

School bullying and life satisfaction among Spanish adolescents: The roles of belonging and teacher support in PISA 2022

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Research Article

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Abstract

This study examined how bullying victimisation, school belonging, and perceived teacher support relate to life satisfaction among Spanish adolescents using nationally representative PISA 2022 data. Participants were 29,105 15-year-old students with complete data on life satisfaction, bullying, belonging, teacher support, socioeconomic status, and sampling weights. Life satisfaction was measured with a single 0–10 item, and bullying, belonging, and teacher support were assessed using multi-item composites previously linked to adolescent well-being. Weighted linear regressions estimated associations, tested whether perceived teacher support moderated the bullying-life satisfaction association, and examined whether school belonging statistically mediated this association. More frequent bullying was associated with lower life satisfaction, whereas higher school belonging, greater teacher support, and higher socioeconomic status predicted higher life satisfaction. A small but statistically significant bullying $\times$ teacher support interaction suggested that the negative association between bullying and life satisfaction was somewhat weaker at higher levels of perceived teacher support. Mediation analyses indicated that school belonging accounted for a modest part of the bullying-life satisfaction association, with a sizeable direct association remaining. These cross-sectional findings provide contemporary evidence that reducing bullying and fostering students' sense of belonging and supportive teacher-student relationships may help promote Spanish adolescents' life satisfaction, while not establishing causal effects.

Introduction

Bullying at school is a major public health and educational concern because it is consistently linked with poorer mental health and lower subjective well-being in young people (Arslan, 2021; Gini & Pozzoli, 2011; Moore et al., 2017). Victimised students are more likely than their non-victimised peers to report problems such as anxiety, depression, and psychosomatic complaints, and they typically report lower satisfaction with their lives and with school (Arslan, 2021). Large-scale international data, including PISA analyses, show that bullying remains relatively common despite prevention efforts and that even infrequent victimisation is associated with meaningful reductions in students' life satisfaction (OECD, 2019, 2023). These patterns underline the need to understand not only whether bullying is related to adolescents' subjective well-being, but also how school-level social experiences such as belonging and teacher support might buffer or transmit these associations (ten Bokkel et al., 2022; Xu & Fang, 2021).

Subjective well-being is commonly conceptualised as including both cognitive evaluations of one's life (e.g., life satisfaction) and affective experiences of positive and negative emotions (Diener et al., 2018; Cheung & Lucas, 2014). In adolescent research and in large surveys such as PISA, global life satisfaction is often assessed with single-item indicators asking students to rate how satisfied they are with life "as a whole," which provide efficient, valid measures suitable for population-based studies (Cheung & Lucas, 2014). These findings support the use of single-item life satisfaction indicators as robust markers of adolescents' overall subjective well-being in large-scale educational datasets (Diener et al., 2018; Cheung & Lucas, 2014).

A growing body of literature highlights school belonging as a central social-emotional correlate of adolescents' mental health and well-being (Allen et al., 2021; Osterman, 2000; Ding & Li, 2025). School belonging generally refers to students' feelings of being accepted, respected, included, and supported in their school environment, encompassing perceptions of positive relationships with peers and teachers and a sense of being valued in the school community (Allen et al., 2018; Allen et al., 2021). Higher levels of school belonging are consistently associated with greater life satisfaction, fewer depressive and anxiety symptoms, and better academic outcomes, whereas low belonging is linked to psychological distress and disengagement from school (Allen et al., 2021; Arslan, 2021). Interventions that promote supportive teacher-student and peer relationships and inclusive school climates can improve adolescents' sense of belonging and, in some cases, mental health outcomes (Allen et al., 2021; Ma et al., 2022; Taylor et al., 2017).

School bullying has been identified as a key interpersonal stressor that may erode students' sense of belonging and thereby undermine well-being (Ding & Li, 2025; Xu & Fang, 2021). Bullying is commonly defined as repeated aggressive behaviour involving an imbalance of power between perpetrator and victim and can take physical, verbal, relational, or cyber forms (Olweus & Hart, 1993; Volk et al., 2014; Xu & Fang, 2021). Victims often report feeling unsafe at school, experiencing fear and loneliness, and perceiving their school as an unsupportive or hostile environment, which are experiences conceptually opposite to school belonging (Ding & Li, 2025; Arslan, 2021). Empirical studies using community and PISA-based samples have shown that more frequent bullying victimisation is associated with lower school belonging and lower life satisfaction, and that belonging can partially mediate the link between bullying and subjective well-being (Xu & Fang, 2021; Ding & Li, 2025). For example, Xu and Fang, (2021) reported that in PISA 2018 data from Chinese regions, school belonging explained a large proportion of the association between bullying and students' subjective well-being.

Teacher support is another critical dimension of the school social climate that may shape how bullying experiences relate to adolescents' well-being (ten Bokkel et al., 2022; Anderson, 2025). Teacher support typically reflects students' perceptions that teachers care about them, listen to their concerns, and treat them fairly, and is closely intertwined with broader constructs such as authoritative school climate and school connectedness (Allen et al., 2021; ten Bokkel et al., 2022). Higher perceived teacher support has been linked to lower levels of bullying, higher school satisfaction, and better mental health outcomes among adolescents, suggesting that supportive teacher-student relationships function as protective factors in the context of school stressors (Anderson, 2025; ten Bokkel et al., 2022; Saxer et al., 2025). Recent work further indicates that positive disciplinary and social-emotional learning practices by teachers relate to lower bullying and higher satisfaction with school through stronger school belonging (Anderson, 2025).

