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# Adaptation and validation of the MLQ-5X Leadership Scale to the Spanish educational context

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**Título:** Adaptación y validación de la escala de liderazgo MLQ-5X al contexto educativo español.

Resumen: Desde la teoría del liderazgo transformacional, este estudio tenía como objetivo analizar las propiedades psicométricas de una versión adaptada al ámbito educativo del Multifactor Leadership Questionnaire (MLQ-5X). Un total de 1551 estudiantes españoles (M = 15,47 años  $\pm 0,72$ ; 679 chicos y 872 chicas) de 31 centros de secundaria participaron en el estudio. El análisis factorial confirmatorio de la estructura inicial de nueve factores de la escala determinó necesario eliminar dos ítems del factor dirección por excepción pasiva, agrupando en un solo factor el liderazgo pasivo. Un segundo modelo de ocho factores encontró altas correlaciones entre los factores del liderazgo transformacional, haciendo necesario establecer un factor de primer orden. Finalmente, un tercer modelo obtuvo valores adecuados de validez y fiabilidad, compuesto por 34 ítems distribuidos en 4 factores principales (liderazgo transformacional, recompensa contingente, dirección por excepción activa y liderazgo pasivo) y 5 factores secundarios para el liderazgo transformacional (influencia idealizada conducta, influencia idealizada atribuida, motivación inspiracional, estimulación intelectual y consideración individualizada). Por tanto, la versión española del MLQ-5X en el ámbito educativo puede utilizarse para evaluar el liderazgo docente desde la percepción del alumnado.

Palabras clave: Validación. Características psicométricas. Liderazgo transformacional. Educación. Adolescentes.

Abstract: Drawing on the transformational leadership theory, this study aimed to analyze the psychometric properties of a version adapted to the educational environment of the Multifactor Leadership Ouestionnaire (MLQ-5X). A total of 1551 Spanish students (M = 15.47 years  $\pm 0.72$ ; 679 boys and 872 girls) from 31 secondary schools participated in the study. The confirmatory factor analysis of the initial nine-factor structure of the scale determined the need to eliminate two items of the passive exception management factor, grouping passive leadership into a single factor. A second eight-factor model found high correlations between the factors of transformational leadership, revealing the need to establish a first-order factor. Finally, a third model, which obtained adequate values of validity and reliability, was composed of 34 items distributed in 4 main factors (transformational leadership, contingent reward, leadership by active exception, and passive leadership) and 5 secondary factors for transformational leadership (idealized influence behavior, attributed idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration). The Spanish version of the MLQ-5X in the educational field can be used to assess the students' perception of teacher leadership.

**Keywords:** Validation. Psychometric characteristics. Tansformational leadership. Education. Adolescents.

#### Introduction

Leadership capacity is an essential element of analysis in the study of group management in different professional and organizational fields (Álvarez et al., 2014; Choi et al., 2016; Sethibe & Steyn, 2017). Specifically, in the educational field, the study of leadership capacity has been relevant both in the management of schools (Sirisookslip et al., 2015; Villa-Sánchez, 2019) and in the teaching-learning processes (Beauchamp et al., 2014; Day et al., 2016).

In recent years, there have been major changes in teachers' professional performance that have affected the leadership styles to be applied. Teachers are workers who will influence their students, in whom their desire for professional development will be reflected (Avalos, 2011). Therefore, it is essential to understand and analyze their teaching work and their influence on students by studying their role as leaders of school groups (Robinson et al., 2014). In the educational process, the role of the leader (teacher) defines the processes

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by which any subject (the students) who is part of a social structure (the class group) will try to achieve the learning goals (Northouse, 2012). This leadership is key to achieving efficient educational actions and students' adequate school performance, provided that it uses the right approach to orient the tasks and create new goals and learning procedures (García-Tuñón et al., 2016). In this sense, precise tools are needed to assess the different types of leadership that teachers exercise. Therefore, this work attempts to validate a scale to assess teachers' leadership during their classes.

The transformational leadership theory (Bass, 1995; Bass & Riggio, 2005) provides an appropriate theoretical framework for contextualizing the study of such behaviors and psychological processes. The theoretical construct differentiates three leadership styles: transformational, transactional, and *laissez-faire* or non-leadership. A leader with a transformational profile transforms the people who follow or depend on him, making them see the importance of the outcomes of their actions according to their needs and abilities (Bass, 1995). For this purpose, these leaders develop their followers' growing interest in the good of the group to which they belong. As a result, a greater sense of trust and respect is achieved, as well as an increase in followers' motivation towards a better outcome of their actions. For this purpose, the transformational leader reinforces, inspires, and

modifies individuals' behavior to improve their performance (Bass & Riggio, 2005).

Transactional leadership is a more classic style, where the leader bases his relationship with his followers on the transactions through which he offers prizes, trying to influence their efforts and transmit to them precisely what kind of work they must do to obtain rewards. For this purpose, the goals to be achieved must be clearly defined, as well as correcting errors and deviations detected concerning these defined goals (Bass & Riggio, 2005).

