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Psychometric validation of the Teachers' Responses to Bullying Questionnaire (TRBQ) among Spanish adolescents

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Abstract

Background

Adolescents’ perceptions of teachers’ responses to bullying have been associated with psychological processes such as perceived social support, classroom safety, help-seeking, and psychosocial adjustment. Understanding these perceptions requires psychometrically sound instruments that can be applied across different cultural contexts. Although the Teachers’ Responses to Bullying Questionnaire (TRBQ) has been validated in several countries, inconsistent factorial solutions have been reported, highlighting the need for further validation in specific populations. Therefore, this study examined the psychometric properties of the TRBQ among Spanish adolescents. Methods: A psychometric validation study was conducted with 1,279 adolescents aged 12 to 16 years enrolled in secondary schools in Spain. A cross-validation approach was adopted, including exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) in two independent subsamples. Internal consistency, convergent validity, measurement invariance across gender, and test–retest reliability over a two-week interval were also examined. Results: Exploratory analyses revealed some overlap between the Non-intervention and Mediation dimensions. However, confirmatory analyses supported a refined 14-item, five-factor model after removing one poorly performing item (TRBQ3). The final model showed good fit to the data (CFI = .972, TLI = .962, RMSEA = .060, SRMR = .032). Internal consistency ranged from acceptable to excellent, convergent validity was supported, and the instrument demonstrated configural, metric, scalar, and strict invariance across gender. Test–retest analyses indicated acceptable to good temporal stability (ICC = .527–.662). Conclusions: The findings support the validity and reliability of a refined 14-item version of the TRBQ for assessing Spanish adolescents’ perceptions of teachers’ responses to bullying. The instrument provides a psychometrically sound measure for investigating how adolescents perceive teachers’ responses to bullying and may facilitate future research examining the relationship between teacher responses, perceived support, and psychosocial functioning in school contexts.

INTRODUCTION

Bullying is one of the most prevalent interpersonal stressors during adolescence and remains a major public health concern because of its well-established associations with emotional distress, anxiety, depressive symptoms, impaired social functioning, and poorer academic adjustment (Olweus, 1993; Espelage & Swearer, 2023; UNESCO, 2023). Beyond its immediate consequences for victims and perpetrators, bullying is increasingly recognized as a complex socioecological phenomenon whose dynamics are shaped not only by the behaviors of those directly involved but also by how these behaviors are interpreted by members of the school community (Bronfenbrenner, 1979; Hong & Espelage, 2012; Espelage & Swearer, 2023). Within this context, understanding how adolescents interpret these interactions is essential because the meaning they attribute to adults' responses shapes their perceptions of safety, fairness, and social support within the school environment (Demol et al., 2020; Thornberg, 2012).

Adolescence is a critical developmental period characterized by profound cognitive, emotional, and social changes, during which young people become increasingly sensitive to interpersonal relationships, social evaluation, and meaningful social cues (Crone & Dahl, 2012; Steinberg, 2014). Rather than simply observing teachers' responses to bullying, adolescents actively construct meaning from these interactions, using adults' responses as meaningful social cues to infer fairness, protection, and the availability of support (Dodge et al., 2006; Salmivalli, 2010; Thornberg et al., 2012). Consequently, teachers' responses become psychologically meaningful signals that shape adolescents' perceptions of safety, school belonging, perceived social support, and willingness to seek help, all of which are closely associated with psychosocial adjustment during adolescence (Demol et al., 2020; Ten Bokkel et al., 2023).

From a social-ecological perspective, bullying cannot be understood solely as an interaction between perpetrators and victims but rather as the product of multiple interacting systems, including peer groups, teachers, schools, families, and broader social contexts (Bronfenbrenner, 1979; Espelage & Swearer, 2023). Within this framework, teachers occupy a uniquely influential position because they are responsible not only for responding to bullying incidents but also for communicating implicit social norms regarding fairness, protection, accountability, and acceptable interpersonal behavior. Their responses therefore extend beyond the immediate management of bullying episodes, providing adolescents with meaningful social information about how

aggression is viewed within the school environment and whether adults can be relied upon to maintain a safe and supportive climate (Demol et al., 2020; Ten Bokkel et al., 2023).

The psychological significance of teachers' responses extends beyond the immediate management of bullying episodes. Positive teacher–student relationships have consistently been associated with lower levels of anxiety, greater emotional well-being, stronger school belonging, and more adaptive social functioning during adolescence (Allen et al., 2018; Wentzel & Ramani, 2016). Likewise, perceived teacher support has been linked to greater motivation, self-efficacy, satisfaction of basic psychological needs, and student engagement through mechanisms described by Self-Determination Theory and Social Cognitive Theory (Allen et al., 2018; Wang & Degol, 2016). Together, these findings suggest that adolescents' perceptions of teachers' responses extend beyond evaluations of observed behavior, reflecting how young people interpret adult support, authority, fairness, and interpersonal security within the school environment.

Given their psychological significance, accurately assessing adolescents' perceptions of teachers' responses becomes essential. Assessing adolescents' perceptions of teachers' responses remains challenging. Early instruments relied primarily on hypothetical scenarios or teachers' self-reported practices, approaches that may be limited by ecological validity and social desirability bias (Bauman et al., 2008; Fischer et al., 2020). Incorporating adolescents' perspectives offers a complementary approach by capturing how adult intervention is experienced by those directly exposed to everyday classroom interactions.

Within this context, Campaert et al. (2017) developed the Teachers' Responses to Bullying Questionnaire (TRBQ) to assess students' perceptions of teachers' responses to bullying. Subsequent validation studies supported alternative factorial structures across educational and cultural contexts. Nappa et al. (2021) proposed a five-factor model comprising Non-intervention, Disciplinary Methods, Group Discussion, Mediation, and Victim Support, which was later confirmed by van Gils et al. (2022). More recently, Rodríguez-Pérez et al. (2026) adapted the TRBQ for Spanish students and identified a more parsimonious three-factor solution. Although this adaptation represents an important contribution, combining conceptually distinct forms of adult intervention may obscure differences in the psychological meaning adolescents attribute to these responses. Retaining these distinctions may therefore be theoretically relevant because different forms of adult intervention communicate different expectations regarding fairness, responsibility, protection, and interpersonal support within the school environment (Demol et al., 2020; Salmivalli, 2010; Thornberg et al., 2012).

