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The relationships of adolescent school-related deviant behaviour and victimization with psychological distress: Testing a general model of the mediational role of parents and teachers across groups of gender and age

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Abstract

Deviant behaviour and victimization at school have been consistently related to poor psychological adjustment in adolescents. This research explores the mediating role that parents and teachers have in adolescent psychological distress in 973 Spanish students aged 11–16 years old. Structural equation analyses results showed that adolescent deviant behaviour and victimization were positively related to psychological distress as seen by the total effects. However, while victimization was directly related to psychological distress, the association of deviant behaviour and psychological distress was mediated by adolescent–parent communication and adolescent–teacher relationships. Multigroup analyses showed that relationships among variables were not significantly different for groups of age and gender.

Keywords: Deviant behaviour; Victimization; Adolescent–parent communication; Adolescent–teacher relationships; Psychological distress

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Introduction

In this study, we analyse the association of adolescent deviant behaviour and victimization with psychological distress, exploring the mediational roles of adolescent relationships with parents and teachers. We conceptualize school-based deviant behaviour as a global concept that reflects behaviour at school that differ from accepted school standards and brings disapproval (see Haralambos & Holborn, 1992), and it comprises both school-based antisocial behaviour (theft, vandalism and damage to school property) and aggression at school (verbal and physical) (see examples in Dishion, Nelson, & Bullock, 2004; Mahoney & Stattin, 2000; McCaghy, Capron, & Jamieson, 2002; Miranda & Claes, 2004; Sokol-Katz & Dunham, 1997).

Previous research has documented how elements of deviant behaviour such as antisocial behaviour (Caron & Rutter, 1991; Russo & Beidel, 1994) and aggression (Crick & Bigbee, 1998; Ritakallio, Haltiala-Heino, Kivivouri, & Rimpelä, 2005; Stanger, Achenbach, & Verhulst, 1997) are significantly associated with adolescent psychological distress. For victimization, a recent meta-analysis of studies with cross-sectional data between 1978 and 1997 (Hawker & Boulton, 2000) found in the studies analysed a great deal of agreement in that victims of peer aggression suffer a variety of feelings of psychosocial distress (see also Hodges & Perry, 1999, for a review).

Findings from previous empirical research suggest that these associations of deviant behaviour and victimization with psychological distress might be mediated by the adolescent's positive relationships with parents and teachers (Baldry, 2004; Rigby, 2000). Baldry (2004) has suggested that the negative psychological outcomes of deviant behaviour and victimization might be mediated by a positive relationship with one or both parents, and Rigby (2000) has also added that teachers might play a significant role, reducing the risk of developing poor mental health for those students most at risk. If relationships of adolescents with parents and teachers play a mediational role, these relationships should be associated both with deviant behaviour/victimization and with psychological distress. Below we review the empirical evidence documenting these associations (see Fig. 1).

The mediational role of parents and teachers in adolescent psychological distress

Victimization, deviant behaviour and relationships with parents and teachers

Previous research has found that parental support (Demaray, Kilpatrick, & Malecki, 2003; Rigby, 2000) and family relations (Beran & Violato, 2004) are not related to victimization, and that parents of victimized boys are not different from those of boys who are not victims (Pavel, Marta, & Tatiana, 1993). Baldry (2004) reported a non-significant correlation between victimization and a positive relationship with the father in a sample of 661 Italian adolescents 11–15 years old. Similar non-significant correlations were reported by Beran and Violato (2004) between general bullying ('I am bullied at school'), verbal bullying ('children say nasty and unpleasant things to me at school') and parental warmth in a national representative sample of 3434 Canadian students 10–11 years old. Also, students who are victimized by peers at school do not have poorer relationships with teachers as compared to those who are not victimized (Smith, Talamelli, Cowie, Naylor, & Chauhan, 2004) and there is research documenting that the teachers'