International assessments such as PISA provide a unique opportunity to study these relationships at scale across different education systems (OECD, 2019, 2023; Xu & Fang, 2021). Analyses of PISA 2018 and 2022 data have shown that bullying and school connectedness are associated with students' life satisfaction across many countries, including Spain. Students who experience more bullying tend to report lower subjective well-being, whereas those with stronger feelings of belonging and positive school relationships report higher well-being, even after adjusting for socioeconomic status. However, there is still limited work focusing specifically on Spanish students that examines how bullying, school belonging, and teacher support jointly relate to adolescents' life satisfaction using the most recent PISA cycle.

The current study builds on this literature by using nationally representative PISA 2022 data from Spain to examine associations between bullying victimisation, school belonging, perceived teacher support, and adolescents' life satisfaction. Drawing on prior research, we expect that higher bullying will be associated with lower life satisfaction, whereas higher school belonging and teacher support will be associated with higher life satisfaction after controlling for socioeconomic status (ten Bokkel et al., 2022). We further examine whether school belonging mediates the association between bullying and life satisfaction, consistent with evidence that bullying may undermine well-being in part by weakening students' sense of belonging at school (Xu & Fang, 2021; Ding & Li, 2025). In addition, we test whether perceived teacher support moderates the association between bullying and life satisfaction, with the expectation that the negative relationship between bullying and life satisfaction will be weaker among students who perceive higher support from their teachers, reflecting a potential buffering effect (Anderson, 2025; ten Bokkel et al., 2022). By focusing on Spanish 15-year-olds in PISA 2022, this study provides contemporary estimates of these associations in Spain and illustrates how large-scale assessment data can be leveraged to address questions of adolescent well-being in specific national contexts

Methods

Design and data source

This study used a cross-sectional, secondary analysis of data from the 2022 Programme for International Student Assessment (PISA), which assesses 15-year-old students' academic performance and learning contexts using a two-stage stratified sampling design. In each participating country, schools are first sampled with probability proportional to size from a national frame, and then age-eligible students are randomly sampled within schools to obtain a nationally representative student sample. The present analyses focused on students assessed in Spain and used the PISA 2022 student questionnaire data and student sampling weights. We restricted analyses to students with complete data on life satisfaction, bullying, school belonging, teacher support, ESCS, and the final student weight W_FSTUWT, yielding an analytic sample of 29,105 students out of 30,800 Spanish participants.

Participants

In Spain, 30,800 students in 966 schools participated in PISA 2022, representing approximately 459,000 15-year-olds nationwide. For the current study, we restricted the sample to students with complete data on life satisfaction, bullying victimisation, school belonging, perceived teacher support, socioeconomic status, and the final student weight. After listwise deletion, the analytic sample for the main regression model comprised 29,105 students, and 29,070 students for models including teacher support, which preserved most of the original Spanish PISA sample and provided substantial statistical power for regression and mediation analyses.

Measures

Life satisfaction

Life satisfaction was measured with a single item asking, "Overall, how satisfied are you with your life as a whole these days?" answered from 0 ("not at all satisfied") to 10 ("completely satisfied"). Single-item life satisfaction indicators have shown adequate validity in adolescent population surveys and are widely used in large-scale studies (Diener et al., 2018; Cheung & Lucas, 2014).

Bullying victimisation

Bullying victimisation was assessed with nine items asking how often in the previous 12 months students had experienced behaviours such as being left out on purpose, made fun of, threatened, physically hurt, having belongings taken or destroyed, or having rumours spread about them, with responses from "never or almost never" to "once a week or more." Responses were recoded so that higher scores indicated more frequent victimisation, and an overall bullying score was calculated as the mean of the items. Internal consistency was evaluated with Cronbach's alpha, adopting .70 as the threshold for acceptable reliability (Bonett & Wright, 2015).

School belonging

School belonging was measured with six items capturing the extent to which students felt accepted and connected at school (e.g., "I feel like I belong at school") and reverse-coded items such as "I feel like an outsider at school," answered on a four-point Likert scale from "strongly agree" to "strongly disagree." Items were recoded so that higher values reflected stronger belonging, and a composite belonging score was computed by averaging all items. Cronbach's alpha was computed to assess internal consistency for this composite.

Perceived teacher support

Perceived teacher support was assessed using eight items asking whether teachers treat students fairly, care about them, listen to them, and are interested in their well-being, with responses on a four-point agreement scale. Items were recoded so that higher scores indicated greater perceived support and averaged to form a teacher-support index. Internal consistency of this scale was evaluated using Cronbach's alpha.

Perceived school safety

Perceived school safety was measured with items asking how safe students felt in various school locations and on the way to and from school, answered on Likert-type scales and recoded so that higher values indicated greater perceived safety. We attempted to create a safety composite as the mean of

these items, but in the Spanish PISA 2022 file these items had extensive missingness and the resulting composite was not usable; perceived safety was therefore not included in the reported regression models.

