Design and validation of an instrument to assess students'perceived school coexistence*

Diseño y validación de un instrumento para valorar la convivencia escolar percibida por los estudiantes

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Abstract:

A good climate of harmonious coexistence in educational institutions can improve students' well-being, self-esteem, and academic results and prevent maladaptive behaviours. Several questionnaires assess coexistence by quantifying the types of problems that occur, but there are few that focus on managing it and implementing programmes to improve it. The aim of the present research is to validate a questionnaire for evaluating students' perception of the management of school coexistence. This questionnaire centres on the 21-item Integrated Model of School Coexistence. We used random cluster and stratified sampling with the participation of 1169 students from 34 centres in year six of primary education and secondary education from the Autonomous Community of Madrid. The questionnaire was validated by expert judgement. We used the SPSS v24 and AMOS programs to perform exploratory and confirmatory factor analyses, respectively. The results show 4 factors with reliability indices ranging between .737 and .859 (Factor 1, protective framework for coexistence; Factor 2, student mediator program; Factor 3, student assistant program; Factor 4, democratic rule-making processes). Finally,

* Convivencia means more than just being together or coexisting; it means sharing spaces, times, experiences, goals, and often having to manage conflicts in a respectful way with the different people who are part of an educational institution.

Revision accepted: 2020-12-15.
This is the English version of an article originally printed in Spanish in issue 279 of the **revista española de pedagogía**. For this reason, the abbreviation EV has been added to the page numbers. Please, cite this article as follows: Torrego Seijo, J. C., García Sanz, M. P., Hernández Prados, M. Á., & Bueno Villaverde, Á. (2021). Diseño y validación de un instrumento para valorar la convivencia escolar percibida por los estudiantes | *Design and validation of an instrument to assess students' perceived school coexistence. Revista Española de Pedagogía, 79* (279), 209-229. https://doi.org/10.22550/REP79-2-2021-04
https://revistadepedagogia.org/ ISSN: 0034-9461 (Print), 2174-0909 (Online)

the empirical fit with the Integrated Model for fostering more harmonious relations in school communities was confirmed.

Keywords: measuring instrument, peaceful coexistence, mediation, programme evaluation, questionnaire, school climate.

Resumen:

Un buen clima de convivencia en los centros educativos puede mejorar el bienestar, la autoestima, los resultados académicos del alumnado y prevenir conductas desadaptativas. Existen cuestionarios que evalúan la convivencia cuantificando los tipos de problemas, pero muy pocos instrumentos se centran en su gestión e implementación de programas. El objetivo de esta investigación es validar un cuestionario de evaluación de la gestión de la convivencia escolar desde la percepción del alumnado, centrado en el modelo integrado de la convivencia. Para ello, se ha realizado un muestreo aleatorio por conglomerados y estratificado en el que han participado 1169 estudiantes de 34 centros de 6.º de Primaria y Secundaria de la Comunidad Autónoma de Madrid. Tras la validación por juicio de expertos, se han empleado los programas SPSS v24 y AMOS para realizar el análisis factorial exploratorio y confirmatorio, respectivamente. Los resultados arrojan 4 factores, cuyos índices de fiabilidad oscilan entre .737 y .859 (Factor 1: marco protector de la convivencia; Factor 2: programa de alumnos/as mediadores; Factor 3: programa de alumnos/as ayudantes; Factor 4: procesos democráticos de elaboración de normas). Finalmente, se confirma el ajuste empírico al modelo integrado de mejora de la convivencia.

Descriptores: instrumento de medida, convivencia pacífica, mediación, evaluación de programas, cuestionario, clima escolar.

1. Introduction

There is considerable social awareness of the need to foster school coexistence and prevent problems relating to violence in schools. As a result, in recent years there has been an increase in educational measures and initiatives such as the Education and Training Strategic Framework (Marco Estratégico Educación y Formación – ET2020) (Eurydice España rediE, n.d.), the School Coexistence Strategic Plan (Plan Estratégico de Convivencia Escolar – MEC, 2017). Furthermore, Spain's Organic Act 8/2013, of 9 December to Improve Educational Quality and the Spanish Constitution (art. 27) (BOE, 1978) provide reference standards for school coexistence.

These initiatives have contributed to greater awareness among students as Spain's results in the PISA report show (OCDE, 2018) with 92% of students believing it is good to help people who cannot look after themselves and expressing positive feelings of belonging to the centre when cooperation is predominant. A supportive, safe, and healthy school environment promotes improvements in academic results, well-being, and self-esteem; it reduces the link between low economic status and academic results; it protects students from

maladaptive behaviour; and it increases teachers' job satisfaction and it reduces burnout (OECD, 2019). Similarly, learners' participation in coexistence programmes and their involvement in management results in improved life in school communities.