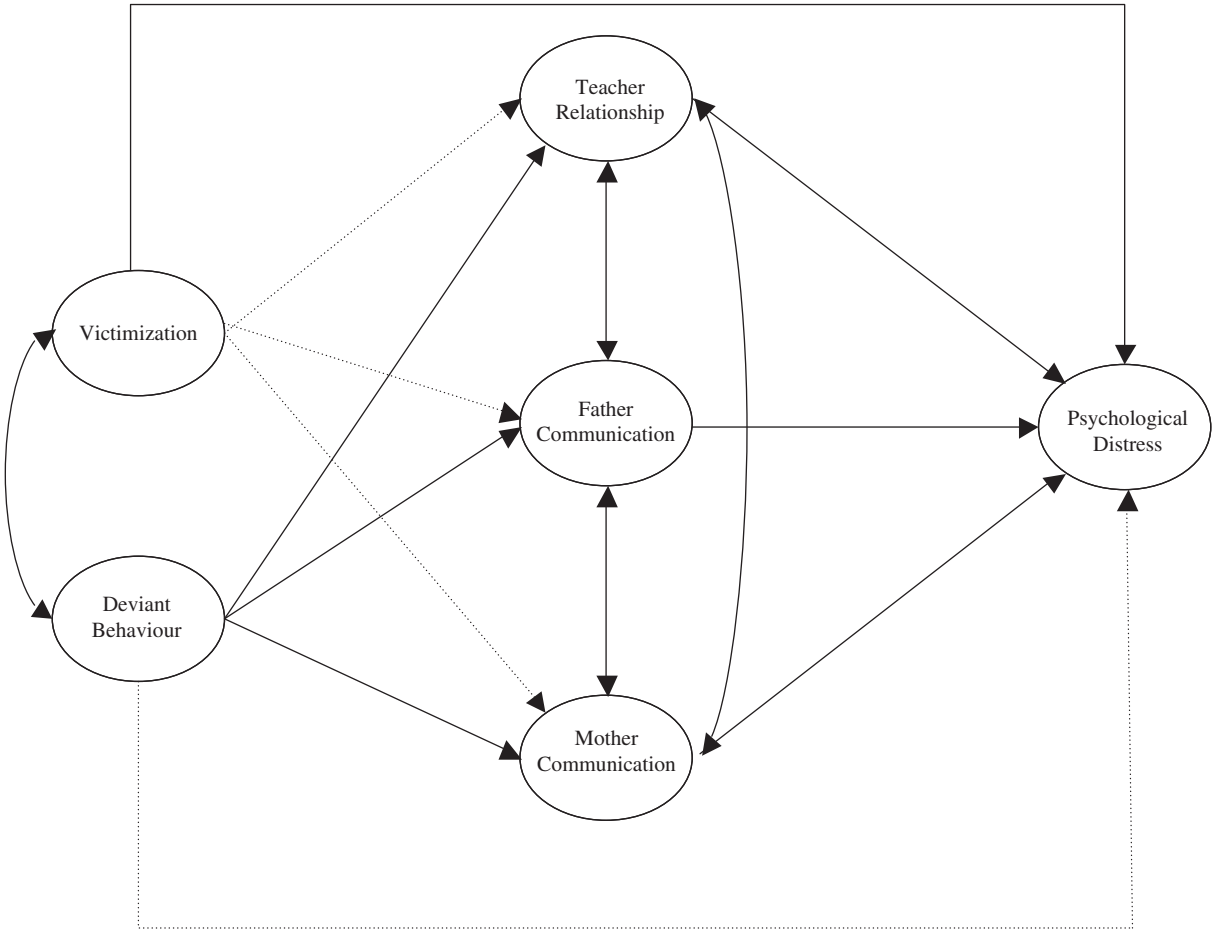

Fig. 1. Deviant behaviour and victimization at school: mediational role of parents and teachers in adolescent psychological distress (dashed lines represent paths hypothesized to be non-significant). Proposed indicators are: Deviant Behaviour (verbal and physical aggression, antisocial behaviour at school); Teacher Relationship (communication, satisfaction and conflictive relationship with student); Father and Mother Communication (open communication, topics avoided and offensive patterns of communication with mother and father separately); Psychological Distress (perceived stress and depression); Victimization (measured with a single indicator of victimization by peers at school).

perceptions of victimized adolescents are not different from those who are not victimized (Juvonen, Graham, & Schuster, 2003).

The association between adolescent deviant behaviour at school and relationships with adults has received less research attention. Some longitudinal research has shown that parents react negatively to adolescent deviant behaviour (Kerr & Stattin, 2003) and that deviant adolescents at school show an important lack of warmth and encouragement from teachers (Birch & Ladd, 1998; Blankemeyer, Flannery, & Vazsonyi, 2002). This suggests that deviant behaviour is associated with adolescent relationships with both parents and teachers although research has seldom tested these associations.

Adolescent–parent communication and psychological distress

There exists a certain agreement in that family environment plays an influential role in the psychological distress (e.g. depression) of children and adolescents (Cummings & Davies, 2002; Formoso, Gonzales, & Aiken, 2000; Sheeber, Hops, & Davis, 2001). Early research suggested that the adolescent psychological adjustment is better in families with close, non-conflictive, parent–child relationships (Josselson, Greenberger, & McConochie, 1977) and it seems well established that poor parent–adolescent communication is positively related to adolescent depression (Allen, Moore, Kuperminc, 1998; Brage & Meredith, 1994; Landman-Peeters et al., 2005). For instance, both longitudinal (Juang & Silbereisen, 1999) and cross-sectional (Essau, 2004) research has found that unsupportive parenting and adolescent depression are significantly related.

Adolescent–teacher relationships and psychological distress

There is empirical evidence suggesting that the relationship with teacher may play a significant role in adolescent psychological distress. Most of this empirical evidence comes from studies analysing the influence the adolescent's perceptions of relationships with teachers on psychological distress. For instance, longitudinal research has shown that an increase in the quality of the adolescent–teacher relationship (i.e. social support) corresponds to a decrease in psychological symptoms over time (Reddy, Rhodes, & Mulhall, 2003). However, how teachers perceive their relationship with adolescents and its association with psychological distress has received almost no research attention.

Association of adolescent relationships with parents and teachers

From the attachment perspective on student–teacher relationships (see Davis, 2003, for an extensive review), adolescent relationships with teachers are extensions of the parent–child relationship and students bring to the classroom relational schemas about the nature of social relationships and attachment patterns with adults. Accordingly, these teacher–student relationships would not be entirely independent of the parent–adolescent relationship in that adolescent relational schemas with parents will provide adolescents with clues to define their relationships with teachers to some extent. During interactions in the classroom, the adolescent get new clues about how to interact with adults, including their relationships with parents.

The present study

The literature summarized above suggests that school-based deviant behaviour, victimization and relationships with parents and teachers are associated with psychological distress. However, while deviant behaviour seems to be associated with relationships with both parents and teachers, the association of victimization and relationships with parents and teachers is less apparent. In this study, we will analyse the mediating role of relationships with significant adults (teachers and

parents) to search for different pathways in which deviant behaviour and victimization are associated with adolescent psychological distress.

First, we hypothesize a direct association of victimization with psychological distress. This would be consistent with research documenting that victimized adolescents may interpret negative peer experiences associated with victimization as critical appraisals of the self and thus leading to internalized distress (Prinstein, Boergers, & Vernberg, 2001) and also with research documenting non-significant relationships between victimization and relationships with significant adults (Baldry, 2004; Beran & Violato, 2004; Juvonen et al., 2003; Smith et al., 2004).

Second, because some research has suggested that the quality of relationships with adults is poorer among deviant adolescents (Baldry, 2004; Rigby, 2000), we would expect that the relationships with adults (parents and teachers) would play a mediating role in the association of deviant behaviour with psychological distress.

Third, given that deviant adolescents may be also victims of peers' aggressive behaviour (Hodges & Perry, 1999; Ma, 2001; Schwartz, 2000), we will explore the substantial associations among deviant behaviour, victimization and relationships with parents and teachers and psychological distress controlling for the association of deviant behaviour and victimization.

