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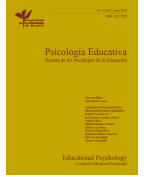
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Student Misbehaviour and School Climate: A Multilevel Study

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ABSTRACT

This study examines how teacher perceptions of student misbehaviour correlate with their perceptions of school climate and student self-reports, using multi-informant two-level multilevel modelling. School climate questionnaires completed by 4,055 teachers and 16,017 students (1st to 4th year of compulsory secondary education from 187 schools) showed that teachers' characteristics are marginally related to perceived disruption. Fair rules and support of students' families acted as protective factors, while a lack of educational leadership was a risk factor. Furthermore, the student variable of pro-violence messages from parents acted as a moderator for leadership and rules, while perceived coercive treatment from teachers acted as a moderator for family support of teachers.

La conducta disruptiva y el clima escolar: un estudio multinivel

RESUMEN

Esta investigación examina en qué medida la percepción del profesorado sobre el comportamiento disruptivo correlaciona con la percepción del clima escolar y los autoinformes del alumnado, mediante una modelización multi-informante y multinivel. Los cuestionarios sobre el clima escolar, cumplimentados por 4,055 profesores y 16,017 estudiantes (de 1^º a 4^º curso de Educación Secundaria Obligatoria pertenecientes a 187 centros educativos), muestran que las características de los profesores se relacionan solo marginalmente con la disrupción percibida. La existencia de unas reglas justas y el apoyo de las familias de los estudiantes se mostraron como factores de protección, mientras que la ausencia de un adecuado liderazgo en el equipo directivo aparecía como factor de riesgo. Además, los mensajes que los alumnos reciben de sus padres a favor de la violencia actuaron como moderadores del liderazgo y las reglas, mientras que el trato coercitivo de los profesores que percibían los estudiantes actuó de moderador del apoyo de la familia hacia el profesorado.

Student Misbehaviour

Extent and Seriousness of Misbehaviour

As recognised in the TALIS study from the Organization for Economic Cooperation and Development (OECD, 2014, 2015), reducing student misbehaviour represents a key to improving learning opportunities and quality of life at school. The aforementioned survey, with the participation of 200 schools from 30 countries, found that teachers at high-school level generally spend 13% of their time establishing order (this figure is 15% in Spain, the country where the research presented here was conducted). One in three teachers state that in general more than 10% of their students misbehave in the classroom.

In these classrooms, the time spent establishing order in class rises to 20%.

Along the same lines, since the pioneering work by Wickman (1928), research has shown that misbehaviour in schools is consistently related with other adolescent problems such as low academic performance (OECD, 2015), absenteeism, violence, and other high-risk behaviour (Díaz-Aguado et al., 2010; Díaz-Aguado & Martínez Arias, 2013; Finn et al., 2008). Student disruptive behaviour has also been identified as the main source of stress and burnout among teaching staff (Aldrup et al., 2018; McCormick & Barnett, 2011). Studies conducted in Spain have reported similar findings (Martínez-Fernández et al., 2017), with the prevalence of this problem indicated by 21% of high-school level teachers admitting

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that students sometimes or often “cause problems and interrupt class” ((Díaz-Aguado, et al., 2010).

Student Misbehaviour from an Ecological Perspective

The available evidence reflects the complexity of the problem of student misbehaviour, which must be analysed taking into account the interaction between the individual characteristics of its protagonists and the context in which it occurs. This requires an analysis at different levels, as recognised in the ecological approach (Aloe et al., 2014; Hopson & Lee, 2011; Kohl et al., 2013) proposed by Bronfenbrenner (1979) and adopted in this study to take into account classroom relations, the school climate, relationships between school and family microsystems, and the cultural context of which the preceding levels are specific manifestations.

As shown in the study by Lewis et al. (2005), student misbehaviour and the disciplinary measures for confronting it vary depending on the cultural context and the recognition of teachers' authority in that context. To contextualise this study, it is hence suitable to take into account the results of the TALIS study (OECD, 2014) showing that only 8% of Spanish teachers believe that their work is valued by society, though 95% are satisfied with their work. The averages for the group of 30 countries as a whole are 31% and 91%, respectively.

Student Misbehaviour Depending on Teacher's Characteristics

Differences have been found in the perception of disruptive behaviour depending on teacher's gender. Although both female and male teachers report misbehaviour more frequently in secondary education, men perceive more disruptive behaviour than women in secondary education, while the opposite occurs in primary education (Kulinna et al., 2006).

Teaching experience appears to be a teacher's characteristic that is most related with the perception of student misbehaviour in the classroom. The problem is found to be much more frequent for new teachers than for experienced teachers (Kulinna, 2006; OECD, 2014). Moreover, the association between disruptive behaviour and burnout is also stronger among inexperienced teachers (Aloe et al., 2014). The following possible explanations have been offered: a) changes in the perception of disruption as teachers become more experienced, making them more tolerant of the problem (Kokkinos et al., 2004) or meaning their attention is focused on student learning and teacher influential role in classroom events (Wolff et al., 2017); b) the recognised tendency of adolescent students to misbehave more with inexperienced teachers, whom they perceive to be insecure (Sun, 2014); and c) the role played by teaching experience in learning more and better strategies to confront disruptive behaviour (Özben, 2010). A study conducted in Spain by Granero-Gallegos et al. (2020) reports similar findings, confirming the relationship between teachers lacking classroom management skills and student misbehaviour.

In relation to teachers' training in classroom management, it is worth considering one of the conclusions of the TALIS study (OECD, 2014), which emphasised confronting misbehaviour as the main difficulty faced by new teachers and a serious obstacle to their security. The conclusion was that training both before and after teachers started their career should include classroom management practice, supervised and evaluated by experienced teachers able to offer suggestions on how to use better strategies. These practical exercises could help to prevent the reality shock suffered by new teachers (Dicke et al., 2015).