From this perspective, our theoretical referent is the Integrated Coexistence Improvement in Educational Institutions Model (modelo integrado de mejora de la convivencia —MIMCO) (Torrego Seijo, 2010). This is based on a conceptualisation of coexistence that goes beyond preventing violence and becomes an exciting project that requires a collective commitment to living with and for others (Torrego Seijo, 2019). This reminds us that conflict is inherent to life, and encourages non-violent management, which involves creating processes of social participation aimed at establishing of a feeling of belonging at the institution and incorporating students into core aspects such as setting rules. In essence, it is a holistic focus that promotes a framework of values centred on peaceful conflict resolution, participation, cooperation, and solidarity; it manages peaceful coexistence in centres and combines intervention in three planes: a democratic process for drawing up rules, a mediation and conflict resolution team, and a coexistence framework (Torrego Seijo, 2019). All of this is set out in the institution's coexistence plan.

a) *Democratic processes for drawing up classroom and institution rules:* these include setting positive rules, preventative measures to favour compliance with them, and remedies in the case of non-compliance. Democratic construction of rules requires people to draw them up, accept them, and respect them, as it is only through students' involvement that rules can acquire the necessary moral force for their compliance and assimilation and for them to develop from a heteronomous moral code to an autonomous one (Da Rocha Costa, 2019). For this purpose, it is necessary to start from the individual and proximate (class rules) and move outwards to the global (institution rules), favouring their abstraction and generalisation, hence both forms are equally necessary. In this case, students participate through their representatives to ensure that the rules of the institution, which have been communicated and agreed on in the class groups, are approved in the School Council and are set down in the Internal Regulations and Coexistence Plan. It is very useful to have shared rules that act as a framework for guiding and regulating coexistence, thus preventing improvised, impulsive, and poorly-founded interventions that result in arbitrary or unfair decisions or abuses of power and so further exacerbate problems.

b) *Mediation team and conflict resolution* this combines two sub-programmes, the School Mediation Programme and the Student Coexistence Helpers Programme. These share the same conflict management philosophy but have their own specific ways of functioning. The former involves establishing a team — who can comprise students, teachers, and/or parents — to act as neutral mediators (Torrego Seijo, 2017) and help find solutions (Grau & García-Raga, 2017) in which everyone wins or is satisfied democratically through dialogue. According to García Raga et al. (2019, p. 106) "the pedagogical sense of mediation could be summarised in three educational aims:

solving conflicts, preventing violence, and personal strengthening".

The success of these programmes relies on: student mediators being volunteers and having a degree of autonomy (Mucientes, 2019); training, dissemination, the expansion of the mediation functions to the teaching-learning process; and the creation of support networks and the application of the social competences learnt at school (García-Raga et al., 2017). In addition, they are positively valued by the teachers as a conflict resolution tool since they reduce number of reports, reprimands, and disciplinary proceedings and prevent the appearance of new conflicts. Both the mediation programme and the systems of peer assistance help to develop social skills, foster moral values, and generate social support networks through which possible coexistence problems can be tackled (Ibarrola-García & Iriarte, 2012).

The Student Coexistence Helpers Programme (Torrego Seijo, 2018) involves selecting and training students so that they can detect various types of problems, including bullying, and support the victims, building confidence and providing companionship and solidarity to their peers. The results of its implementation reflect a reduction in disruptive behaviour with a fall in social isolation, theft, bullying, and vandalism in the view of students and teachers (Andrés & Gaymard, 2014).

c) *The coexistence protection framework:* this entails encouraging educational contexts that favour personal and collective development and a culture of conversation and dialogue (Grau & García-Raga, 2017). It combines interventions such as: 1) tutorial activities, in which democratic conflict management can be taught and the use of protocols for intervention in cases of bullying incentivised (Luengo, 2019); 2) increasing the potential for a more inclusive and collaborative curriculum, using active methodologies that promote communication, positive interdependence, and social skills that favour coexistence (Montanero, 2019); and 3) promoting family participation, as the lower this is, the higher the level of violence among the student body (Reyes-Angona et al., 2018). All of this should be specified in the Coexistence Plan (Torrego Seijo, 2010).

Having defined the theoretical model, we will now review the evaluation instruments that make it possible to cover it. However, the results show that most questionnaires focus on identifying types of problems with violence (Burguera et al., 2017; Reyes-Angona et al., 2018), and very few evaluate the management of school coexistence. The instruments that partially approach the MIMCO, as they consider democratic, participatory, peaceful, and inclusive management of conflict, include the School Coexistence Questionnaire (Cuestionario de Convivencia Escolar) (Del Rey et al., 2009), the Coexistence Management Model (Modelo de Gestión de la Convivencia) of Ibarrola-García and Iriarte (2012), the School Life for Non-Violence Questionnaire (CENVI) (Muñoz et al., 2017), and the School Coexistence Questionnaire (Valdés et al., 2018). As for the evaluation of school mediation, García Raga et al. (2017) and Ibarrola-García and Iriarte (2012) have provided questionnaires.

