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Perceived Classroom Responsibility Climate Questionnaire: A new scale

Javier Fernández-Río[1], Jose A. Cecchini[1], Juan Andrés Merino-Barrero[2], and Alfonso Valero-Valenzuela[3]
[1] Universidad de Oviedo and [2] Universidad Internacional de La Rioja, and [3] Universidad de Murcia

Abstract

Background: Given the lack of measuring instruments, we aimed to develop and validate a scale to assess the classroom responsibility climate fostered by the teacher and the students in different school subject lessons. **Method:** 810 students from all secondary education years agreed to participate. Data were obtained from three different subjects: Mathematics (n = 240; 118 female, 13.10 ± 1.07 years), Spanish Language and Literature (n = 318; 169 female 13.37 ± 1.03 years) and Physical Education (n = 252, 112 female, 13.23 ± .99 years). The first version of the questionnaire underwent a three-phase refining process: a) Assessment by experts (n = 8), b) Pilot study one (n = 100) to assess comprehensive adequacy, and c) Pilot study two (n = 300), an exploratory factor analysis. **Results:** The instrument consists of two factors: climate generated by the teacher and by the students. Confirmatory factor analyses showed that all fit indices were acceptable. **Conclusion:** The instrument presented adequate convergent, discriminant and concurrent validity and completes other existing tools, being suitable for use in the different secondary school subjects to assess the responsibility climate produced by the teacher and students.

Keywords: Classroom, climate, classmates, teacher, responsibility.

Resumen

Evaluación del Clima de Responsabilidad Percibida en el Aula: una nueva escala. **Antecedentes:** la ausencia de instrumentos de medida ha llevado a plantear el objetivo de desarrollar y validar una escala sobre el clima de responsabilidad de aula promovido por docente y estudiantes en las diferentes materias educativas. **Método:** participaron 810 estudiantes de Educación Secundaria Obligatoria. Los datos se obtuvieron de tres materias diferentes: Matemáticas (n = 240; 118 mujeres; 13.10 ± 1.07 años), Lengua Castellana y Literatura (n = 318; 169 mujeres; 13.37 ± 1.03 años) y Educación Física (n = 252; 112 mujeres; 13.23 ± .99 años). Una primera versión del cuestionario fue sometida a un triple proceso de depuración: a) Juicio de expertos (n = 8), b) Estudio piloto uno (n = 100) para valorar la adecuación comprensiva, y c) Estudio piloto dos (n = 300) análisis factorial exploratorio. **Resultados:** consta de dos subescalas: clima desarrollado por el docente y por los compañeros. Los análisis factoriales confirmatorios mostraron que todos los índices de ajuste eran aceptables. **Conclusiones:** el instrumento mostró una adecuada validez convergente, discriminante y concurrente que completa a otros instrumentos ya existentes, siendo adecuado su uso en las diferentes materias del currículum de Secundaria para valorar el clima de responsabilidad promovido por docente y estudiantes.

Palabras clave: aula, clima, compañeros, docente, responsabilidad.

Classroom climate is deemed to be a multidimensional construct. It has been found to be related with academic and personal support received from classmates and teachers, among other elements (Rowe, Kim, Baker, Kamphaus, & Horne, 2010). Thus, these two factors, classmates and teachers are so important that authors like Yoneyama and Rigby (2006) or García, Ciges and Peiró (2016) considered that classroom climate quality depends mostly on teacher-student relationships, as well as on the relationships among the students sharing a classroom.

