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Content

Editorial

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Bursting the bubble: the role of scientific publications in popular science

Despite persistent calls for educational research to crystallize as a tool to facilitate school improvement and renewal processes (Aguado, 2023; Davis, 1999; Owen et al., 2023), in general terms, its incorporation into the daily life of schools is not occurring effectively. The problem is complex and its causes, therefore, multiple. For instance, it would be necessary to continue raising awareness about the importance of the issue, as teachers themselves sometimes do not perceive research as a useful tool in their work. Furthermore, it seems that the educational policies that are being implemented do not make a firm commitment to its incorporation into practice. On the other hand, educational research findings may be disconnected from the interests or needs of teachers at different levels. This could derive from the existing gap between teachers and researchers, which likely originates in the supposed dichotomy between research and teaching practice, which erroneously places both groups in watertight compartments (Aguado, 2023). This framework does not facilitate the fulfilment of fundamental conditions, such as perceived usefulness and interest for those who are in practice, who, unfortunately, in most cases act as mere spectators of research.

On the one hand, therefore, the training of future teachers should insist on raising awareness of the benefits of educational research and equip teachers with the skills and tools to look critically at classrooms and schools. Undoubtedly, the possibility for teachers of all educational levels to do research and to base their practice on the results of their research, as well as the approach of joint projects between schools and universities, would help to stimulate the processes of educational renewal (Aguado, 2023).

On the other hand, it is important to bear in mind that there is a considerable amount of knowledge generated by research that could be useful in teaching practice. However, it is clear that this information rarely reaches potential stakeholders. Certainly, the dissemination of scientific knowledge generated by educational research is not a simple question and, in fact, it would be a matter of going beyond the mere transfer of knowledge to achieve the desired social impact:

that these results are applied and improve different key aspects of education (Aliaga et al., 2018).

GENESIS AND EVOLUTION OF POPULAR SCIENCE

Although earlier examples exist, the origins of scientific popularization are associated with the increasing complexity of theories developed in the so-called scientific revolution of the second half of the 17th century (Spurgeon, 1986). The concept of popularization emerged within the context of the natural sciences, as we shall see, that most of its development took place.

In 1687, Sir Isaac Newton published *Mathematical Principles of Natural Philosophy*, which was largely incomprehensible to most readers, particularly due to its inherent mathematical complexity. From that moment onward, works began to emerge seeking to disseminate his theories in a language more accessible to the public. For example, in the publication «The Elements of Sir Isaac Newton's Philosophy», Voltaire sought to popularize the theories of his friend Newton (Voltaire, 1738). In other scientific disciplines, such as biology or geology, the necessity for popularization emerged at a more delayed pace and is primarily attributed to two factors: the expanding technical vocabulary and the substantial volume of knowledge generated from the 19th century onwards.

At the beginning of the 19th century, the astronomer John Hershel, in a letter sent to the natural philosopher William Whewell, made explicit the need to «digest what is now known, in every branch of science... to provide a connected view of what is done and what remains to be done.» This baton was picked up by the Scottish mathematician Mary Fairfax Somerville (1780-1872), who would become one of the pioneers of scientific popularization, thanks to the publication of her book of «On the Connection of the Physical Sciences» in 1834 (Holmes, 2014). In this work, Mary Fairfax provides a comprehensive account of the state of science in her time and does so by reducing the mathematical apparatus to a minimum with the aim of making it accessible to all interested persons.

During the 20th century, the tradition of science popularization in the field of natural sciences increased with the advancement of knowledge. We all have in mind the names of extraordinary science popularizers who developed their work in the 20th century, such as the marine biologist Rachel Carson (1907-1964), the astronomer Carl Sagan (1934-1996), the paleontologist Stephen Jay Gould (1941-2002), writer and biochemist Isaac Asimov (1920-1992), theoretical physicist Richard Feynman (1918-1988) and others who continue to do so such as the mechanical engineer Bill Nye, the primatologist Jane Goodall, the writer Bill Bryson, the paleoanthropologist Juan Luis Arsuaga or the physicist José Manuel Sánchez Ron, among many others.