Despite recent advances, important questions remain regarding the factorial structure of the TRBQ in Spanish secondary education. Rather than simply extending previous psychometric findings, the present study examines whether adolescents differentiate distinct forms of adult responses to bullying as psychologically meaningful dimensions during a developmental period characterized by increasing social-cognitive sophistication. Accordingly, this study examined the psychometric properties of the TRBQ among Spanish adolescents by evaluating its factorial structure, internal consistency, convergent validity, measurement invariance across gender, and temporal stability. In doing so, the study provides further evidence that adolescents perceive adult responses to bullying as psychologically distinguishable dimensions of adult intervention.

METHODS

2.1. Design and participants.

This psychometric validation study followed the recommendations of Montero and León (2007). A cross-sectional design was used to examine the factorial structure and measurement invariance of the Teachers' Responses to Bullying Questionnaire (TRBQ), whereas a longitudinal subsample was assessed over a two-week interval to evaluate temporal stability.

Participants were students enrolled in Years 7 to 10 of Compulsory Secondary Education (aged 12–16 years) from schools in Southwestern and Central Spain. The main sample comprised 1,279 adolescents (51.7% boys, 48.3% girls; *M* age = 13.31 years, *SD* = 1.48), including 290 students (22.7%) from Southwestern Spain and 989 (77.3%) from Central Spain. Participants were distributed across the four grade levels of secondary education as follows: Year 7 (*n* = 374, 29.2%), Year 8 (*n* = 277, 21.7%), Year 9 (*n* = 380, 29.7%), and Year 10 (*n* = 248, 19.4%).

For cross-validation, the total sample was randomly divided into two independent subsamples while preserving equivalent distributions of gender and grade level. The first subsample (*n* = 639; 52.7% boys; *M* age = 13.38 years, *SD* = 1.49) was used for exploratory factor analysis (EFA), whereas the second (*n* = 640; 50.6% boys; *M* age = 13.25 years, *SD* = 1.47) was used for confirmatory factor analysis (CFA).

Temporal stability was assessed in an independent subsample of 129 adolescents (40.3% boys, 59.7% girls; *M* age = 13.61 years, *SD* = 1.56) recruited from one secondary school in Southwestern Spain. Participants completed the TRBQ twice with a two-week interval between administrations. The distribution across grade levels was balanced (Year 7 = 27.1%, Year 8 = 24.8%, Year 9 = 21.7%, Year 10 = 26.4%).

2.2. Instruments

The Teachers' Responses to Bullying Questionnaire (TRBQ; Campaert et al., 2017) was used to assess students' perceptions of teachers' responses to bullying. The present study employed the revised 15-item version proposed by Nappa et al. (2021) and subsequently supported by van Gils et al. (2022), which comprises five dimensions: Non-intervention, Disciplinary Methods, Group Discussion, Mediation, and Victim Support. Responses were recorded on a five-point Likert scale ranging from 1 (*Never*) to 5 (*Always*), with higher scores indicating a greater perceived frequency of each type of teacher response.

Before completing the questionnaire, students received a standardized explanation of bullying based on Olweus's (1993) definition to ensure a common understanding of the construct and to distinguish bullying from everyday peer conflicts.

The Spanish version of the TRBQ was obtained through a forward–backward translation procedure. Two bilingual translators independently translated the original instrument into Spanish, after which a consensus version was produced by the research team. This version was then independently back-translated into English, and both versions were compared to ensure semantic, conceptual, and cultural equivalence, as well as age-appropriate comprehension for secondary school students.

2.3. Procedure

Schools were randomly selected from the official registers of the regional education authorities in Central and Southwestern Spain. Invitations describing the aims of the study, data collection procedures, and participation requirements were sent to the management teams of 45 public secondary schools (20 in Southwestern Spain and 25 in Central Spain), together with the parental informed consent form and the Spanish version of the TRBQ.

Eighteen schools initially agreed to participate (40.0% response rate), although only 14 completed the consent process and data collection (31.1% effective participation rate). Data for the psychometric analyses were collected between September and December 2025. A member of the research team visited each participating school to administer the questionnaires during regular school hours, explain the study procedures, answer participants' questions, and emphasize the voluntary nature of participation. Completion of the TRBQ required approximately 10–15 minutes.

Temporal stability was evaluated in an independent sample recruited from a secondary school that had not participated in the cross-sectional phase. Participants completed the questionnaire twice with a two-week interval between administrations (November 2025), following the same standardized administration procedures.

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and the ethical guidelines of the American Psychological Association for research involving human participants. Ethical approval was obtained from the Bioethics and Biosafety Committee of the University of Extremadura (approval code: 270/2025). Written informed consent was obtained from parents or legal guardians, and participation was voluntary and anonymous. Alphanumeric codes were used to match responses across measurement occasions while preserving participants' confidentiality, and all study data were stored on secure servers accessible only to the research team.

2.4. Statistical Data Analysis

All statistical analyses were conducted using R (version 4.4.1; R Core Team, 2024) and Jamovi (version 2.6.4.5; The Jamovi Project, 2024). Preliminary descriptive analyses were performed in Jamovi, whereas exploratory, confirmatory, invariance, and temporal stability analyses were conducted in R using the packages **lavaan** (version 0.6–18; Rosseel, 2012), **psych** (version 2.4.6; Revelle, 2024), **semTools** (Jorgensen et al., 2022), and **irr** (Gamer et al., 2019).

Descriptive statistics, including means, standard deviations, skewness, and kurtosis, were calculated for each TRBQ item. Univariate normality was considered acceptable when skewness and kurtosis values ranged between − 2 and + 2 (Finney & DiStefano, 2006; Kline, 2016). Given the ordinal nature of the five-point Likert response scale, exploratory factor analysis (EFA) was conducted using a polychoric correlation matrix. Confirmatory factor analysis (CFA) treated the items as approximately continuous because they comprised five response categories and showed no substantial deviations from univariate normality. Accordingly, the CFA models were estimated to use robust maximum likelihood (MLR), which provides robust standard errors and scaled fit indices.