Responsibility can be understood as the adherence to established social rules (Wentzel, 1991), as well as the capacity of every person to accept the consequences of their own decisions (Vera & Moreno, 2008). "It is a moral duty that individuals hold upon themselves and others" ["Es una obligación moral que una persona tiene sobre uno mismo y sobre los demás"] (Menéndez & Fernández-Río, 2016, p. 247). The values related with personal responsibility are effort and autonomy, while the values associated with social responsibility are respect to others' rights and feelings, empathy and social sensitivity (Gutiérrez, Escartí, & Pascual, 2011; Hellison, 2011). Thus, responsibility, or lack thereof, is one of the most determining factors of human development, and personally and socially responsible behaviours are essential for an appropriate development (Wright & Craig, 2011). In the educational context, it has been proved that, when a student gets actively involved in the learning process showing the right personal attitude, their academic performance improves (Cabrera & Galán, 2002). Thus, "high academic performance is associated with high levels of social and personal responsibility towards school work" ["el rendimiento académico alto está vinculado a unos niveles altos de actitudes de responsabilidad social y personales ante el estudio"] (Carbonero, Martín-Antón, Monsalvo, & Valdivieso, 2015, p. 995), since more responsible individuals show better attitude towards school tasks and studying and, consequently, they usually obtain better results. The lack of responsible behaviours among youth has led to the need of developing specific programmes such as the *Teaching*

Received: March 16, 2019 • Accepted: July 15, 2019
Corresponding author: Alfonso Valero-Valenzuela
Facultad de Ciencias del Deporte
Universidad de Murcia
30720 Murcia (Spain)
e-mail: avalero@um.es

Personal and Social Responsibility framework (TPSR; Hellison, 2011), which has proved successful at different educational stages and even with students at high risk of exclusion (Escartí, Gutiérrez, Pascual, & Llopis, 2010; Escartí, Gutiérrez, Pascual, Marín, Martínez, & Chacón, 2006; Menéndez & Fernández-Río, 2016).

The latest studies suggest a direct relationship between the increase in adolescents' personal and social responsibility and the improvement of classroom climate and prosocial behaviours (Caballero, 2015; Courel-Ibáñez, Sánchez-Alcaraz, Gómez-Mármol, Valero-Valenzuela, & Moreno-Murcia, 2019). Based on the self-determination theory of Deci and Ryan (1985) and the hierarchical model of Vallerand (1997), studies have been published reporting predictive relationships among certain social factors, such as responsibility, that produce an improvement in the basic psychological needs. This leads to improved self-determined motivation and new behaviours (Merino-Barrero, Valero-Valenzuela, & Belando, in press) and could be extrapolated to an improvement in the classroom climate.

A thorough review of the existing scientific literature did not reveal many instruments for assessment of students' responsibility in the classroom. Watson, Newton and Kim (2003) developed the *Contextual Self-Responsibility Questionnaire*. This tool consists of 15 items to assess responsibility level according to TPSR model. Later, the *Scale of student's responsibility in physical education grading* (Moreno, Vera, & Cervelló, 2006) was built to examine the importance on their own grading that students gave to the transfer of responsibility from the teacher and to the student's role in that process. Subsequently, the *Personal and Social Responsibility Questionnaire* (Li, Wright, Rukavina, & Pickering, 2008) was created for students to assess their personal and social responsibility in the classroom. It has been so successful that it has been validated for several languages, such as Spanish (Escartí, Gutiérrez, & Pascual, 2011), Portuguese (Martíns, Rosado, Ferreira, & Biscaia, 2015) or Greek (Agiasotelis, Digelidis, Koutelidas, & Syrmpas, 2017). It is based on the aforementioned TPSR model (Hellison, 2011) and is one of the most commonly used worldwide. Taking this same model as a reference, the *Tool for Assessing Responsibility-Based Education* (TARE; Wright & Craig, 2011) was developed. This is an instrument to observe the teacher's and students' behaviours in the classroom. It is a very powerful tool, but complex to use, since it requires the recording of the lessons and the later viewing and analysis by an expert on the subject matter. Moreover, it has been designed in such way that an external observer, instead of the classroom members, assesses the level of responsibility shown. Later, Escartí, Wright, Pascual and Gutiérrez (2015), published a second and more complex version of *TARE*, where they added a section in order to measure students' behaviours in social contexts. Lastly, the *Scale of social responsibility attitudes in primary school students* (Monsalvo, 2012) includes different factors, but only one of them is directly related with an individual's responsibility in the school environment, so its usefulness can be deemed as limited.