Finally, passive leadership or non-leadership implies the absence of leadership behavior, where the leader avoids responsibility, delays decisions, provides no feedback, and does not show any interest in meeting the needs of the components of his group (Northouse, 2012).

When assessing the leadership role in group management, the instrument based on the transformational leadership theory has been the Multifactor Leadership Questionnaire (MLQ; Bass & Avolio, 1990). Initially, the instrument (MLQ-5R) consisted of 70 items grouped into seven factors: four of transformational leadership (charisma, inspiration, intellectual stimulation, and individualized consideration), two of transactional leadership (contingent reward and management by exception), and a factor denoting the absence of leadership or passive leadership (laissez-faire). This first instrument was modified and reduced after various criticisms (Hunt, 1991; Smith & Peterson, 1988; Yukl, 1994) and subsequent theoretical inputs (Conger & Kanungo, 1987; House et al., 1991). Thus, the initial instrument evolved to the resulting Multifactor Leadership Questionnaire -short form (MLQ-5X; Bass & Avolio, 1997), which has been widely used in multiple studies (Crede et al., 2019). This instrument consists of 45 items, of which 36 are related to leadership, grouped into nine factors: five of transformational leadership (idealized influence behavior, attributed idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration), two of transactional leadership (contingent reward and active exception management), and two factors denoting the absence of leadership or passive leadership (passive exception management and laissez-faire). The remaining nine items measure organizational variables such as the extra effort that followers are willing to put out, the leader's effectiveness, and the group individuals' satisfaction with the leader. This factorial structure has subsequently been supported by various studies in different contexts (Antonakis et al., 2003; Muenjohn & Armstrong, 2008). Specifically, this instrument was validated in Spanish, with modifications to the original factorial structure (Molero et al., 2010). In this sense, this model defines four main factors: transformational leadership (idealized influence behavior, attributed idealized influence, inspirational motivation, and intellectual stimulation); developer/transactional leadership (individualized consideration and contingent reward); corrective leadership (active exception management), and passive/avoidant leadership (passive exception management and laissez-faire).

Based on the development of this scale, numerous studies have been carried out, showing the benefits of different leaderships. Specifically, it has been shown that the transformational leadership style is more effective and causes greater satisfaction in the group's components, improves their commitment, involvement, and loyalty to the group and its leader, as well as their commitment to performing their tasks, helping to manage stress situations (Bass et al., 2003; Bass & Bass, 2009; Harms et al., 2017). Also, transformational leadership has been shown to produce significant improvements for the professionals in areas such as worker satisfaction (Judge et al., 2017), increased motivation (Fernet et al., 2015), or improved performance in their professions (Atmojo, 2015).

In any case, the theory emphasizes that transformational leadership should not be perceived as a substitute for transactional leadership. In fact, transactional leadership is considered essential to improve the effectiveness of the leadership task, and it is the starting point for transformational leadership. Transactional leadership is therefore considered to contribute to additional efforts and an overall improvement in the performance of the group's components (Bass, 1995). Hence, in certain professional fields, the transactional behaviors of the leaders are perceived as more effective by the people toward whom they are directed (Antonakis et al., 2003; Martínez-Córcoles & Stephanou, 2017). Moreover, despite receiving much less attention, knowing the negative effects of passive leadership on people's behaviors is critical to understanding their responses (Judge & Piccolo, 2004).

In the educational context, the measurement of the influence of the behavior of the teachers of different subjects on the students' perceptions at the cognitive, affective, and behavioral level has become the object of considerable study in recent years (Beauchamp et al., 2011; Noland & Richards, 2015; Pachler et al., 2019). Several studies have shown that the positive relationship between the teachers' leadership and the students' responses produces an increase in selfdetermined motivation (Beauchamp et al., 2011; Ögvist & Malmström, 2018), the satisfaction of students' basic psychological needs, satisfaction with the teacher, better academic performance, and more fun and enjoyment of the subject (Balwant, 2016; Bean et al., 2017; Morton et al., 2010). Specifically, under the prism of transformational leadership, it has been observed that teaching leads to students' cognitive, emotional, and behavioral improvements (Balwant et al., 2019; Harrison, 2011; Kopperud et al., 2014).

#### The present study

Although the MLQ-5X has been used to determine the influence of teachers' self-perceived leadership styles on different consequences of student behavior and learning (Allen et al., 2015; McCarley et al., 2016), research has focused more on the transformational dimension of the theory. Several studies have used exclusively the transformational dimension of the scale as a measuring instrument (Balwant, et

al., 2019; Noland & Richard, 2014). Moreover, the Transformational Teaching Questionnaire (TTQ; Beauchamp et al., 2010), which differentiates four factors of transformational leadership (idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration) has been developed and validated. This instrument has already been validated in Spanish in the educational field to assess the perception of secondary school students about their Physical Education teachers' leadership behaviors (Álvarez et al., 2018).