The questionnaire we propose offers a positive and holistic overview of coexistence

in educational institutions. This questionnaire, which takes the MIMCO as its starting point, focuses on educational intervention and centres exclusively on its management. It comprises the following blocks: democratic processes for drawing up rules; mediation and conflict resolution teams (school mediation programme and student helpers); and a school coexistence protection framework.

2. Identifying the problem and the research aim

This background raises the following research problem: how can school coexistence in primary and secondary schools be evaluated in a valid and reliable way from the perspective of the students? Starting with this question, the aim of the present research is to construct and validate a questionnaire based on the MIMCO theoretical model of school coexistence (Torrego Seijo, 2010) that will make it possible to build knowledge about school coexistence from the perception of the students.

3. Method

3.1. Participants

From an estimated population of 343,418 students from year 6 of primary school and compulsory secondary education (ESO) in the Community of Madrid, 1169 from 34 educational institutions in this autonomous region of Spain participated in this research. Participants were selected through stratified (district, educational stage, and ownership of the school) random cluster (institutions) sampling. The confidence interval was 95%, with a 3% margin of error. These parameters would require a sample of 1064 students, and so the sample size is fully appropriate.

With regards to the characteristics of the students who participated, there is an equal division by sex (50% male and female); 22.6% were at primary school and 77.4% secondary; 52.8% attended public schools, 39.7% private state-assisted schools and 7.5% private centres; finally, 51.1% were from the city of Madrid; 15.5% from the north district; 12.3% from the south of the Community; 8.4% from the east district; and 12.2% from the west of the Community.

3.2. Instrument

We started with an initial questionnaire with 21 items on school coexistence. The content of the questionnaire was subjected to expert evaluation by eight academics from three universities who specialise in the subject and in research methodology, as well as a representative of the Autonomous Region of Madrid. We modified some questions to improve their clarity, in line with the respondents to whom the instrument is directed, but we kept the initial 21 items (Table 1).

We organised the items in the questionnaire in accordance with the model's three theoretical blocks: Democratic processes for drawing up class and institution rules (items Q1 to Q5), mediation and conflict resolution team (items Q6 to Q10, which consider the Student Helpers Programme, and Q13 to Q18, which consider the mediation programme) and coexistence protection framework (items Q11 and Q12, dedicated to bullying and Q19 to Q21).

TABLE 1. Questionnaire items.

State how often or how much the content of each of the questions below happens, in your opinion, using the scale provided	Never/not at all	Rarely/a little	Sometimes/ a bit	Often/quite a lot	Always/a lot
1. Students and teachers take part in drawing up and revising class rules.					
2. Students, teachers, and families take part in drawing up and revising school rules.					
3. The corrections applied in the school make it possible to repair any harm done and correct behaviour.					
4. The selection of year delegates is done knowing the roles they will have to perform.					
5. During tutorial sessions, the coexistence of groups is analysed and evaluated.					

	YES	NO
6. Is there a Student Helpers Programme in the school?		

Only answer if you answered yes to the previous question	1	2	3	4	5
7. Evaluate from 1 to 5 the operation of the Student Helpers Programme.					

Only answer if there is a Student Helpers Programme in your school. State how often or how much the content of each of the questions below happens, in your opinion, using the scale provided	**Never/not at all**	**Rarely/a little**	**Sometimes/ a bit**	**Frequently/ quite a lot**	**Always/a lot**
8. The student helpers are attentive to the other students.					
9. The student helpers selected are good at giving help.					
10. The student helpers programme has been publicised among students and families.					

	YES	NO
11. Is there a protocol in the school to help students who suffer from bullying?		

Only answer if you answered yes to the previous question	1	2	3	4	5
12. Evaluate from 1 to 5 the operation of the bullying prevention programme.					

	YES	NO
13. Is there a school mediation programme in your school?		

Only answer if you answered yes to the previous question	1	2	3	4	5
14. Evaluate from 1 to 5 the functioning of the school mediation function.					

State how often or how much the content of each of the questions below happens, in your opinion, using the scale provided	Never/not at all	Rarely/a little	Sometimes/a bit	Frequently/quite a lot	Always/a lot
15. When students have a problem, they turn to the mediator classmates.					
16. The student mediators deal with coexistence problems.					
17. The student mediators selected are the right people.					
18. The mediation programme has been publicised among students and their families.					
19. I know the main actions listed in the school's coexistence plan.					
20. In general, the school promotes participation in the coexistence plan.					
21. In general, the atmosphere of relationships and coexistence between people in the school is good.					

Source: Own elaboration.

3.3. Procedure

After we had prepared the first questionnaire, expert analysis of it was done by email. We sent the initial instrument to the university academics as well as the representant of the School Council of the Autonomous Community of Madrid and after telling them about its purpose, we asked them to make any suggestions they felt were appropriate. Based on these, we modified the wording of some items to make them more appropriate for students from year 6 of primary education and compulsory secondary education.