The climate of an organisation can be defined in terms of perception by the agents it is composed of (Sandoval, 2014), and each of them can perceive it in a completely different way, this leading to various potential consequences. In an educational context, the climate generated in the classroom depends on two main factors: what class members do and what the teacher does. Over the past two decades, the emotional (Avant, Gazelle, & Faldowski, 2011), socio-psychological (Fraser, Aldridge, & Adolphe, 2010) and social aspects (Allodi, 2010) of classroom climate have been studied. Nonetheless, the responsibility climate generated by the students or by the teacher has not been analysed. The need of developing instruments to assess students' and teacher's responsibility in the classroom from other points of view has been brought to light (Wright & Craig, 2011), and describing the responsibility climate perceived by the individuals involved can help complete this assessment. Furthermore, measuring the changes generated in the responsibility classroom climate after implementing programmes like TPSR may largely contribute to theoretical constructs such as the achievement goal theory or the self-determination theory, where certain social factors (like the teacher or classmates) affect students' expected behaviour and academic performance.

Given all the above, the main aim of the present study was to design and validate a questionnaire that could measure separately the perceived responsibility classroom climate generated by classmates and by the teacher.

Method

Participants

A total of 810 secondary school students (1st, 2nd, 3rd and 4th year of compulsory secondary school) agreed to participate in the study. The data were obtained from three different school subjects: Mathematics (MT; n = 240; 118 girls of mean age 13.10 years, SD = 1.07), Spanish Language and Literature (SLL; n = 318; 169 girls of mean age 13.37 years, SD = 1.03) and Physical Education (PE; n = 252, 112 girls of mean age 13.23 years, SD = .99). The data were collected immediately after the corresponding lesson.

Instruments

Perceived Responsibility Classroom Climate Questionnaire. The first version was built according to the guidelines established by Morales, Urosa and Blanco (2003), Muñiz (2005) and Muñiz and Fonseca (2019), and taking the responsibility assessment tools mentioned in the introduction as reference (Li et al., 2008; Wright & Craig, 2011). This first version contained a total of 18 items divided into two sub-scales: responsibility climate generated by classmates and responsibility climate generated by the teacher. The items were preceded by the sentence: "We would like to know how your classmates and teacher usually behave during the [subject] class". Participants were requested to answer on a 7-item Likert-type scale, ranging from strongly agree (7) to strongly disagree (1), because of its adequacy to the participants' age and its suitability for later statistical validation. With the purpose to ensure both content validity and instrument applicability, this first version underwent a three-phase refining process:

a) *Assessment by experts*. Eight university professors, experts on the subject matter, assessed the adequacy of every item to the dimension they aimed to measure using a 5-item Likert-type scale. Inter-judge agreement was used to remove the most problematic items and the first version was reduced to 12 items, six in each sub-scale.
b) *Pilot study 1*. One hundred secondary school students participated with the aim to remove the items that would create comprehension problems. Thus, one item was

removed from each sub-scale, so the final version consisted of 10 items, five in each sub-scale.

c) *Pilot study 2*. Exploratory factor analysis was applied to a sample of 300 participants (100 PE, 100 MT and 100 SLL). Given that the items were Likert-type, factor analysis was conducted based on polychoric correlations, which is the recommended procedure for this type of items (Muthen & Kaplan, 1985). To do so, Factor Analysis 10.9 software was used. Maximum likelihood estimation with oblique rotation was used as extraction method. Kaiser-Meyer-Olkin measure of sampling adequacy was calculated and Bartlett's sphericity test was conducted. Bartlett's sphericity test (1950) revealed that the items were dependent ($p < .001$), while Kaiser-Meyer-Olkin measure of sampling adequacy lay above the recommended .50 (KMO = .853). The criterion for factor extraction was that the eigenvalue was higher than one and items were assigned to factors when factor loading was higher than .40. The eigenvalue range was 4.92 for factor 1 and 2.15 for factor 2. The factors obtained from the exploratory factor analysis were the same as initially proposed and the items saturated for the expected factor. The final instrument is shown in Table 1.