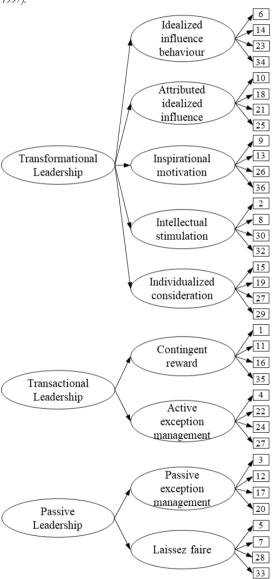
However, the study of the influence of different leadership profiles has not been limited to the transformational dimension in other professional fields (Hinkin & Schriesheim, 2008). Multiple studies focus on specifically determining the effect of other leadership profiles on various groups and professional fields (Anderson & Sun, 2017; Wong & Giessner, 2018; Yang, 2015). It is logical to think that, also at the educational level, teachers' knowledge of the leadership they exercise on their students will be more complete if they know the students' perception of all the other existing leadership profiles described in the theory. This would allow for more complete results and conclusions, as is the case in other professional and organizational fields. Therefore, the main objective of this work was to adapt and validate the MLQ-5X Leadership Scale (Bass & Avolio, 1997) to the educational context, using the translation of the items into Spanish performed by Molero et al. (2010). For this purpose, we intended to examine the psychometric properties of the scale, testing the same factorial structure as the original instrument (Bass & Avolio, 1997) (See Figure 1). As a function of this objective, as Hypothesis 1, we expected to find an adequate structure and factorial validity, with optimal fit index values of the above-mentioned initial model and with appropriate values in the internal consistency of each of the instrument's factors.

Secondly, we intended to analyze the divergent capacity of the instrument's factors. This implies analyzing the degree of differentiation between factors and confirming whether they are independent of each other. For this purpose, the relationship between the instrument factors (dimensions of each of the leadership factors) should be moderate (Kline, 2015). Taking into account the findings of previous studies (Bass & Avolio, 1997; Molero et al., 2010), as Hypothesis 2, the factors of the transformational dimension are expected to correlate positively with the factors of the transactional dimension (contingent reward and active exception management). Also, the dimensions of transformational and transactional leadership are expected to correlate negatively with the passive leadership factors.

Finally, as prior investigations have confirmed invariance in different contexts of the initial factorial model of the scale (Antonakis et al., 2003), it is necessary to test the factorial invariance to confirm that the scale behaves identically in and can be generalized to the different population subgroups that make up the research. Therefore, as Hypothesis 3, we expect that the factorial structure of MLQ-5X in the educa-

tional context will be invariant in terms of gender and the students' grades. Thus, we would have an appropriate tool to assess teachers' different leadership profiles defined within the established theoretical framework and to determine their consequences on students' behavior as a function of their perceptions.

Figure 1
Factorial Structure of the Initial Version of 36 MLQ-5X items (Bass & Avolio, 1997).



#### Method

## **Participants**

The total study sample consisted of 1551 students (679 boys and 872 girls) of third (n = 876) and fourth grade (n = 675) of Compulsory Secondary Education (CSE) (M = 15.47

years  $\pm$  0.72), belonging to public (n = 26) and subsidized schools (n = 5) of the Spanish autonomous communities of Andalusia (n = 6), Extremadura (n = 21), and Castilla-La Mancha (n = 4). With this number of participants, the available ratio was sufficient compared to the number of items in the instrument analyzed (Nunnally, 1978). Cluster sampling was used for sample selection, considering the proximity of the schools and the researchers' possibilities to access the sample, having an existing prior relationship with the teachers of the schools. Students whose parents or legal guardians did not explicitly authorize their participation were excluded from the study. Also, the responses of participants who completed the instrument randomly or incompletely were eliminated.

#### Instrument

Teacher leadership style. To assess the teacher's leadership capacity as perceived by the students, the Spanish-translated version of the MLQ-5X for the business setting (Molero et al., 2010) was adapted to the educational field. Five experts reviewed each item on the scale individually and adapted them to the educational setting. The criteria developed by Skjong and Wentworht (2001) were followed for item selection. The group of experts was formed by PhDs in Sports Psychology and university professors from the Education and Sports branch. All of them had extensive experience in validating questionnaires of variables linked to education and psychology in sports. Each of the experts individually drafted the set of the 45 items intended to assess students' perception of each of their teachers' leadership styles: transformational leadership, transactional leadership, passive leadership, and organizational capacity. Specifically, each expert received a descriptive dossier of the characteristic conditions of each leadership profile, as well of as each of the factors that make it up. Subsequently, through a sharing of the different proposals, the expert group agreed to the drafting of each of the items that best described the theoretical construct of each of the factors, resulting in an initial version of 45 items. To this end, the guidelines of Escobar-Pérez and Cuervo-Martínez (2008) about the group consensus technique were followed.