Disruption-Coercion Escalations in Student-Teacher Relationships

To understand and prevent disruptive behaviour, it is important to analyse the type of student-teacher interaction in the context

in which it occurs (Schwab et al., 2019). Studies carried out on this matter show that teachers tend to address more criticism and fewer positive comments to students who present misbehaviour. Teachers behaving in this way will tend to reduce students' motivation to learn and their level of academic achievement (Wentzel, 2002), meaning that the disruptive behaviour increases in turn (Demanet & Van Houtte, 2012). Students themselves tend to put down their own misbehaviour to a lack of support and acknowledgement from teachers (Bru et al., 2002; Honkasilta et al., 2016; Lewis, 2001). In contrast, when teachers support students and manage disruptions with more varied and positive strategies, their students are more likely to participate in on-task behaviour and to reduce their misbehaviour (Jennings & Greenberg, 2009; Sun, 2015; Wallace et al., 2014). In relation to this, it is worth considering the higher frequency of student misbehaviour found at high-school level (Nickerson & Martens, 2008), possibly associated with a mismatch between school climate and the needs of developing adolescents (Eccles et al., 1993; Wang & Eccles, 2012), such as the increased control of teachers as opposed to students' strong need for autonomy. This mismatch could encourage disruption-coercion escalations, which start with misbehaviour by an adolescent, in response to which some teachers (particularly new teachers, who may be insecure and have insufficient proactive strategies) engage in coercive conduct. Far from putting an end to disruption, this action tends to increase it (Allen, 2010; Aloe et al., 2014; Lewis et al., 2005).

Misbehaviour Dependig on School Characteristics

Research conducted in this area highlights two school climate variables as particularly significant due to their relationship with misbehaviour management: school leadership and fairness of rules and discipline (Bowen et al., 2006; Cohen et al., 2009; Hopson & Lee, 2011; OECD, 2014, 2017; Stewart, 2003).

School leadership. TALIS studies (OECD, 2014, 2016) define school leadership as the range of practices used by school heads to improve teaching and learning and encourage collaboration among teachers. The results of these studies show that centres with distributed leadership, which foster participation by students, teachers, and families in school decisions and apply a culture of shared responsibility and mutual support, have fewer disciplinary problems. Almost all centres involve teachers in decision-making processes. The main differences between centres arise in terms of opportunities offered to students and their families to participate in school decisions. Despite the importance of school leadership, only a quarter of heads in the 30 countries that participated in these studies refer to having been prepared for this task before taking up their position.

In accordance with the foregoing, it is also worth considering findings of other studies along the lines that interactions among school personnel and administrative support are very important conditions of the quality of a school (Hopson & Lee, 2011; Tickle et al., 2011), as students and teachers perform better in schools in which staff collaborate in decision-making (Bowen et al., 2006), share a common mission and trust each other, and where students and families are encouraged to become involved and participate (Thapa et al. 2013; Wang, & Degol, 2016).

Fairness of school rules and discipline. It has traditionally been expected that students and their families will unconditionally respect the authority of teachers and school rules, even if those rules are implicit, contradictory, and difficult for many students to understand, hence forming part of the hidden curriculum (Jackson, 1968). Fear of punishment was used to prevent student misbehaviour in this context, with coercive measures such as expulsion employed as basic mechanisms to address misbehaviour. But in contrast to these traditional expectations, studies conducted in recent decades have

found that strict school coercive measures increase misbehaviour instead of reducing it (Skiba & Losen, 2016; Morrison, 2018), while such misbehaviour is reduced in schools in which rules and discipline are perceived as fair and legitimate (Gottfredson et al., 2005; Thapa et al., 2013; Wang & Degol, 2016). The findings of a study conducted by Slocum et al. (2017) should be interpreted along the same lines; this study reported that students are more willing to report misbehaviour in schools with democratic authority structures and consistent enforcement of school rules. Way (2011) analysed 1,052 schools and found that although the perception of fairness of rules and discipline for students predict lower disruptions, the effects are mediated by positive teacher-student relations. This offers a reflection of the relationship between what happens in the classroom and overall discipline at school. Contrary to the traditional framework, stricter school rules are predictive of more, not less, disruptive behaviour. Moreover, attending a school that imposes more severe punishments can generate defiance among young people, who do not perceive teachers' authority as legitimate.

Misbehaviour Depending on Characteristics of Families and their Relationship with School

Research on the role played by families in student misbehaviour has found that this problem is reduced with quality in family relationships, adult support, and supervision, and more effective, constructive, and consistent family discipline processes (Elias & Noordin, 2011). This may be used as a basis to explain why, in a study carried out in Spain (Díaz-Aguado et al., 2010), teachers, school principals, and families themselves emphasise inadequate family discipline as one of the main causes of disruptive behaviour at school. This lack of consistency between school and family discipline has been the characteristic of the mesosystem (or relationship between microsystems) that has received most attention.

Family messages on how to address problems can have a significant influence on adolescent behaviour, with violence representing one of the most studied aspects in this regard. Studies have found that young people whose parents advise them to respond aggressively to violence are more likely to resolve conflicts using violence and to face school suspension (Kliewer et al., 2006; Solomon et al., 2008). On the other hand, it has been observed that family messages encouraging peaceful conflict resolution reduce the risk of violence in general (Ohene et al., 2006) and of bullying in particular (Espelage et al., 2000), whereas advice favouring aggression ("If someone hits you, hit her/him") increases risk of bullying (Díaz-Aguado & Martínez Arias, 2013). This observation is further supported by findings by Slocum et al. (2017), who reported that personal adherence to a street code (believing physical force and intimidation are necessary to achieve and maintain respect) moderates the effect of school context on reporting attitudes of misbehaviour. Given the reactive nature of disruption-coercion escalations that adolescents recognise (Bru et al., 2002; Honkasilta et al., 2016; Lewis, 2001), it would be reasonable to expect that such escalations would be more likely to occur with advice proposing the mistreatment of those who have mistreated an adolescent. However, this hypothesis has not yet been proven. This is one of the aims of the present study. The reason for this study including family advice encouraging reactive violence rather than messages in favour of school disruption is that the former have traditionally been very commonplace and this appears to remain the case (clearly expressed in what Slocum et al., 2017 described as a street code), being the advice that is frequently offered by certain families who would not support other kinds of misbehaviour expressly directed against a teacher to the same extent. Evidence of the persistence of traditional messages encouraging reactive violence is provided by Spanish research (Díaz-Aguado et al., 2014), according to which 36.7% of adolescents report having frequently been given "If someone hits you, hit her/him"

advice, although when adults with responsibility for family education are directly asked about this issue only 8.7% admit frequently giving this advice (Díaz-Aguado et al., 2010).

There is a general consensus as to the need for families to be involved in schools to reduce disciplinary issues and improve school and learning climate. Previously mentioned findings on the efficacy of distributed leadership, favouring the involvement of families in school decisions, should be interpreted as supporting this approach (OECD, 2014, 2016). Other research has also been published along these lines, including a study by Sheldon & Epstein (2002) using longitudinal data from elementary and secondary schools. Their results show that regardless of schools' prior rates of discipline, when more family involvement activities were implemented, fewer students were disciplined by being sent to heads' offices or given detention or in-school suspension. It is worth noting in this regard that teacher-family conflicts are one of the main sources of stress among teachers (Skaalvik & Skaalvik, 2009).