Prior to EFA, the adequacy of the correlation matrix was assessed using the Kaiser–Meyer–Olkin (KMO) index and Bartlett's test of sphericity. KMO values ≥ .70 and a significant Bartlett's test ($p < .001$) were considered indicative of satisfactory factorability.

Because the TRBQ is supported by a well-established theoretical framework (Campaert et al., 2017; Nappa et al., 2021; van Gils et al., 2022), a cross-validation strategy was adopted. First, EFA was performed in the first subsample ($n = 639$) to explore the dimensionality of the Spanish version of the instrument. Factor extraction was conducted using the minimum residual (MINRES) method with Promax rotation. The number of factors was determined using Horn's parallel analysis, optimal coordinates, and the Very Simple Structure (VSS) criterion (O'Connor, 2000). Subsequently, the theoretical five-factor structure was tested through CFA in an independent subsample ($n = 640$). Greater emphasis was placed on the confirmatory results because the primary objective of the study was to evaluate the theoretical structure of the TRBQ in Spanish adolescents.

Model fit was evaluated using the Comparative Fit Index (CFI), Tucker–Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR), following the recommendations of Hu and Bentler (1999). Internal consistency was assessed using Cronbach's alpha (α) and McDonald's omega (ω), with values ≥ .70 considered acceptable (Nunnally & Bernstein, 1994). Convergent validity was evaluated using the Average Variance Extracted (AVE), with values ≥ .50 indicating adequate convergent validity (Fornell & Larcker, 1981).

Measurement invariance across gender was examined using multigroup CFA with MLR estimation. Configural, metric, scalar, and strict invariance were sequentially tested following the recommendations of Putnick and Bornstein (2016) and Svetina et al. (2020). Invariance was evaluated using changes in CFI and RMSEA ($\Delta CFI < .010$; $\Delta RMSEA \leq .015$), complemented by chi-square difference tests (Cheung & Rensvold, 2002; Chen, 2007).

Temporal stability was evaluated using three complementary approaches in an independent subsample ($n = 129$). First, intraclass correlation coefficients (ICC [3,1]) with 95% confidence intervals were calculated using a two-way mixed-effects model with absolute agreement. ICC values ≥ .50 were considered indicative of acceptable stability and values ≥ .60 of good stability (Koo & Li, 2016). Second, paired-samples *t*-tests were conducted to examine mean differences between the two administrations. Finally, longitudinal measurement invariance was assessed using CFA models specifying the same factorial structure across the two assessment occasions while allowing correlations between the residuals of identical items. Configural, metric, and scalar longitudinal invariance models were evaluated using data collected over a two-week interval.

RESULTS

The sociodemographic characteristics of the participants are presented in Table 1. The total sample ($N = 1,279$) showed a balanced distribution by gender and included students from all four grades of Compulsory Secondary Education. The exploratory ($n = 639$) and confirmatory ($n = 640$) subsamples showed comparable demographic characteristics, supporting the cross-validation strategy. The independent test–retest subsample ($n = 129$) was recruited from Southwestern Spain and was used exclusively to evaluate the temporal stability of the instrument.

Table 1

Sociodemographic characteristics of the participants

Variable	Category	Total EFA y CFA (N = 1279) N (%)	EFA (N = 639) N (%)	CFA (N = 640) N (%)	ET (N = 129) N (%)
Sex	Boy	661 (51,7)	337 (52,7)	324 (50,6)	52 (40,3)
	Girl	618 (48,3)	302 (47,3)	316 (49,4)	77 (59,7)
Level	1st ESO	374 (29,2)	173 (27,1)	201 (31,4)	35 (27,1)
	2nd ESO	277 (21,7)	141 (22,1)	136 (21,3)	32 (24,8)
	3rd ESO	380 (29,7)	194 (30,4)	186 (29,1)	28 (21,7)
	4º ESO	248 (19,4)	131 (20,5)	117 (18,3)	34 (26,4)
Region	Southwestern Spain	290 (22,7)	131 (20,5)	159 (24,8)	129 (100)
	Central Spain	989 (77,3)	508 (79,5)	481 (75,2)	0 (0)
		Total M ± SD	**EFA M ± SD**	**CFA M ± SD**	**ET M ± SD**
Age (years)		13,31 ± 1,48	13,38 ± 1,49	13,25 ± 1,47	13,61 ± 1,56

Note. EFA = exploratory factor analysis; CFA = confirmatory factor analysis; TR = test–retest subsample used to analyze the test-retest reliability of the scores.

The descriptive statistics for the 15 TRBQ items are presented in Table 2. Items assessing teacher non-intervention showed the lowest mean scores, whereas items reflecting active teacher responses received consistently higher ratings, suggesting that students generally perceived teachers as responding to bullying rather than remaining passive. Skewness and kurtosis values were within acceptable limits for all items, supporting the suitability of the data for subsequent factor analyses (Finney & DiStefano, 2006; Kline, 2016).

Table 2

Descriptive statistics for the items of the Teachers' Responses to Bullying Questionnaire (TRBQ), grouped by factors (n = 1,279)

Item	M	SD	As	Cu
Factor 1. Lack of intervention				
1. My teacher does NOTHING to prevent bullying	2,13	1,24	0,83	−0,41
2. My teacher does NOT notice the bullying	2,63	1,23	0,32	−0,80
3. My teacher lets the students resolve it on their own	2,69	1,26	0,24	−0,94
Factor 2. Disciplinary methods				
12. My teacher tells the bully that their behavior is unacceptable	4,10	1,17	−1,18	0,39
13. My teacher acts against the bully	3,96	1,23	−0,97	−0,12
14. My teacher reports the bullying incident to the principal and/or parents	3,90	1,29	−0,92	−0,34
Factor 3. Group discussion				
5. My teacher discusses bullying with the whole class	3,93	1,27	−0,90	−0,37
6. My teacher talks to the whole class about how much the victim may suffer because of the bullying	3,83	1,28	−0,82	−0,46
15. My teacher explains what bullying is and discusses it with the class	4,07	1,19	−1,14	0,29
Factor 4. Mediation				
4. My teacher helps the students involved resolve the bullying	3,83	1,18	−0,76	−0,34
7. My teacher tries to get the students to make peace	4,06	1,12	−1,11	0,46
8. My teacher helps the students involved find a solution	3,88	1,20	−0,89	−0,13
Factor 5. Support for the victim				
9. My teacher tries to get other students to comfort and help the victim	3,86	1,23	−0,87	−0,24
10. My teacher tries to help the victim	4,12	1,16	−1,19	0,47
11. My teacher comforts the victim	4,01	1,20	−1,06	0,13

Note: SD standard deviation; M for mean; As is the Fisher coefficient of asymmetry, and Cu is the Fisher coefficient of kurtosis. The components of Factor 1 are presented in their original form, with higher scores indicating a greater perception of teacher non-intervention in school-related abuse situations. Higher scores in the active intervention factors indicate a higher perception of the teacher's use of these strategies.