We then administered the questionnaire, which had been validated by experts, to the student respondents, using a non-experimental, descriptive, and cross-sectional survey-type design. The phases in this stage of the research were as follows:

1. Contacting the management teams of the selected institutions to inform them of the research.
2. Asking the parents of the students to give informed consent, with guarantees of anonymity and confidentiality.
3. Administering the questionnaires to the students online, with the help of the teachers.
4. Administering paper copies of the questionnaires to complete the required sample size owing to the high drop-out rate.

5. The research team collected the completed questionnaires in person at the educational institutions.
6. Data analysis using the programs IBM SPSS, v. 24 and IBM SPSS Amos, v.21.

4. Analysis and results

Once the content validity of the questionnaire had been considered by the experts, we used the SPSS program to calculate the descriptive statistics of the items in the instrument and perform an exploratory factor analysis with the aim of starting to test the MIMCO empirically.

4.1. Descriptive statistics

Table 2 shows that, overall, school coexistence is medium-high (overall mean = 3.68) in the centres where we evaluated it. The valuations of the Student Helper Programme (Q7) and Student Mediators Programme (Q13) stand out, as does the suitability of the selected student helpers (Q9). In contrast, there should be more participation by students, teachers, and families in drawing-up and reviewing the centres' rules (Q2) and students should be better informed of the principal actions contained in the centre's Coexistence Plan (Q19).

TABLE 2. Descriptive statistics for the items in the questionnaire.

Ítems	*N*	Minimum	Maximum	Mean	Standard deviation
Total	1169	1.59	5	3.68	.453
Q1	1169	1	5	3.15	1.259
Q2	1169	1	5	2.89	1.284
Q3	1169	1	5	3.19	1.198
Q4	1169	1	5	3.61	1.237
Q5	1169	1	5	3.71	1.176
Q7	1169	1	5	4.03	.576
Q8	1169	1	5	3.90	.590
Q9	1169	1	5	4.00	.554
Q10	1169	1	5	3.12	.717
Q12	1169	1	5	3.98	.890
Q14	1169	1	5	4.03	.698
Q15	1169	1	5	3.05	.738
Q16	1169	1	5	3.84	.781
Q17	1169	1	5	3.90	.695
Q18	1169	1	5	3.83	.817
Q19	1169	1	5	2.97	1.210
Q20	1169	1	5	3.32	1.106
Q21	1169	1	5	3.73	.973

Source: Own elaboration.

TABLE 3. Correlation between observed variables.

	Q1	Q2	Q3	Q4	Q5	Q7	Q8	Q9	Q10	Q12	Q14	Q15	Q16	Q17	Q18	Q19	Q20	Q21
Q1	1																	
Q2	.665	1																
Q3	.528	.521	1															
Q4	.259	.293	.361	1														
Q5	.410	.403	.416	.461	1													
Q7	.136	.085	.107	.157	.124	1												
Q8	.122	.088	.108	.166	.182	.446	1											
Q9	.096	.098	.158	.219	.164	.403	.591	1										
Q10	.131	.137	.156	.180	.181	.255	.340	.429	1									
Q12	.170	.175	.258	.183	.212	.178	.113	.157	.141	1								
Q14	.147	.111	.162	.154	.164	.297	.137	.173	.144	.332	1							
Q15	.229	.251	.262	.137	.232	.213	.188	.186	.181	.265	.412	1						
Q16	.136	.124	.173	.174	.163	.180	.181	.188	.190	.196	.407	.568	1					
Q17	.087	.100	.129	.182	.146	.227	.221	.346	.225	.173	.387	.427	.608	1				
Q18	.152	.142	.150	.154	.191	.163	.167	.17*	.261	.168	.321	.432	.595	.573	1			
Q19	.471	.472	.463	.369	.398	.175	.155	.153	.164	.214	.138	.263	.189	.116	.202	1		
Q20	.475	.461	.484	.414	.441	.196	.203	.179	.189	.224	.174	.241	.179	.119	.203	.668	1	
Q21	.347	.345	.430	.374	.410	.179	.196	.191	.116	.224	.177	.195	.197	.183	.169	.441	.504	1

Source: Own elaboration.

4.2. Exploratory factor analysis

Before studying the questionnaire's construct validity, we calculated Spearman's correlation coefficient between the items in the questionnaire to prevent multicollinearity issues. As Table 3 shows, bivariate correlations greater than .85 were not obtained in any cases, and so, in line with Kline (2005), we did not have to remove any items from the questionnaire owing to this criterion.

Next, we performed an exploratory factor analysis, using principal component analysis and the Varimax rotation. After performing the Kaiser-Meyer-Olkin test for sampling adequacy (.866) and Bartlett's sphericity test for statistical significance (.000), we obtained an explained variation of 59.82% for eigenvalues>1. This analysis included all items from the questionnaire except for 6, 11, and 13, as these were dichotomous. Table 4 shows the rotated component matrix ordered by size.