The instrument's items began the introductory phrase "The teacher of the subject, during the classes...", followed by the 45 items, 36 of which rate the different leadership profiles, while the remaining 9 (Items 37-45) rate general organizational aspects of leadership. In this sense, the expert group decided not to include these 9 items in our study, considering that their application was decontextualized for the educational field. Despite this, the structure of the instrument did not lose the essence of the theoretical basis, resulting in a shorter scale, more accessible and applicable in less time for the type of sample in an educational setting, in line with the current trend of applying reduced scales (Blanca et al., 2020; Postigo et al., 2020). The initial 36 items are organized into 9 factors (See Figure 1). Transformational leader-

ship includes five factors of 4 items each: idealized influence behavior (admiration and respect of the students, who try to imitate the teacher and place their trust in him), attributed idealized influence (same as the previous one, but focused on specific behaviors), inspirational motivation (the teacher's ability to motivate the students, granting meaning to their effort and vision of the future), intellectual stimulation (the leader's ability to stimulate students' creativity, innovation, and search for solutions), and individualized consideration (teacher's attention to the students' individualized needs of achievement and personal growth). Transactional leadership is rated through two factors of 4 items each: contingent reward (definition of expectations and teacher's recognition when the student achieves the goals) and active exception management (the teacher focuses on correcting failures and deviations from the search for goals). Finally, passive leadership is rated with two factors of 4 items each: passive exception management (attitude by which the teacher leaves things as they are, intervening only when problems become serious) and laissez-faire (teaching behavior where the teacher avoids making decisions or getting involved in important issues). Agreement with the statement of each item was rated on a 5point Likert scale ranging from 1 (totally disagree) to 5 (totally

#### Procedure

Prior to data collection, the headmasters of the participating schools were contacted to explain the objectives of the study and request their participation. As the participants were underage, informed consent forms were distributed by the direction of each center, which the parents or legal guardians completed, authorizing the participation of the students in this investigation. The measurement procedure was carried out during school hours. The necessary ethical standards of action when working with minors were respected at all times and, concerning the consent, confidentiality, and anonymity of the responses, we followed the ethical guidelines of the American Psychological Association (2010) and the Declaration of Helsinki (1964). In addition, the investigation was approved by the University's Bioethics Committee (239/2019) corresponding to the first author. All participants completed the questionnaires individually for each subject in approximately 15 minutes, in a suitable climate for their concentration, without distractions or the presence of the teachers of the subjects involved in the study. A researcher was present to resolve any doubts and or unforeseen questions. Within each school, the groups had different teachers for each of the academic subjects of the study. Specifically, subjects of a different nature, structure and, teaching loads (Mathematics, Physical Education, English, Spanish Language and Literature) were selected for the study. In this sense, the students of each participating group rated the same teacher, but they did not coincide with other groups in the same school, who had different teachers or who rated different subjects.

#### Data analysis

Firstly, the Mplus 7.3 statistical software (Muthén & Muthén, 1998-2020) was used to analyze the factorial structure of the MLQ-5X. To test its factorial structure, three models were tested based on confirmatory factorial analysis (Models 1-3) to determine the best representation, using the robust maximum likelihood estimation included in the software, which provides standard errors and fit indices that are robust for non-normality and Likert-type scales (Finney & DiStefano, 2013). Missing values were allocated using the Full Information Maximum Likelihood method, also included in the software.

To assess which of the proposed models had the best fit, the following indices were used: Chi-Square ( $\chi^2$ ), degrees of freedom df, comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA), and standardized root mean residual (SRMR). Scores greater than .90 for incremental indexes such as CFI and TLI are acceptable (Hu & Bentler, 1999). The model is considered to have a good fit if the RMSEA and SRMR values are less than .08 and .06, respectively (Hu & Bentler, 1999). Secondly, a reliability analysis was carried out for each factor using Cronbach's alpha (Cronbach, 1951). Thirdly, descriptive analysis and bivariate correlations were calculated between the factors of the scale to analyze construct validity and divergent validity.

Finally, its invariance was tested concerning the students' gender and grade. To consider MLQ-5X to be invariant among these population subgroups, the following sequence of models was calculated: configural invariance, metric invariance, strong invariance, and strict invariance. In this way, the models were compared according to the changes in the fit indices, accepting factorial invariance with increments not greater than .01 in CFI, TLI, RMSEA, and SRMR (Cheung & Rensvold, 2002).

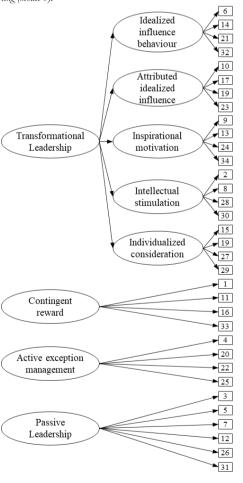
## Results

To check the original factorial structure of the MLQ-5X (Bass & Avolio, 1997), a model consisting of 9 correlated first-order factors was tested. Even though the model showed a good fit to the data,  $\chi^2 = 2046.48$ , df = 558, p < 100.001, CFI = .92, TLI = .91, RMSEA = .04, SRMR = .06, the model proved unacceptable due to certain factorial loads. Specifically, Items 17 (shows that he/she believes in the saying "do not touch what is OK") and 20 (shows that problems must be important before he/she acts), which belonged to the passive exception management factor, presented factorial loads of .020 and -.034 (p > .05), respectively. Due to these low factorial loads, these items were removed from further analysis, leaving the passive exception management factor with only two items. For this reason, we decided to join the remaining Items 3 and 12 of that factor with the laissez-faire factor, thereby forming the passive leadership factor with six items.