Prior to exploratory factor analysis (EFA), the suitability of the data was confirmed. Bartlett's test of sphericity was significant (χ^2 = 5,793, p < .001), and the Kaiser–Meyer–Olkin index indicated excellent sampling adequacy (KMO = .938).

The EFA identified a four-factor solution that was partially interpretable but did not reproduce the theoretical five-factor structure proposed for the TRBQ (Table 3). The first factor combined the Non-intervention items with several Mediation items, reflecting a bipolar dimension ranging from the absence of teacher intervention to active teacher involvement. The remaining factors corresponded to Group Discussion, Victim Support, and Disciplinary Methods.

Item TRBQ3 showed inadequate psychometric performance, including low communality (h^2 = .145), high uniqueness (u^2 = .855), the absence of a clear primary loading, and high factorial complexity. Consequently, this item was excluded from the subsequent confirmatory factor analysis.

Overall, the exploratory solution showed acceptable residual fit (RMSR = .020), although the RMSEA indicated only moderate model fit (RMSEA = .089, 90% CI [.080, .099]). Therefore, the EFA was considered a preliminary descriptive step, whereas the

theoretical five-factor model was subsequently evaluated through confirmatory factor analysis in an independent subsample.

Table 3

Pattern Matrix of the Exploratory Factor Analysis (n = 639)

Item	F1	F2	F3	F4	Uniqueness
Factor 1. Non-intervention / Mediation					
TRBQ1	−0.805				0.230
TRBQ2	−0.695				0.564
TRBQ3*					0.855
TRBQ4	0.631				0.320
TRBQ7	0.381				0.388
TRBQ8	0.413				0.231
Factor 2. Group discussion					
TRBQ5		0.984			0.160
TRBQ6		0.777			0.259
TRBQ15		0.727			0.199
Factor 3. Support for the victim					
TRBQ9			0.553		0.323
TRBQ10			0.795		0.138
TRBQ11			1.007		0.068
Factor 4. Disciplinary methods					
TRBQ12				0.602	0.408
TRBQ13				0.866	0.135
TRBQ14				0.683	0.273

Note. Only salient pattern coefficients are presented to facilitate interpretation. Extraction method: minimum residual (MINRES) with Promax rotation. TRBQ3 was excluded from the CFA because of its low communality, high uniqueness, absence of salient loading, and high factorial complexity. Pattern coefficients may exceed 1.00 in oblique solutions because of factor intercorrelations.

The polychoric correlation matrix of the 15 TRBQ items is presented in Table 4. As expected, the three Non-intervention items showed positive intercorrelations and negative correlations with the active intervention items. In contrast, the active intervention dimensions displayed moderate-to-high positive intercorrelations, particularly among Group Discussion, Mediation, Victim Support, and Disciplinary Methods, suggesting that students perceive these strategies as related, yet conceptually distinguishable, forms of teacher intervention.

Table 4

Polychoric correlation matrix between TRBQ items in the exploratory subsample (n = 639)

Item	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1														
2	.612	1													
3	.327	.144	1												
4	−.689	−.518	−.301	1											
5	−.489	−.307	−.106	.542	1										
6	−.559	−.408	−.176	.566	.779	1									
7	−.626	−.446	−.221	.672	.506	.538	1								
8	−.712	−.513	−.293	.722	.543	.633	.733	1							
9	−.636	−.471	−.224	.616	.462	.503	.665	.744	1						
10	−.686	−.508	−.340	.698	.508	.591	.686	.761	.740	1					
11	−.641	−.524	−.351	.623	.455	.527	.648	.749	.769	.903	1				
12	−.570	−.392	−.241	.541	.441	.505	.582	.595	.565	.624	.638	1			
13	−.665	−.453	−.307	.618	.479	.530	.627	.731	.710	.705	.738	.721	1		
14	−.677	−.475	−.336	.639	.505	.530	.608	.644	.608	.680	.663	.633	.777	1	
15	−.566	−.329	−.166	.565	.756	.729	.539	.615	.564	.633	.604	.600	.658	.633	1

Note: Polychoric correlations were calculated using the exploratory subsample (*n* = 639). Negative correlations involving the Non-intervention items are expected because higher scores on this factor indicate greater perceived teacher inaction, whereas higher scores on the remaining factors indicate more frequent perceptions of active teacher responses.

Although the EFA identified a four-factor solution, the confirmatory analyses were conducted using the theoretically derived five-factor structure after excluding TRBQ3 because of its inadequate psychometric performance. Specifically, TRBQ3 showed low communality (h^2 = .145), high uniqueness (u^2 = .855), no salient primary loading, and high factorial complexity.

The refined five-factor model showed good overall fit to the data (Table 5): χ^2 (67) = 217.594, p < .001, CFI = .972, TLI = .962, RMSEA = .060 (90% CI [.051, .069]), and SRMR = .032. These indices support the adequacy of the proposed factorial structure.

Internal consistency was satisfactory for the four active intervention factors, with Cronbach's alpha values ranging from .820 to .883 and McDonald's omega values ranging from .820 to .885 (Table 6). The Non-intervention factor, composed of two items, showed a slightly lower alpha coefficient (α = .678), although omega (ω = .710) and convergent validity (AVE = .562) remained within acceptable limits.

Correlations among the latent factors followed the expected theoretical pattern. The active intervention dimensions (Mediation, Group Discussion, Victim Support, and Disciplinary Methods) were positively associated (r = .65–.87, p < .001), whereas Non-intervention showed moderate-to-strong negative correlations with all active intervention factors (r = − .61 to − .81, p < .001), supporting its conceptual distinction from proactive teacher responses.