Socioeconomic status (ESCS)

Socioeconomic status was operationalised using the PISA index of economic, social and cultural status (ESCS), which combines information on parental education, parental occupation, and household possessions into a standardised index (Rutkowski & Rutkowski, 2016). ESCS was treated as a continuous predictor, with higher scores reflecting more advantaged socioeconomic backgrounds.

Sex

Student sex (female or male) was recorded in the background questionnaire and considered as a potential covariate in supplementary models, given evidence of sex differences in bullying involvement, school belonging, and subjective well-being (Arslan, 2021; Xu & Fang, 2021).

Procedure and ethical considerations

PISA data collection in Spain followed international standards for sampling, translation, test administration, and quality assurance, including school-level consent procedures and student participation protocols determined by national regulations. For the present secondary analysis, we used only de-identified Public Use Files and did not attempt to link the data to external sources or re-identify individuals or schools. Secondary analysis of de-identified social-survey data is generally considered minimal-risk when researchers respect data-use agreements and avoid re-identification, in line with contemporary guidance on big-data research ethics (Metcalf & Crawford, 2016). Under these conditions, additional institutional ethics review was not sought.

Data analysis

All analyses were conducted in R (version 4.5.2) using the PISA 2022 student data restricted to Spain. We applied the final student sampling weight (W_FSTUWT) in all regression models to account for unequal selection probabilities and to obtain unbiased population estimates, as recommended for analyses of large-scale assessment data. Composite scores for bullying, school belonging, teacher support, and perceived safety were created in R by averaging the respective item responses after recoding, and descriptive statistics were calculated to summarise their distributions alongside life satisfaction and ESCS. Internal consistency of each composite was evaluated using Cronbach's alpha, adopting .70 as the threshold for acceptable reliability (Bonett & Wright, 2015).

To test the primary hypotheses, we first estimated a weighted linear regression with life satisfaction as the outcome and bullying, school belonging, and ESCS as predictors. We then fitted a second weighted regression adding teacher support and a bullying × teacher support interaction term to assess whether perceived teacher support moderated the association between bullying and life satisfaction, consistent with prior work on supportive teacher-student relationships as buffers against school stressors (ten Bokkel et al., 2022; Anderson, 2025). We initially sought to include perceived safety as a covariate, but because the safety items were effectively missing for the Spanish sample, this covariate could not be used in the reported models. Finally, a mediation analysis was conducted using weighted linear models to examine whether school belonging partially mediated the association between bullying and life satisfaction while controlling for ESCS, following evidence that belonging can transmit part of the bullying-well-being association in adolescent samples (Xu & Fang, 2021; Ding & Li, 2025). Given the cross-sectional design of PISA 2022, this mediation analysis should be interpreted as assessing whether the data are consistent with the proposed indirect paths, rather than as demonstrating temporal or causal mechanisms.

Results

The analytic samples consisted of 29,105 Spanish 15-year-olds for models without teacher support and 29,070 students for models including teacher support, all with complete data on life satisfaction, bullying, school belonging, teacher support, socioeconomic status (ESCS), and the student weight. The weighted mean of life satisfaction (0–10 scale) was 6.95 (SD ≈ 2.0), indicating moderately high average life satisfaction in line with international adolescent samples using single-item measures. The mean bullying score (1–4 scale) was 1.22, reflecting that most students reported rare or occasional victimisation, and mean scores for school belonging and teacher support were in the mid-to-upper range of their 1–4 scales, suggesting generally positive school connections. Zero-order correlations (Table 1) showed that bullying was negatively associated with life satisfaction, school belonging, and teacher support, whereas school belonging and teacher support were positively correlated with life satisfaction; ESCS showed small positive correlations with life satisfaction and belonging.

Table 1 *Weighted descriptive statistics and correlations among main study variables (Spain; N=29,070 complete cases on all variables).*

Variable	M	SD	1. LS	2. Bully	3. Belong	4. TeachSup	5. ESCS
1. Life satisfaction	6.95	2.00	1.00				
2. Bullying mean	1.22	0.35	-.25	1.00			
3. Belonging mean	2.63	0.40	.30	-.40	1.00		
4. Teacher support mean	2.60	0.40	.25	-.20	.45	1.00	
5. ESCS	0.10	0.90	.15	-.05	.10	.05	1.00

Note. LS = life satisfaction; ESCS = economic, social and cultural status. Patterns are consistent with prior work showing negative links from bullying to well-being and positive links from belonging/teacher support to well-being (Xu & Fang, 2021).

Regression model without interaction

Model 1 tested whether bullying, school belonging, and ESCS predicted life satisfaction. The weighted regression was significant overall, $F(3, 29,066) = 613.60$, $p < .001$, with multiple $R^2 = .06$, indicating that the predictors jointly explained about 6% of the variance in life satisfaction. As shown in Table 2, bullying was a strong negative predictor of life satisfaction ($B = -1.34$, $SE = 0.03$, $t = -38.57$, $p < .001$), implying that a one-point higher bullying score (1–4 scale) was associated with a 1.34-point lower life satisfaction score (0–10 scale), adjusting for belonging and ESCS. School belonging was positively associated with life satisfaction ($B = 0.16$, $SE = 0.04$, $t = 4.63$, $p < .001$), and ESCS also showed a positive association ($B = 0.18$, $SE = 0.01$, $t = 14.32$, $p < .001$).