DISSEMINATION OF EDUCATIONAL KNOWLEDGE TODAY

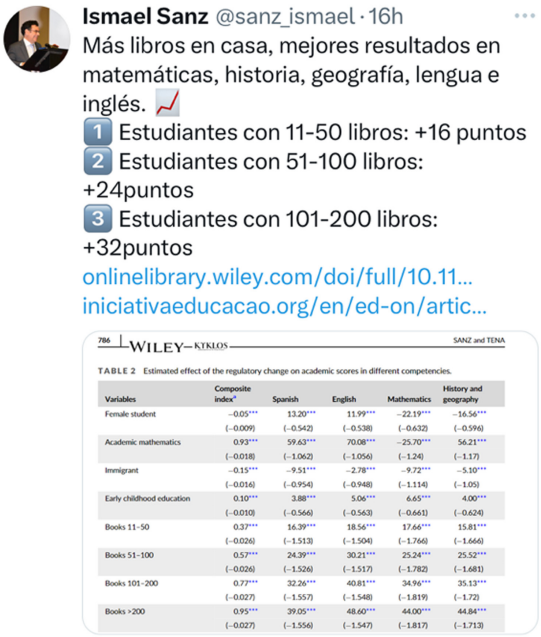
Despite the consolidation of scientific popularization in the 20th century, the field of education has not evolved at the same pace, although there is a growing concern about this issue. The University of Delaware, for example, has created the Center for Research Use in Education (CRUE), whose main objective is to facilitate the integration of educational research with educational institutions at all levels and with political agents involved in educational decision-making.

The issue of translating educational research findings into the context of practice is not straightforward (Carrier, 2017). In a relatively recent theoretical model, it has been suggested that the key may lie in considering that the process is bidirectional, and that both the people who generate the research findings and those who are in practice need to be considered for effective knowledge translation (Farley-Ripple, 2021). In this bidirectional relationship, the importance of intermediaries (people, activities, or motivations) that facilitate the exchange, transformation, and communication of information generated in research and in schools has been established (Shewchuk, & Farley-Ripple, 2022, 2023).

There is a growing number of concrete initiatives aimed at disseminating knowledge resulting from educational research. Most of them take the form of books that summarize scientific advances related to education in a way that is accessible to interested persons, whether they are researchers or not. In recent years, there has been a particular emphasis on works related to neuroscience applied to education (see, for example, Mora, 2024 or Willingham, 2023), but specific handbooks on the use of scientific evidence for decision-making in education are also emerging (see, for example, Petty, 2023).

Thanks to the evolution of technology, there are more and more channels, beyond books, in which there is a presence of educational dissemination. Although they have their drawbacks, social networks seem to be a good platform for the dissemination of knowledge (Gutiérrez-Sánchez, 2023). In fact, there are very interesting initiatives in these environments in which people involved in educational research try to disseminate not only their own research among their colleagues, but also to all people who might be interested. A notable example of these actions is the contributions of Ismael Sanz, Professor of Applied Economics at the Universidad Rey Juan Carlos, who disseminates results in his profile on the social network X (@sanz_ismael), including a brief and very accessible explanation of them and a link to the scientific work from which these conclusions are drawn (see Figure 1).

Figure 1
Publication by Professor Ismael Sanz in X (22/07/2024)



Ismael Sanz @sanz_ismael · 16h

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TABLE 2 Estimated effect of the regulatory change on academic scores in different competencies.