Table 5

TRBQ confirmatory factor analysis fit indices (n = 640)

Adjustment Index	Value
χ^2	217.594
gl	67
p	< .001
CFI	0.972
TLI	0.962
RMSEA	0.060
IC 90% RMSEA	[0.051, 0.069]
SRMR	0.032
AIC	22420.764
BIC	22651.444
SSABIC	22486.352

Note: Maximum Likelihood Robust (MLR) was used to estimate the model. The model's global adjustment is indicated by the adjustment indices, which have excellent CFI, TLI, and SRMR values, even though the RMSEA falls within the conventional range of good adjustment.

Table 6

Internal consistency and convergent validity of the TRBQ factors (n = 640)

Factor	Items	α	ω	AVE
Factor 1: Non-intervention	2	0.678	0.710	0.562
Factor 2: Disciplinary measures	3	0.825	0.832	0.621
Factor 3: Discussion group	3	0.862	0.867	0.683
Factor 4: Mediation	3	0.820	0.820	0.608
Factor 5: Support for the victim	3	0.883	0.885	0.718

Note. α = Cronbach's alpha coefficient; ω = McDonald's omega coefficient; AVE = average variance extracted. All factors have AVE values greater than 0.50, indicating adequate convergent validity. Factor 1, composed of two items phrased as Non-intervention by teachers, showed an alpha slightly below the conventional cutoff point of 0.70, although its omega and AVE reached acceptable values.

The standardized solution of the final confirmatory factor model is presented in Fig. 1. All standardized factor loadings were moderate to high (.58–.88), supporting the contribution of each item to its corresponding latent factor. As shown in the model, the active intervention factors were positively correlated, whereas Non-intervention showed negative correlations with all active intervention dimensions, consistent with the theoretical structure of the TRBQ.

Diagram of the TRBQ confirmatory factor analysis model

Measurement invariance across gender was supported at all levels of analysis (Table 7). The configural model showed good fit to the data, χ^2SB (134) = 222.91, CFI = .977, TLI = .968, RMSEA = .056, supporting the equivalence of the five-factor structure for boys and girls. Successive tests of metric, scalar, and strict invariance produced only trivial changes in model fit (all ΔCFI ≤ .002; all ΔRMSEA ≤ .004), and robust chi-square difference tests were not significant ($p \geq .53$). These findings support full measurement invariance across gender, indicating that the TRBQ functions equivalently in male and female adolescents.

Table 7

Factorial invariance analysis by sex of the TRBQ (n = 640)

Model	χ^2	gl	CFI_ robust	TLI_ robust	RMSEA_robust	SRMR	ΔCFI	ΔRMSEA
Configural	222.91	134	0.977	0.968	0.056	0.038	—	—
Metric	232.37	143	0.977	0.970	0.054	0.040	0.000	−0.002
Scalar	242.40	152	0.977	0.972	0.052	0.041	0.000	−0.002
Strict	245.39	166	0.979	0.977	0.048	0.041	0.002	−0.004

Note: χ^2_SB = Satorra-Bentler statistical scaled chi-square.

SRMR stands for Standardized Root Mean Square Residual, RMSEA for Root Mean Square Error of Approximation, TLI for Tucker-Lewis Index, and CFI for Comparative Fit Index. The changes regarding the immediately less restrictive model are represented by ΔCFI and ΔRMSEA. Following standard criteria (ΔCFI < 0.010; ΔRMSEA ≤ 0.015), the results support the configural, metric, scalar, and strict invariance of the TRBQ model between males and females

Temporal stability analyses supported the stability of the TRBQ over the two-week interval (Table 8). Intraclass correlation coefficients ranged from .527 to .662 (mean ICC = .623), indicating acceptable to good temporal stability. Although the confidence interval for the Non-intervention factor extended slightly below the conventional threshold, all point estimates exceeded .50. In addition, paired-samples *t*-tests revealed no significant differences between the two administrations, with negligible effect sizes across all factors. Longitudinal confirmatory factor analyses further supported the stability of the measurement model, as increasingly restrictive invariance models showed no substantial deterioration in model fit (Tables 8 and 9).

Table 8

Descriptive statistics, intraclass correlations, and temporal stability of TRBQ factors

Factor	M (T1)	SD (T1)	M (T2)	SD (T2)	ICC (3,1)	IC 95%	t	p	d
F1 Non-intervention	2.65	1.09	2.51	1.13	0.527	[0.395, 0.639]	1.44	.152	0.12
F2 Mediation	3.67	1.13	3.74	1.08	0.648	[0.539, 0.736]	−0.90	.371	−0.08
F3 Group Discussion	3.88	1.11	3.80	1.11	0.662	[0.556, 0.747]	0.96	.339	0.08
F4 Support for the victim	3.87	1.12	3.78	1.08	0.630	[0.517, 0.722]	1.08	.283	0.09
F5 Disciplinary measures	3.79	1.08	3.77	1.09	0.650	[0.541, 0.738]	0.20	.838	0.02

Note. ICC = intraclass evaluation coefficient (mixed effects model, absolute agreement type, individual measures: ICC (3,1)). T1 = first measurement; T2 = second measurement. d = Cohen's effect size for related samples. ICC values ≥ 0.50 indicate acceptable temporal stability and ≥ 0.60 good stability. The interpretation of ICCs should also consider the width of confidence intervals.

Table 9

Longitudinal factorial invariance analysis of the TRBQ

Invariance Model	χ^2	gl	CFI	RMSEA	ΔCFI	ΔRMSEA	p ($\Delta\chi^2$)	Conclusion
Configural	237.06	134	0.957	0.085	—	—	—	Acceptable fit
Metric	244.94	143	0.957	0.081	0.000	−0.003	0.682	Metric invariance
Scalar	260.79	152	0.955	0.081	−0.002	0.000	0.067	Scalar invariance

Note. χ^2_SB = Satorra–Bentler scaled chi-square statistic. Longitudinal CFA models were specified with data organized in a wide format, allowing correlation between residuals for the same items measured at T1 and T2. Invariance was assessed using criteria based on changes in fit indices (ΔCFI ≤ 0.010; ΔRMSEA ≤ 0.015). The results support longitudinal scalar invariance, allowing valid comparisons of latent mean across time points.

