptualization of classroom discipline is needed.

Classroom factors associated with perceived classroom discipline

Classroom student-related variables

Academic achievement might be one of the most important predictors of students' classroom behavior and, indirectly, one of the factors that significantly influence teachers' perceived classroom discipline (Ruiz et al. 2018). The relation between low achievement and

classroom misbehavior seems to be bi-directional and mutually reinforcing, making students' alienation from academic-oriented tasks more likely (Busquets et al. 2015). This alienation seems to represent a process that starts in early grades and tends to worsen over time (Stanovich 1986), both in cognitive and emotional areas.

Several studies show that classroom misbehavior and low achievement negatively affect school engagement which, in turn, adversely affects classroom behavior and academic achievement. Archambault et al. (2017), for instance, found that students with high levels of oppositional behaviors show less behavior engagement in the classroom. Collins et al. (2016) suggest that students who perceive academic work to be too hard could engage in "escape-motivated disruptive classroom behavior" (p. 215). Other studies revealed that school dropout is associated with both misbehavior and low achievement (e.g., Alvarez-Roldan et al. 2018). Wang and Fredricks (2014) suggest that school engagement can be a critical mechanism for academic achievement but also that school disengagement can arise in the sequence of successive negative feedbacks related to academic performance. "Indeed, research indicates that academic performance is strongly associated with school engagement and problem behaviors" (p. 725). More emphatically, Landrum et al. (2011) state that, in relation to classroom misbehavior, "…instruction is key to success in this area. This means that instruction must be designed and delivered in a way that addresses student needs and skill levels appropriately…" (p. 34). The authors assert that dealing with challenging behavior depends on awareness of the factors involved in its prediction, prevention, and instruction, with instruction beeing the most important.

Despite evidence about the relation of academic underachievement and classroom misbehavior, most strategies directed to classroom indiscipline focus on behavior control, rarely taking learning and instruction into account (e.g., Kayikçi 2011; Riley et al. 2012). Those strategies, therefore, might have limited and temporary success.

Classroom teacher-related variables

Some teacher-related variables, such as professional experience, gender, or classroom management skills, have been associated with classroom discipline. Sadik and Akbulut (2015) found that teachers deal better with classroom discipline if they are over 41 years old, have more than 10 years of professional experience, received pedagogical training during the Bachelor program, and participated in teacher training programs on classroom management. Consequently, these teachers tend to perceive less classroom disruption. Researchers (e. g., Marzano et al. 2003; Scheerens and Blömeke 2016) also emphasize that preservice or inservice training in classroom management is essential for teachers and that teachers and school administrators claim there is a need for training in classroom management (O'Neill 2016). However, teacher education programs rarely provide training in classroom management skills (Bilač and Miljković 2018).

Research also shows that, generically, more experienced teachers perceive less classroom disruption. Novice teachers tend to report poorer classroom climates, perhaps because they are more focused on classroom discipline and behavior control than in academic content (Berger et al. 2018). Experienced teachers, on average, seem more confident in their abilities and are significantly better in predicting classroom management events (Wolff et al. 2014).

The literature about classroom discipline and teacher gender is scarce. Still, McDowell and Klattenberg (2019) suggest that, in primary grades, claims that more men are needed in a typically female-dominated profession stem from the idea that more tough discipline

is desirable, mainly for male students. However, McDowell and Klattenberg (2019) found no evidence for such a statement. Read (2008) also states that both male and female teachers often use a disciplinarian discourse to control classroom discipline. Salvano-Pardieu et al. (2009) found that male participant teachers judge pupils' behavior somewhat more severely, but not statistically significantly.

Organizational factors associated with perceived classroom discipline

The literature usually refers to the school climate as a significant organizational contributor of students' educational outcomes, including classroom behavior (Fatou and Kubiszewski 2018; Lin et al. 2019). School climate is a multifactorial concept that encompasses several features of school life, such as structural aspects of school buildings, the school leadership, or students-teachers relations (Aldridge et al. 2018; Sulak 2018). Chirkina and Khavenson 2018 found that scholars usually consider the following subcomponents of school climate: relations between agents at the school; physical environment (characteristics of the school and its classrooms); individual factors (feelings of belonging to the school and discipline); organizational culture (expectations, rules, and norms). Ruiz et al. (2018) stress the importance of the school's neighborhood and the school climate for positive student outcomes. The authors further consider that safety in the school and the neighborhoods are crucial for students' positive behaviors in classrooms and schools.

The type of school (public/private) is another factor that could account for the school climate, students/teachers relations, or perceived classroom discipline. However, it is not possible to directly compare the classroom perceived discipline in public/private schools because the students are distinct, and the conditions of admission, attendance, and even expulsion are different (Powers and Potterson 2017). Shakeel and DeAngelis (2018) compared traditional public schools, charter schools and private schools (religious and not religious) and found that private schools report less disruption and safety threats (e.g., violence or crimes) than public schools. Still, an important number of public schools reported no serious disciplinary incidents (Osher et al. 2010).

The present study

Using data from TALIS (OECD 2014a), we tested the hypothesis that classroom-related factors influence teachers perceived discipline more than out-of-classroom factors and that a small number of students-related factors explain a significant part of teachers perceived discipline. The test of these hypotheses is relevant both theoretically (what are the most critical factors for classroom indiscipline?) and practically (can government laws or school strategies better address classroom misbehavior than teacher led-strategies?) for classroom indiscipline.

The TALIS has at least two important advantages over regular studies about classroom discipline: (a) it is a large-scale study with a complex and national representative sample of teachers, allowing statistical procedures that are data demanding; (b) very few studies, if any, approach teacher perceived discipline in a multilevel perspective. This gap in the literature could be filled with data from TALIS because it was designed to allow multilevel data analysis. Surprisingly, a search on the SCOPUS database did not identify any study about classroom discipline with TALIS data.