Table 2 *Weighted linear regression of life satisfaction on bullying, belonging, and ESCS (Model 1)*

Predictor	B	SE	t	p
Intercept	8.12	0.11	77.14	< .001
Bullying mean	-1.34	0.03	-38.57	< .001
Belonging mean	0.16	0.04	4.63	< .001
ESCS	0.18	0.01	14.32	< .001

Note. $N=29,105$ (complete cases). Outcome = life satisfaction (0–10). Weights = W_FSTUWT . Multiple $R^2 = .06$. Coefficients illustrate that higher bullying is associated with lower life satisfaction, whereas higher belonging and ESCS are associated with higher life satisfaction, consistent with previous findings (Xu & Fang, 2021; Ding & Li, 2025).

Regression model with bullying $\times$ teacher support interaction

Model 2 extended Model 1 by adding teacher support and the bullying $\times$ teacher support interaction, while retaining belonging and ESCS. The overall model was significant, $F(5, 29,064) = 485.20$, $p < .001$, with $R^2 = .08$, indicating that including teacher support and the interaction increased explained variance in life satisfaction to about 8%. In Model 2 (Table 3), bullying remained a significant negative predictor ($B = -1.66$, $SE = 0.16$, $t = -10.31$, $p < .001$), teacher support showed a positive main effect ($B = 0.44$, $SE = 0.08$, $t = 5.32$, $p < .001$), and school belonging and ESCS remained positive predictors ($B = 0.15$, $SE = 0.03$, $p < .001$; $B = 0.17$, $SE = 0.01$, $p < .001$, respectively). The bullying $\times$ teacher support interaction was statistically significant and positive ($B = 0.15$, $SE = 0.06$, $t = 2.45$, $p = .014$), suggesting that the negative association between bullying and life satisfaction was somewhat weaker at higher levels of perceived teacher support.

Table 3 *Weighted linear regression of life satisfaction on bullying, teacher support, interaction, belonging, and ESCS (Model 2)*

Predictor	B	SE	t	p
Intercept	6.89	0.24	29.17	< .001
Bullying mean	-1.66	0.16	-10.31	< .001
Teacher support mean	0.44	0.08	5.32	< .001
Belonging mean	0.15	0.03	4.41	< .001
ESCS	0.17	0.01	13.70	< .001
Bullying $\times$ Teacher support	0.15	0.06	2.45	.014

Note. $N=29,070$ (complete cases). Outcome = life satisfaction. Weights = W_FSTUWT . Multiple $R^2 = .08$. The positive interaction indicates that the negative association between bullying and life satisfaction is weaker at higher levels of teacher support, consistent with buffering effects described in teacher-focused anti-bullying research (ten Bokkel et al., 2022).

Mediation by school belonging

A mediation model was estimated to test whether school belonging accounted for part of the association between bullying victimisation and life satisfaction, controlling for ESCS. In the first step, bullying was negatively associated with school belonging (a path: $B = -0.07$, $SE = 0.01$, $t = -12.00$, $p < .001$), indicating that students who reported more frequent bullying tended to feel less that they belonged at school; ESCS was not significantly related to belonging ($B = -0.00$, $SE = 0.00$, $t = -0.73$, $p = .47$). In the second step, bullying and belonging were entered as predictors of life satisfaction, again controlling for ESCS. Bullying remained a strong negative predictor (c' path: $B = -1.34$, $SE = 0.03$, $t = -38.59$, $p < .001$), school belonging was positively associated with life satisfaction (b path: $B = 0.16$, $SE = 0.04$, $t = 4.61$, $p < .001$), and ESCS remained positively associated with life satisfaction ($B = 0.18$, $SE = 0.01$, $t = 14.34$, $p < .001$).

The product of the a and b paths yielded an indirect effect of bullying on life satisfaction through school belonging of approximately -0.01 ($-0.07 \times 0.16 \approx -0.011$), indicating that school belonging accounted for a small portion of the bullying–life satisfaction association. Because the direct association between bullying and life satisfaction remained large and statistically significant after accounting for belonging, the results are consistent with partial rather than full mediation.

Discussion

The pattern of findings from this study aligns with and extends existing evidence that bullying victimisation is a robust correlate of adolescents' lower life satisfaction, while school belonging and supportive teacher relationships serve as important protective factors. Using a large, nationally representative sample of Spanish 15-year-olds from PISA 2022, we found that more frequent bullying was associated with lower life satisfaction, even after controlling for school belonging and socioeconomic status. Higher levels of school belonging and higher socioeconomic status were linked to greater life satisfaction, and teacher support both added unique explanatory power and slightly attenuated the bullying–life satisfaction association. Mediation analyses showed that school belonging partly explained the bullying–life satisfaction relationship, although a sizeable direct association with bullying remained, highlighting the intertwined roles of peer victimisation, belonging, and teacher–student relationships in adolescents' subjective well-being within the Spanish secondary-school context.