Thus, the second model, consisting of 8 correlated first-order factors, was tested. This model again showed an appropriate fit to the data,  $\chi^2 = 1619.58$ , df = 499, p < .001, CFI = .93, TLI = .93, RMSEA = .04, SRMR = .05, with higher fit indices than the previous model. However, the model could not be accepted due to the high inter-factor correlations found. Specifically, transformational leadership factors yielded relationships greater than .85 in all cases (range between .86 and .89). These high correlations indicated the possibility of creating a second-order factor (transformational leadership) explained by the five first-order factors that made up this construct.

Thus, a third model consisting of 4 main factors (transformational leadership, contingent reward, active exception management, and passive leadership) and 5 second-order factors for transformational leadership (idealized influence behavior, attributed idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration, see Figure 2) was tested.<sup>1</sup>

**Figure 2**Factorial Structure of the Final Version of 34 MLQ-5X items in the Educational setting (model 3).



<sup>1</sup> In the appendix at the end of the document, the drafting of the 34 MLQ-5X items in the educational field is presented.

This model also showed adequate fit to the data,  $\chi^2$  = 1697.20, df = 516, p < .001, CFI = .93, TLI = .93, RMSEA = .04, SRMR = .05. In addition, all items obtained factorial loads greater than .40 with their first-order factor (see Table

1; range .41 - .81; M = 0.65, p < .01), and the 5 first-order factors also obtained high and significant factorial loads on the second-order factor (see Table 1; range .93 - .96; M = 0.95, p < .01).

**Table 1**Confirmatory Factorial Analysis of Model 3.

Confirmatory Factorial And	alysis of Model 3.									
	λ	SE	Þ	D			λ	SE	Þ	D
v1- Idealized influenc	e behavior				v5- ]	Individualized o	consideratio	on		
Item 6	.547	.021	<.001	.472		Item 15	.619	.019	<.001	.540
Item 14	.680	.017	<.001	.559		Item 18	.503	.023	<.001	.451
Item 21	.651	.018	<.001	.498		Item 27	.680	.017	<.001	.532
Item 32	.665	.018	<.001	.530		Item 29	.817	.012	<.001	.616
v2- Attributed idealiz	ed influence				v6- (	Contingent Rev	vard			
Item 10	.727	.014	<.001	.589		Item 1	.781	.016	<.001	.539
Item 17	.542	.020	<.001	.461		Item 11	.808	.015	<.001	.558
Item 19	.751	.014	<.001	.647		Item 16	.583	.022	<.001	.447
Item 23	.686	.016	<.001	.589		Item 33	.591	.024	<.001	.453
v3- Inspirational moti	ivation				v7- 1	Active exceptio	n managen	nent		
Item 9	.593	.019	<.001	.540		Item 4	.416	.026	<.001	.381
Item 13	.728	.014	<.001	.624		Item 20	.801	.015	<.001	.655
Item 24	.731	.015	<.001	.632		Item 22	.789	.016	<.001	.633
Item 34	.678	.016	<.001	.552		Item 25	.742	.017	<.001	.574
v4- Intellectual stimul	lation				v8- l	Passive Leaders	hip			
Item 2	.477	.022	<.001	.412		Item 3	.548	.022	<.001	.484
Item 8	.611	.019	<.001	.508		Item 5	.577	.021	<.001	.502
Item 28	.754	.014	<.001	.588		Item 7	.674	.018	<.001	.538
Item 30	.682	.017	<.001	.544		Item 12	.649	.019	<.001	.549
						Item 26	.498	.024	<.001	.453
						Item 31	.525	.023	<.001	.484
				λ	SE	Þ				
Transformational Lea	ıdership									
v1- Idealized inf	luence behavior			.944	.012	<.001				
v2- Attributed ic	lealized influence	<u>.</u>		.964	.009	<.001				
v3- Inspirational	motivation			.951	.009	<.001				
v4- Intellectual s	timulation			.943	.011	<.001				
v5- Individualize	ed consideration			.934	.011	<.001				

Note.  $\lambda$  = Factor Loadings, SE = Standard Error, D = Discrimination Index

Table 2 shows the descriptive statistics, the reliability of the first- and second-order factors, and the correlations between the MLQ-5X factors. Concerning the descriptive statistics, the factors that make up transformational leadership obtained means of about 3.5. Contingent response and active exception management obtained slightly lower mean scores, and passive leadership obtained the lowest mean. Second, all first- and second-order factors had acceptable internal consistency values ( $\alpha = .71 - .93$ ; Nunnally & Bernstein, 1994).