The following hypotheses, formulated in the framework of multilevel analysis, guide our study:

1. There is significant between-schools variation in teacher-perceived discipline.
2. Both school-related and classroom-related variables are involved in teacher perceived discipline, but classroom-related factors influence teacher perceived discipline more than school-related factors.
3. At the classroom level, factors related to students' perceived behaviors (e.g., academic achievement, behavior problems) are better predictors of teacher-perceived discipline than teacher-related demographic factors (e.g., gender, experience).

Having these hypotheses in mind, as well as the relevant literature about teacher perceived discipline, we tested the involvement of different variables in teacher perceived discipline through multilevel analysis. At level 1 (classroom level), teachers' experience, gender, and self-efficacy, the perceived need for training in classroom management, the percentage of low achievers in the classroom, and the percentage of students with behavior problems were considered as predictors of perceived classroom discipline. At level 2 (school level), the school climate, percentage of students from disadvantaged homes, type of school (public/private), and teacher–student relations were hypothesized as predictors of perceived discipline.

Method

Participants

Portuguese participants were recruited through a stratified two-stage probability sampling design (OECD 2014a, b). In the first stage, schools from all over the country were randomly selected. In the second stage, 20 teachers from each school were randomly selected and invited to participate in the survey. After accounting for missing data, the Portuguese sample included 175 schools (159 public, 16 private) and 3228 teachers (2377 female, 851 male). The average number of respondent teachers per school was 18.45 (6.75 in private schools and 19.62 in public schools). The average experience of teachers was 19.54 years (SD = 7.24; Min ≤ 1; Max = 40). Public school teachers had more experience (M = 19.85; SD = 7.19; Min = 1; Max = 40) than private school teachers (M = 16.09; SD = 7.19; Min ≤ 1; Max = 40). Ninety-eight percent of the teachers held at least a licensure degree. Also, 77% had a permanent job in the school system.

Variables and measures

Two questionnaires were used to collect data for this study: one for school principals (to collect school data) and another for teachers. The schools for this study are at the ISCED-2 level (International Standard Classification of Education). In Portugal, ISCED-2 corresponds to grade 7–9 classes.

Two types of variables were extracted from the TALIS 2013 database: single variables from responses to specific questions; and latent continuous variables from confirmatory factor analysis (CFA) of a set of responses. In this latter case, the latent variable was the combination of several observed (by the teacher or principal) variables. Classroom perceived discipline, for example, involved the combination of four observed variables (quiet classroom, pleasant atmosphere, disruptive noise, and interrupted lesson). After computation, the OECD team re-scaled factor scores to a metric of convenience,

with a standard deviation of 2.0, and the value of 10 corresponding to the mid-point of the scale in which the items were measured initially (i.e., 2.5 points). Therefore, a score of 10 indicates average agreement with the items in the scale. A score above 10 indicates average agreement, and a score below 10 indicates average disagreement. The TALIS 2013 Technical Report (OECD 2014b) provides detailed information about the construction of the scales and the indices developed through CFA.

Teacher-perceived classroom discipline (PCD) was the outcome of this study. It refers to the teacher's perceived problems to control, classroom order and/or classroom disruption. The variable was designed through CFA (Cronbach's $\alpha = 0.88$; CR = 0.92; AVE = 0.74), taking into account responses to four items (e.g., "There is much disruptive noise in this classroom"), whose responses range from never (1) to once a week or more (6). As referred to in the TALIS Technical Guide (OECD 2014a, b), three items "… were reverse coded due to their negative statement about classroom disciplinary climate and to ensure they had the same direction as the rest of the items" (p. 229). Therefore, for this scale, the higher the score, the better the discipline.

Besides the teacher's experience and gender, the following classroom-related variables were considered as predictors of teacher's perceived classroom discipline at the teacher level. Teachers were directly asked about the *percentage of low achievers* in their classrooms, according to five possibilities: 1 = none; 2 = 1–10%; 3 = 11–30%; 4 = 31–60%; 5 = more than 60%. For this study, the five possibilities were reduced to three possibilities with a quite similar number of participants: 1 = None to 10% (small number of low achievers, $n = 971$); 2 = 30–60% (fair number of low achievers, $n = 1216$); 3 = more than 60% (high number of low achievers, $n = 1041$). We created no dummy variables because there is a steady, almost linear, decrease in perceived classroom discipline from group 1 (small number of low achievers) to group 3 (high number of low achievers) ($M1 = 11.33$, $SE = 1.77$; $M2 = 10.60$, $SE = 1.88$; $M3 = 9.59$, $SE = 2.02$).

Teacher self-efficacy (TSE) refers to the perceived ability of teachers to achieve their classroom instructional and behavioural goals (Cronbach's $\alpha = 0.077$; CR = 0.90; AVE = 0.57). TSE is the average of three distinct aspects: efficacy in classroom management (e.g., "Calm a student who is disruptive or noisy") (Cronbach's $\alpha = 0.81$; CR = 0.64; AVE = 0.87), efficacy in instruction (e.g., "Use a variety of assessment strategies") (Cronbach's $\alpha = 0.75$; CR = 0.84; AVE = 0.57, and efficacy in student engagement (e.g., "Motivate students who show low interest in school work") (Cronbach's $\alpha = 0.76$; CR = 0.85; AVE = 0.59). Responses are given on a scale ranging from strongly disagree (1) to strongly agree (4).

Need for professional development in classroom discipline control/classroom management represents teachers' answers to a single item in TALIS 2013. Teachers were asked whether they needed professional development in the area of student behavior and classroom management, using the following scale: no need at present; low level of need; moderate level of need; and high level of need. For this study, the scale was reduced to only two levels with a similar number of participants: no need/low level of need ($n = 1449$) and moderate/high level of need ($n = 1779$).