Finally, extensive research has reported significant age and gender differences in deviant behaviour (Beyers & Goossens, 1999; Dekovic, Wissink, & Meijer, 2004), victimization (Khoury-Kassabri, Benbenishty, & Astor, 2004; Owens, Daly, & Slee, 2005; Van Dorn, 2004), both adolescent–parent (Landman-Peeters et al., 2005) and student–teacher relationships (Davis, 2003; Sturm, 2000), and psychological distress (Juang & Silbereisen, 1999; Newman, Holdsen, & Delville, 2005; Sacker & Wiggins, 2002). In this study, we will explore the role of age and gender on the substantive relationships among variables in two ways: (1) using gender and age as covariates, and thus removing their effects on the relationships among variables and (2) testing if relationships among variables are significantly different for groups of age and gender.

Method

Participants

Data were gathered from 973 students recruited from four public schools of a one million population metropolitan area (Valencia, Spain), who agreed to participate in an intervention programme to reduce rates of deviant behaviour and victimization at school. After pre-contacts were made with principals at several public schools in the city sponsored by local government educational agencies, four schools were finally selected mostly based on the open predisposition shown by both Parent Associations and staff at these schools. Letters with a brief description of the programme and explaining the need to collect data were sent by Parent Associations to families. This letter also included a no-consent form to sign if parents did not wish their children to take part in the programme. Due to the previous open predisposition shown by parents no students returned the no-consent form. Also, all of the teachers volunteered to participate. While there was no payment to teachers, they were offered several seminars (30 h) which the local government agreed to include as a merit in the teachers' curriculum. Fifty-six classrooms were surveyed providing data for 1061 participants, of whom 973 retained complete data for the

present study. The most basic reason for non-valid data in this study was that some of the students were not living in a two-parent family and their data were removed from the analyses.

Students completed questionnaires in the month of March (the seventh month of the school period in Spain) in a regular class period (1 h) and only the researchers were present during completion. With this procedure, students' reactance to disclose personal information about their views concerning school and teachers was probably lessened. Teachers responded to questions pertaining to their students in private, during the lunch-break.

Age ranged from 11 to 16 years old ($M = 13.72$, s.d. $= 1.61$) and 47.2% of participants were boys. For exploratory and multigroup analyses, we split participants into two age groups (11–13 and 14–16 years old). A percentage of 45.5 of participants belonged to the 11–13 years old group.

Instruments

Scale scores were formed by summing up across items pertaining to each of the scales. All variables were scored so that a higher score represented higher levels of the construct (see Table 2 for correlations among variables of the study).

Deviant behaviour and victimization

We constructed a scale to examine self-reported victimization and deviant behaviour at school, mostly of minor status offences such as cheating, fighting, theft, harm and disruption in class in the last 12 months (see Appendix A). Some of the items used for the various sub-scales of deviant behaviour and victimization are quite similar to items used by others in prior research. For victimization, items such as "classmates made fun of me", "somebody robbed me", "somebody blamed me for things I was not responsible for" "somebody said bad things about my family" and "insulted me" were taken from Mynard and Joseph (2000). For deviant behaviour, we selected and adapted items from Emler and Reicher (1995) to measure deviant behaviour at school since the original items were not restricted to the school context. For instance, items such as 'driven motor vehicle on public highway under the legal age' were not selected. Conversely, items such as 'Smashed, slashed, damaged public property' or 'Broken windows for empty houses' were included in the scale as 'Smashed, slashed, damaged teacher's property' and 'Broken windows at school'. The use of self-report allowed us to examine whether adolescents engaged in deviant behaviour and perceived victimization that maybe was happening covertly in school and may not had been reported by other informants (Crick & Bigbee, 1998). Responses were rated from (1) *never* to (5) *many times*.

Principal component analysis with varimax rotation yielded a four-factor structure for deviant behaviour and victimization at school scale. Kaiser–Meyer–Olkin measure of sampling adequacy was .91. The Kaiser–Meyer–Olkin is a measure of the degree that a factor analysis of the variables might not be a good idea, since correlations between pair of variables cannot be explained by the other variables. Kaiser (1974) characterized a measure of .80 as meritorious whereas considered .90 as marvellous. According to these standards, factor analysis was completely justified. Also, the Bartlett tests of sphericity were statistically significant (171, $\chi^2 = 6875.87.82$, $p < .001$), indicating that it was really improbable that the correlation matrix was an identity matrix and that the factor model was inappropriate.

Factor loadings are presented in Appendix A. The first factor explained 18.21% of the variance and grouped items referring to antisocial behaviour (six items; $\alpha = .82$). The second factor explained 15.43% of the total variance and grouped items referring to victimization (six items; $\alpha = .78$). The third factor explained 14.26% of the variance and grouped items referring to verbal aggression (five items; $\alpha = .76$). Finally, the fourth factor accounted for 8.71% of the total variance and grouped items referring to physical aggression (two items; $\alpha = .75$).

Physical and verbal aggression, and antisocial behaviour are used as indicators of the latent variable deviant behaviour. This allowed us to obtain a single score of adolescent self-reported deviant behaviour on the basis that antisocial behaviour may indicate more deviant behaviour than aggressive behaviour alone (see Pope, Bierman, & Mumma, 1991, for a similar rationale), and also suggested by the moderate inter-correlations observed for the three factors (r's $> .45$, $p < .001$; see Table 1). For victimization at school, we used the scale score.