**Table 2**Descriptive Statistics, Internal Consistency and Bivariate Correlations between factors of MLO-5X scale.

	M	DT	As	K	α	1	2	3	4	5	6	7	8	9
1. Transformational Leadership	3.523	0.854	599	096	.935	1								
2. Idealized influence behavior	3.561	0.934	568	163	.723	.864***	1							
3. Attributed idealized influence	3.586	1.014	608	290	.768	.894***	.701***	1						
4. Inspirational motivation	3.512	1.006	467	458	.781	.889***	.730***	.718***	1					
5. Intellectual stimulation	3.557	0.941	565	147	.723	.859***	.684***	.702***	.674***	1				
6. Individualized consideration	3.431	0.979	419	376	.740	.869***	.666***	.729***	.700***	.688***	1			
7. Contingent Reward	2.829	0.925	.156	484	.712	153***	112**	232***	114**	134***	119**	1		
8. Active exception management	3.238	0.965	132	590	.757	.373***	.302***	.315***	.302***	.295***	.348***	.383***	1	
9. Passive Leadership	2.180	0.890	.718	.070	.760	459***	417***	454***	407***	439***	371***	.493***	.065*	* 1

*Note.*  $As = Asimmetry; K = Kurtosis; \alpha = Cronbach's alpha; *p < .05. **p < .01. ***p < .001.$ 

With regard to divergent validity, Table 2 shows the significant and moderate correlations between all the factors of the instrument. Transformational leadership correlated negatively with contingent reward and passive leadership (r = .153 and r = .459, respectively) and positively with active exception management (r = .315). Also, contingent reward was positively associated with active exception management and passive leadership (r = .383 and r = .483, respectively) and, in turn, active exception management was positively associated with passive leadership (r = .065).

Finally, a multigroup analysis examined the invariance for the factorial structure of the MLQ-5X as a function of gender (male and female) and participants' grade (third and fourth grade of CSE). The factorial structure for both groups was first tested independently and then, different nested models (invariance models) were examined. Table 3 shows that the fit indices were appropriate for each of the gender and grade invariance models, and that the increases in the CFI, TLI, RMSEA, and SRMR in each invariance model did not exceed .01 in either case (Cheung & Rensvold, 2002).

Table 3
Invariance Analysis by Gender and School Year

Invariance Analysis by Gender and School Yea	r.										
	$\chi^2$	$\Delta\chi^2$	df	CFI	$\Delta \text{CFI}$	TLI	TLI	RMSEA	$\Delta$ RMSEA	SRMR	$\Delta$ SRMR
Gender											
Model 0. Male	864.174	-	499	.941	-	.934	-	.033	-	.054	-
Model 0. Female	1077.202	-	499	.937	-	.929	-	.037	-	.054	-
Model 1. Configure invariance	1978.528	-	1024	.938	-	.922	-	.035	-	.056	-
Model 2. Weak invariance	1978.528	0.000	1024	.938	.000	.922	.000	.035	.000	.056	.000
Model 3. Strong invariance	1978.528	0.000	1024	.938	.000	.922	.000	.035	.000	.056	.000
Model 4. Strick invariance	1978.528	0.000	1024	.938	.000	.922	.000	.035	.000	.056	.000
School year											
Model 0. Third	1069.090	-	499	.934	-	.928	-	.036	-	.053	-
Model 0. Fourth	857.323	-	499	.947	-	.940	-	.034	-	.057	-
Model 1. Configure invariance	1953.506	-	1024	.940	-	.934	-	.035	-	.056	-
Model 2. Weak invariance	1953.506	0.000	1024	.940	.000	.934	.000	.035	.000	.056	.000
Model 3. Strong invariance	1953.506	0.000	1024	.940	.000	.934	.000	.035	.000	.056	.000
Model 4. Strick invariance	1953.506	0.000	1024	.940	.000	.934	.000	.035	.000	.056	.000

#### Discussion

The main objective of this work was to adapt and validate the MLQ-5X Leadership Scale (Bass & Avolio, 1997) for the educational field, using the translation into Spanish of the original instrument validated by Molero et al. (2010) to measure the different leadership profiles of secondary school teachers. For this purpose, several models were tested, by which we intended to obtain a valid and reliable scale that would behave in the same way with both genders and the grades (third and fourth grade) included in the research. The results indicate that slight adjustments should be made to the scale in the passive leadership dimension for use in the educational setting.

Regarding the first hypothesis, we expected to confirm the same factorial structure as the original instrument (Bass & Avolio, 1997). First, the confirmatory factorial analysis of the structure of nine first-order factors was performed, following the distribution of items from the previous model. The results of this analysis led to the removal from the scale of two items (Items 17 and 20), belonging to the same factor (passive exception management). This led to merging the elements of the passive leadership style into a single factor of six items. The two specific dimensions of the single-factor passive leadership profile were therefore deleted. The validity problems of the original scale in the educational context for the passive leadership dimension have been found in different studies (Holtz & Hu, 2017; López-Vílchez et al., 2018;

Mirón et al., 2019). The solution of a single passive leadership factor has already been proposed by the authors of the theoretical framework (Bass & Avolio, 1997). However, these small variations in the psychometric properties of the scale have been considered to be common and justified in various previous studies (Antonakis et al., 2003; Judge & Piccolo, 2004). At the educational level, we consider the idea that students of the secondary education stage cannot yet differentiate the behaviors associated with the passive exception management factor and identify these behaviors as corresponding to the laissez-faire factor. Besides, in the reality of the educational process, this type of responsabilities is usually assumed by people with different roles and functions from those of the teacher of the subject (group tutor or headmaster of the school, mainly).