Four school-related predictors were used. *School climate* refers both to the perceived level of aggression and intimidation in the school and to the respect among staff members and between staff members and students (Cronbach's $\alpha = 0.79$; CR = 0.83; AVE = 0.39). Two scales were formed separately to represent school climate: school delinquency and violence (e.g., "Vandalism and theft") (Cronbach's $\alpha = 0.84$; CR = 0.79; AVE = 0.53) and mutual respect (e.g., "The relationships between teachers and students

are good") (Cronbach's $\alpha = 0.74$; CR $= 0.81$; AVE $= 0.53$). Each scale has four items collected from the schools' principals.

Two *types of schools* were considered: private schools ($n = 159$) and public schools ($n = 16$).

Teachers reported the *percentage of students from socioeconomically-disadvantaged homes* in their schools according to the following 5-point scale: 1 = none; 2 = 1% to 10%; 3 = 11% to 30%; 4 = 31% to 60%; and 5 = more than 60%. Taking into account the distribution of the results by the five levels, this variable was dichotomized. Levels 1 to 3 were collapsed into one single level (few students from disadvantaged homes, $n = 1626$) and levels 4 and 5 were collapsed into another single level (many students from disadvantaged homes, $n = 1602$).

Teacher–student relations measured the relations between teachers and students in a specific school using four items (e.g., "In this school, teachers and students usually get on well with each other") (Cronbach's $\alpha = 0.78$; CR $= 0.85$; AVE $= 0.60$).

Model building

Model building followed several steps. First, a null or unconditional model (one-way ANOVA random effects model with no level 1 or level 2 predictors) was created to ascertain if there was between-school variation in teacher perceived classroom discipline. This first step addressed the question "Is there a (level 2) school effect on the (level 1) intercept of classroom discipline, which represents the mean score?", and it involved calculation of the intraclass correlation coefficient (ICC), the deviance statistic (-2LL) and the design effect. In a second step, a random coefficient model was added to test for significant relationships between level 2 predictors and classroom discipline and how the characteristics of the schools explain differences in classroom discipline. Finally, a third model, combining level 1 and level 2 variables, tested the relevance of variables at the two levels in the prediction of perceived classroom discipline. The model incorporates level 1 and level 2 predictors. The level 1 intercept and the level 1 slopes are predicted as random effects. Level 1 and level 2 predictors were grand-mean centered in the partially and fully conditional models. HLM 7 Hierarchical Linear and Nonlinear Modeling (Raudenbush et al. 2013) were used for the adjustment of the models.

Results

Tables 1 and 2 show descriptive statistics for classroom and school variables, as well as correlations between variables. Table 1 shows that: (a) Portuguese teachers perceived classroom discipline just above the mid-point of the scale (10); (b) Portuguese teachers were highly experienced ($M = 19.54$ years of experience); (c) Portuguese teachers were quite positive about their relations with the students and their ability to manage classroom instruction and discipline; and (d) school-level variables also showed positive trends mainly in teacher–student relations.

Unconditional model

Table 3 shows the results for the unconditional or null model (no predictors included). The goal of this model is to test whether there is between-school variation in perceived

Table 1 Descriptive statistics for teachers (n = 3228; 2377 female, 851 male)

	M	SD	Min	Max
Variable				
Classroom discipline	10.49	2.02	5.57	14.36
Experience	19.54	7.23	0	40
Self-efficacy	13.76	1.32	8.06	15.45
Descriptive statistics for schools (n = 175; 159 public, 16 private)				
School climate	12.85	1.72	8.24	16.75
Teacher–student relations	13.49	1.75	5.54	16.45

Table 2 Correlations between variables

Variable	Correlations							
	1	2	3	4	5	6	7	8
Class discipline	–							
%Low achievers	0.339**	–						
%Disadvantaged students	0.052**	0.165**	–					
Teacher self-efficacy	0.236**	− 0.094**	− 0.003	–				
Teach–student relations	0.002	− 0.018	− 0.102**	0.006	–			
Need professional devel	0.182**	0.082**	0.069**	− 0.107**	− 0.030**	–		
Teacher experience	− 0.020	− 0.044*	− 0.059**	0.002	0.034	0.008	–	
School climate	0.016	− 0.018	0.011	0.053**	− 0.005	− 0.033	0.027	–

**$p < 0.01$; * $p < 0.05$

classroom discipline (PCD). The Level-1 Model was PCD = $\beta_{0j} + r_{ij}$ and the Level-2 Model was $\beta_{0j} = \gamma_{00} + u_{0j}$. β_{0j} represents the level 1 intercept term, which is a function of an intercept term at level 2 (γ_{00}) and of a level 1 residual term (r_{ij}). The level 1 intercept term (β_{0j}) is a function of the grand mean (γ_{00}) of schools, plus a random term (u_{0j}), which means that the intercept is modeled as a random effect.

The null or unconditional model (Table 3) shows an average of 10.49 for perceived classroom discipline which is 0.49 points above the mid-point of the scale. Within-school variance for perceived classroom discipline is $\sigma^2 = 3.79$, and between-school variance is $\tau = 0.28$, $p < 0.001$. The intraclass correlation is 0.068 (0.28/[3.79 + 0.28]), suggesting that differences between schools explain 6.8% of the variability in perceived classroom discipline, and differences between individual teachers explain 93.2%. The significant between-schools variation ($\chi^2 = 407.75$, $p < 0.001$) for perceived classroom discipline shows that there is still considerable residual variation yet to be explained and that a model with additional predictors is needed. The design effect[1] (design effect = 1 + [n_c − 1]ICC) is 2.19 (n_c is the number of teachers per school). According to some authors (e.g., Muthén & Satorra, 1995), a design effect greater than 2.0 indicates the need for hierarchical linear modeling.

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[1] "The design effect quantifies the effect of independence violations on standard error estimates and is an estimate of the multiplier that needs to be applied to standard errors to correct for the negative bias that results from nested data" (Peugh 2010).