Variables	Composite index[a]	Spanish	English	Mathematics	History and geography
Female student	−0.05***	13.20***	11.99***	−22.19***	−16.56***
	(−0.009)	(−0.542)	(−0.538)	(−0.632)	(−0.596)
Academic mathematics	0.93***	59.63***	70.08***	−25.70***	56.21***
	(−0.018)	(−1.062)	(−1.056)	(−1.24)	(−1.17)
Immigrant	−0.15***	−9.51***	−2.78***	−9.72***	−5.10***
	(−0.016)	(−0.954)	(−0.948)	(−1.114)	(−1.05)
Early childhood education	0.10***	3.88***	5.06***	6.65***	4.00***
	(−0.010)	(−0.566)	(−0.563)	(−0.661)	(−0.624)
Books 11–50	0.37***	16.39***	18.56***	17.66***	15.81***
	(−0.026)	(−1.513)	(−1.504)	(−1.766)	(−1.666)
Books 51–100	0.57***	24.39***	30.21***	25.24***	25.52***
	(−0.026)	(−1.526)	(−1.517)	(−1.782)	(−1.681)
Books 101–200	0.77***	32.26***	40.81***	34.96***	35.13***
	(−0.027)	(−1.557)	(−1.548)	(−1.819)	(−1.72)
Books >200	0.95***	39.05***	48.60***	44.00***	44.84***
	(−0.027)	(−1.556)	(−1.547)	(−1.817)	(−1.713)

We believe that practices such as the latter are appropriate for the rigorous dissemination of knowledge, since the «informative summary» provided is accompanied by a reference to the scientific work that faithfully supports the information being transmitted. However, it is important to bear in mind that the knowledge disseminated in social networks runs the risk of being produced in an environment far removed from the rigorous selection procedures that manuscripts are subjected to in scientific journals, which makes the appearance of hoaxes relatively common (García-Carmona, 2023).

WHAT CAN WE DO FROM SCIENTIFIC JOURNALS?

Studies on who reads research articles are scarce, but they place the interest in the narrow circle of the research context and not in people involved in teaching at different educational levels (Mohammadi et al., 2015). However, as Aliaga et al. (2018) showed in their analysis of educational research journals in Spain: «... fundamental aspects are still pending, such as the evaluation of their most social aspects (local impact, language, changes in the community, etc.), those most

closely related to the environment in which they are produced and which they should serve» (p. 576). We could say that, at present, the knowledge generated by educational research remains largely encapsulated in the bubble of the research community, and its relevance to teachers at non-university levels of education is rather limited. However, about half of the papers currently published in our journal include research in the context of early childhood, primary or secondary education, which could be attractive and useful to teachers of these educational levels, and even to families and other agents involved in education.

Starting with this issue, each article published in «Education XX1» now includes a «Dissemination» button on its page, providing access to an infographic in which the authors explain, using accessible vocabulary, the main results of their research in terms of their applicability and impact in the classroom and/or in education policy. The same infographic is the one we use on our social networks (@EducationXX1) to share the interesting articles we publish in each issue. We thank the authors for their efforts to disseminate their work and hope that, thanks to them, the results of their research will have a wider dissemination and scope in practice.

Diego Adura Martínez
Editor Jefe de Educación XX1

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Studies

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Effect of academic support on school outcomes through school engagement: evidence of gender invariance

Efecto del apoyo académico sobre los resultados escolares a través del compromiso: evidencia de la invarianza de género

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ABSTRACT

In order to understand the adequate development of students, direct measures such as their grades, but also indirect measures such as their satisfaction with school, must be taken into account. It is also important to determine which variables promote it and how. This study aims to explore if the mediating effect of school engagement between academic support (from teachers, parents, and peers) and school outcomes (satisfaction with school, and grades) is gender invariant. The sample was 1712 students with a mean age of 14.73 (52.7% female). The model was tested using Structural Equation Modeling and an invariance routine was carried out to test gender moderation. The model satisfactorily fitted the data, with the school engagement mediating the effect of parents, teachers, and peer support on satisfaction with school and grades. Teacher support was the dimension of academic support with the highest impact. The model explained 46% of the variance of satisfaction and 7.8% of grades. The invariance routine revealed no moderation effects due to gender. The proposed model is invariant across boys and girls, being the academic support equally relevant for both correct involvement and performance in school. Implications are discussed.