TABLE 4. Exploratory factor analysis. Rotated component matrix.

Items	Component			
	1	2	3	4
Q2	**.773**	.086	-.019	-.077
Q20	**.772**	.087	.131	.049
Q1	**.760**	.076	.013	-.024
Q19	**.755**	.119	.093	.003
Q3	**.727**	.097	.058	.132
Q5	**.644**	.109	.100	.150
Q21	**.617**	.085	.103	.257
Q4	**.543**	.072	.170	.155
Q16	.096	**.878**	.053	.084
Q17	.059	**.816**	.174	.080
Q18	.129	**.811**	.096	.033
Q15	.250	**.715**	.104	.162
Q9	.074	.094	**.838**	.068
Q8	.081	.069	**.813**	.003
Q7	.100	.064	**.648**	.342
Q10	.158	.180	**.632**	-.108
Q12	.219	.086	.057	**.794**
Q14	.080	.477	.074	**.622**

Source: Own elaboration.

As Table 4 shows, all of the factor loadings are greater than .5, reflecting a high saturation of items in the corresponding factors.

The first factor combines 8 items. In accordance with the MIMCO, this factor comprises the blocks: *Democratic processes for drawing up rules* (Q1, Q2, and Q3) and *coexistence protection framework* (Q4, Q5, Q19, Q20, and Q21). Item Q12 relating to the valuation of the programme for preventing bullying is missing. This should be in the first factor, included in the *coexistence protection framework* block. In fact, although this item saturates in the fourth factor, the next highest factor loading is found in the first (.219).

The second factor includes half of the items from the *conflict mediation and resolution team* block. These are the ones that refer to the *mediation programme* sub-block (Q15, Q16, Q17, and Q18). In accordance with the theoretical model we are testing, item Q14, which is in factor 4, should have saturated in this factor (valuation of the functioning of the mediation programme). However, the second highest factor loading for this item is found in factor 2 (.477).

The third factor comprises the items in the *mediation and resolution team* block, in other words, those relating to the *Student Helpers Programme* sub-block (Q7, Q8, Q9, and Q10).

Redistributing the two items from the fourth factor into factors 1 and 2, respectively, eliminates this component. In its place, in the interest of a closer approximation to the theoretical model that we wish to demonstrate empirically, we consider a subdivision of the items from the first factor, putting those that refer to *democratic processes for drawing up rules* into factor four (Q1, Q2, and Q3).

Combining our theoretical considerations and the results of the exploratory factor analysis gives the following factors in the configuration of the MIMCO.

- Factor 1: Coexistence protection framework.
- Factor 2: Student Mediators Programme.
- Factor 3: Student Helpers Programme.
- Factor 4: Democratic processes for drawing up rules.

4.3. Confirmatory factor analysis

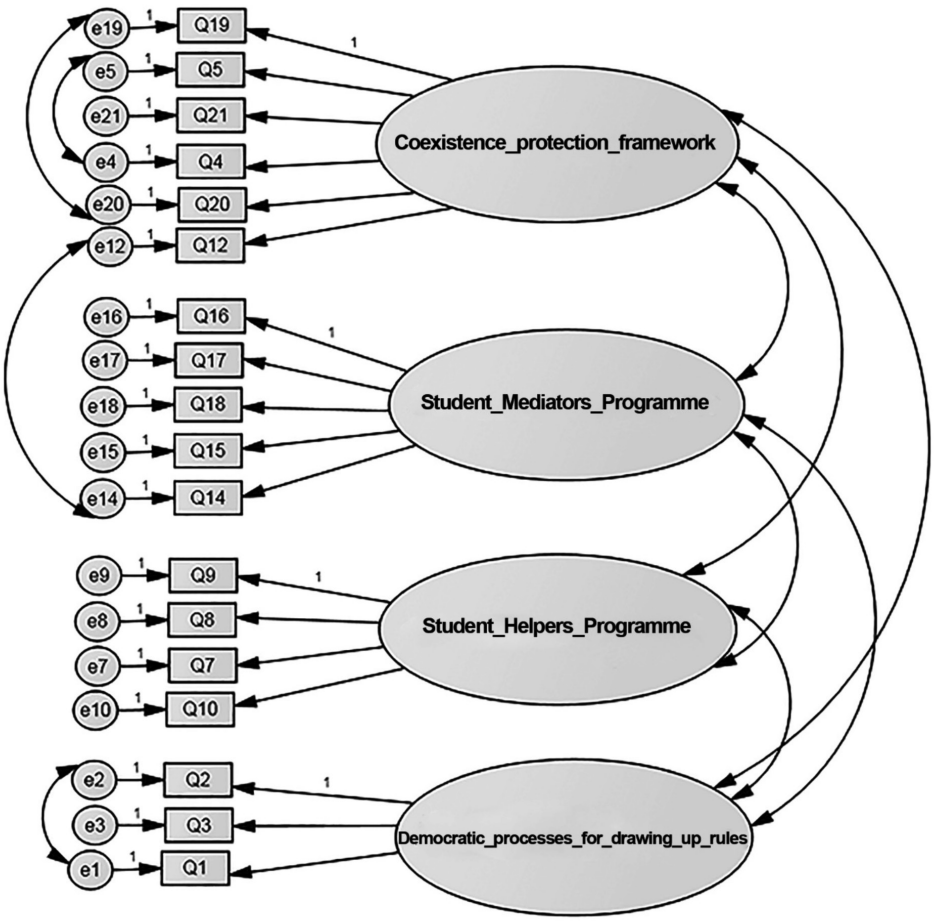
We performed confirmatory factor analysis through structural equation modelling in the AMOS program to ascertain the construct validity of the questionnaire and ensure that its internal structure is appropriate. This type of analysis makes it possible to correct or corroborate the weak points from the exploratory factor analysis, leading a greater contrast of the hypotheses or objectives posed (Bollen, 1989).