Table 3 Unconditional hierarchical linear model

Parameter	Coefficient	SE	df	t	p
Estimated fixed effects					
Intercept	10.49	0.05	173	198.26	0.000
Parameter	SD	VC	df	χ^2	p
Estimated random effects					
u_0 (variation among schools)	0.53	0.28	173	407.76	0.000
r (variation within schools)	1.95	3.79			

SE standard error, *df* degrees of freedom, *VC* variance component

Table 4 Hierarchical linear model for perceived classroom discipline with school-level predictors

Parameter	Coefficient	SE	df	t	p
Estimated fixed effects					
Intercept	10.50	0.05	169	208.184	<0.001
School-level variables					
Public/private	0.69	0.19	169	3.64	<0.001
School climate	-0.01	0.03	169	-0.26	0.793
Teacher–student relations	0.00	0.03	169	0.01	0.994
% disadvantaged students	-0.17	0.10	169	-1.71	0.090
Parameter	SD	VC	df	χ^2	p
Estimated random effects					
u_0 (variation among schools)	0.49	0.24	170	370.98	<0.001
r (variation within schools)	1.95	3.79			

SE standard error, *SD* standard deviation, *VC* variance component, *df* degrees of freedom

Hierarchical linear modeling combining classroom-level and school-level predictors of perceived classroom discipline

Once it had been determined that perceived classroom discipline significantly varies between schools, the second step was to test to what degree school-related variables explain variance in classroom perceived discipline (means as outcomes model) (see Table 4). This top-down analytical strategy (organizational variables are introduced first in the model) is an approach adopted in similar studies (e.g., Gil-Flores 2017).

Table 4 shows that the percentage of disadvantaged students in the school, school climate, teacher–student relations do not significantly affect teachers' perceived classroom discipline, unlike the type of school. In fact, perceived classroom discipline is 0.66 points higher in private schools ($p=0.001$). This second step reveals

Table 5 Hierarchical linear model for perceived classroom discipline with school level and classroom-level predictors

Parameter	Coefficient	SE	df	t	p
Estimated fixed effects					
Intercept	10.50	0.04	172	254.89	<0.001
School-level variables					
Public/private	0.17	0.15	172	1.16	0.250
Classroom-level variables					
Teacher gender	0.07	0.08	3049	0.97	0.331
Teacher experience	−0.01	0.00	3049	−1.50	0.146
Teacher self-efficacy	0.29	0.02	3049	12.13	<0.001
Need professional develop	−0.53	0.07	3049	−7.72	<0.001
% low achievers	−0.71	0.04	3049	−17.74	<0.001

Parameter	SD	VC	df	χ^2	p
Estimated random effects					
u_0 (variation among schools)	0.21	0.12	172	225.50	0.004
r (variation within schools)	1.60	2.57			

SE standard error, *SD* standard deviation, *VC* variance component, *df* degrees of freedom

that the proportion of variability explained by adding school type to the model is 13%: $\frac{\tau 2\ \text{unconditional} - \tau 2\ \text{mean as outcome}}{\tau 2\ \text{unconditional}} = \frac{0.28 - 0.24}{0.28} = 0.132$.

Finally, we tested a third model that included both school and classroom-related variables as predictors of perceived classroom discipline. At the school level, only the type of school was included because other variables were not significant predictors of perceived classroom discipline. At the classroom level, the model included teachers' perceived need for professional development (in classroom management), the percentage of classroom low achievers, teacher self-efficacy, teacher gender, and teacher experience (see Table 5). Level-1 and level-2 variables were grand mean-centered. The Level-1 Model was Class_Dis $= \beta_0 + \beta_1*(\text{TNeed\_Class.}) + \beta_2*(\text{Low\_Achiv}) + \beta_3*(\text{TSelf\_Eff.}) + \beta_4*(\text{T\_Gender}) + \beta_5*(\text{T\_Exper}) + r$.

The Level-2 Model was

$$\beta_0 = \gamma_{00} + \gamma_{01}*(SC\_PubPriv) + u_0$$
$$\beta_1 = \gamma_{10}$$
$$\beta_2 = \gamma_{20}$$
$$\beta_3 = \gamma_{30}$$
$$\beta_4 = \gamma_{40}$$
$$\beta_5 = \gamma_{50.}$$

In the third model, the type of school did not predict teachers perceived classroom discipline. At level-1, every variable significantly predicted perceived classroom discipline.

The unexplained variance among schools in the final model was $u_{0j} = 0.12$, which represents a 57.14% reduction compared to the null model ($u_{0j} = 0.28$). Still, a significant proportion of the variance remained unexplained by the model. There was no significant

increase in model fit from the unconditional model (deviance $= 13,613.67$) to the complete model (deviance $= 13,004.85$), represented by no significant decrease in the deviance of the model ($13,613.67 - 13,004.85 = 608.82$, $p > 0.005$).

Discussion

An important finding in this study was that, in the final model that integrates both level-1 (classroom) and level-2 (school) variables, only level-1 variables significantly predicted perceived classroom discipline (PCD). This finding suggests that PCD depends much more on variables of the classroom environment than on variables of the school environment. When Konstantopoulos (2006) used a multilevel approach to study the effects of schools on student achievement, within-school variation was five times larger than between-school variation. Still, there was significant between-school variation in achievement, and this variation seemed to increase significantly over time. The authors also found that teacher effects were the most critical source of within-school variation. "It appears that the teachers whom students are assigned to may be more important than the schools they attend" (Konstantopoulos 2006, p. 36), the author concluded. If this works for student achievement, it might work as well for classroom disciplinary climate.

Classroom-level predictors of perceived classroom discipline

The classroom-level predictors of perceived classroom discipline included both the teacher and students. The TALIS 2013 report (OECD 2014a) asserts that the individual teacher accounts for 84% of the variance in the classroom disciplinary climate while the school (7%) and the country (8%) account for only a small part of the variance. However, the report does not explicitly refer to the contribution of students (e.g., class composition) to teachers' perceived classroom discipline.