Personal and Social Responsibility Scale. In order to test the questionnaire's concurrent validity, the version of the *Personal and Social Responsibility Questionnaire* (Li et al., 2008) validated for Spanish by Escartí et al. (2011) was used. This instrument contains two sub-scales: personal responsibility (7 items; e.g. "I participate in all activities") and social responsibility (7 items; e.g. "I respect others"). The following Cronbach´s alpha values were obtained in the present study: personal responsibility .75 (PE), .77 (MT), .76 (SLL) and social responsibility .81 (PE), .83 (MT), .82 (SLL). McDonald's omega coefficients were also calculated (Table 2).

Procedure

First of all, the approval from the ethics committee of the researchers' university was obtained (ID: 1602/2017). Subsequently, several secondary schools were approached and the project was explained to them. The approval from the board of a large number of them was obtained and a working protocol was established in order to gather as much information in the shortest time possible. Afterwards, informed consent was collected from all participants' parents or legal guardians. The questionnaires were administered in the presence of one of the researchers and the teacher in a relaxed environment for 20 minutes. Anonymity and no effect of the answers on school grades were guaranteed in order to reduce social desirability bias in the answers.

Data analysis

All data were analysed using the statistical software SPSS version 24.0 (IBM, Chicago, IL) and EQS version 6.1 (Multivariate Software Inc). Firstly, multivariate normality was examined. Then, confirmatory factor analysis (CFA) was conducted to check the questionnaire's basic structure. After that, convergent validity and measurement reliability were assessed. Subsequently, discriminant validity was examined, a multigroup factor analysis was performed and, finally, concurrent validity was assessed.

Table 1
Perceived Responsibility Classroom Climate Questionnaire

During [subject] class … [En las clases de…]								
	Responsibility climate generated by classmates [Clima de responsabilidad generado por los compañeros]							
RCC1 [CRC1]	Students help each other [Los estudiantes se ayudan entre sí]	1	2	3	4	5	6	7
RCC2 [CRC2]	We encourage each other [Nos animamos unos a otros]	1	2	3	4	5	6	7
RCC3 [CRC3]	Students are kind to each other [Los estudiantes son amables entre sí]	1	2	3	4	5	6	7
RCC4 [CRC4]	Students cooperate when necessary [Los estudiantes colaboran cuando es necesario]	1	2	3	4	5	6	7
RCC5 [CRC5]	Students follow the class rules [Los estudiantes siguen las reglas de clase]	1	2	3	4	5	6	7
	Responsibility climate generated by the teacher [Clima de responsabilidad generado por el docente]							
RCT1 [CRP1]	It is important to the teacher that we help each other [Para el profesor es importante que nos ayudemos]	1	2	3	4	5	6	7
RCT2 [CRP2]	The teacher likes that we encourage each other [Al profesor le gusta que nos animemos unos a otros]	1	2	3	4	5	6	7
RCT3 [CRP3]	The teacher wants us to be kind to each other [El profesor quiere que seamos amables entre nosotros]	1	2	3	4	5	6	7
RCT4 [CRP4]	The teacher insists that we must cooperate with each other [El profesor insiste en que tenemos que colaborar entre nosotros]	1	2	3	4	5	6	7
RCT5 [CRP5]	The teacher appreciates that we try to do he/she asks us to do [El profesor valora que intentemos hacer lo que nos pide]	1	2	3	4	5	6	7

Results

Confirmatory factor analysis

Firstly, the instrument's basic structure was tested through CFA. The *Perceived Responsibility Classroom Climate Questionnaire* consists of two sub-scales or latent factors, which are, in turn, defined by five observable variables or indicators that aim to reflect the dimensions with associated measurement error (Figure 1). This configural model was first applied to each group separately (Byrne, 2008).