Table 1
Descriptive statistics by schools

Variable	School				
	1	2	3	4	Overall-test statistics[a]
Age	13.39 (1.59)*b*	13.77 (1.61)*a*	13.85 (1.55)*a*	13.82 (1.67)*a*	$F = 3.201$, $p < .05$
Gender					$\chi^2 = 11.348$, $p < .05$
Boys	118	209*a*	115*b*	63	
Girls	149	178	159	74	
Victimization	9.50 (1.90)	9.62 (1.92)	9.47 (1.97)	9.85 (1.97)	$F = 1.349$, ns
Deviant behaviour					
Antisocial behaviour	6.84 (1.29)	7.09 (1.71)	6.98 (1.59)	7.10 (1.83)	$F = 1.498$, ns
Physical aggression	2.94 (.88)*a*	2.78 (.85)	2.65 (.84)*b*	2.91 (.89)*a*	$F = 5.718$, $p < .01$
Verbal aggression	7.44 (1.67)	7.26 (1.73)	7.28 (1.75)	7.51 (1.73)	$F = 1.132$, ns
Adolescent–mother communication					
Open communication	42.42 (8.26)	41.12 (8.34)*b*	41.76 (8.93)	43.78 (9.08)*a*	$F = 3.415$, $p < .05$
Topics avoided	6.08 (2.03)	5.73 (1.95)	5.87 (2.17)	6.30 (2.15)	$F = 1.165$, ns
Offensive patters	14.62 (6.10)	15.18 (5.68)	15.20 (6.66)	14.76 (6.30)	$F = 1.192$, ns
Adolescent–father communication					
Open communication	38.53 (9.36)	37.59 (9.93)*b*	37.49 (9.75)*b*	41.07 (8.96)*a*	$F = 4.575$, $p < .01$
Topics avoided	5.90 (2.00)	5.64 (1.95)	5.75 (2.21)	5.90 (2.10)	$F = 1.046$, ns
Offensive patters	14.60 (6.28)	15.28 (6.26)	14.78 (6.28)	14.28 (6.56)	$F = 1.053$, ns
Relationship with teacher					
Communication	6.98 (1.99)*a*	6.73 (1.79)	6.46 (1.96)*b*	6.63 (2.02)	$F = 1.612$, ns
Satisfaction	7.26 (1.67)	7.26 (1.39)	6.96 (1.67)	7.71 (1.43)	$F = 1.954$, ns
Non-conflictive relationship	6.59 (2.05)	6.77 (1.82)	6.45 (1.92)	6.63 (2.12)	$F = 1.314$, ns
Psychological distress					
Depression	47.76 (15.50)	49.22 (14.31)	50.91 (16.66)	48.24 (15.42)	$F = 2.090$, ns
Perceived stress	38.24 (8.82)	39.44 (8.70)	39.67 (9.91)	37.97 (9.43)	$F = 1.954$, ns

*$a > b$, $p < .05$ (two-tailed test with Bonferroni correction).
[a]ns, non-significant ($p > .05$, two-tailed test).

Adolescent–parent communication

The parent–adolescent communication scale (Barnes & Olson, 1985) was used to assess the adolescents' perception of communication with parents. This 20 item, five-point Likert-type scale is composed of two sub-scales that measure the degree of openness and extent of problems in family communication. Responses were rated from (1) *never* to (5) *always* and were referred to separately for father ($\alpha = .90$) and mother ($\alpha = .89$).

Barnes and Olson (1985) reported a two-factor structure with adequate internal consistency (α's $> .78$) and test–retest reliability (r's $> .77$, $p < .001$) for each sub-scale. However, we could not replicate this factor structure in our data. Principal component analyses with varimax rotation for items referred to both fathers and mothers, showed a three-factor structure. The first factor grouped 10 items that corresponded to the original 'open family communication sub-scale' (e.g. *My mother/father is always a good listener*) reported by authors—open communication with mother and father (α's $> .88$), respectively. This factor accounted for 32.70% and 34.30% of the explained variance for father and mother, respectively. The remaining 10 items corresponded to the original 'problems in family communication sub-scale'—problems with mother and father, respectively, and were grouped in two factors that accounted for 10.30% and 11.20%, and 6.15% and 7.20% of the variance, for father and mother. These two factors referred to the existence of topics avoided with parents (two items; e.g. 'there are topics I avoid with my mother/father', α's $> .77$) and the presence of offensive patterns in adolescent–parent communication (eight items; e.g. 'my mother/father insults me when she/he is angry with me', α's $> .65$). Open communication, topics avoided and offensive patterns were used as indicators of communication with father and mother, respectively.

Student–teacher relationship

We constructed three items to assess the teacher–student relationship. Teachers were asked to estimate on a (1) *low-poor* to (10) *high-very good* scale levels of communication (*How would you rate your communication with this student*?), satisfaction with the relationship (*How would you rate your satisfaction with your relationship with this student*?), and degree of non-conflictive relationship with the student (*How are the levels of conflict in your relationship with this student*? reversed score). Internal consistency for the three items was $\alpha = .82$. These three items were used as indicators of the relationship with teacher latent variable.

Psychological distress

Perceived stress: A global measure of perceived stress scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used. The PSS is a 14-item scale that measures the degree to which respondents appraised situations as stressful in the last month (e.g. "In the last month, how often have you felt confident about your ability to handle your personal problems?"). Items were scored on a one- to five-point scale from (1) *never* to (5) *very often*. Coefficient α for PSS was .82. *Depression*: The Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977) is a 20-item scale that evaluates the presence of depressive symptomatology including depressed mood, positive affect, somatic and retarded activity, and negative perception of interpersonal relationships in the last week and provides a global measure of depressive mood (e.g. 'I felt that I could not shake off the blues even with the help from my family or friends'). CES-D has been extensively used for the measurement of depression symptoms in both normative and clinical

samples of adolescents (Prinstein et al., 2001). Responses were rated on a four-point scale from (1) *never* to (4) *very often*. Coefficient α was .90. Depression and perceived stress were used as indicators of the latent variable psychological distress.

Results

Table 1 presents descriptive statistics of students participating in the study in each of the four schools.

There were some significant statistical differences across schools. School 1 had a significantly lower mean of age as compared to the other three schools. The proportion of boys and girls was different in schools 2 and 3. There were significant differences between some schools in physical aggression, open communication with mother and father, and communication with teacher. All the remaining variables were equally distributed across schools.