Keywords: academic support, school engagement, satisfaction with school, grades, structural equation modeling

RESUMEN

Para entender el adecuado desarrollo del alumnado deben de tenerse en cuenta medidas directas como sus calificaciones, pero también medidas indirectas como su satisfacción con la escuela. Así mismo, es importante determinar qué variables lo promueven y cómo. El presente estudio tiene como objetivo explorar si el efecto mediador del compromiso escolar entre el apoyo académico (de profesores, padres e iguales) y los resultados escolares (satisfacción con la escuela y notas) es invariante al género. La muestra fueron 1712 estudiantes con una edad media de 14.73 (52.7% mujeres). El modelo fue puesto a prueba mediante un Modelo de Ecuaciones Estructurales y se llevó a cabo una rutina de invarianza para evaluar la moderación del género. El modelo ajustó satisfactoriamente a los datos, con el compromiso escolar mediando el efecto del apoyo del profesorado, padres e iguales sobre la satisfacción con la escuela y las notas. El apoyo del profesorado fue la dimensión del apoyo académico con un mayor impacto. El modelo explicó un 46% de la varianza de satisfacción y un 7.8% de las notas. La rutina de invarianza reveló la ausencia de efecto de moderación del género. Consecuentemente, el modelo propuesto es invariante a través de los y las estudiantes, siendo el apoyo académico igual de relevante para el correcto desarrollo en la escuela de ambos. Se discuten las implicaciones.

Palabras clave: apoyo académico, compromiso escolar, satisfacción con la escuela, notas, modelo de ecuaciones estructurales

INTRODUCTION

The adequacy of students' educational functioning can be evaluated through direct performance measures (such as grades) or indirect measures (such as students' satisfaction) (Antičević et al., 2018). The consideration of both kinds of academic outcomes is essential to promote higher academic achievement, motivation, and students' future professional success (Gutiérrez & Tomás, 2019). Previous research has evidenced that direct outcomes, such as high school grades, constitute one of the strongest predictors of academic achievement (Brookhart et al., 2016; Duckworth et al., 2012), related to other relevant variables such as on-time college graduation (Galla et al., 2019). Additionally, the consideration of indirect outcomes became a complement that enrich the comprehension of students' academic achievement. Among the indirect outcomes, school satisfaction has been considered as one of the most relevant factors affecting quality of life in childhood and adolescence (Verkuyten & Thijs, 2002). However, this variable has received less attention in previous research (Gutiérrez et al., 2017).

School satisfaction is defined as "the student's subjective cognitive appraisal of the quality of his or her school life that can be linked to the construct of quality of life" (Löfstedt et al., 2020, p. S60). Other authors, such as Elliott and Healy (2001), defined student satisfaction as a "short-term attitude resulting from an evaluation of a student's educational experience" (p. 2). This appreciation of the school context is crucial for student's development, being related to other variables such as academic success or psychosocial adjustment (e.g. Daily, 2020; Huebner & Gilman, 2006; Persson et al., 2016). For this, Gutierrez et al. (2017) claimed that for a better understanding of successful learning, the consideration of school satisfaction, along with other direct measures of academic achievement, is crucial.

If we aim to understand the development of an academic successful adjustment and development, we need to clarify which variables are predicting the aforementioned outcomes and how the process is developed in the students. Among the antecedents of adequate academic achievement, school engagement has achieved a predominant role in previous research (Gutiérrez et al., 2017; Reyes et al., 2023; Serrano & Andreu, 2016; Tomás et al., 2020), being considered a key point in school accomplishment from both a theoretical and a practical way. School engagement is defined as the student's perception of connectedness with their academic environment (Veiga, 2013). Engagement has traditionally been decomposed into three main components: emotional, cognitive, and behavioral engagement. Behavioral engagement refers to the student's implication in school activities (Fredricks et al., 2004). Emotional engagement refers to feelings of belonging, school enjoyment, and appreciation of success in school (Voelkl, 1997). Finally, cognitive engagement alludes to self-regulated or strategic learning (Pintrich

& De Groot, 1990). Nevertheless, some authors consider a fourth dimension, the agentic engagement (Reeve & Tseng, 2011). Agentic engagement would be defined as the students' capability to set their own academic goals, with an active and constructive attitude (Tomás et al., 2016). This conceptualization with four dimensions of school engagement is frequently used in current literature (e.g. Li et al., 2024).