Discussion

The present study extends current knowledge on adolescents' perceptions of adult responses to bullying by supporting the interpretation that these perceptions are best understood as a multidimensional psychological construct rather than as a single evaluation of teacher behavior. Although the primary aim of this study was to examine the psychometric properties of the Teachers' Responses to Bullying Questionnaire (TRBQ), the findings also contribute to developmental and educational psychology by suggesting that adolescents differentiate among distinct forms of adult intervention during bullying situations. The confirmatory analyses supported the original five-factor conceptualization proposed by Campaert et al. (2017) and subsequently replicated by Nappa et al. (2021) and van Gils et al. (2022), while extending this evidence to Spanish adolescents. More importantly, the present findings are consistent with the interpretation that adolescents organize different forms of adult intervention into psychologically meaningful categories reflecting fairness, protection, authority, accountability, and social support. From this perspective, the TRBQ appears to capture not only observable teacher behaviors but also the way adolescents interpret and organize the social meaning of adult responses during bullying situations. This interpretation is consistent with developmental theories proposing that adolescents actively construct meaning from social experiences and use adult behavior as an important source of social information when forming expectations about their interpersonal environment (Dodge et al., 2006; Crone & Dahl, 2012; Steinberg, 2014; Demol et al., 2020).

The present findings also contribute to clarifying the factorial structure of the TRBQ within the Spanish context. The recent Spanish adaptation represented an important milestone by providing the first psychometric evidence for the instrument in Spain (Rodríguez-Pérez et al., 2026). Rather than contradicting those findings, the present study complements them by addressing a different developmental and theoretical question. Whereas the previous validation identified a more parsimonious three-factor solution across a combined sample of primary and secondary school students, the present study focused exclusively on adolescents and examined whether this developmental stage is characterized by a more differentiated perception of adult responses to bullying. The confirmatory analyses supported the original five-factor model, suggesting that adolescents distinguish between non-intervention, disciplinary methods, group discussion, mediation, and victim support as conceptually distinct forms of adult intervention. From a developmental psychology perspective, this distinction is theoretically meaningful because adolescence is characterized by substantial advances in social cognition, abstract reasoning, and moral understanding, allowing young people to differentiate increasingly subtle social cues conveyed through adults' responses to interpersonal conflicts (Crone & Dahl, 2012; Steinberg, 2014). Consequently, preserving these dimensions is not only psychometrically justified but also theoretically relevant, as different forms of adult intervention may communicate distinct expectations regarding fairness, responsibility, protection, and interpersonal support within the school environment (Demol et al., 2020; Salmivalli, 2010; Thornberg et al., 2012).

The distinction among these five dimensions has implications that extend beyond the psychometric performance of the instrument. Rather than representing alternative categories of teacher behavior alone, the dimensions identified by the TRBQ may reflect different ways in which adolescents organize the psychological meaning of adult intervention when bullying occurs

(Burger et al., 2022; Demol et al., 2020). According to social information processing theory, adolescents continuously interpret social interactions to infer how their environment functions and to develop expectations regarding relationships, authority, and social norms (Dodge et al., 2006). Within this process, adults' responses to bullying become salient social cues that inform adolescents whether aggression is tolerated, victims are protected, and support is likely to be available when interpersonal conflicts arise. This interpretation is consistent with previous research showing that students' perceptions of adult support contribute to school belonging, psychological safety, help-seeking behavior, and psychosocial adjustment (Burger et al., 2022; Demol et al., 2020). Consequently, distinguishing among different forms of adult responses may provide a more comprehensive understanding of how adolescents experience school climate and interpret the social role of teachers during bullying situations.

Although the exploratory analyses suggested some overlap among specific intervention strategies, the confirmatory analyses supported the theoretical distinction underlying the original five-factor model. This pattern is consistent with current recommendations in structural equation modelling, which emphasize that exploratory solutions should be interpreted together with theoretical expectations and confirmatory evidence when evaluating multidimensional constructs (Brown, 2015; Kline, 2016). Rather than indicating weaknesses in the instrument, the partial overlap observed during the exploratory phase may reflect the complexity with which adolescents interpret adult responses to bullying. Some intervention strategies may initially be perceived as sharing common characteristics because they all communicate some degree of adult involvement. However, when evaluated within a theoretically specified model, adolescents appear to distinguish among these responses according to the different psychological meanings they convey.

This interpretation is particularly relevant for mediation, group discussion, and victim support. Although these strategies share a common restorative orientation, they differ in their immediate objectives and in the social messages they communicate. Mediation emphasizes conflict resolution, group discussion reinforces collective norms and shared responsibility, whereas victim support primarily conveys protection and emotional reassurance. From the perspective of adolescent social cognition, these differences are unlikely to be trivial because each strategy may shape distinct expectations regarding fairness, interpersonal support, and the role of adults in maintaining a safe school environment (Demol et al., 2020; Colpin et al., 2021; Wachs et al., 2019). Consequently, preserving these dimensions allows the TRBQ to capture nuances that might otherwise remain hidden within broader categories of adult intervention.

The removal of TRBQ3 resulted in a non-intervention factor represented by two indicators. Although latent factors are preferably represented by three or more items, previous methodological literature indicates that two-item factors may be retained when supported by strong theoretical justification and satisfactory psychometric performance (Marsh et al., 1998; Boomsma & Hoogland, 2001). In the present study, this factor demonstrated acceptable reliability and convergent validity, supporting its retention while preserving an important conceptual distinction between the perceived absence of adult intervention and the presence of active intervention strategies. From a theoretical perspective, maintaining this distinction is particularly relevant because the absence of intervention may itself communicate meaningful social information regarding adult availability, protection, and the acceptability of aggressive behavior within the school environment.