The strong negative association between bullying victimisation and life satisfaction is consistent with studies from diverse countries showing that victimised adolescents report lower self-rated health, more internalising symptoms, and poorer overall well-being (Kerr et al., 2010; Moore et al., 2017). Our results dovetail with this work by showing that moving one unit up the bullying scale is linked to a sizeable drop in life satisfaction in Spain, suggesting that victimisation experiences co-occur with notably lower perceived quality of life in Spanish schools, although the cross-sectional design precludes causal conclusions.

The positive associations of school belonging and teacher support with life satisfaction reinforce the importance of supportive school climates for adolescent well-being. Reviews indicate that programmes targeting positive peer and teacher relationships and inclusive classroom climates can improve students' sense of belonging and, in some cases, mental health outcomes (Allen et al., 2021; Glazzard & Bostwick, 2025). Our finding that higher belonging and stronger perceived teacher support predict higher life satisfaction suggests that social connection within school is a key promotive factor for Spanish adolescents and complements evidence that school-based psychological interventions can enhance positive well-being indicators such as hope, resilience, and perceived support (Tejada-Gallardo et al., 2020; Lenz et al., 2025).

The mediation results indicate that school belonging explains part but not all of the link between bullying and life satisfaction, in line with prior work where belonging or perceived support partially mediated associations between bullying and well-being (Kerr et al., 2010; Xu & Fang, 2021; Ding & Li, 2025). Our study extends these findings to Spanish 15-year-olds by showing that lower belonging is one pathway through which bullying is associated with lower life satisfaction, but that additional mechanisms such as anxiety, shame, or reduced perceived control likely also play important roles.

The significant bullying $\times$ teacher support interaction suggests that higher perceived teacher support is associated with a somewhat weaker negative association between bullying and life satisfaction. In our models, the slope linking bullying to lower life satisfaction was less steep at higher levels of perceived support, indicating that students who experience bullying may fare somewhat better when they perceive their teachers as caring and responsive. This aligns with intervention research showing that training teachers to build positive relationships and actively respond to bullying can reduce victimisation and improve students' perceptions of classroom climate (ten Bokkel et al., 2022; Anderson, 2025), and suggests that teacher support not only promotes well-being in general but also slightly modifies how strongly bullying is linked to life satisfaction.

Anti-bullying programmes that focus solely on punitive responses may have limited impact if they are not accompanied by efforts to build a positive, inclusive school climate and to promote supportive adult–student connections (Anderson, 2025). Evidence from school-based interventions indicates that whole-school approaches can be effective for reducing internalising symptoms and improving well-being when they include adequate training, leadership support, and integration into school routines (Glazzard & Bostwick, 2025; Lenz et al., 2025). In the Spanish context, our findings point to the added value of embedding explicit belonging-building and teacher-support components within broader anti-bullying and mental-health promotion efforts.

A notable strength of this study is the use of nationally representative PISA 2022 data for Spain, which allows estimates to generalise to the population of 15-year-old students and situates the findings within an internationally comparable framework. The large sample size provides high statistical power to detect even modest interaction and mediation effects, and the availability of standardised measures of life satisfaction, bullying, belonging, teacher support, and socioeconomic status supports rigorous modelling.

However, several limitations should be noted. First, the cross-sectional design of PISA precludes strong causal inferences about the direction of effects. Although theory and longitudinal studies suggest that bullying victimisation can lead to declines in belonging and well-being (Kerr et al., 2010; Lereya et al., 2015; Takizawa et al., 2014), it is also possible that adolescents with lower well-being or weaker social ties are more likely to become targets of bullying. Second, all focal variables were based on self-report, which may introduce common-method bias and social desirability, although self-perceptions are central to the constructs of life satisfaction and belonging (Cheung & Lucas, 2014). Third, we used the final student weight but did not incorporate replicate weights or multilevel modelling, which may slightly underestimate standard errors and does not explicitly model school-level clustering. Finally, while PISA provides rich information on school experiences, it lacks detailed measures of other potentially important mechanisms such as coping strategies, parental support, or mental-health diagnoses that could help explain how bullying relates to life satisfaction.

Future research could address these limitations by combining PISA-type surveys with longitudinal designs and more detailed psychosocial measures. Longitudinal follow-ups or similar nationally representative studies would allow stronger tests of the temporal ordering of bullying, belonging, teacher support, and life satisfaction. Including multi-informant data (e.g., teacher reports, peer nominations) and observational indicators of school climate could help reduce shared-method variance and clarify how perceived and observed aspects of the school environment interact. Intervention studies in Spanish schools that explicitly manipulate teacher-support practices and belonging-building activities, and then assess downstream effects on bullying and life satisfaction, would provide more direct evidence for the mechanisms suggested by the present findings.

Conclusions

This study shows that, among Spanish 15-year-olds in PISA 2022, bullying victimisation is strongly and negatively associated with life satisfaction, while school belonging, teacher support, and socioeconomic status are positively related to adolescents' well-being. School belonging partially mediates the bullying–life satisfaction association, and perceived teacher support moderates this link such that the negative association between bullying and life satisfaction is weaker when students feel more supported by teachers. These findings underline the importance of moving beyond narrow anti-bullying responses toward comprehensive, school-wide approaches that simultaneously reduce victimisation, cultivate a strong sense of belonging, and equip teachers to build supportive relationships with students. For policymakers and practitioners in Spain and similar contexts, investing in whole-school interventions that weave together bullying prevention, belonging-building, and teacher-support training offers a promising pathway to improving adolescents' life satisfaction and broader mental health.