Prior to the above, multivariate normality was examined and kurtosis coefficients showed that the samples followed a non normal distribution (Mardia, 1974). For this reason, the analysis was based on Satorra-Bentler chi-squared statistic (S-Bχ^2; Satorra & Bentler, 2001) and robust standard estimates implemented with the statistical software EQS. Several fit indices were examined. Apart from S-Bχ^2, the robust *Comparative Fit Index* (*CFI), the robust version of the *Root Mean Square Error of Approximation* (*RMSEA) and the *Standardised Root Mean Square Residual* (SRMR) were used. For acceptable model fit, SRMR must be close to 0.08, RMSEA close to 0.06, and *Tucker-Lewis index* (TLI) and CFI close to 0.95 (Hu & Bentler, 1999). The results lay above the most restrictive conditions in all samples (Table 2).

Table 2
Fit indices from confirmatory factor analysis for every sample

Factors	S-Bχ^2	df	*CFI	SRMR	*RMSEA (90% CI)
Mathematics	38.72	34	.99	.04	.024 (.000 – .055)
Spanish Language	56.15**	34	.98	.04	.045 (.022 – .066)
Physical Education	30.82	34	1.00	.04	.000 (.000 – .040)

** $p < .001$

Given that the items were Likert-type, factor analysis was conducted based on polychoric correlations, which is the recommended procedure for this type of items (Muthen & Kaplan, 1985). To do so, Factor Analysis 10.9 software was applied.

Convergent validity and measurement reliability

Convergent validity was determined through statistical significance of the factor loadings of the indicators of each latent construct. Table 3 shows how all standardised loadings (λ) and cut-off values for *t* were far above the recommended minimum levels of .50 and 1.96 ($p < .05$), respectively (Hair, Black, Babin, Anderson, & Tatham, 2006). Cronbach's alpha was calculated to assess measurement reliability. The minimum value that is considered acceptable for this coefficient is .70 (Nunnally, 1978). It was far above this value in all cases.

Discriminant validity

The square root of the *average variance extracted* (AVE) was compared to the correlation among constructs (Fornell & Larcker, 1981). Table 4 contains the correlations among the four constructs, with the square root of AVE shown in the diagonal. In this case, the values in the diagonal must be higher in order to ensure discriminant validity. Thus, the relationship between the constructs under study and their own observable measures must be stronger than among the different constructs. In light of the results obtained, it can be stated that there was discriminant validity among the constructs, although the relationships among them were relatively high.

Table 3
Standardised loadings (λ) and cut-off values for t, Cronbach's alpha and McDonald's omega for every sample

		Spanish Language				Mathematics				Physical Education			
	Items	λ	t	α	ω	λ	t	α	ω	λ	t	α	ω
Responsibility climate - classmates	RCC1	.81	–	.81	.76	.86	–	.85	.80	.81	–	.85	.80
	RCC2	.76	13.484***			.81	15.148***			.75	12.354***		
	RCC3	.69	11.811***			.86	15.773***			.83	13.611***		
	RCC4	.58	9.864***			.50	7.700***			.67	10.869***		
	RCC5	.53	8.800***			.62	10.266***			.59	9.223***		
Responsibility climate - teacher	RCT1	.85	–	.89	.84	.85	–	.88	.83	.84	–	.88	.83
	RCT2	.93	22.099***			.91	18.134***			.82	15.443***		
	RCT3	.84	18.407***			.85	16.317***			.87	16.640***		
	RCT4	.68	13.602***			.63	10.717***			.69	11.942***		
	RCT5	60	11.546***			.64	10.951***			.65	11.129***		

Table 4
Square root of the average variance extracted and correlations among constructs for every sample

	Factors	Spanish Language		Mathematics		Physical Education	
		1	2	1	2	1	2
RC	1. Classmates	.68		.74		.74	
	2. Teacher	.37	.79	.34	.78	.36	.78