The series of studies conducted in Spain investigating high-school environment (Díaz-Aguado et al., 2010), incorporating the perspectives of students, teachers, principals, and families, identify a proactive teaching style as the most important indicator of quality in the school context and as one of the main conditions for families to support teachers. For example, 61% of families emphasise that for teachers to influence adolescent students it is best to "exercise authority and transmit confidence at the same time"; meanwhile, only 2.7% of parents believe that teachers will be able to achieve this influence using exclusively coercive measures ("punishing the smallest offence").

To develop an understanding of how to improve education, it is necessary to identify potential interactions and moderating effects between what happens at school and what happens in the family. Studies carried out on this subject suggest that although a good school climate acts as a protective condition for general student performance, it is particularly important for those from family contexts classified as at-risk due to family's poverty or structure (Becker & Luthar, 2002; Hopson & Lee, 2011; O'Malley et al. (2015). We have not found any research that analyses, as this study proposes, potential interactions and moderating effects between school climate and pro-reactive violence messages heard in family environment.

Aims and Hypothesis of Present Study

A review of research on school climate (Thapa et al., 2013) highlights the need for multilevel studies that include variables evaluated from different perspectives (both student and teacher). The aim of this study is hence to develop an understanding of risk and protective conditions for disruptive behaviour from an ecological perspective. The specific aims are to develop an understanding of the relationship between disruptive behaviour in school and: 1) individual characteristics of teachers and students; 2) school climate as perceived by teachers (family support, school leadership, and fairness of rules and discipline); and 3) contextual variables evaluated by students (coercive treatment from teachers and violence-related messages in family environment). This final aim is particularly significant from an ecological perspective, in order to develop an understanding of the relationship between disruptive behaviour and each of the main educational microsystems (family and school), which have rarely been studied as contextual variables. In addition to this, analysing student misbehaviour based on the characteristics of family microsystem (family support for teacher and messages given by families regarding how to resolve conflicts), as well as the relationship between those messages and school climate (school leadership, fairness of rules and discipline, and coercive treatment from teachers), will facilitate progress in terms of study of the mesosystem (relationships between microsystems).

With respect to characteristics of a teacher and a group of students, a higher level of perceived misbehaviour is expected to be found among men than among women (hypothesis 1.1) – the younger the teacher (hypothesis 1.2), the shorter the time they have spent at the school (hypothesis 1.3) –, among teachers who have not been on any specific disruption-related course (hypothesis 1.4), and among those working in curriculum diversification groups (hypothesis 1.5).

As regards school climate variables, a higher level of perceived misbehaviour is expected to be found the lesser the school leadership from the school's principals (hypothesis 2.1). In contrast, lower levels of disruption are expected to be found the greater the presence of two protective conditions: fairness of rules and discipline at school (hypothesis 2.2); and family support for a teacher (hypothesis 2.3).

Contextual risk variables are studied from students' perspective: pro-violence messages in family environment and coercive treatment from teachers are evaluated, with increased misbehaviour expected at centres where families have more frequently recommended the use of violence to resolve conflicts (hypothesis 3.1) and where there is more coercive treatment from teachers (hypothesis 3.2).

Finally, a potential moderating effect is expected from other contextual variables (coercive treatment from teachers and pro-violence family messages) in terms of relationships between perceived misbehaviour and school climate variables (family support for teachers, leadership from school's principals, quality of rules and discipline), though specific hypotheses are not proposed in this regard.

Method

Participants

Participants were selected via a two-stage stratified cluster sampling method, proportional to size. Strata were Spain's regions (16, as one refused to participate) and centre's status (public and private), with a total of $16 \times 2 = 32$ strata. The sample was allocated in proportion to strata size and high schools were the primary sample unit. Sampling frame, duly stratified by status, was provided by each participating region. This resulted in the selection of 187 secondary schools. For the second phase, classrooms from each selected school were chosen on a simple random basis (one per academic year), from ESO's (standing for mandatory secondary education) 1st to 4th year. For some third- and fourth-year groups, defined as curriculum diversification groups, students with difficulties following standard third- and fourth-year teaching programmes are grouped together in order to adapt teaching to particular needs of those students and thereby to facilitate their learning. Participation rates were very high, with an overall rate of 94.65%, of which 93.85% in public centres and 95.93% in private centres.

Teachers duly completed 4,090 questionnaires, but in 35 cases (0.9%) it was not possible to obtain teachers' perceived disruption indicator, which is the main dependent variable analysed. These cases were removed insofar as they represented a small percentage of responses (far below the 5% limit established by [Tabachnik & Fidell, 2007](#)), leaving a total of 4,055 valid questionnaires.

Out of the group of valid responses, 56.8% came from women and 43.2% from men. Responses were divided into 31.1% who taught at private centres and 68.9% teaching at public schools. Of the latter, 64.9% were permanent members of staff and 35.1% were teachers with fixed-term contracts. Distribution of respondents in terms of age and seniority is presented in [Table 1](#).

With respect to students, 16 (0.1%) of 16,033 completed questionnaires were rejected as it was not possible to calculate the perceived disruption indicator for students, leaving 16,017 cases. Of these, 49.9% were women and there was a very even distribution of participants (26.1%, 25.1%, 25.0%, and 23.8%) from each academic

year, ranging from ESO's 1st to 4th year. Ages ranged from 11 to 18, with a mean value of 14.22 ($SD = 1.42$).

Table 1. Distribution for Teachers' Age and Seniority

Age	Seniority at school (years)						Total
	≤ 1	2-3	4-5	6-10	11-20	> 20	
30	6.9%	3.0%	0.7%	0.5%			11.1%
31-40	11.7%	7.3%	4.1%	7.1%	2.2%		32.5%
41-50	4.7%	4.9%	3.7%	6.6%	10.2%	2.8%	33.0%
51-60	1.3%	1.4%	1.4%	3.6%	5.6%	7.6%	20.9%
> 60	0.2%	0.2%	0.1%	0.4%	0.5%	1.3%	2.6%
Total	24.9%	16.9%	10.0%	18.2%	18.4%	11.7%	100.0%

Note. Percentages are relative to the whole sample.

Procedure

School principals selected were notified and their participation requested for the study. We also asked for informed consent from parents of the students chosen. Data were collected online at the schools. All teachers of the selected centres were invited to participate. Regarding students, all selected classes participated. Students were instructed that the survey was voluntary, that they could withdraw at any time, and that their responses were anonymous. A teacher remained in the room as the survey was administered in order to answer questions and resolve potential computer problems. Average time required to complete the questionnaire was 50 minutes.