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Figures

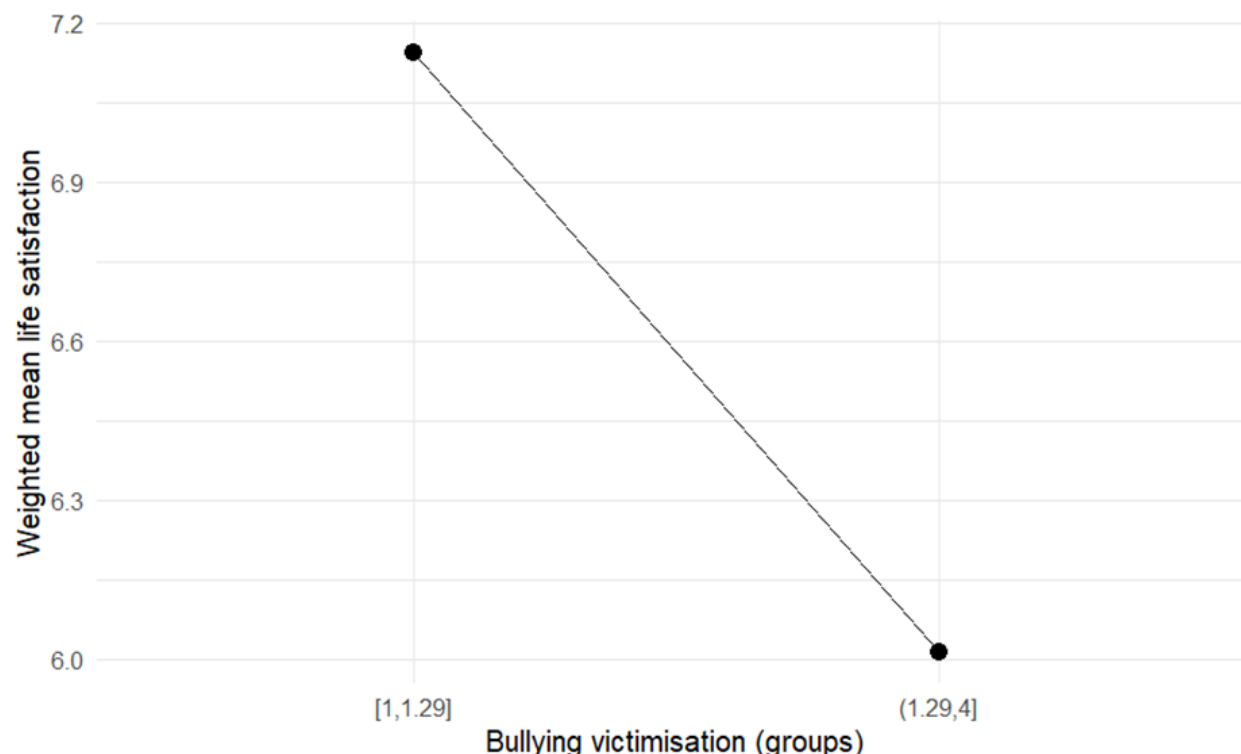


Figure 1

Weighted life satisfaction by bullying group

Note. Life satisfaction is measured on a 0–10 scale; bullying groups are based on the distribution of the bullying composite (1–4 scale). Values represent weighted means using the final student weight. The pattern is consistent with prior research showing that more frequent bullying victimisation is linked to poorer subjective well-being in adolescents (Xu & Fang, 2021; Moore et al., 2017).