The literature supports that school engagement is a relevant predictor of school satisfaction (e.g. Gutiérrez et al., 2017; Reyes et al., 2022; Tomás et al., 2020) and academic achievement (e.g. Moreira et al., 2018; Virtanen et al., 2018). However, some of these studies went a step further proposing comprehensive theoretical models that integrate school engagement as a mediator among some contextual variables and academic outcomes (e.g. Gutiérrez et al., 2017; Gutiérrez & Tomás, 2019; Skinner et al., 2008). Regarding its antecedents, school engagement is related to environmental factors such as social support (Fernández-Lasarte et al., 2020). Gutiérrez et al. (2017) asserted that family, peers, and teachers' support has an important role in school engagement according to scientific evidence (Bru et al., 2021; Estell & Perdue, 2013; Garcia-Reid et al., 2015; Jia & Cheng, 2024; Ramos-Díaz et al., 2016; Wang & Eccles, 2012). There is a general agreement in the relevance of teachers and parents' support in school engagement (Cirik, 2015; Fernández-Lasarte et al., 2019; Fernández-Zabala et al., 2016; Oriol-Granado et al., 2017; Quin et al., 2018; Virtanen et al., 2014; Wang & Fredricks, 2014). Nevertheless, the effect of peer support remains more controversial. Some studies did not find a direct relationship (Fernández-Lasarte et al., 2020; Gutiérrez et al., 2017; Pietarinen et al., 2014; Ramos-Díaz et al., 2016), while others showed a negative effect (Rodríguez-Fernández et al., 2018), and some studies consider peer support as the most relevant social predictor (Kozan et al., 2014; Wang & Eccles, 2012). Besides, the support given by peers, teachers and parents' support is also related to academic achievement and satisfaction with school variables (Elmore & Huebner, 2010; Li et al., 2011; Shao et al., 2024; Sivandini et al., 2013).

Although this pattern of relationships has been tested previously, its invariance across genders remains understudied. Previous gender studies have been mainly focused on the differences in some variables, with little attention to differences in the processes and relationships between variables. For example, it is well-studied that males, compared to females, tend to perform worse in secondary school (Voyer & Voyer, 2014). Additionally, they present lower motivation (Butler, 2014) and engagement (Bru et al., 2021; Lam et al., 2012; Wilcox et al., 2018). Oga-Baldwin and Fryer (2020) understood this phenomenon pointing out that externally controlled motives were more likely in males, which could decrease their motivation and performance. The differences in the antecedents of these variables are less clear. Although some previous studies showed that boys and girls experience different

levels of support from teachers and peers (Bru et al., 2021; Rueger et al., 2010; Tennant et al., 2015; Wilcox et al., 2018), a meta-analysis evidenced that these results are inconclusive (Roorda et al., 2011).

Despite the differences in the magnitude of some variables in each gender, what about the relevance of these contextual variables and psychosocial antecedents on academic achievement? Is the interaction among them equally relevant for both? Regarding the gender differences in the strength of the relationships between academic support, academic engagement, and academic outcomes (satisfaction with school or grades), the literature is scarce. Lietaert et al. (2015) found that the association between autonomy support from teachers and behavioral engagement was stronger in males than females. Recently, Bru et al. (2021) carried out research to study the effect of gender on the teachers' support–engagement relationship. Their study showed that, although the effect of learning process support and emotional support on emotional engagement was stronger in females, the effect of structuring of learning activities on emotional engagement was stronger for males (Bru et al., 2021). The effect of support on behavioral engagement was gender invariant (Bru et al., 2021). Wilcox et al. (2018) showed similar results about the effect of support on academic engagement, this relationship seems to be equivalent between males and females. However, these studies lack on considering the full picture, including the transference of school engagement into academic performance or academic achievement.