The relationships observed among the five dimensions further support the conceptual coherence of the proposed model. Positive associations among the active intervention dimensions suggest that adolescents tend to perceive supportive forms of adult intervention as complementary rather than mutually exclusive. In contrast, the negative associations between non-intervention and the remaining dimensions reinforce the distinction between the perceived absence of adult involvement and active responses to bullying. These patterns are consistent with previous conceptualizations describing teachers' responses as multidimensional rather than existing along a single continuum of effectiveness (Demol et al., 2020; Colpin et al., 2021; Rigby, 2020). From a developmental perspective, these findings suggest that adolescents organize different forms of adult intervention into coherent psychological representations that reflect distinct expectations regarding protection, fairness, accountability, and interpersonal support. Rather than functioning as isolated categories, these dimensions appear to represent interconnected profiles through which adolescents interpret adults' roles during bullying situations.

The demonstration of measurement invariance across gender provides additional support for the interpretation of the TRBQ as a robust measure of adolescents' perceptions of adult responses to bullying. Configural, metric, scalar, and strict invariance indicate that boys and girls conceptualize the latent dimensions in a comparable manner, allowing meaningful comparisons across gender (Cheung & Rensvold, 2002; Chen, 2007). This finding is particularly relevant because gender differences are frequently reported in bullying involvement, help-seeking behavior, and perceptions of social support. Establishing measurement equivalence ensures that any observed differences are more likely to reflect genuine differences in adolescents' perceptions rather than artefacts of measurement, thereby strengthening the usefulness of the instrument for both developmental research and intervention evaluation.

Evidence of temporal stability further reinforces the interpretation that the TRBQ assesses relatively stable psychological representations rather than transient evaluations of isolated events. Although adolescents' perceptions may evolve because of meaningful changes in classroom experiences or school-based interventions, the acceptable test–retest coefficients observed in the present study suggest that these perceptions remain sufficiently stable over short periods to be considered reliable indicators of how adolescents interpret adult responses to bullying (Koo & Li, 2016). This finding is consistent with previous evidence indicating that adolescents gradually consolidate their perceptions of adult support and teacher behavior through repeated social interactions within the school environment (Demol et al., 2020; Wentzel & Ramani, 2016). Consequently, the temporal stability of the TRBQ supports its potential application in longitudinal research examining how changes in perceived adult intervention relate to school belonging, psychological adjustment, and the effectiveness of bullying prevention programs (Allen et al., 2018; Demol et al., 2020).

The present findings also have important implications for both research and educational practice. If adolescents interpret different forms of adult intervention as psychologically distinct experiences, assessing these perceptions may provide valuable information that extends beyond the occurrence of bullying itself. Students' perceptions of how adults respond to bullying can influence their expectations regarding support, fairness, protection, and the credibility of school authority, all of which have been associated with school belonging, help-seeking behavior, and psychological adjustment (Allen et al., 2018; Demol et al., 2020; Wentzel & Ramani, 2016). Consequently, understanding these perceptions may help explain why similar anti-bullying policies produce different outcomes across schools, as the effectiveness of intervention may depend not only on what teachers do but also on how their actions are perceived by students.

From an applied perspective, the TRBQ may therefore represent more than a tool for psychometric assessment. By providing a multidimensional evaluation of adolescents' perceptions of adult responses to bullying, the instrument may assist researchers and practitioners in identifying strengths and areas for improvement in teachers' intervention practices. Rather than relying exclusively on objective records of bullying incidents or teachers' self-reported behaviors, incorporating students' perspectives offers an opportunity to evaluate whether adult interventions are interpreted as supportive, fair, and effective by those who experience them directly. This information may be particularly valuable for evaluating whole-school anti-bullying programs, monitoring changes in school climate, and informing professional development initiatives aimed at strengthening teachers' responses to bullying.

More broadly, the present findings support the growing recognition that adolescents' perceptions of adult behavior constitute psychologically meaningful indicators of the quality of the school social environment. Within developmental and educational psychology, increasing attention has been paid to the role of perceived adult support, school belonging, and positive teacher–student relationships as protective factors for adolescents' mental health and social development (Allen et al., 2018; Wang & Degol, 2016; Wentzel & Ramani, 2016). In this context, the TRBQ provides a psychometrically sound framework for investigating how adolescents interpret adult responses to bullying and how these perceptions may contribute to broader developmental processes, including psychosocial adjustment, engagement with school, and willingness to seek help when victimization occurs.

Strength and Limitations

The present study has several strengths, including a large sample of Spanish adolescents, cross-validation using independent subsamples, the examination of measurement invariance across gender, and the assessment of temporal stability. Nevertheless, some limitations should be acknowledged. First, the sample was drawn from secondary schools in a single Spanish region, which may limit the generalizability of the findings. Future studies should examine the factorial structure of the TRBQ across different cultural and educational contexts. Second, although TRBQ intentionally assesses adolescents' perceptions of adult responses to bullying, these perceptions may not fully correspond to objectively observed teacher behavior. Combining students' reports with teacher reports or observational measures would provide a more comprehensive understanding of adult intervention. Finally, the cross-sectional design precludes conclusions about the developmental processes underlying adolescents' perceptions. Longitudinal research is needed to examine how these perceptions evolve over time and whether they predict subsequent changes in school belonging, help-seeking behavior, psychological adjustment, and bullying involvement.

Future research directions and implications

Future research should examine how adolescents' perceptions of adult responses to bullying relate to broader developmental outcomes, including school belonging, perceived teacher support, psychological well-being, and help-seeking behaviour. Longitudinal and cross-cultural studies are also needed to examine how these perceptions evolve across adolescence and whether they mediate the effectiveness of school-based bullying prevention programmes. Beyond further psychometric research, the TRBQ may provide a valuable framework for investigating the psychological mechanisms through which adolescents interpret adult intervention and how these perceptions contribute to positive developmental and educational outcomes.

CONCLUSIONS

Overall, the present findings provide additional evidence supporting the psychometric soundness of the 14-item Teachers' Responses to Bullying Questionnaire (TRBQ) for assessing Spanish adolescents' perceptions of adult responses to bullying. The original five-factor structure was supported after the removal of one item, and the instrument demonstrated satisfactory internal consistency, convergent validity, measurement invariance across gender, and acceptable temporal stability.

Beyond its psychometric properties, the present findings support the interpretation that adolescents perceive different forms of adult responses to bullying as psychologically distinguishable experiences rather than as a single evaluation of teacher behaviour. Preserving the distinction among non-intervention, disciplinary methods, group discussion, mediation, and victim support may therefore contribute to a more comprehensive understanding of how adolescents interpret fairness, protection, authority, and social support within the school environment.