Data on school-based deviant behaviour and victimization were compared with available national statistics conducted by the Ombudsman in Spain in 2000 (Informe del Defensor del Pueblo, 2002) among 1500 boys and 1500 girls 12–16 years old, from 300 schools. In Spain, 40.9% of school students reported having insulted classmates sometimes (39.4% in our study), 6.4% reported having stolen private belongings at school (5.3% in our data), 33.8% were insulted by classmates sometimes (26.7% in our data) and 5.2% were robbed at school (4.8% in our study). Overall, results from our study seemed to be comparable with national data.

We used EQS 6.1 (Bentler & Wu, 2002) structural equation programme to explore relationships among variables. Because χ^2 is very sensitive with large sample sizes, we used several fit indexes to evaluate model fit. Values of CFI, GFI and AGFI, above .95 and values of SRMR and RMSEA below .05 are indicative of good fit (Hu & Bentler, 1999). Maximum likelihood estimator and Satorra–Bentler (S–B) χ^2 for correcting departure from multinormality (as seen by Mardia's Normalized Estimate) were used for the calculation of robust fit indexes (CFI and RMSEA), standard errors and statistical significance of the parameters. All calculations were based on the variance–covariance matrix. We used age and gender as covariates. To do so, paths from age and gender to any observed variable were freely estimated while they were allowed to freely covariate.

Measurement model

Firstly, we fit the measurement model. This model showed a poor fit: S–B χ^2 (77, $N = 973$) $= 989.77$, $p < .001$, CFI $= .84$, Robust CFI $= .85$, GFI $= .90$, AGFI $= .79$, SRMR $= .060$; RMSEA $= .110$ (90% confidence interval .104–.117). Inspection of the multivariate Lagrange Multiplier Test showed that freeing correlated errors between the equivalent indicators of communication with mother and father would reduce the χ^2 substantially. As Bollen (1989) has indicated, in some situations "errors may correlate because indicators come from the same source" (p. 232) as probably was the case in our study. Estimating these covariances not only produced a substantial reduction in χ^2, it but also helped to account for systematic error variance (Bollen, 1989). This final measurement model with correlated errors fit the data well: S–B χ^2 (74, $N = 973$) $= 179.44$, $p < .001$, CFI $= .98$, Robust CFI $= .98$, GFI $= .98$, AGFI $= .95$, SRMR $= .042$; RMSEA $= .038$ (90% confidence interval .031–.045), χ^2/d.f. $= 2.42$.

Table 2
Means, standard deviations and zero-order correlations of observed variables

Variable	*M*	S.D.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
1. Verbal aggression	7.32	1.69	—																
2. Physical aggression	2.78	.86	.51***	—															
3. Antisocial behaviour	9.55	1.92	.55***	.45***	—														
4. Victimization	1.50	1.63	.43***	.29***	.27***	—													
5. Open communication—mother	36.92	7.53	−.26***	−.12***	−.16***	−.13**	—												
6. Topics avoided—mother	6.09	2.12	.19***	.04	.05	.10**	−.48***	—											
7. Offensive patterns—mother	15.02	6.06	.23***	.08*	.17***	.13***	−.55***	.32***	—										
8. Open communication—father	33.09	8.39	−.21***	−.04	−.10**	−.14***	.57***	−.33***	−.35***	—									
9. Topics avoided—father	6.24	2.20	.18***	−.01	.05	.07*	−.29***	.68***	.22***	−.36***	—								
10. Offensive patterns—father	14.08	6.28	.23***	.08*	.17***	.15***	−.33***	.22***	.65***	−.46***	.28***	—							
11. Non-conflictive (teacher)	6.65	1.94	−.20***	−.22***	−.22***	−.08*	.14***	−.05	−.17***	.10**	−.03	−.15***	—						
12. Satisfaction (teacher)	7.19	1.55	−.15***	−.18***	−.12***	−.04	.08*	−.04	−.10**	.06*	−.04	−.09**	.62***	—					
13. Communication (teacher)	6.75	1.91	−.11**	−.12***	−.14***	−.06	.09**	−.02	−.14***	.09**	.01	−.15***	.63***	.61***	—				
14. Depression	49.01	15.30	.19***	.01	.12***	.23***	−.37***	.30***	.45***	−.41***	.25***	.38***	−.13***	−.07*	−.13***	—			
15. Perceived stress	38.86	9.11	.26***	.05	.13***	.22***	−.43***	.35***	.46***	−.42***	.31***	.38***	−.15***	−.06	−.13***	.78***	—		
16. Gender[a]	1.53	.50	−.12***	−.35***	−.18***	−.00	−.03	.03	.11***	−.18***	.13***	.06	.20***	.10**	.09**	.25***	.17***	—	
17. Age	13.72	1.61	.31***	.02	.15***	.06	−.18***	.14***	.18***	−.22***	.15***	.20***	−.13***	−.08*	−.13***	.14***	.20***	.03	—

*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed test).
[a]1 = boy; 2 = girl.

Structural model

Secondly, we empirically tested the theoretical model (see Fig. 1) as well as other alternative nested models. For comparison of nested models, a likelihood ratio test was used. In Model 1, we fixed all of the structural paths to zero and this model was used as a baseline model to compare more restricted nested models. Model 2 tested the direct paths between victimization, deviant behaviour and psychological distress. In this model (direct associations model), paths from both victimization and deviant behaviour to relationships with adults (parents and teachers) were fixed to zero, and all the remaining paths were freed. Model 3 is our proposed theoretical model. In this model, deviant behaviour is only indirectly associated with psychological distress through its association with adolescent–parents and adolescent–teacher relationships. The direct path linking victimization and psychological distress is freely estimated (see Fig. 1) and the paths linking victimization and relationships with adults are hypothesized to be zero. Finally, we tested a fully saturated model (Model 4) that estimated all the relationships among variables. Results of model comparisons are presented in Table 3.