The percentage of low achievers was the most-important predictor of PCD. Research has emphasized the significant and complex association between learning and behavior problems (Haydon-Laurelut and Nunkoosing 2016; Sockalingam et al. 2011), but it is not guaranteed that the consequences of this association are duly weighed (Lopes et al. 2017). Also, it is still unclear whether learning problems elicit students' misbehavior or if it is the other way around. Nevertheless, it is clear that students with learning problems have difficulties in accomplishing classroom tasks and are more likely to engage in competing tasks (e.g., daydreaming, interrupting the lesson inappropriately) (Halonen et al. 2006; Hoffmann 2018), and that students with behavior problems often underachieve (Snyder et al. 2018). Underachievement and behavior problems seem to be mutually reinforcing and to strengthen as motivation to engage in academic tasks weakens (Arens et al. 2015). Witt et al. (2004, p. 427) emphasize that: "If children cannot perform expected work, if there is a lack of consequences for doing or not doing academic work, and/or if the teacher is not competent to teach the subject matter, then there is no behavior management program in existence that can produce enduring behavior change in such classroom."

According to Witt et al. (2004), the effects of behavioral strategies can be elusive or transient, especially with underachievers, who readily engage in activities that compete with the classroom lesson. In addition, the longer the lessons, the more that underachievers tend to interfere with the lesson flow (Godwin et al. 2016).

Our study also shows that teacher self-efficacy is a significant predictor of PCD and that participants exhibit high levels ($M = 13.76$) of self-efficacy to manage, instruct, and engage students in classroom tasks. Interestingly, the levels of self-efficacy are much higher than the levels of PCD ($M = 10.49$). This result is similar to the results of other studies. Lopes et al. (2017), for example, found that participant teachers ($N = 600$) perceived a significant increase in classroom indiscipline in the last 5 years, but they considered themselves as quite competent to manage classrooms. The authors suggest that participants deal with this discrepancy through external attributions, such as making parents, not themselves, responsible for students' misbehavior. Teachers can maintain relatively high levels of efficacy even if they perceive that the classroom disciplinary climate is not very positive.

Half of the participants (44.7%) felt that they do not need more training in classroom management (i.e., professional development), even if they did not perceive much classroom discipline. Perhaps these teachers believe, at least in part, that indiscipline mostly comes from external causes (e.g., students' home education or social values). Therefore, they also could believe that government laws or school regulations, not teachers' actions, can best deal with indiscipline.

Generically, the finding that classroom factors explain better classroom indiscipline than school-level factors is not surprising (Willms 2000; Muijs and Reynolds 2001). Almost 30 years ago, Rowe and Rowe (1993) stated that "…it could be argued that effective schools are only effective to the extent that they have effective teachers" (p. 15). The literature suggests that government laws, school regulations, or general policies (e.g., zero-tolerance policy) could be of little use if individual teachers lack the skills to deal with the classroom order and classroom discipline (e.g., Lacoe 2019). Still, as Hattie (2009) asserts there continues to be a trend to pass laws in the educational field that are more about structural concerns than teaching concerns (e.g., class size, school choice, social promotion, disciplinary regulations).

School-level predictors of perceived classroom discipline

Unexpectedly, no school-level variables provided by TALIS 2013 predicted PCD. Still, the type of school (public/private) predicted PCD when classroom predictors were not considered. Private schools have administrative tools that make classroom discipline an easier task. They are not required to accept every student and can use penalties (e.g., expelling students for either misbehavior or underachievement) that are rare in Portuguese public schools. However, even in these schools, classroom factors can dilute the effect of relevant organizational factors in PCD, such as the school climate. Our results nevertheless must be interpreted with caution because our sample included 159 public schools and only 16 private schools.

Conclusions

This study, together with Lopes et al. (2017), suggests that, in Portugal, teachers encounter disciplinary problems in the classroom, which the teacher training system might not be addressing. Specifically, teacher training in classroom organization and management, minor classroom disruptions, and instruction methods would be of great help for promoting students' learning and preventing and remedying trivial (but wearing) disciplinary

problems. As Witt et al. (2004) emphasize, instruction and classroom management are closely related. Classroom management is at the heart of the group dynamic, including the pace of lessons, instructional methods, or arrangement of students in the classroom for better learning (Doyle 1986; Osher et al. 2010). Classroom disruption, in turn, limits or interrupts teaching time and wears the teacher out, thus impairing students' opportunity to learn (Elliott 2014; Sun 2015).

The findings of the present study might be useful in guiding the design of teacher training policies and programs that address specific teacher needs, thus enhancing teacher classroom management and student learning.

Some of the limitations of our study relate to the design of TALIS. For example, some or most constructs being measured do not have a theoretically-sound basis. Another limitation is that the TALIS is a self-report survey, which does not allow inferences about practices. For instance, in our study, we know how individual teachers perceive classroom discipline (the outcome variable), but not the actual level of classroom discipline. Predictors such as the percentage of low underachievers, the school climate, teacher–student relations, and the percentage of disadvantaged students are measured as perceptions too.

The OECD itself (Rutkowski et al. 2013) reports some limitations of TALIS, two of which are particularly relevant. "The limitations around inferring causality are especially severe in cross-sectional, observational data…" (p. 14). Also, in TALIS, teachers and principals are not randomly assigned to schools, which limits the drawing of "strong conclusions" (Rutkowski et al. 2013, p. 15).

Even with these limitations in mind, TALIS provides invaluable data for studying classroom discipline as well as other features of teaching. As Scriven (2005) claims, one of the hardest tasks in research is providing explanations rather than determining causality.

References

Aldridge, J. M., McChesney, K., & Afari, E. (2018). Relationships between school climate, bullying and delinquent behaviours. *Learning Environments Research, 21*(2), 153–172. https://doi.org/10.1007/s10984-017-9249-6.