Taken together, these findings suggest that the TRBQ provides a psychometrically sound framework for investigating adolescents' perceptions of adult responses to bullying and their role in broader developmental and educational processes. By moving beyond the assessment of observable teacher behaviour, the instrument offers new opportunities to examine how adolescents organize and interpret the psychological meaning of adult intervention during bullying situations, thereby contributing to research on school climate, bullying prevention, and adolescent psychosocial development.

Declarations

AUTHOR CONTRIBUTIONS (CRediT)

Conceptualization: García-Prieto, A., and Galán-Arroyo, C.; Methodology: Rojo-Ramos, J.; Validation: Galán-Arroyo, C., and Rojo-Ramos, J.; Formal analysis: Galán-Arroyo, C., and Rojo-Ramos, J.; Investigation: García-Prieto, A., and Galán-Arroyo, C.; Data curation: García-Prieto, A.; Writing – original draft: García-Prieto, A., Galán-Arroyo, C., and Rojo-Ramos, J.; Writing – review & editing: García-Prieto, A., Galán-Arroyo, C., and Rojo-Ramos, J.; Project administration: Galán-Arroyo, C.; Supervision: Galán-Arroyo, C., and Rojo-Ramos, J. All authors have read and approved the final manuscript.

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DECLARATION OF CONFLICTING INTERESTS

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ETHICAL APPROVAL

The study was conducted in accordance with the ethical principles of the Declaration of Helsinki and was approved by the Bioethics and Biosafety Committee of the University of Extremadura, Spain (approval code: 270/2025).

INFORMED CONSENT TO PARTICIPATE

Written informed consent was obtained from the parents or legal guardians of all participating students prior to data collection. Participation was voluntary, and students were informed that they could withdraw from the study at any time without any consequences.

CONSENT FOR PUBLICATION

Not applicable. No identifiable individual participant data is included in this manuscript.

DATA AVAILABILITY STATEMENT

The datasets generated and/or analyzed during the current study are not publicly available due to ethical and privacy restrictions involving minors but are available from the corresponding author on reasonable request.

USE OF ARTIFICIAL INTELLIGENCE

During the preparation of this manuscript, the authors used ChatGPT (OpenAI) and Paperpal exclusively to improve academic writing, correct grammatical errors, translate text into English, and enhance linguistic style. All scientific content, methodological decisions, data collection procedures, analyses, interpretations, and conclusions were developed independently by the authors. Any AI-generated suggestions were critically reviewed, revised when necessary, and verified against the original data, relevant scientific literature, and the authors' own expertise before inclusion in the manuscript. The authors take full responsibility for the accuracy, integrity, and final content of this work.

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Figures

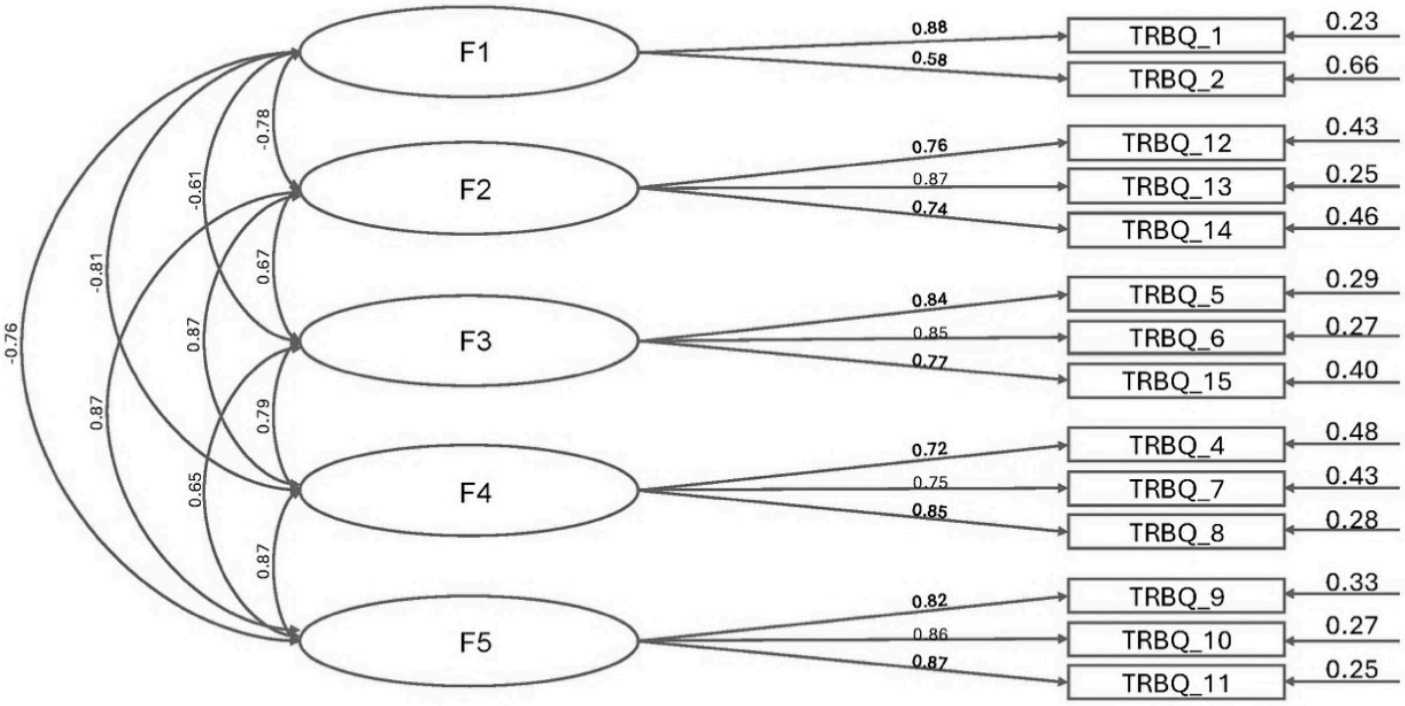


Figure 1

Diagram of the TRBQ confirmatory factor analysis model