Measures

All measures had been validated in previous research conducted in Spain ([Díaz-Aguado et al., 2010](#)), and technical aspects of the psychometric properties of measures in that research are available for review. Indicators for student misbehaviour and coercive treatment from teachers have been defined by experts on the pattern of disruption-coercive escalations to refer to misbehaviour that does not amount to violence but may be a precursor to it, such as disturbing the class, arriving late, or confronting the teacher ([Borg, 1998](#); [Díaz-Aguado & Martínez Arias, 2013](#)). The three school climate variables evaluated via teacher were first defined from focus group discussions with teachers and subsequently discussed and selected by a panel of school climate experts. Pro-violence messages from families were evaluated based on the measure proposed by [Espelage et al. \(2000\)](#).

The indicators used were obtained via factor analysis after conducting [Horn's \(1965\)](#) parallel analysis for the sections used, and the Cronbach's alpha coefficient, which is included below in parentheses after each indicator's name.

Indicators on teachers' characteristics and circumstances at the school. The following indicators were evaluated by means of the questionnaire answered by teachers:

Gender. Dichotomous variable identifying participants as male or female.

Disruption training courses. This dichotomous variable states whether the teacher has undergone a training course on misbehaviour and classroom management.

Age. This variable was divided into five intervals (below 30 years, 31 to 40 years, 41 to 50 years, 51 to 60 years, and over 60 years). Each interval was separately analysed in the regression model, taking 31 to 40 group age as benchmark and creating four variables with each of the other age bands. This variable, and the next one, were coded in intervals to facilitate anonymity, especially in small centres.

Seniority at school. This variable was divided into six bands (one year or less of experience, 2 to 3 years, 4 to 5 years, 6 to 10 years, 10 to 20 years, and over 20 years). Similarly to the foregoing variables, five

variables were created to analyse seniority in the regression model, taking the group with 4 to 5 years' experience as benchmark.

Teaching in a curriculum diversification group. This variable states whether a teacher gives classes in groups made up of students with difficulties following the standard 3rd and 4th year teaching programme, in which teaching is adapted to students' particular needs.

A Likert-type four-point scale was used for all the variables described below, constructed as presented below and following a generic question.

Dependent variable: misbehaviour

Students' misbehaviour perceived by teachers. ($\alpha = .86$). Teachers answered, through eight items, the following question: "Think about whether you have experienced one of the situations mentioned in your relations with students and choose the response that reflects its frequency during the last two months of class" (*never* = I have never experienced one; *sometimes* = once or twice a month; *frequently* = approximately once a week; and *many times* = a number of times a week). Some examples are "they ignore me during classes", "they reject me", "they answer rudely", "they confront me".

School climate variables perceived by the teacher. For the following three variables, teachers rated relevant questions on a scale (*not at all*, *a little*, *somewhat/fairly*, *a lot*):

Family support for teachers (three items; $\alpha = .79$). "To what extent is the following true for you?: 'I feel that the families respect me'; 'I feel that the families value my work'; 'I have suffered offensive or insulting treatment from a family' (reversed)".

Fairness of rules and discipline (seven items; $\alpha = .82$). "In relation to the school rules and approach to conflict resolution, to what extent do you agree with the following statements?". Some examples are "the rules are fair", "the teachers observe the rules", "students try to resolve conflicts without hitting or insulting anybody", "the disciplinary measures for breaking the rules are fair", "the disciplinary measures act to improve the punished behaviour".

Lack of leadership from school principals (three items; $\alpha = .90$). "At this school, to what extent is the climate damaged by the following?: 'a lack of regular coordination among the professionals working at the school', 'a lack of a school's plan that involves the majority', 'the management team having difficulty leading climate improvement'."

Contextual variables evaluated via total student responses

Pro-violence messages heard in school family environment (three items; $\alpha = .91$). This scale is based on the same general question used in research conducted by Espelage et al. (2000) to measure "Adult messages on violence", with the first item included being the only one in favour of reactive violence used in said study and the addition of another two items along the same lines. The question was: "Have you heard the adults in your family environment provide any of the following recommendations as a way to resolve conflicts? (*never*, *sometimes*, *often*, *very often*): 1) 'if another student hits you, hit them back'; 2) 'if someone insults you, hit them if it's necessary'; 3) 'if someone insults you, insult them back'."

Coercive treatment from teachers toward students (five items; $\alpha = .80$). "How frequently do teachers at your school behave in the following ways? (*never or almost never*, *in some classes*, *in most classes*, *in all classes*): 'answer some students rudely', 'stop some students participating', 'send some students to the head's office'."

Data Analysis

This study was based on a multilevel data structure in which information from teachers and students was nested within their educational centre (Hox et al., 2017; Raudenbush & Bryk, 2002), keeping the information associated with the various levels (Finch et al., 2014).

As such, level 1 (individual) is focused on teacher perceptions, while level 2 is made up of the information relating to each school, meaning that the scores of all students at the same school are aggregated (averaged) for each variable in the study.

The multilevel analysis was conducted with HLM software (version 7; Raudenbush et al., 2011) and performed via four models. The null or non-conditional model allows observed variance for the dependent variable to be divided into two parts: inter- and intra-centre. This model enables an estimate of the part of dependent variable variance that is explicable at an individual level and the part explicable at school level. The percentage variation at school level is provided by the intraclass correlation coefficient (ICC), which indicates the need (or lack of need) to use a multilevel strategy. Model 1 only included some individual variables (gender, age, training, years of experience at the school) or variables for the group of students with which a teacher was working (diversification), all level 1 variables, as predictors. Model 2 incorporated variables on the operation of a school provided by teachers (from level 1: fairness of rules and discipline, lack of leadership from management team, and family support for the teacher), in addition to others provided by students (from level 2, aggregated: pro-violence messages heard in the family and perception of coercive treatment from teachers). Finally, model 3 – the full model – included all the previous indicators to study their relationship as a whole. Robust standard errors were used to account for clustering.

Measures of the individual characteristics of teachers or of student groups with difficulties were maintained on their original scale (or recoded as dummy variables as previously stated). All other measures were centred with respect to the global mean, facilitating their interpretation (Raudenbush & Bryk, 2002) while maintaining their relative position with respect to the sample as a whole. Compliance with assumptions of normality and homoscedasticity for levels 1 and 2 residuals was verified prior to the analyses (see Martínez-Fernández, 2016).