Subsequently, the confirmatory factorial analysis of the eight first-order factors was performed. The results of the analysis achieved higher fit indices than the previous model, with satisfactory factorial loads on all items of the scale. However, high inter-factor correlations were observed between the different factors of transformational leadership. Therefore, we decided to discard this model, considering the possibility of creating a second-order factor, composed of the five first-order factors of the theoretical construct of the scale. Given these correlations, we considered that the participating students rated the items included in the questionnaire similarly for each of the factors that make up the transformational dimension of leadership, so we discarded this

factorial model. This idea has already been proposed since the emergence of the instrument (Avolio et al., 1999; Carless, 1998), and since then, the literature has suggested that, when analyzing transformational leadership, the application of a single factor for this dimension of the theory may be the best choice, depending on the results found in the interfactorial correlations (Bono & Judge, 2004). Moreover, this approach was already highlighted in subsequent studies of the psychometric characteristics of the scale (Bass & Riggio, 2006; Molero et al., 2010). This possibility has been applied in educational (Hofmann & Jones, 2005; Niessen et al., 2017), professional (Hermosilla et al., 2016), and study population contexts (Rittschof & Fortunato, 2016). Therefore, we performed confirmatory factorial analysis of this third model, consisting of 4 main factors (transformational leadership, contingent reward, active exception management, and passive leadership) and 5 second-order factors for transformational leadership (idealized influence behavior, attributed idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration). The results showed adequate factorial loads of the items on their firstorder factor; that is, the five first-order factors of transformational leadership achieved high and significant factorial loads. The internal consistency of the model's factors was also analyzed. The coefficients were adequate, with scores above the criterion of .70 (Nunnally & Bernstein, 1994).

Concerning the factorial structure obtained in the final model, the results obtained in this study differ slightly from the original validation of the MLQ-5X (Bass & Avolio, 1997) and from the Spanish version of Molero et al., (2010). However, previous studies (Antonakis et al., 2003; Judge & Piccolo, 2004) have found and justified these slight variations in the psychometric properties and factorial structure of the scale. Therefore, the first hypothesis is partially confirmed, showing that Model 3 of the MLQ-5X is a valid and reliable tool for measuring students' perception of teacher leadership.

Second, the divergent capacity of the factors that make up the instrument was examined. In line with the results obtained by previous validations of the scale (Bass & Avolio, 1997; Molero et al., 2010), we expected to find a positive correlation between the factors that make up transformational leadership and contingent reward and active exception management. In contrast, the relationship of these factors with passive leadership was negative (Judge & Piccolo, 2004; Molero et al., 2010). Concerning the correlation between the two factors, a positive and moderate relationship (Kline, 2015), with a value below the Spanish version of Molero et al. (2010) and slightly higher than the original validation (Bass & Avolio, 1997) was obtained. Consequently, the original five-factor factorial structure for the transformational leadership dimension was maintained, discarding the factorial proposal that merged the individualized consideration and contingent reward dimensions into the same factor Molero et al. (2010). In addition, this positive correlation has been found in other studies (Judge & Piccolo, 2004). With regard to passive leadership, the negative results in the correlations with the other factors of the transformational dimension coincide with those found in previous studies (Molero et al., 2010). Thus, these results suggest that the MLQ-5X factors are somewhat related, because they seem to be the same construct, but they are nonetheless different, as no correlations close to one were found (Kline, 2015). However, these correlations with the factors of the transactional dimension are positive, especially those of contingent reward. These results differ from those found in previous validations (Antonakis et al., 2003; Molero et al., 2010). Therefore, taking into account the findings analyzed in this research and those observed in other previous studies, Hypothesis 2 is partially confirmed.

Finally, we intended to ensure that the measuring instrument behaved similarly in the different population subgroups included in this investigation. For this purpose, the invariance of the MLQ-5X was checked, taking into account the gender of the participants and their academic grade (third and fourth grades of CSE). The results indicate that the MLQ-5X was invariant in both genders and grades, both in the configural model and in the different models with constraints. Similar results have been found in terms of gender invariance in studies from different professional contexts, including the educational field (Antonakis et al., 2003; Judge & Piccolo, 2004; Xu et al., 2016), but not in samples with students. In this sense, the results coincide with those found in other validations in Spanish of instruments of the same theoric framework, such as that performed by Álvarez et al. (2018) on the initial version of the Transformational Teaching Questionnaire (TTQ; Beauchamp et al., 2010). However, we have no knowledge of previous studies of invariance as a function of the academic grade. In short, as the MLQ-5X was invariant in these population subgroups, it can be stated that the instrument ensures the measurement of the perceptions of secondary school students in different grades of the leadership exercised by their teachers in the classes of various subjects. Therefore, Hypothesis 3 is accepted.