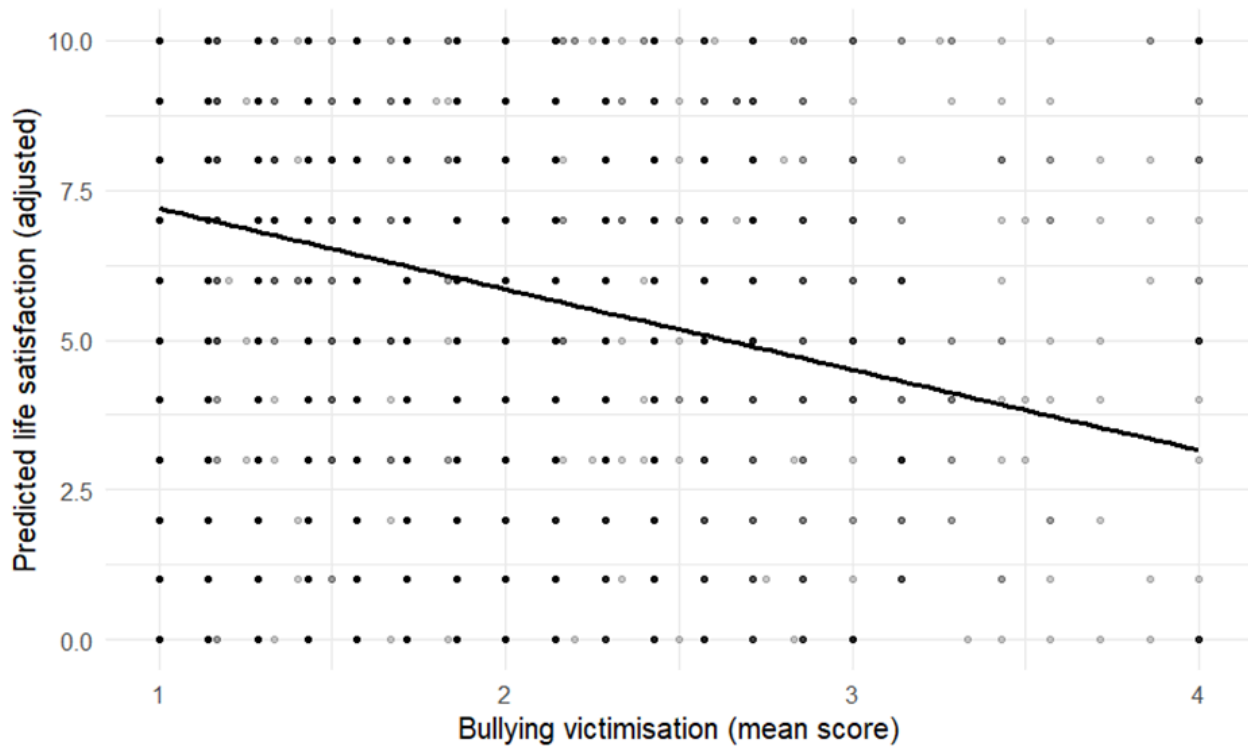


Figure 2

Partial regression of life satisfaction on bullying victimisation.

Note. The solid line represents predicted life satisfaction (0–10 scale) from the regression model including bullying victimisation, school belonging, and socioeconomic status (ESCS) as predictors, with belonging and ESCS held at their mean values. Points show individual students’ adjusted life satisfaction values across the bullying composite (1–4 scale). The negative slope illustrates that, after accounting for belonging and ESCS, higher bullying victimisation remains associated with lower life satisfaction, consistent with prior findings that higher bullying victimisation is associated with lower adolescents’ subjective well-being (Xu & Fang, 2021).

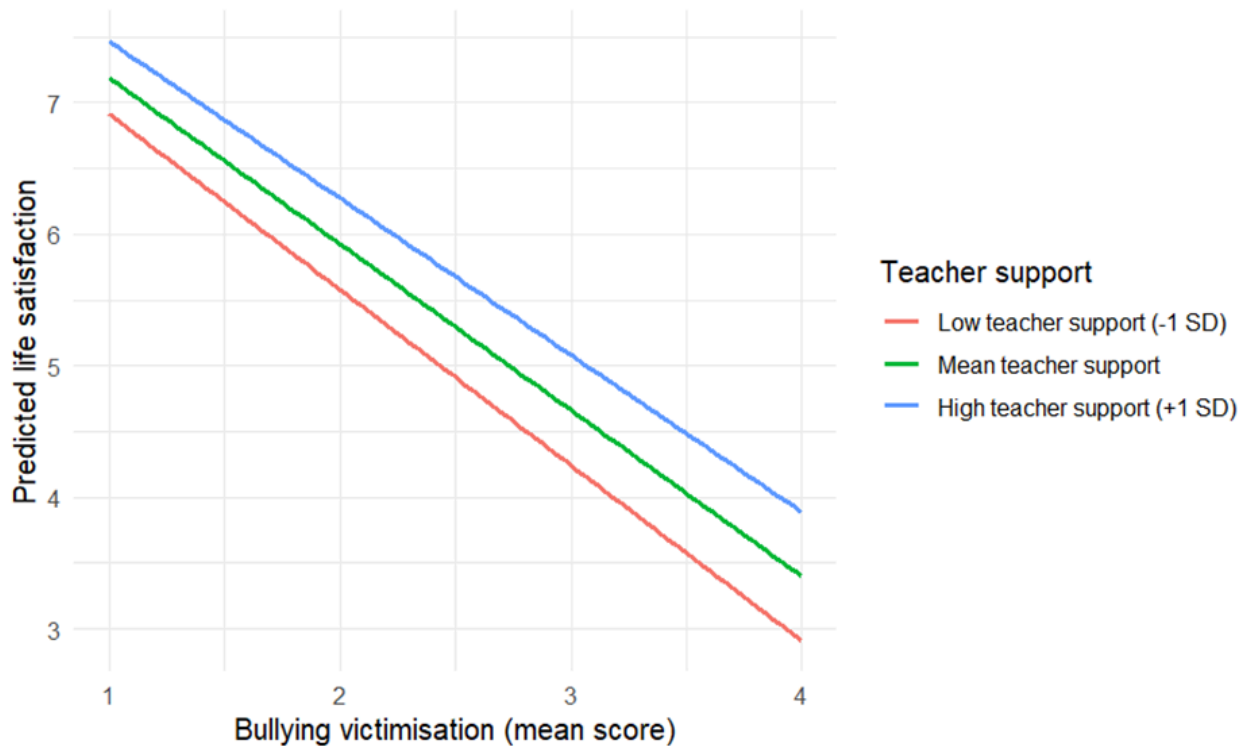


Figure 3

Teacher support

- Low teacher support (-1 SD)
- Mean teacher support
- High teacher support (+1 SD)

Page 9/10

Note. Lines depict model-based predictions from the weighted regression including bullying victimisation, teacher support, their interaction, school belonging, and socioeconomic status (ESCS) as predictors. Bullying and teacher support are represented by their composite mean scores (1–4 scale), with teacher support plotted at –1 SD (low), mean, and +1 SD (high). For any given bullying level, higher teacher support is associated with higher predicted life satisfaction (0–10 scale), and the negative association between bullying and life satisfaction is least severe at high teacher support, consistent with evidence that supportive teacher–student relationships buffer the impact of bullying on adolescents’ well-being (ten Bokkel et al., 2022).