Results

Descriptive Analysis

The results of the descriptive analyses and correlations for level-1 school indicators are shown in Table 2. Taking into account that the values for each indicator were transformed into a scale from 0 to 10 to facilitate their interpretation, we observe that the dependent variable of perceived disruption has a value that could be considered low ($M = 2.05$) were it not for the negative implications of this type of behaviour. Perception of family support for the teacher has the highest average value. Fairness of rules and discipline scores almost 6, indicating that fairness and compliance with rules were not perceived as highly present at the centres. Finally, lack of leadership from school's principals had a low-medium value, though higher than would be desirable.

Table 2. Descriptives and Correlations for Level 1 School Indicators (scale from 0 to 10)

Indicators ($N = 4,055$)	M	SD	r		
			1	2	3
1. Misbehaviour perceived by teacher	2.05	1.47	1		
2. Family support for teacher	7.15	1.57	-.46	1	
3. Lack of leadership by school principals	3.07	2.24	.23	-.26	1
4. Fairness of rules and discipline	5.84	1.50	-.37	.37	-.48

Note. All correlations are significant at $p < .001$.

With respect to level-2 indicators, the aggregated data for the 187 centres (see Table 3) shows a relatively high presence of family advice on the use of violence, while coercive treatment by teachers toward students scores low but remains clearly present.

Table 3. Descriptives and correlations for level 2 students' indicators

Indicators (<i>N</i> = 187)	Range	<i>M</i>	<i>SD</i>	<i>r</i>
1. Pro-violence messages from family	0.8-5.1	2.92	0.59	
2. Coercive treatment from teacher toward students	0.4-2.4	1.07	0.32	.44

Note. Range shows the real range obtained for aggregated variables although individual values range from 0 to 10. Correlation is significant with $p < .001$.

Multilevel Analyses

Null model. The null or non-conditional model offers a division of the variance of the dependent variable according to the levels of analysis proposed, and acts as a reference point for comparisons with the other models. The results show that 11% (intraclass correlation coefficient or ICC = .11, $p < .001$) of the total variation in disruption perceived by teachers is located between centres ($\sigma^2 = 0.237$), while the remaining 89% is intra-centre variability ($\sigma^2 = 1.919$). This result confirms the existence of dependence of the observations and hence the need for a multilevel analysis.

Model 1: Individual characteristics of teachers and student group. The first model included demographic control variables

(gender and age), other individual characteristics (years of experience at the centre, completion of training courses on disruption) and giving classes to diversification groups, which could be related to the disruption perceived by teachers.

The results show significant coefficients for various predictors that, as a whole, reduce intra-centre variance by 2.24% ($\sigma^2 = 1.88$) compared with the null model (see Table 4). For gender, it is observed that men perceive a higher level of disruption than women. Giving class to diversification groups is also related to an increase in perceived disruption, but the same does not happen for attendance at disruption training courses. With regard to age and taking the 31-to-40 years age group as a benchmark, we find significantly lower levels of perceived disruption for the over-50 group and the over-60 group. For time at the centre, the group with 4 to 5 years' experience was used as a benchmark. Significantly higher levels of perceived disruption were found among groups with less seniority (two to three years; fewer than two years). It was verified for all the aforementioned variables whether they had a random variation component with regard to level 2, none being significant (all $ps > .05$).

Model 2: Level-1 variables and interactions with level-2 variables. Model 2 simultaneously incorporates level-1 indicators (family support, lack of leadership from school principals, and

Table 4. Multi-level Analysis for the Dependent Variable Misbehaviour of Students Perceived by Teacher

Predictors	Model 1		Model 2		Model 3	
Fixed effects	γ	<i>SE</i>	γ	<i>SE</i>	γ	<i>SE</i>
Intercept	1.95***	.08	1.98***	.03	1.97***	.07
Controlled variables						
Gender [men]	.11*	.05			.05	.04
Diversification [Yes]	.12 [†]	.06			.05	.06
Disruption training courses [Yes]	-.08	.05			.00	.05
Age [= < 30]	.01	.09			.05	.07
Age [41-50]	-.05	.07			-.09 [†]	.05
Age [51-60]	-.28***	.07			-.28***	.06
Age [> 60]	-.32*	.15			-.12	.11
Seniority [< 2 years]	.23**	.08			.27***	.07
Seniority [2-3]	.29***	.08			.27***	.07
Seniority [6-10]	-.06	.08			-.08	.07
Seniority [10-20]	-.14 [†]	.08			-.09	.07
Seniority [> 20 years]	.02	.09			.03	.08
Level 1 (teacher's perceptions)						
Family support for the teacher			-.32***	.02	-.33***	.02
Lack of leadership of school principals			.03*	.01	.03**	.01
Fairness of rules and discipline			-.18***	.02	-.17***	.02
Level 2 (school level)						
Pro-violence messages from family			.18**	.06	.12*	.06
Coercive treatment from teachers			.09	.06	.11 [†]	.06
Levels 1 and 2 interactions						
Family support x pro-violence mess			.02	.03	.03	.03
Family support x coercive treatment			-.13***	.04	-.14***	.04
Lack of leadership x pro-violence mess			-.06**	.02	-.06**	.02
Lack of leadership x coercive treatment			-.02	.03	-.04	.03
Fairness of rules x pro-violence mess			-.08*	.04	-.09*	.04
Fairness of rules x coercive treatment			.01	.04	.01	.04
Random effect	Variance	$\chi^2(186)$	Variance	$\chi^2(181)$	Variance	$\chi^2(181)$
Intercept	0.207***	598.11	0.066***	297.71	0.063***	287.85
Family support for the teacher			0.014*	221.82	0.016**	228.17
Lack of leadership of school principals			0.005	196.11	0.003	188.64
Fairness of rules and discipline			0.009	185.06	0.010	191.92
σ^2	1.876		1.428		1.390	

Note. Symbols represent probabilities inside the ranges: .1 > [†] > .05 > * > .01 > ** > .001 > ***. Dummy coded variables (Age and Seniority) must be compared with Age = 31 to 40 and Seniority = 4 to 5 years, respectively.

fairness of rules and discipline) and level-2 indicators from the total group of students at each school (family advice on the use of violence and perception of coercive treatment from teachers; the specification of the model can be observed below). With respect to the null model, model 2 reduces intra-school variance by 25.6% ($\sigma^2 = 1.43$) and between school variance by 71.9% ($t = 0.07$).

Table 4 indicates that the three level-1 predictors show a significant relationship with the disruption perceived by teachers. Being valued and respected by families shows a negative relationship, so when teachers perceive higher levels of family support we find a lower perception of disruption. There is a similar pattern for fairness of rules and discipline; the fairer and more respected the rules, the lower the disruption perceived by teachers. As expected, problems with the management team and the organisation show a positive relationship, in which a lack of leadership from the school principal is directly related with a higher frequency of student misbehaviour.