In order not to reduce the initial sample, we replaced the missing values with the mean of each item. With regards to

outliers, Aguinis et al. (2013) state that "A pervasive view of outliers among substantive researchers is that outliers are 'problems' that must be 'fixed,' usually by removing particular cases from the analyses" (p. 280). Nonetheless, some studies claim that these values should be considered (O'Boyle & Aguinis, 2012). Therefore, as there is little agreement on atypical values in the methodological literature, we decided to include these as we regarded them as interesting, given that they can provide potentially valuable knowledge (J. Cohen et al., 2003; Mohrman & Lawler, 2012).

Graph 1 pictorially displays the correlation between the latent and observable variables, the measurement error of the latter, and the covariance between the four latent variables and between errors.

Graph 1. Structural equation modelling of the questionnaire to evaluate students' perception of school coexistence.



Source: Own elaboration.

We used the maximum likelihood estimation to calculate the model. Similarly, we tested for univariate normality by studying the skewness and kurtosis of the variables observed. All items fulfilled the criterion established by Aguinis, Gottfredson, and Joo (2013) for interpreting both statistics, as none of them exceeded a skew of l3l and a kurtosis between l8l and l20l (Table 5).

TABLE 5. Skew and kurtosis of the observed variables.

Variable	Minimum	Maximum	Skew	Critical ratio	Kurtosis	Critical ratio
Q10	1	5	.471	6.579	3.212	22.420
Q15	1	5	-.099	-1.376	2.808	19.594
Q4	1	5	-.721	-10.061	-.445	-3.109
Q14	1	5	-1.717	-23.968	6.050	42.221
Q8	1	5	-1.971	-27.518	7.134	49.787
Q9	1	5	-1.728	-24.120	8.432	58.850
Q7	1	5	-1.450	-20.237	6.852	47.824
Q16	1	5	-1.888	-26.356	4.662	32.539
Q18	1	5	-1.801	-25.133	3.869	26.999
Q17	1	5	-1.797	-25.088	5.570	38.872
Q12	1	5	-1.345	-18.773	2.433	16.979
Q2	1	5	-.011	-.147	-1.002	-6.992
Q1	1	5	-.163	-2.279	-.924	-6.446
Q20	1	5	-.236	-3.293	-.430	-3.003
Q19	1	5	-.003	-.039	-.771	-5.378
Q5	1	5	-.782	-10.910	-.235	-1.637
Q3	1	5	-.157	-2.190	-.784	-5.468
Q21	1	5	-.819	-11.430	.421	2.941

Source: Own elaboration.

Table 6 shows the regression coefficients (factor loadings) of the observable variables on the latent variables, the standard error (SE) and the critical ratio (CR), as well as the corresponding statistical significance (p). It also shows the standardised regression coefficients between these variables. As is apparent, all of the pairs are significant, where $\alpha = .01$. Similarly, all of the standardised regression coefficients easily exceed the value of .3 established by Cohen (1988) as the typical value for the effect size.

Table 7 shows the covariance coefficients between the latent variables and

TABLE 6. Regression coefficients and standardised regression coefficients between observable and latent variables.