# Conclusions, Limitations, and Future Lines of Research

As a main conclusion, we can state that the scale adapted to the educational field requires slight modifications in the factorial structure, as well as in the composition of the items of each factor. On the one hand, the transformational leadership dimension has internal consistency and construct validity, suggesting the differentiation between first- and second-order factors. As for the other two leadership profiles, adaptation to the educational field requires changes in the factorial composition of passive leadership, in addition to different correlations of the other dimensions of the scale. However, the results show that this scale may be a good tool for measuring the different leadership profiles of the educational setting defined in the theoretical construct and that it is not only applicable to one of the leadership profiles, as observed in

other measurement instruments. Knowledge of students' perception of the leadership exercised by their teachers will provide more complete results and conclusions about the consequences in their behavior if an instrument is available to assess the different profiles described in the theoretical framework, as in other professional and organizational fields. On another hand, the structure of the instrument we present allows authors of future research to assess the relationships that may occur between the factors that make up transformational leadership, giving them the option of using five separate factors or a global factor that analyzes teachers' leadership profile when performing their professional activity. Finally, the extension of the instrument makes its application very advantageous for the educational context, as it does not require much time and the target sample can understand the scale.

As limitations of the study, we should highlight the cross-sectional nature of this work, where data collection was carried out at a specific point in the academic year. This data collection was performed in a sample of Spanish secondary school students, so it is not generalizable to other Spanish-speaking languages or cultures with different educational systems, or to other educational levels of the same national system (primary education, vocational training, or university studies). The application of the scale to different stages or educational systems could be addressed in future research to determine whether the instrument is invariant and equally applicable. On the other hand, the process of adapting and validating the scale is based on students' perceptions of their teachers. To contrast and consolidate these perceptions in the future, one could consider conducting an observation process of the teacher's performance, assessing the students' perception of their teachers, or even a process of triangulation among the three. Finally, it would be interesting to observe the behavior of the scale concerning variables of a motivational or amusing nature or academic performance. The concurrent validity of the instrument concerning such variables could thus be tested.

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# **Appendix**

# Final version of 34 MLQ-5X items in the Educational Setting

- 1. Sólo me apoya cuando hago bien las tareas y actividades.
- 2. Tiene en cuenta las críticas, valorándolas si son apropiadas.
- 3. No hace algo hasta que los problemas son serios.
- 4. Centra su atención en los fallos y en el no cumplimiento de las normas.
- 5. Evita implicarse en cualquier cuestión importante.
- 6. Nos habla de la importancia de tener valores morales (ser buena persona).
- 7. No hace nada cuando se le necesita.
- 8. Busca diferentes perspectivas a la hora de solucionar los problemas.
- 9. Habla con entusiasmo acerca del futuro.
- 10. Estoy orgulloso/a de que sea mi profesor.
- 11. Destaca solamente a los alumnos que realizan correctamente las tareas.
- 12. Espera a que las cosas vayan mal antes de actuar.
- 13. Habla con entusiasmo acerca de los objetivos que deben conseguirse.
- 14. Deja clara la importancia de tener un fuerte sentido del deber (ser comprometido).
- 15. Dedica su tiempo a atender de manera individualizada a los alumnos.
- 16. Recuerda continuamente que nuestra nota va a depender de que cumplamos los objetivos.
- 17. Va más allá de su propio interés en beneficio de los alumnos.
- 18. Me trata más como una persona que como miembro de un grupo.
- 19. Actúa de forma que se gana mi respeto.
- 20. Concentra toda su atención en los errores, quejas y fallos.
- 21. Tiene en cuenta las consecuencias éticas y morales de sus decisiones.
- 22. Nos recuerda todos los fallos.
- 23. Demuestra un gran sentido del poder y de la confianza.
- 24. Plantea una visión de futuro que nos motiva.
- 25. Hace que dirija mi atención hacia los fallos a la hora de realizar las tareas.
- 26. Evita tomar decisiones.
- 27. Considera que cada alumno tiene diferentes necesidades, capacidades y aspiraciones.
- 28. Consigue que vea los problemas desde diferentes puntos de vista.
- 29. Me ayuda a desarrollar mi capacidad.
- 30. Nos sugiere nuevas formas de ver cómo completar las tareas.
- 31. Espera a que los problemas y conflictos se resuelvan solos para no tener que actuar.
- 32. Resalta lo importante que es respetar a los demás y trabajar en equipo.
- 33. Se muestra satisfecho solo con aquellos alumnos que hacen bien todas las tareas en la asignatura.
- 34. Demuestra confianza a los alumnos en que alcanzaremos los objetivos.

Note. Idealized influence behavior: 6, 14, 21, 32; Attributed idealized influence: 10, 17, 19, 23; Inspirational motivation: 9, 13, 24, 34; Intellectual stimulation: 2, 8, 28, 30; Individualized consideration: 15, 18, 27, 29; Contingent Reward: 1, 11, 16, 33; Active exception management: 4, 20, 22, 25; Passive Leadership: 3, 5, 7, 12, 26, 31.