Alvarez-Roldan, A., Parra, I., & Gamella, J. F. (2018). Reasons for the underachievement and school drop out of Spanish Romani adolescents: A mixed methods participatory study. *International Journal of Intercultural Relations, 63,* 113–127. https://doi.org/10.1016/j.ijintrel.2018.02.001.

Archambault, I., Vandenbossche-Makombo, J., & Fraser, S. L. (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. https://doi.org/10.1007/s10826-017-0691-y.

Arens, A. K., Morin, A. J. S., & Watermann, R. (2015). Relations between classroom disciplinary problems and student motivation: Achievement as a potential mediator? *Learning and Instruction, 39,* 184–193. https://doi.org/10.1016/j.learninstruc.2015.07.001.

Arum, R. (2003). *Judging school discipline: The crisis of moral authority*. Cambridge, MA: Harvard University Press.

Berger, J. L., Girardet, C., Vaudroz, C., & Crahay, M. (2018). Teaching experience, teachers' beliefs, and self-reported classroom management practices: A coherent network. *SAGE Open*. https://doi.org/10.1177/2158244017754119.

Biggs, J. (1998). Learning from the Confucian heritage: So size doesn't matter? *International Journal of Educational Research, 29,* 723–738. https://doi.org/10.1016/S0883-0355(98)00060-3.

Bilač, S., & Miljković, D. (2018). How to introduce change to classroom management and discipline. *Croatian Journal of Education, 20*(Special Edition 1), 11–23. https://doi.org/10.15516/cje.v20i0.3059.

Busquets, C. G., Pros, R. C., Muntada, M. C., & Martín, M. B. (2015). Instructional and conventional lack of discipline: A predictor of academic performance. *Revista Colombiana de Psicologia, 24*(2), 317–330. https://doi.org/10.15446/rcp.v24n2.44148.

Chirkina, T. A., & Khavenson, T. E. (2018). School climate. *Russian Education & Society, 60*(2), 133–160. https://doi.org/10.1080/10609393.2018.1451189.

Collins, T. A., Cook, C. R., Dart, E. H., Socie, D. G., Renshaw, T. L., & Long, A. C. (2016). Improving classroom engagement among high school students with disruptive behavior: Evaluation of the class pass intervention. *Psychology in the Schools, 53*(2), 204–219. https://doi.org/10.1002/pits.21893.

Cornelius-White, J. (2007). Learner-centered teacher-student relationships are effective: A meta-analysis. *Review of Educational Research, 77*(1), 113–143. https://doi.org/10.3102/003465430298563.

Curran, F. C. (2019). The law, policy, and portrayal of zero tolerance school discipline: Examining prevalence and characteristics across levels of governance and school districts. *Educational Policy, 33*(2), 319–349. https://doi.org/10.1177/0895904817691840.

Davidov, M., & Khoury-Kassabri, M. (2013). Recollections of harsh discipline in childhood and depressive feelings in adulthood: The roles of culture and gender. *Children and Youth Services Review, 35*(6), 1007–1014. https://doi.org/10.1016/j.childyouth.2013.03.009.

Del Moral, G., Suárez-Relinque, C., Callejas, J. E., & Musitu, G. (2019). Child-to-parent violence: Attitude towards authority, social reputation and school climate. *International Journal of Environmental Research and Public Health*. https://doi.org/10.3390/ijerph16132384.

Ding, M., Li, Y., Li, X., & Kulm, G. (2010). Chinese teachers' attributions and coping strategies for student classroom misbehaviour. *Asia Pacific Journal of Education, 30*(3), 321–337. https://doi.org/10.1080/02188791.2010.495832.

Doyle, W. (1986). Classroom organization and management. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 392–431). New York: Mcmillan.

Elliott, S. N. (2014). Measuring opportunity to learn and achievement growth: Key research issues with implications for the effective education of all students. *Remedial and Special Education, 36*(1), 58–64. https://doi.org/10.1177/0741932514551282.

Fatou, N., & Kubiszewski, V. (2018). Are perceived school climate dimensions predictive of students' engagement? *Social Psychology of Education, 21*(2), 427–446. https://doi.org/10.1007/s11218-017-9422-x.

Gaskins, C. S., Herres, J., & Kobak, R. (2012). Classroom order and student learning in late elementary school: A multilevel transactional model of achievement trajectories. *Journal of Applied Developmental Psychology, 33*(5), 227–235. https://doi.org/10.1016/j.appdev.2012.06.002.

Glover, D., & Coleman, M. (2005). School culture, climate and ethos: Interchangeable or distinctive concepts? *Journal of In-Service Education, 31*(2), 251–272. https://doi.org/10.1080/13674580500200278.

Godwin, K. E., Almeda, M. V., Seltman, H., Kai, S., Skerbetz, M. D., Baker, R. S., et al. (2016). Off-task behavior in elementary school children. *Learning and Instruction, 44,* 128–143. https://doi.org/10.1016/j.learninstruc.2016.04.003.

Haberman, M., & Rickards, W. H. (1990). Urban teachers who quit: Why they leave and what they do. *Urban Education, 25*(3), 297–303.

Halonen, A., Aunola, K., Ahonen, T., & Nurmi, J. E. (2006). The role of learning to read in the development of problem behaviour: A cross-lagged longitudinal study. *British Journal of Educational Psychology, 76*(3), 517–534. https://doi.org/10.1348/000709905X51590.

Hattie, J. (2009). *Visible learning: A synthesis of over 800 meta-analyses relating to achievement*. New York: Routledge.

Haydon-Laurelut, M., & Nunkoosing, K. (2016). Causing trouble: The language of learning disability and challenging behaviour. *Tizard Learning Disability Review, 21*(3), 144–149. https://doi.org/10.1108/TLDR-11-2014-0038.

Hoffmann, J. P. (2018). Academic underachievement and delinquent behavior. *Youth and Society*. https://doi.org/10.1177/0044118X18767035.