Relationship between observable and latent variables		Regression coefficient				Standardised regression coefficient
		Estimates	SE	CR	p	Estimates
Q17	Student_Mediators	.805	.027	29.353	***	.778
Q16	Student_Mediators	1.000				.860
Q9	Student_Helpers	1.000				.796
Q10	Student_Helpers	.867	.054	16.011	***	.533
Q15	Student_Mediators	.781	.030	26.213	***	.711
Q18	Student_Mediators	.905	.033	27.759	***	.744
Q8	Student_Helpers	.981	.048	20.450	***	.731
Q7	Student_Helpers	.763	.044	17.410	***	.583
Q14	Student_Mediators	.512	.029	17.484	***	.499
Q20	Coexistence_Framework	.968	.036	26.787	***	.735
Q19	Coexistence_Framework	1.000				.694
Q12	Coexistence_Framework	.343	.034	10.206	***	.325
Q4	Coexistence_Framework	.796	.050	15.896	***	.540
Q21	Coexistence_Framework	.757	.040	18.934	***	.653
Q5	Coexistence_Framework	.867	.048	18.003	***	.619
Q3	Drawing up_Rules	1.022	.051	20.203	***	.762
Q2	Drawing up_Rules	1.000				.696
Q1	Drawing up_Rules	.981	.039	25.459	***	.696

Source: Own elaboration.

also between the detected errors, as well as the corresponding standard error (SE), critical ratio (C.R), and statistical significance (p). It also shows the correlation coefficients between the latent variables and between errors. As can be seen, all of the pairs are significant, for a level of statistical significance of α=.01. Similarly, the correlation coefficients, approximately achieved or exceeded the value of .3 determined by Cohen (1988) as the benchmark, with the exception of those relating to the relationship between the Student Helpers Programme and drawing up rules and the relationship between errors e5-e4.

We use three different types of index to evaluate the fit of the model, in line

TABLE 7. Covariances and correlation between latent variables and between errors.

Relationship between latent variables		Covariances				Correlation
		Est.	SE	CR	P	Est.
Student_Mediators	Student_Helpers	.092	.011	8.356	***	.312
Student_Mediators	Coexistence_ Framework	.213	.022	9.590	***	.379
Student_Helpers	Coexistence_ Framework	.127	.015	8.412	***	.345
Coexistence_ Framework	Drawing up_Rules	.664	.045	14.759	***	.886
Student_Mediators	Drawing up_Rules	.175	.023	7.531	***	.292
Student_Helpers	Drawing up_Rules	.090	.016	5.743	***	.229
e5	e4	.192	.033	5.791	***	.200
e1	e2	.308	.038	8.091	***	.370
e19	e20	.227	.029	7.916	***	.349
e12	e14	.130	.016	8.334	***	.259

Source: Own elaboration.

with the recommendations of authors such as Hu and Bentler (1998) to use more than one statistic for this purpose: normed chi-squared or the ratio of chi-squared over degrees of freedom (CMIN/DF), which measures goodness of fit and parsimony; the comparative fit index (CFI), which is one of the incremental fit indices; and the root mean square error of approximation (RMSEA), which is a measurement of absolute goodness of fit. Table 8 shows the values obtained from these indices:

TABLE 8. Goodness of fit statistics.

Index	Value
CMIN/DF	4.399
CFI	.947
RMSEA	.054

Source: Own elaboration.

With regards to the normed chi-squared statistic, the values established by the literature on this matter are between 1 and 5 (Hair et al., 2008; Lévy Mangin & Varela Mallou, 2003; Marsh & Hocevar, 1985; Wheaton et al., 1977). The comparative fit index must have a value of between 0 and 1 (Lévy Mangin & Varela Mallou, 2003; McDonald & Marsh, 1990; Marsh & Hocevar, 1985), and a value of at least .9 is recommended (Cupani, 2012). The root mean square error of approximation can, according to several authors, have values lower than .08 (Browne & Cudeck, 1993; Hair et al., 2008; Steiger & Lind, 1980), although more demanding authors specify values of up to .05 (Lévy Mangin & Varela Mallou, 2003).

Considering the results shown in Table 8, we can state that the model,

including the covariance between the errors shown, displays reasonable indices of fit between the theoretical structures and the empirical data obtained, and so the construct validity of the questionnaire is confirmed.

4.4. Reliability of the questionnaire

We again used the SPSS statistics software to calculate the reliability of the questionnaire. We calculated this psychometric characteristic with the internal consistency method, using Cronbach's alpha. Table 9 displays the respective reliability indices, both overall and by blocks. High internal consistency of the instrument is observed, with all cases exceeding the minimum value of .7, a requirement for the instrument to be considered reliable (DeVellis, 2003).

TABLE 9. Reliability of the questionnaire.

Block	Cronbach's alpha coefficient
Total	.859
Block 1: Coexistence protection framework	.743
Block 2: Student Mediators Programme	.844
Block 3: Student Helpers Programme	.737
Block 4: Democratic processes for drawing up rules	.805

Source: Own elaboration.

All of the items fulfilled the corrected item-total correlation criterion, and so it was not necessary to eliminate any of them.

5. Discussion and conclusions

Handling school coexistence is one of the most important challenges currently facing schools, teachers, and families (BOCM, 2019; OECD, 2019). To help improve it, MIMCO offers an integrated focus centred on participatory, inclusive, and democratic interventions that distinguishes it from others. However, despite being an established model, there was hitherto no instrument to evaluate reliably the dimensions that comprise it, as confirmed in the literature review we performed. Constructing and validating an instrument centred on this model that is of use for identifying areas of coexistence intervention that have been put in place in educational institutions, is of administrative and methodological value.