At school level, only family advice on violence shows a clear and positive relationship with perceived disruption, which points to an increase in disruption perceived by teachers when pro-violence messages are more frequent in students' family environments. The perception of coercive treatment from teachers does not show a significant relationship.

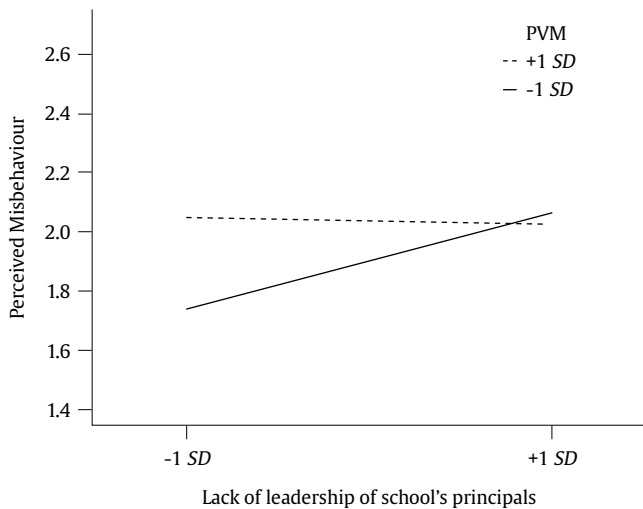


Figure 1. Moderation Effect of Pro-violence Messages from Family (PVM) on the Relationship between Perceived Misbehaviour and Lack of Leadership of School Principals. Regression Lines Represent Values of +1 SD and -1 SD in PVM Variable.

More interesting is the study of the moderating effects of these two student indicators on teachers' predictors. Applied to the three level-1 predictors, the results show significant interactions on three occasions. The indicator of family advice on the use of violence shows a moderating effect in two of the three level-1 predictors. With respect to the indicator of lack of leadership from the school principal ($\gamma = -.06$, $SE = .02$, $p = .005$), the results show that although there is generally a positive relationship with misbehaviour (higher lack of leadership resulting in higher perceived misbehaviour), this relationship disappears when students very frequently receive pro-violence messages in the family, with disruption levels remaining high regardless of whether there is good leadership from the principal (see Figure 1). To the contrary, when students receive little pro-violence advice in family, disruption levels are clearly lower and depend on a lack of leadership from management team, and remain lower than for the above-mentioned group (recipients of frequent pro-violence messages in the family), except when there are high levels of management problems.

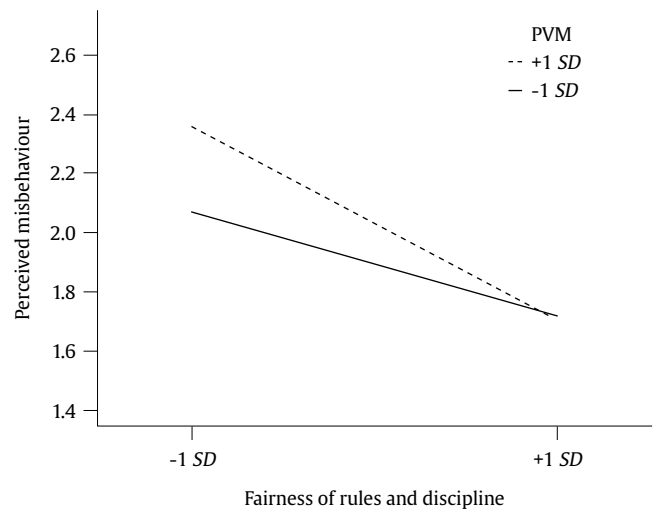


Figure 2. Moderation effect of pro-violence messages from family (PVM) on the relationship between perceived misbehaviour and fairness of rules and discipline. Regression lines represent values of +1 SD and -1 SD in PVM variable.

With respect to fairness of rules and discipline, family advice on violence also shows a significant moderating effect ($\gamma = -.09$, $SE = .04$, $p = .019$). Figure 2 suggests an inverse relationship between misbehaviour perceived by teachers and fairness of rules and discipline. The regression line for the group receiving frequent pro-violence advice is located above that for the group receiving infrequent pro-violence advice, and also has a greater negative slope.

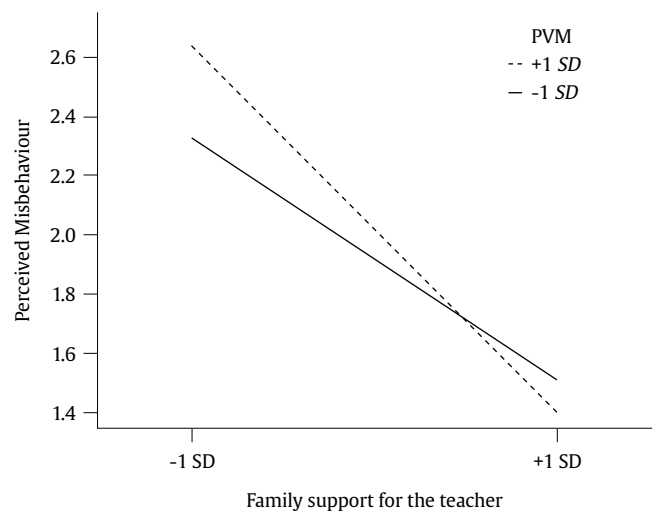


Figure 3. Moderation effect of coercive treatment from teachers (CTT) on the relationship between perceived misbehaviour and family support for teacher. Regression lines represent values of +1 SD and -1 SD in CTT variable.

In the case of family support for teachers, the perception of coercive treatment from teachers shows a significant moderating effect ($\gamma = -.1$, $SE = .04$, $p < .001$). Figure 3 shows the moderating effect of students perceiving coercive treatment from teachers on the relationship between perceived misbehaviour and family support for teachers. It is observed that although the relationship between being valued by families and perceived disruption is generally negative, the slope is greater the more coercive treatment students perceive teachers to engage in. From another perspective, we observe that teachers being highly valued and respected by families can end up "neutralising" the effects of coercive treatment from teachers, with low levels of misbehaviour that are

independent from coercive behaviour. When valuing by families is low, in contrast, perceived level of misbehaviour will be high and will also rise as coercive treatment from teachers increases.

Finally, the multilevel analysis enables us to explore random effects (see Table 4); we observe that only one slope present a significant random variation component, for family support for teachers ($\tau^2 = .014$, $p = .021$). This demonstrates that after the application of the foregoing terms of the model, there are still variations in the slopes of this variable that depend on differences between schools.