Model 3 significantly improved model fit as compared with Model 2: $\Delta\chi^2$ (2, $N = 973$) = 100.32, $p < .001$. The fully saturated model did not significantly improve model fit as compared to the proposed theoretical model: $\Delta\chi^2(4, N = 973) = 4.26$, ns. These results gave empirical support for Model 3 (Table 3).

Complete fit indexes for Model 3 were: S–B χ^2 (72, $N = 973$) = 161.85, $p < .001$, CFI = .98, Robust CFI = .99, GFI = .98, AGFI = .96, SRMR = .027; RMSEA = .037 (90% confidence interval .030–.044), χ^2/d.f. = 2.24. Table 4 presents the unstandardized and standardized estimates of the measurement part of the model and Fig. 2 depicts the unstandardized and standardized structural paths and probability associated for Model 3. As seen in Table 4, all factor loadings were highly significant, indicative of the plausibility of the measurement model.

As for the effects of the covariates on the variables of the study, boys scored higher on deviant behaviour manifest indicators while girls rated more positively communication with parents, were rated more positively by teachers and showed higher levels of psychological distress. Older participants reported more verbal aggression and antisocial behaviour, poorer communication

Table 3
Satorra–Bentler (S–B) χ^2, degrees of freedom, probability associated and comparison of tested models[a]

Model	Description	S–B χ^2	d.f.	Nested models compared	S–B χ^2 difference	d.f. difference	*p*
Model 1	Baseline model	6238.15	136		—	—	—
Model 2	Direct associations model	245.90	78	Model 1–Model 2	6212.42	58	.000
Model 3	Theoretical model	161.85	76	Model 2–Model 3	100.32	2	.000
Model 4	Fully saturated model	157.39	72	Model 3–Model 4	4.26	4	.371

[a]The difference between two S–B scaled test statistics does not yield the correct S–B scaled difference test statistic. For comparisons of nested models, we used a Satorra expression that permits scaling the difference test statistic (Satorra & Bentler, 1999).

Table 4
Maximum likelihood parameter estimates and standard errors (in parentheses) for the final model ($n = 973$)

	Parameter estimates[a] (unstandardized/standardized)		
	Factor loadings	Effect of gender[b]	Effect of age
Deviant behaviour			
Verbal aggression	1.467/.799***	−.445/−.131***	.333/.317***
	(.097)	(.102)	(.030)
Physical aggression	.555/.589***	−.607/−.351***	.017/.032
	(.036)	(.052)	(.015)
Antisocial behaviour	1[c]/.602	−.585/−.191***	.148/.157***
		(.097)	(.027)
Victimization	1[c]/.998	−.040/−.010	.069/.058
		(.124)	(.040)
Adolescent–mother communication			
Open communication	3.637/.768***	−.551/−.028	1.084/.180***
	(.234)	(.609)	(.185)
Topics avoided	−.513/−.672***	.116/.028	.182/.144***
	(.045)	(.130)	(.041)
Offensive patterns	−1[c]/−.519	.650/.106***	.329/.174***
		(.190)	(.057)
Adolescent–father communication			
Open communication	4.011/.682***	−3.904/−.173***	−1.502/−.215***
	(.330)	(.690)	(.216)
Topics avoided	−.434/−.413***	.522/.129***	.195/.156***
	(.050)	(.128)	(.041)
Offensive patterns	−1[c]/−.609	.349/.055	.396/.203***
		(.196)	(.058)
Relationship with teacher			
Communication	1.048/.761***	.800/.205***	−.159/−.124***
	(.049)	(.122)	(.036)
Satisfaction with relationship	.817/.762***	.323/.104**	−.083/−.086**
	(.039)	(.099)	(.031)
Non-conflictive relationship	1[c]	.380/.099**	−.147/−.132***
		(.122)	(.037)
Psychological distress			
Depression	1.590***	7.586/.247***	1.243/.131***
	(.067)	(.936)	(.291)
Perceived stress	1[c]	2.986/.164***	1.062/.188***
		(.562)	(.177)
Covariances between error terms			
Open communication mother–father		15.267/.435***	
		(.292)	—
Topics avoided mother–father		3.238/.654***	
		(.292)	
Offensive patterns mother–father		2.020/.623***	
		(.132)	

*$p < .05$; **$p < .01$; ***$p < .001$ (two-tailed test).
[a]Robust statistics. Below in parenthesis are standard errors.
[b]1 = boy; 2 = girl.
[c]Fixed to 1.00 during estimation.