Multigroup confirmatory factor analysis

A progressive evaluation of factorial invariance (Bollen, 1989; Byrne, 1998, 2008; Byrne & van de Vijver, 2017; Marsh, 1993) was applied to the three samples (MT, SLL, PE) in order to confirm whether the model parameters (two factors) stayed invariant in the three of them. By doing so, it would be ensured that the measurement formal and substantial meaning was independent from the model parameters (Elosúa, 2015). As stated by Byrne (1998, 2008), the first step consists in establishing a reference model for the three groups in one single sample for analysis. The invariance testing begins with the least restrictive model, in which only the reference model is included (Marsh, 1993). This is a "non-invariant" step that provides a fundamental basis for subsequent model comparisons. Then, the factor loadings were forced to stay invariant among groups. The next step consisted in limiting the covariance matrix among groups, as well as the factor loadings. The second last step entailed restricting the variances among groups, while the factor loadings and covariances remained limited. Lastly, singularity (error) was set to be equivalent among groups, with the factor loadings, covariances and variances still limited. In this case, significant differences were observed in x^2 statistic when the variances and the error variations were limited (Table 5). Nevertheless, no relevant changes were found in the rest of variables analysed.

Table 5
Results of factorial invariance

Scale	Model	x^2	df	$\Delta\chi^2$	Δ df	*CFI	SRMR	*RMSEA (90% CI)		AIC
RC	M_{shape}	124.37	102	–	–	.99	.04	.029	(.000 – .045)	-79.63
	$M_{loading}$	142.26	118	17.89	16	.99	.05	.028	(.000 – .043)	-.93.74
	$M_{covariance}$	144.90	120	20.53	18	.99	.06	.028	(.000 – .043)	-.95.11
	$M_{variance}$	173.07	124	48.70**	22	.98	.08	.038	(.023 – .051)	-74.93
	M_{error}	274.52	144	150.15***	42	.94	.08	.058	(.047 – .068)	-13.49

However, since x^2 coefficient is sensitive to sample size, the criterion established by Cheung and Rensvold (2002) regarding ΔGFI was also applied. According to these authors, values of ΔGFI equal to or smaller than -.01 mean that the null hypothesis of invariance cannot be rejected, except in the last step. In the fourth step, significant differences were observed in x^2 when the degrees of freedom (df) increased from 18 to 22. The same happened in the fifth step when df increased to 42.

Concurrent validity

The means for all four sub-scales were calculated and six regression analyses were conducted independently. For each analysis, the individual responsibility and social responsibility sub-scales were used as criterion variables and the scores on the responsibility climate scales were the predictor variables. The analysis revealed that the responsibility climate sub-scales explained a significant percentage of the variance of individual responsibility and social responsibility. The sub-scale corresponding to responsibility climate generated by classmates explained the largest percentage (Table 6), except for social responsibility during mathematics lessons.

Table 6
Bivariate correlations and regression analysis

	Individual responsibility		Social responsibility	
	r	β	r	β
	Mathematics			
Responsibility climate - classmates	.52***	.46***	.33***	.10
Responsibility climate - teacher	.33***	.17*	.30***	.27***
R2		.30***		.10***
	Spanish Language			
Responsibility climate - classmates	.46***	.42***	.37***	.29***
Responsibility climate - teacher	.31***	.07	.31***	.15*
R2		.21***		.15***
	Physical Education			
Responsibility climate - classmates	.46***	.38***	.36***	.32***
Responsibility climate - teacher	.37***	.23***	.25***	.14*
R2		.25***		.14***

Note: r = Pearson's correlation; β = standardised beta; * $p < .05$, ** $p < .01$, *** $p < .00$

Discussion

The aim of the present study was to design and validate a questionnaire that could measure separately the perceived responsibility classroom climate generated by classmates and by the teacher. The results have proved that this has been satisfactorily achieved.