Full model. Model 3 is intended to evaluate the level-1 predictors and their level-2 moderators (model 2) after controlling for personal and workplace variables of model 1 (see equations below). In comparison with null model, the full model reduces intra-centre variance by 27.6% ($\sigma^2 = 1.39$) and between-school variance by 73.5% ($\tau = .06$).

Level 1 Model

$$\begin{aligned} \text{MISBEHAVIOUR}_{ij} = & \beta_{0j} + \beta_{1j} * (\text{GENDER}_{ij}) + \beta_{2j} * (\text{DIVERSIF}_{ij}) + \beta_{3j} * (\text{TRAIN_COURSE}_{ij}) \\ & + \beta_{4j} * (\text{AGE1}_{ij}) + \beta_{5j} * (\text{AGE2}_{ij}) + \beta_{6j} * (\text{AGE3}_{ij}) + \beta_{7j} * (\text{AGE4}_{ij}) + \beta_{8j} * (\text{AGE5}_{ij}) \\ & + \beta_{9j} * (\text{SEN1}_{ij}) + \beta_{10j} * (\text{SEN2}_{ij}) + \beta_{11j} * (\text{SEN3}_{ij}) + \beta_{12j} * (\text{SEN4}_{ij}) + \beta_{13j} * (\text{SEN5}_{ij}) \\ & + \beta_{14j} * (\text{FAM_SUPP}_{ij}) + \beta_{15j} * (\text{LACK_LEADER}_{ij}) + \beta_{16j} * (\text{FAIR_RULES}_{ij}) + r_{ij} \end{aligned}$$

Level 2 Model

$$\begin{aligned} \beta_{0j} = & \gamma_{00} + \gamma_{01} * (\text{PRO-VIOL_ADV}_j) + \gamma_{02} * (\text{COERC_TREAT}_j) + u_{0j} \\ \beta_{kj} = & \gamma_{k0}, k = 1, 2, \dots, 13 \\ \beta_{14j} = & \gamma_{140} + \gamma_{141} * (\text{PRO-VIOL_ADV}_j) + \gamma_{142} * (\text{COERC_TREAT}_j) + u_{4j} \\ \beta_{15j} = & \gamma_{150} + \gamma_{151} * (\text{PRO-VIOL_ADV}_j) + \gamma_{152} * (\text{COERC_TREAT}_j) + u_{5j} \\ \beta_{16j} = & \gamma_{160} + \gamma_{161} * (\text{PRO-VIOL_ADV}_j) + \gamma_{162} * (\text{COERC_TREAT}_j) + u_{6j} \end{aligned}$$

With respect to the controlled variables and comparing the results with those of model 1, the variables of gender, diversification and disruption training courses were excluded from the model, with age and years of seniority at the school retained (see Table 4). An additional analysis showed that exclusion of variables occurred when separately including the predictor of family support for teachers, and not when introducing the remaining teacher indicators (lack of leadership from management team and fairness of rules and discipline). For the variables included, the results remain practically the same as those of model 1.

In turn, level-1 predictors also maintain a similar share in the equation (see Table 4) with respect to model 2. For level-2 variables, perception of coercive treatment from teachers becomes marginally significant, while the variable of pro-violence family messages shows a similar relationship to the previous one.

Interactions between levels remain at values indistinguishable from those obtained in model 2, as well as the interpretation of the moderating role of the variables considered. Random effects also remain at similar levels (see Table 4), where the same predictor as in model 2 shows a slope with a significant random variation component (family support for teachers). So, as previously, after the application of the model there are still variations in the slope for those variables that depend on inter-school variations.

Discussion

Misbehaviour Based on Teacher and Student Group Characteristics

An analysis of the results related to hypotheses 1.1 through 1.5 initially showed all the expected variables other than having received disruption training courses to be significant predictors, although both gender and teaching of special groups disappeared from the final model. Men were found to perceive higher levels of disruption in comparison to women, which confirms for Spain a similar result as the one obtained by Kulinna et al. (2006) with United States high-school teachers.

Our results show that disruptive conduct is perceived to be higher among teachers working with groups that contain more students with difficulties, as has also been found in other studies (OECD, 2014; Schwab et al., 2019), in the case of younger teachers and those with fewer than three years' experience at the school. This is probably due to the role of teaching experience in confronting misbehaviour (OECD, 2017; Özben, 2010). It is worth taking into account, however, that the predictive power of these teacher characteristics is very low (reduction in intra-school variance is 2.24%).

Misbehaviour Based on School Characteristics

In accordance with hypotheses 2.1 to 2.3 and along the lines of findings in previous research, our results confirm that misbehaviour perceived by teachers is reduced with three important measures to improve school climate: fairness of rules and discipline (Gottfredson et al., 2005; Morrison, 2018; Slocum et al., 2017; Way, 2011); family support for teachers (Sheldon & Epstein, 2002; Skaalvik et al., 2009); and better leadership from school principals, which encourages participation in school decisions by teachers – as is already the case in the majority of centres – but also by students and families, which few schools promote (Bowen et al., 2006; Hopson & Lee, 2011; OECD, 2014, 2016; Thapa et al., 2013; Tickle et al., 2011).

Variables Evaluated by Student Group in the School Context

Hypothesis 3.1, which predicted increased disruption in contexts with pro-violence family messages, is confirmed. The results do not support hypothesis 3.2, as student perception of coercive treatment from teachers only shows a marginally significant effect on teacher perception of misbehaviour ($p = .084$, only in model 3).

Moderating effects of pro-violence family messages. The results show that although a lack of leadership from school principals (based on teacher participation) enables misbehaviour to be directly predicted, this relationship disappears in centres whose students frequently receive pro-violence messages in their families, where high levels of disruption are observed regardless of said leadership. Teachers tend to describe something similar with regard to the difficulty of using the educational organisation to counteract the influence of family environments that convey messages contradicting what schools are attempting to teach. This again supports the conclusion reached by previous studies (OECD, 2014, 2016; Sheldon et al., 2002) regarding the need to develop distributed leadership. One of the main contributions of the present research from an ecological perspective is its identification in this respect of the need to intervene with families that are conveying pro-violence messages (such as “if you are hit, hit back”) in order to replace those messages with non-violent conflict resolution strategies and thereby improve the consistency of the two main educational microsystems. This kind of mesosystem-level intervention, previously proposed in the context of anti-bullying student programmes (Espelage et al., 2000), also appears necessary to prevent disruption-coercion escalations.