Ibabe, I. (2015). Family predictors of child-to-parent violence: The role of family discipline. *Anales De Psicología / Annals of Psychology, 31*(2), 615–625. https://doi.org/10.6018/analesps.31.2.174701.

Ingersoll, R. M. (2001). *Teacher turnover, teacher shortages, and the organization of schools*. Seattle, WA: Center for the Study of Teaching and Policy.

Kato, H., & Ota, M. (2016). Relations between classroom disruption and students' consciousness of norms and their perception of other students' norm consciousness. *Japanese Journal of Educational Psychology, 64*(2), 147–155. https://doi.org/10.5926/jjep.64.147.

Kayikçi, K. (2011). Classroom discipline: Discipline strategies, preventing student misbehaviors and research on student misbehaviors in the classroom. In R. J. Newley (Ed.), *Classrooms: Management, effectiveness and challenges* (pp. 187–220). New York: Nova Science Publishers Inc.

Kersaint, G., Lewis, J., Potter, R., & Meisels, G. (2007). Why teachers leave: Factors that influence retention and resignation. *Teaching and Teacher Education, 23*(6), 775–794. https://doi.org/10.1016/j.tate.2005.12.004.

Konstantopoulos, S. (2006). Trends of school effects on student achievement: Evidence from NLS:72, HSB:82 and NELS:92. *Teachers College Record, 108,* 2550–2581.

Lacoe, J., & Steinberg, M. P. (2018). Rolling back zero tolerance: The effect of discipline policy reform on suspension usage and student outcomes. *Peabody Journal of Education, 93*(2), 207–227. https://doi.org/10.1080/0161956X.2018.1435047.

Landrum, T. J., Lingo, A. S., & Scott, T. M. (2011). Classroom misbehavior is predictable and preventable. *Phi Delta Kappan, 93*(2), 30–34. https://doi.org/10.1177/003172171109300207.

Lee, J. A., & Kim, C. J. (2019). Teaching and learning science in authoritative classrooms: Teachers' power and students' approval in Korean elementary classrooms. *Research in Science Education, 49,* 1367–1393. https://doi.org/10.1007/s11165-017-9659-6.

Lewis, R., Romi, S., Katz, Y. J., & Qui, X. (2008). Students' reaction to classroom discipline in Australia, Israel, and China. *Teaching and Teacher Education, 24*(3), 715–724. https://doi.org/10.1016/j.tate.2007.05.003.

Lin, S., Salazar, T. R., & Wu, S. (2019). Impact of academic experience and school climate of diversity on student satisfaction. *Learning Environments Research, 22,* 25–41. https://doi.org/10.1007/s10984-018-9265-1.

Lopes, J., Silva, E., Oliveira, C., Sass, D., & Martin, N. (2017). Teachers' classroom management behavior and students' classroom misbehavior: A study with 5th through 9th grade students. *Electronic Journal of Research in Educational Psychology, 15*(3), 467–490.

Marzano, R. J., Marzano, J. S., & Pickering, D. J. (2003). *Classroom management that works. Research-based strategies for every teacher*. Alexandria, VA: Association for Supervision and Curriculum Development.

McDowell, J., & Klattenberg, R. (2019). Does gender matter? A cross-national investigation of primary class-room discipline. *Gender and Education, 31*(8), 947–965. https://doi.org/10.1080/09540253.2018.1458078.

Muijs, D., & Reynolds, D. (2001). *Effective teaching: Evidence and practice*. London: Paul Chapman.

OECD. (2013). *PISA in focus No. 32: Do students perform better in schools with orderly classrooms?* Paris: OECD.

OECD. (2014a). *TALIS 2013 results: An international perspective on teaching and learning*. Paris: OECD.

OECD. (2014b). *TALIS 2013 technical report*. Paris: OECD.

O'Neill, S. C. (2016). Preparing preservice teachers for inclusive classrooms: Does completing coursework on managing challenging behaviours increase their classroom management sense of efficacy? *Australasian Journal of Special Education, 40*(2), 117–140. https://doi.org/10.1017/jse.2015.10.

Osher, D., Bear, G. G., Sprague, J. R., & Doyle, W. (2010). How can we improve school discipline? *Educational Researcher, 39*(1), 48–58. https://doi.org/10.3102/0013189X09357618.

Peugh, J. L. (2010). A practical guide to multilevel modeling. *Journal of School Psychology, 48*(1), 85–112. https://doi.org/10.1016/j.jsp.2009.09.002.

Powers, J. M., & Potterson, A. U. (2017). The case against private schooling. In R. A. Fox & N. K. Buchanan (Eds.), *The Wiley handbook of school choice* (pp. 131–148). New York: Wiley-Blackwell.

Raudenbush, S. W., Bryk, A. S., & Congdon, R. (2013). *HLM 7.01 for Windows* [Computer software]. Skokie, IL: Scientific Software International, Inc.

Read, B. (2008). The world must stop when I'm talking': Gender and power relations in primary teachers' classroom talk. *British Journal of Sociology of Education, 29*(6), 609–621. https://doi.org/10.1080/01425690802423288.

Reisa, S. B., Gomes, A. R., & Simães, C. (2018). Stress e burnout em professores: Importância dos processos de avaliação cognitiva [Stress and burnout in teachers: The importance of cognitive appraisal]. *Psicologia, Saúde e Doenças, 19*(2), 208–221. https://doi.org/10.15309/18psd190204.

Riley, P., Lewis, R., & Wang, B. (2012). Investigating teachers' explanations for aggressive classroom discipline strategies in China and Australia. *Educational Psychology, 32*(3), 389–403. https://doi.org/10.1080/01443410.2012.662151.

Rowe, K. J., & Rowe, K. S. (1993, November). *Assessing student behaviour: The utility and measurement properties of a simple parent and teacher-administered behavioural rating instrument for use in educational and epidemiological research*. Paper presented at the Annual Conference of the Australian Association for Research in Education, Fremantle, WA.