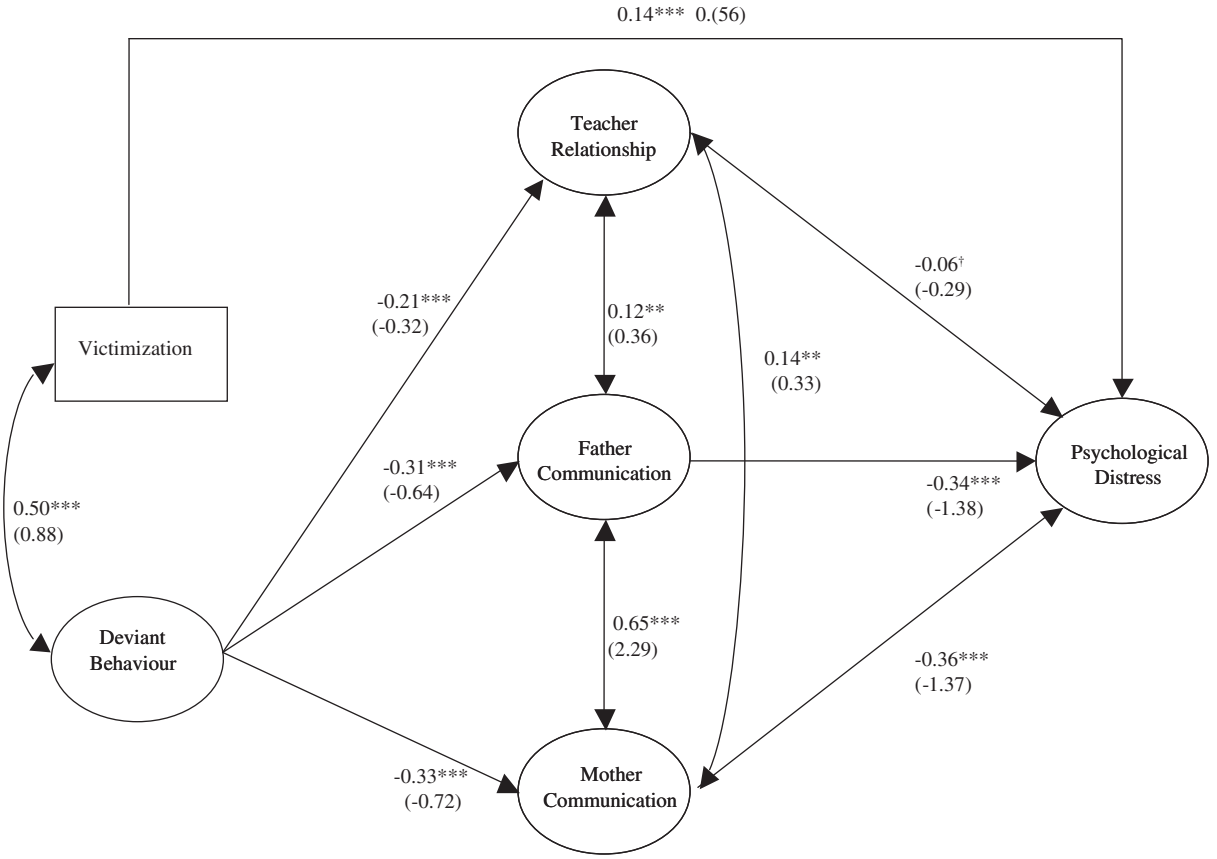

Fig. 2. Deviant behaviour and victimization at school: mediational role of parents and teachers in adolescent psychological distress. Final structural model. To ease the presentation, manifest indicators and disturbance terms are omitted. All paths are covariate-adjusted by gender and age. Bi-directional paths among endogenous latent variables represent correlations among disturbance terms. Coefficients in parenthesis are unstandardized coefficients. Total effect for deviant behaviour → psychological distress ($b = 1.98$, $\beta = .23$, $p < .001$). Explained variance of psychological distress = 46%. Standardized/unstandardized residual variances for latent variables are: Communication Mother (.94/3.75***), Communication Father (.95/3.30***), Relationship with Teacher (.97/2.02***), Psychological Distress (.73/33.71***). Mardia's Normalized Estimate = 21.19. $^{\dagger}p < .10$; $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$ (two-tailed test).

with parents, were rated more negatively by teachers and showed higher levels of psychological distress. By including age and gender as covariates we controlled for potential spurious relationships among variables in the structural model.

As for the structural part of the model, we found that the standardized total effects of deviant behaviour ($\beta = .23$) and victimization ($\beta = .14$) on psychological distress were positive and highly significant ($p < .001$) (see bottom of Fig. 2). As results depicted in Fig. 2 suggest, deviant behaviour and victimization's associations with psychological distress followed different pathways. Deviant behaviour at school followed an indirect path where adolescent–parent communication and their relationships with teachers were both negatively associated with deviant

behaviour and psychological distress ($p<.001$), although marginally ($p<.10$) for the relationship with teacher. Victimization at school followed a direct path. Higher levels of victimization at school were related to higher levels of psychological distress but no direct associations between victimization and relationships with parents and teachers were found. This final model explained 46% of the psychological distress latent variable variance.

Multigroup comparisons across gender and age

We further checked the robustness of this final model by testing both measurement and structural invariance across groups of age and gender through multigroup analyses (Bentler & Wu, 2002). Two models were tested for groups of age and gender, respectively. In the unrestricted model, parameter estimates (factor loadings and structural paths) were freely estimated across groups. In the restricted model, we constrained each of the factor loadings as well as the structural paths to be invariant across groups. If the χ^2 of the restricted model were significantly larger than the χ^2 of the unrestricted model, the assumption of invariance would not be tenable.

For groups of age, a non-significant difference between the unrestricted and restricted model was found: $\Delta\chi^2$ (23, $N = 973$) = 33.40, ns. For groups of gender the unrestricted model showed a significantly smaller χ^2 than the restricted model: $\Delta\chi^2(23, N = 973) = 50.27$, $p<.001$. Multivariate Lagrange Multiplier Tests revealed that releasing three constraints out of 23 would contribute to a significant reduction in χ^2. These freely estimated parameters were still highly significant ($p<.001$) for both girls and boys, although the unstandardized parameter estimates were greater for girls. Father and mother communication was strongly related in girls ($b = 2.74$) than in boys ($b = 1.94$), although in both cases was highly significant ($p<.001$). Topics avoided in parent–adolescent communication was a stronger indicator of adolescent–mother (b's, $|.629|>|.376|$) and adolescent–father (b's, $|.590|>|.292|$) communication in girls than in boys. After releasing these three constraints, unconstrained and constrained models were statistically equivalent: $\Delta\chi^2(20, N = 973) = 27.65$, ns. Despite these minor differences, results supported both the factorial and structural invariance across groups, thus adding generalizability to the proposed model.

Discussion

The present study has analysed the mediational role of parents and teachers in the association of deviant behaviour and victimization at school with psychological distress among 973 Spanish adolescents 11–16 years old. Firstly, once the confounding associations of deviant behaviour and victimization with psychological distress were controlled for, our results suggested that deviant behaviour is not directly related to psychological distress. Moreover, the association of deviant behaviour and psychological distress seemed to be completely mediated by relationships with parents and, to a lesser extent, with teachers. Higher levels of deviant behaviour were associated with a poorer communication with parents (Dishion et al., 2004) and teachers (Birch & Ladd, 1998) which, in turn, were positively associated with concurrent adolescent psychological distress (Essau, 2004). This finding points to the important role that significant adults may play as potential mediators between deviant behaviour and psychological distress.