As an expression of the interaction between risk conditions at school and in the family, the results for the moderating effect of pro-violence family messages should be interpreted as showing that the risk of low-quality rules being associated with misbehaviour is higher in schools where students have more frequently heard these messages. A possible explanation would be that these students could have more difficulty in complying with school rules when they involve learning via the so-called hidden curriculum (Jackson, 1968), characterised by low fairness of rules and discipline as well as by frequent contradictions between what is assumed should be taught in schools and what happens in practice. Of particular note in support of this is the importance of schemes to overcome hidden curriculum among young people in situations involving risk of violence, such

as Just Community Approach programmes (Kohlberg, 1985; Power & Higgins-D'Alessandro, 2008), based on democratic construction of school rules with all members of the school community being encouraged to participate.

Moderating effects of coercive treatment perceived by students. Studying the interactions between levels also showed that students' perception of coercive treatment acted as a moderating variable for the relationship between misbehaviour and family support perceived by teachers. In particular, high support from families was associated with low levels of perceived misbehaviour. However, when family support was low, disruption was greater (or lesser) as students' perception of coercive treatment from teachers increased (or decreased). These results coincide with those obtained in the majority of research published in recent decades in this area regarding the role of coercion, which has reported that not only does coercion frequently not reduce misbehaviour levels; it even increases them (Demanet et al., 2012; Jennings et al., 2009; Morrison, 2018; Slocum et al., 2017; Wallace et al., 2014; Sun, 2015; Wang & Degol, 2016).

Conclusions

As recognised in reviews of school climate-focused studies (Thapa et al., 2013; Wang et al., 2016), in order to make progress on this matter there is a need to conduct multilevel studies that evaluate school climate on the basis of multiple sources. The methodology used in this study is hence one of its main contributions: a multilevel and multi-informant model to study the factors of school climate associated with disruption in class, based on teacher and student perceptions.

As a result, we have observed that although sociodemographic factors show a relationship with perceived disruption, it is generally a slight one, the predictive capacity of which disappears (except for seniority at the same school) when other factors are taken into account.

School's contextual variables, such as lack of leadership from the management team (associated with higher levels of disruption) and family support for teachers and fairness of school rules and discipline (both associated with less disruption) are significant at a predictive level.

The information provided by students did not show a clear relationship with disruption when studied in isolation, but there was a clear relationship to the interaction with the information provided on the school by teachers. For example, teachers feeling valued and respected by families was observed to be a protective factor against students' perceived coercive treatment from teachers, restricting the level of classroom disruption. Moreover, students having heard messages in favour of reactive violence represented an important risk factor which can be partly neutralised with high levels of fairness of school rules and discipline, but which is associated at high levels with high disruption, regardless of whether there is good school leadership at the school.

Training Teachers to Proactively Manage Misbehaviour with Supervised Practical Exercises in the Classroom

The results of this research suggest the need to include practical classroom management exercises in the initial and continuous training of high-school teachers, supervised by teachers with experience in effective management of misbehaviour. These exercises enable teachers, particularly when they are new to the profession, to learn proactive strategies to prevent disruption-coercion escalations. This training should include development of skills allowing the teacher to obtain support from students and families. From an ecological perspective, this means intervening at mesosystem level

and encouraging communication between school and family, two microsystems that have traditionally had very little opportunity to collaborate. Feedback provided via this supervision should help to increase both the effectiveness of strategies used by teachers and teachers' security and empowerment, which is particularly important among teachers working with adolescents. Opportunities to learn via this feedback should be supplemented with the chance to observe how other teachers manage misbehaviour. Until recently, the majority of continuous training programmes provided for teachers in Spain did not include this type of practical exercise. The lack of a relationship found in the present study between teachers having attended courses on misbehaviour and perceiving misbehaviour in the classroom could be attributed to this.

Along the lines of previous findings (OECD, 2014, 2016), the results of this study reflect considerable variability in the frequency of misbehaviour experienced by teachers at a single school, which indicates the possibility that teachers could learn the best strategies to share classroom experiences with other teachers at their school, thereby disseminating best practices.

Training of School Principals on Distributed Leadership and Collaboration with Families

School principals should foster opportunities to extend classroom management best practices. Our results also show the importance of these teams extending to students and their families the opportunity to participate in school decisions and plans. This may encourage consensus in terms of identifying what is happening at school and how to improve it through collaboration on a project between all of those whose support is needed. This distributed leadership could contribute to increasing family support for teachers, fairness of rules and discipline, and opportunities to develop consistency between family and school with regard to the messages that are transmitted and their educational effectiveness. Despite the importance of this type of leadership (Thapa et al., 2013; Wang, et al., 2016), results from 30 countries show that it is only practised in a minority of centres (OECD, 2014, 2017). There is hence a need to increase school principals' training and involvement in this leadership, which may be especially important in high-risk contexts as shown by the moderating effects of coercive treatment perceived by students and pro-violence messages heard in family environment. This again reflects the need to encourage mesosystem-level collaboration by promoting family participation in school microsystem.

Development of Conflict Resolution-related Skills and Attitudes

In the context of collaboration between families and schools based on shared objectives, families could be encouraged to communicate to teachers the need to replace the coercive treatment that some staff use for confronting disruption with the proactive treatment that a majority of families demand (Díaz-Aguado et al., 2010). Schools could also inform families of the need to improve the establishing of limits at home as well, helping to raise awareness that advice to do harm to those who do harm to you can lead to an escalation of confrontations that negatively impacts on educational relationships. The results of this study suggest that this type of intervention, proposed to prevent bullying (Espelage, 2000), could also be highly significant in eradicating disruption-coercion escalations in student-teacher relationships. This emphasises the possibility of preventing both problems by replacing dominance-submission and confrontation with mutual respect and cooperation in relationships between students, between students and teachers, and between school and family. These results, which again reflect the need to encourage a new kind

of mesosystem-level collaboration, can be highlighted as a major contribution of this study.

Limitations

Among the most important limitations of this study, it is first necessary to emphasise the fact that a non-experimental methodology was used via a transversal design in the collection of study data, which limits the possibility of establishing causal relationships between variables. The relationships identified from the analyses performed should be interpreted in this light and prudence should be applied to any interpretation seeking to infer any causality. Longitudinal studies and experimental research into the efficacy of the proposed measures are required in order to overcome these limitations.

It should also be stated that all the indicators used are from a questionnaire that investigates personal perceptions and experiences of respondents, which represent measures that are of undoubted interest but are not equivalent to other possible objective measures with respect to indicators evaluated. It would be useful to overcome this limitation with observational studies to examine classroom interactions and analyse them in light of school's social climate.

It should finally be noted that the variables studied contemplate significant aspects for both individual teachers and schools, but do not exhaust all possible study dimensions.

Conflict of Interest

The authors of this article declare no conflict of interest.

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