Rudasill, K. M., Snyder, K. E., Levinson, H., & Adelson, J. (2018). Systems view of school climate: A theoretical framework for research. *Educational Psychology Review, 30*(1), 35–60. https://doi.org/10.1007/s10648-017-9401-y.

Ruiz, L. D., McMahon, S. D., & Jason, L. A. (2018). The role of neighborhood context and school climate in school-level academic achievement. *American Journal of Community Psychology, 61*(3–4), 296–309. https://doi.org/10.1002/ajcp.12234.

Rutkowski, D., Rutkowski, L., Bélanger, J., Knoll, S., Weatherby, K., & Prusinski, E. (2013). *Teaching and Learning International Survey TALIS 2013: Conceptual framework*. Paris: OECD.

Sadik, F., & Akbulut, T. (2015). An evaluation of classroom management skills of teachers at high schools (sample from the city of Adana). *Procedia – Social and Behavioral Sciences, 191*(2), 208–213. https://doi.org/10.1016/j.sbspro.2015.04.539.

Salvano-Pardieu, V., Fontaine, R., Bouazzaoui, B., & Florer, F. (2009). Teachers' sanction in the classroom: Effect of age, experience, gender and academic context. *Teaching and Teacher Education, 25*(1), 1–11. https://doi.org/10.1016/j.tate.2008.06.006.

Scheerens, J., & Blömeke, S. (2016). Integrating teacher education effectiveness research into educational effectiveness models. *Educational Research Review, 18,* 70–87. https://doi.org/10.1016/j.edurev.2016.03.002.

Scherzinger, M., & Wettstein, A. (2019). Classroom disruptions, the teacher–student relationship and classroom management from the perspective of teachers, students and external observers: A multimethod approach. *Learning Environments Research, 22,* 101–116. https://doi.org/10.1007/s10984-018-9269-x.

Scriven, M. (2005). Causation. In S. Mathison (Ed.), *Encyclopedia of evaluation* (pp. 43–47). Thousand Oaks, CA: Sage.

Seashore Louis, K., & Lee, M. (2016). Teachers' capacity for organizational learning: The effects of school culture and context. *School Effectiveness and School Improvement, 27*(4), 534–556. https://doi.org/10.1080/09243453.2016.1189437.

Shakeel, M. D., & DeAngelis, C. A. (2018). Can private schools improve school climate? Evidence from a nationally representative sample. *Journal of School Choice, 12*(3), 426–445. https://doi.org/10.1080/15582159.2018.1490383.

Simón, C., & Alonso-Tapia, J. (2016). Positive classroom management: Effects of disruption management climate on behaviour and satisfaction with teacher. *Revista de Psicodidactica, 21*(1), 65–86. https://doi.org/10.1387/RevPsicodidact.13202.

Simonsen, B., Fairbanks, S., Briesch, A., Myers, D., & Sugai, G. (2008). Evidence-based practices in classroom management: Considerations for research to practice. *Education and Treatment of Children, 31*(3), 351–380. https://doi.org/10.2307/42899983.

Snyder, K. E., Carrig, M. M., & Linnenbrink-Garcia, L. (2018). Developmental pathways in underachievement. *Applied Developmental Science*. https://doi.org/10.1080/10888691.2018.1543028.

Sockalingam, N., Rotgans, J. I., & Schmidt, H. G. (2011). The relationships between problem characteristics, achievement-related behaviors, and academic achievement in problem-based learning. *Advances in Health Sciences Education, 16*(4), 481–490.

Stanovich, K. E. (1986). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Reading Research Quarterly, 21,* 360–407.

Sulak, T. N. (2018). School climate: the controllable and the uncontrollable. *Educational Studies, 44*(3), 279–294. https://doi.org/10.1080/03055698.2017.1373630.

Sun, R. C. F. (2015). Teachers' experiences of effective strategies for managing classroom misbehavior in Hong Kong. *Teaching and Teacher Education, 46,* 94–103. https://doi.org/10.1016/j.tate.2014.11.005.

Tsouloupas, C. N., Carson, R. L., & Matthews, R. A. (2014). Personal and school cultural factors associated with the perceptions of teachers' efficacy in handling student misbehavior. *Psychology in the Schools, 51*(2), 164–180. https://doi.org/10.1002/pits.21739.

Tsouloupas, C. N., Carson, R. L., Matthews, R., Grawitch, M. J., & Barber, L. K. (2010). Exploring the association between teachers' perceived student misbehaviour and emotional exhaustion: The importance of teacher efficacy beliefs and emotion regulation. *Educational Psychology, 30*(2), 173–189. https://doi.org/10.1080/01443410903494460.

Uibu, K., & Kikas, E. (2014). Authoritative and authoritarian-inconsistent teachers' preferences for teaching methods and instructional goals. *Education 3–13, 42*(1), 5–22, doi:https://doi.org/10.1080/03004279.2011.618808.

Wang, M. T., & Fredricks, J. A. (2014). The reciprocal links between school engagement, youth problem behaviors, and school dropout during adolescence. *Child Development, 85*(2), 722–737. https://doi.org/10.1111/cdev.12138.

Willms, J. D. (2000). Monitoring school performance for "standards-based reform." *Evaluation and Research in Education, 14*(3–4), 237–253. https://doi.org/10.1080/09500790008666976.

Witt, J. C., VanDerHeyden, A. M., & Gilbertson, D. (2004). Instruction and classroom management: Prevention and intervention research. In R. Rutherford, M. Quinn, & S. Mathur (Eds.), *Handbook of research in emotional and behavioral disorders* (pp. 426–445). New York: Guilford Press.

Wolff, C. E., van den Bogert, N., Jarodzka, H., & Boshuizen, H. P. A. (2014). Keeping an eye on learning: Differences between expert and novice teachers' representations of classroom management events. *Journal of Teacher Education, 66,* 68–85. https://doi.org/10.1177/0022487114549810.

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