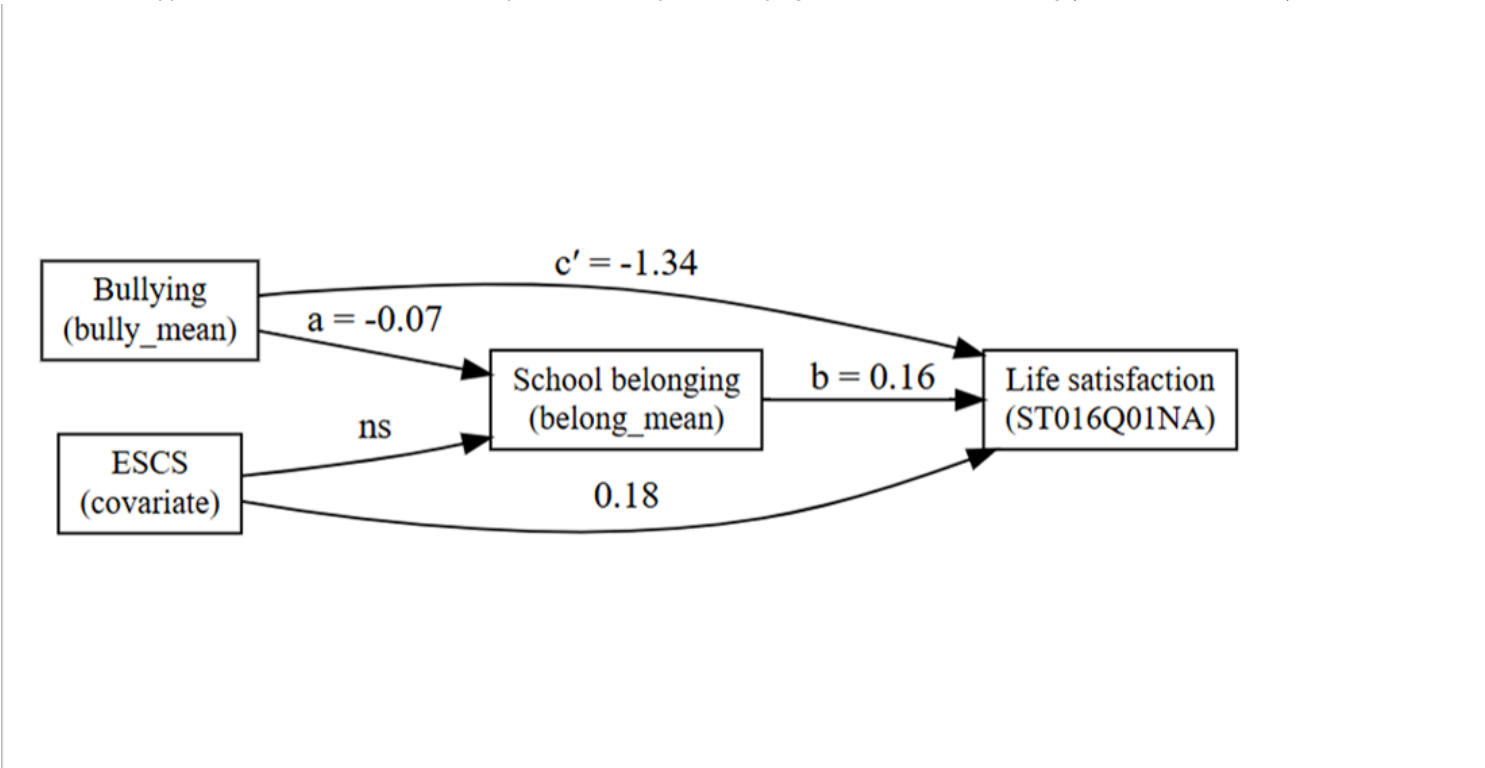


Figure 4

Mediation model of bullying victimisation, school belonging, and life satisfaction.

Note. Standardised paths are omitted for clarity. The diagram shows bullying victimisation predicting life satisfaction both directly (c' path) and indirectly via school belonging ($a \times b$ path), with socioeconomic status (ESCS) included as a covariate on both belonging and life satisfaction. Path coefficients correspond to the weighted regression models: bullying negatively predicts belonging ($a \approx -0.07$), belonging positively predicts life satisfaction ($b \approx 0.16$), and bullying retains a sizeable negative direct association with life satisfaction ($c' \approx -1.34$) after accounting for belonging and ESCS. The small negative indirect effect indicates partial mediation, consistent with prior findings that school belonging explains part but not all of the association between bullying and adolescents’ subjective well-being.