Conversely, we found a direct path between victimization and psychological distress, thus confirming other research findings which show that victimization is positively associated with psychological distress among adolescents (see Hawker & Boulton, 2000, for a review). Interestingly, victimization was not associated with relationships with adults. These results are in line with other research findings that suggest that parents of victimized adolescents are not different from those of adolescents who are not victims (Beran & Violato, 2004; Pavel et al., 1993) and extends these findings to relationships with teachers (Juvonen et al., 2003; Smith et al., 2004). Previous research has suggested that adults are usually unaware of adolescent victimization (Whitney & Smith, 1993), with teachers being less aware than parents (Houndoumadi & Pateraki, 2001). It has been further suggested that victimized adolescents usually keep their problems a secret because they probably think adults can do little to help them (Olweus, 1991). If students' victimization is not visible to adults, they cannot give the adolescent the support and guidance needed to cope with victimization. Further research would seek to better disentangle this link between adolescent victimization and relationships with adults.

It is also possible that indirect associations between victimization and psychological distress might have been found had we used other indicators of relationships with adults. Baldry (2004) found a similar finding using a brief measure of positive adolescent–parent relationships, asking students if they agreed with mother/father, if mother/father were supportive to him/her and if they helped them when needed. Relatedly, Beran and Violato (2004) found that perceived victimization and parental warmth and control, measured by the Parent Practices Scale (Strayhorn & Weidman, 1991), were not significantly associated. We also tested the structural model of Fig. 2 with social support from mother and father (as measured by RSI, van Lieshout, Cillessen, & Haselager, 1999) instead of communication with mother and father and results were virtually replicated, finding a direct path between victimization and psychological distress. This suggests that maybe results of this study would generalize with other indicators of relationships with significant adults, although more research is needed to confirm this point.

We also found significant differences across groups of age and gender among the variables of the study in line with those reported in the literature (Dekovic et al., 2004; Newman et al., 2005; Sturm, 2000; Van Dorn, 2004). Beyond these differences, results from the multigroup analyses indicated that the substantive associations among deviant behaviour, victimization and relationships with adults and psychological distress were equivalent across groups of age and gender.

Yet, some characteristics of this research may limit the generalizability of the study findings in several ways. Firstly, the use of self-reported data allowed for potential shared method variance (Prinstein et al., 2001), artificially inflating relationships among participants' responses. However, correlation with measures obtained through other sources (teacher) may indicate that relationships among constructs are relatively independent of a shared method variance. Nonetheless, in addition to self-report measures from adolescents, parental perceptions of family communication should be included to more accurately understand the associations found in this study.

Secondly, generalizability within the Spanish context is limited. Participants in the study are not a representative sample of Spanish adolescents 11–16 years old, although the distribution of deviant behaviour and victimization seems to follow a similar pattern when compared with national representative data (see Results section).

Thirdly, generalizability beyond the Spanish context is also limited. There is evidence that the association of adolescent–parent and adolescent–teacher relationships with psychological distress varies across cultures. While authoritative parenting has been documented in Anglo-Saxon cultures to promote the adolescent psychosocial adjustment significantly better than other types of parenting (Steinberg, Lamborn, & Darling, 1994), these relationships have not been found in other cultural contexts such as in Germany (Barber, Chadwick, & Oerter, 1992) or in Spain (Musitu & García, 2004).

Also, as Chen, Greenberger, and Farruggia (2003) have suggested, in cultures where adolescents have a more varied life that includes sports and other extracurricular activities (i.e. Spain and most of Western countries) the association between teacher support and adolescent psychological adjustment may be weaker as compared to those cultures where teachers play a more significant role in the lives of adolescents (i.e. China). Further research should clarify if the findings of our study may be replicated in different cultural contexts.

Finally, the present study used a cross-sectional design so we should be cautious about making causal inference from our results. Certainly, the use of longitudinal data would help to further clarify the role that parents and teachers play in the relationships between adolescent school-based deviant behaviour, victimization by peers and psychological adjustment.

These potential shortcomings notwithstanding, the present study has shown the importance of including the adolescent–parent and adolescent–teachers relationships in explaining the associations of deviant behaviour and victimization and psychological distress.

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Appendix A

Please answer sincerely about the frequency from (1) never to (5) a lot which you participated in the following behaviours in the last 12 months (see Table 5 for details).

Table 5
Deviant behaviour and victimization at school scale (factor structure)[a]

Item	Factors			
	Antisocial behaviour	Victimization	Verbal aggression	Physical aggression
Stolen or forced school registries	.806			
Smashed, slashed, damaged teacher's property	.764			
Broken windows at school	.754			

Table 5 (*continued*)

Item	Factors			
	Antisocial behaviour	Victimization	Verbal aggression	Physical aggression
Destroyed classmate's notebooks and/or homework	.679			
Falsified parent's signature on report cards or parental notes	.518		.361	
Stolen classmate's property	.479			
Classmates made fun of me		.786		
Somebody robbed me		.670		
Somebody insulted me		.654		
Somebody said bad things about my family		.646		
Somebody blamed me for things I was not responsible for		.637		
Somebody at school stared at me in a bad way		.622		
Insulted or made fun of teachers			.751	
Disturbed teachers in the classroom			.740	
Responded aggressively to teachers			.644	
Provoked problems and conflicts in the classroom			.560	
Insulted classmates			.557	
Hit somebody at school				.878
Struggled, fought with classmates				.698
% Explained variance	18.21	15.43	14.26	8.71

[a]Factor loadings smaller than .35 not shown. Kaiser–Meyer–Olkin measure of sampling adequacy = .912. Barlett test of sphericity (171, $\chi^2 = 6875.87.82$, $p < .001$).

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