This research has demonstrated the validity and reliability of a 21-item questionnaire that makes it possible to evaluate students' perception of school coexistence, providing highly enriching information about democratic processes in the development of class and institution-level rules, mediation teams, and conflict resolution, as well as the framework for protecting school coexistence. Although the MIMCO theoretical model initially comprised these three dimensions, after the exploratory

and confirmatory factor analyses, it was split into four factors, subdividing the mediation and student helpers programmes into two different but related dimensions.

Factor 1, the coexistence protection framework, provides information about the peaceful conflict resolution through tutorial action (García Raga et al., 2019), bullying protocols (Luengo, 2019), a cooperative curriculum for coexistence (Burguera et al., 2017), and family participation (Reyes-Angona et al., 2018). All of this contributes to personal strengthening, prevention of violence, and conflict resolution (García Raga et al., 2019) and results in improved coexistence. In this factor, measurement error covariances relating to items Q4-Q5 and Q19-Q20 can be seen. Firstly, responsible selection of delegates who understand the roles they have to perform (Q4) is one specific aspect of rules-based democratisation that fits into the broader framework of tutorials. However, it is not the only one as, according to Arribas and Roura (2010), other aspects of coexistence can be covered during them (Q5). Therefore, knowing how much tutoring is used to improve coexistence is one aspect of the questionnaire that is essential to maintain (Torrego Seijo, 2019). More complex is the line of differentiation of the item referring to knowledge of actions in the Coexistence Plan (Q19) and participation in it (Q20), since in the Spanish setting, although different areas of participation are considered, it is often conceived as unitary, and so differs greatly from Epstein's graded model (2001) or that presented in the State School Council (2014), to which we subscribe.

In contrast, in the theoretical model set out here, the student mediators programme (factor 2) and Student Helpers Programme (factor 3) are within the same dimension (mediation and conflict resolution team). However, in the factor analysis they are separated into two factors, which is in line with the results found in other research. Consequently, these are two complementary programmes (Usó et al., 2009), but there are very few studies in which they have been implemented simultaneously, something corroborated by Torrego Seijo et al. (2019) where they confirm that more centres use mediation programmes than student helper programmes in the Community of Madrid. Similarly, experiences focussing on mediation (Martínez, 2018; Viana Orta, 2019) and others on student helpers (Andrés & Barrios, 2006; Gómez, 2018) have been found separately.

We confirmed a measurement error covariance between factors 1 and 2 relating to items Q12 (bullying prevention programme) and Q14 (mediation programme). In the exploratory factor analysis, these items saturated exclusively in one particular factor relating to the evaluation of the two programmes. Nonetheless, the former was included in the coexistence protection framework (factor 1), as it refers to the protocols against bullying established in the centres as a procedure for responding to situations of bullying between peers (Luengo, 2019; De Vicente, 2010). These are not disciplinary procedures, although they can culminate with the opening of disciplinary action against the offending student; instead they involve an invitation to clarify and resolve events and design ac-

tion plans and educational measures. Having a protocol means that when confronting problems that create much distress in educational communities, these situations are made explicit and tackled in an ordered and systematic way. Likewise, item Q14 was included in factor 2 which refers to the mediation programme, as the legislation in force (BOCM, 2019) states that the coexistence committee will evaluate the situation of harmonious life in the centre and the results of applying the rules for said coexistence. Therefore, it is an important aspect to take into account for inclusion in these centre evaluations. However, Viana Orta (2019) analyses the legislation in all of Spain's autonomous regions and concludes that the two that were pioneers in mediation — the Basque Country and Madrid — do not explicitly mention this programme in their legislation, while many other autonomous regions do, and so it is necessary to include evaluation of them.

Finally, in factor 4, democratic processes for drawing up rules, we found a measurement error covariance using SEM in relation to items Q1 and Q2, which are apparently similar, but allude to two different levels of the construction of rules. The first level is that of the classroom, where efforts are made to raise students' awareness (Fernández, 2017) and make the process of drawing them up, agreeing on them, and adopting them more comprehensible for students. The second level, that of the institution, is much more complex as for the democratic development of its rules, it is necessary for it to have organised structures of delegates who participate in student representative committees and in the School Council to approve them. According to Decree 32/2019, schools must draw up their own coexistence plans and institution rules, including all of the educational community: "The student body's participation in the drawing up and following of rules of coexistence shall facilitate the development of their moral autonomy" (sec. 14, BOCM, 2019).

The results of this research, although it starts from a broad sample, were extracted from a single autonomous region, and so, although they can be extrapolated to similar populations, this is a limitation of the study. It would be interesting to continue this research and explore similarities and differences in the results with other populations.

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