The final version of the questionnaire underwent all statistical tests needed in order to confirm the psychometric strength of this kind of instrument: confirmatory factor analyses, convergent validity and measurement reliability tests, discriminant validity test, multigroup factor analysis and concurrent validity test. The confirmatory factor analyses yielded adequate reliability indices in all samples analysed, even much higher than the required values for many of them (Hu & Bentler, 1999). Based on these results, it can be stated that the questionnaire presents solid construct validity. Moreover, the standardised loadings (λ) and the cut-off values for t were far above the recommended minimum levels (Hair et al., 2006). This, together with Cronbach's alpha values being much higher than the minimum (Nunnally, 1978) suggests that the instrument counts on appropriate convergent validity. Furthermore, the comparison between the square root of the average variance extracted and the correlations among constructs yielded adequate results (Fornell & Larcker, 1981), what allows us to confirm that there is discriminant validity among them,

although their relationship was relatively strong. Besides, a multi-step invariance analysis with the three groups per school subject (MT, SLL, PE) was conducted in order to test the questionnaire's factorial structure and to be able to extend it to other populations. The results proved that the proposed structure is invariant to a great extent (Bollen, 1989; Byrne, 1998, 2008; Byrne & van de Vijver, 2017; Marsh, 1993). Finally, the concurrent validity of the questionnaire's factors was tested through several independent lineal regression analyses, the results showing that the different variables explained a significant percentage of the variance. All the analyses described suggest that the instrument has appropriate psychometric properties.

A scientific literature review showed that there exists no instrument like the one presented in this study. Instruments have been created to measure specific aspects of the responsibility developed in the classroom during the grading process (Scale of student's responsibility in physical education grading*;* Moreno et al., 2006). Others have assessed it in a much wider context that included family environment (Scale of social responsibility attitudes in primary school students*;* Monsalvo, 2012). Others, rather complex, require the recording of the lessons and the later viewing and analysis by an expert on the subject matter. They have been designed in such way that an external observer, instead of the classroom members, assesses the level of responsibility shown (*TARE;* Wright & Craig, 2011). The most widely used (*Personal and Social Responsibility Questionnaire;* Li et al., 2008), translated and validated for several languages, including Spanish, has revealed to be an appropriate tool for students to assess their own level of personal and social responsibility in the classroom. In fact, the instrument presented in this research could be considered as an extension of the *Personal and Social Responsibility Questionnaire*, since students are asked to assess their classmates' and teacher's behaviour related to the creation of a classroom climate oriented to responsibility development. Therefore, the *Perceived Responsibility Classroom Climate Questionnaire* counts on several elements, apart from its psychometric properties, that make it a necessary instrument in the educational context: a) it is the students (and not an external observer) who assess the responsibility that their classmates and teacher try to generate; and b) the two main aspects that build classroom climate are analysed: the classmates' and the teacher's behaviour (García et al., 2016; Yoneyama & Rigby, 2006).

Academic performance is associated with high levels of personal and social responsibility (Carbonero et al., 2015), so more responsible students usually show better attitude towards school tasks and studying and, as a consequence, they obtain better academic results. Therefore, a classroom climate oriented to developing students' responsibility will probably have positive consequences on them. The instrument presented in this manuscript allows for assessment of the responsibility climate generated in the classroom by the teacher and by the classmates separately. It enables us to know and analyse whether the teacher's interpersonal style produces positive or negative consequences (Behzadnia, Adachi, Deci, & Mohammadzadeh, 2018), becoming interesting for both teachers and researchers. Furthermore, it allows for opening of new research lines related with perceived classroom climate and motivational theories such as the self-determination or the achievement goal theories (Méndez-Giménez, Cecchini-Estrada, & Fernández-Río, 2018).

Among the study limitations, it is noteworthy that potential contextual effects of the sociodemographic characteristics have not been taken into account in the validation process. For future studies, it is recommended considering some of the participants' characteristics, such as socioeconomic status or school facilities. Another common limitation of this kind of study is that the model obtained through structural equations is just one of the many models that could have been obtained. Therefore, it would be interesting to address the criterion validity of the present questionnaire in a new study in order to get a global scoring on the questionnaire usage. In addition to the above, in future studies it would be advisable to distinguish between personal and social responsibility, identifying these two sub-factors within the teacher and classmates dimensions. Finally, this instrument constitutes a contribution to literature regarding TPSR, not by substituting any of the existing questionnaires, but by complementing them with a responsibility climate assessment based on students' perceptions, what makes it applicable to the different school subjects of compulsory secondary education.

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