While analyzing the aforementioned relationships, it is important to take into account the age of the participants and how it affects the other variables. Some previous studies have evidenced that students in higher levels present lower results of school engagement (Goñi et al., 2018) and satisfaction that younger students (Gutiérrez et al, 2021; Lampropoulou, 2018; Liu et al., 2016). However, these relationships could be different for males and females. Wilcox et al. (2018) found that grade level was only relevant for academic engagement for males, presenting a non-statistically significant effect for females. For this reason, it is crucial to consider age as a control variable.

Except for the aforementioned studies, there is a lack of literature analyzing gender differences in the relationships among variables that precede and promote positive academic outcomes. Consequently, the present study aims to test a theoretical model based on previous literature (Gutiérrez et al., 2017; Gutiérrez & Tomás, 2019; Tomás et al., 2020) where the school engagement mediates between academic support (from teachers, parents, and peers) and school outcomes (satisfaction with school, and grades). This objective is based on six hypotheses: (1) perceived support from the teachers, family, and peers positively impacts the school engagement of the students, (2) school engagement is a positive predictor of the grades, (3) school engagement positively promotes school satisfaction, (4)

there is a positive relationship between the grades the students obtain and their school satisfaction, and, finally, as a consequence, (5) the perceived support from the teachers, family and peers indirectly increase grades and (6) school satisfaction. Additionally, our main contribution is to evaluate if this model is gender invariant or, in turn, if there are relevant gender effects to consider in academic achievement promotion.

METHOD

Participants

The sample consisted of 1712 students from the Dominican Republic with a mean age of 14.73 (SD = 1.18), ranging between 12 and 20 years. 902 students were female and 809 were male, 52.7% and 47.3%, respectively. One student did not report gender information. Most participants attended public institutions (n = 1278, 74.65%). The rest attended private institutions (n = 268, 15.65%) or semi-official institutions (n = 166, 9.70%).

Instruments

The survey included some sociodemographic questions (e.g. age, gender) and educational indicators. All of the indicators and questionnaires were administered in Spanish, the mother tongue of the participants. For the aim of this study, the relevant questionnaires used were:

1. *Perceived Academic Support Questionnaire (PASQ*; Reyes et al., 2022). This scale is assessed three sources of academic support: teacher's support, a dimension consisting of three items (e.g. "At my school, there is a teacher who is kind to me"); peer support, also with three items (e.g. "At my school, I have a friend who really cares about me" or "At my school, I have a friend who helps me when I have difficulties (problems)"); and family support, a dimension composed by six items (e.g. "My parents worry about my education"). All the items ranged from 1 (strongly disagree) to 5 (strongly agree). The three dimensions showed adequate reliability with Cronbach's Alpha values of .90, .79, and .76, respectively.
2. *Student Engagement Scale- 4 dimensions* (Veiga, 2013). This 20-item scale measures school engagement through four dimensions: affective (e.g. "My school is a place where I feel integrated"), agentic (e.g. "I make suggestions to teachers on how to improve things"), behavioral (e.g. "I miss classes while at school") and cognitive (e.g. "When I read a text, I try to understand the

meaning of what the author wants to convey"). Following Tomás et al.'s (2016) recommendation, items 2 and 18 were removed. In the proposed model, the dimensions are considered as indicators of the latent construct of school engagement. The internal consistency of the dimensions was reasonable. The internal consistency estimate was .71 for affective engagement, .69 for agentic engagement, .83 for behavioral engagement, and .68 for cognitive engagement.

3. *Satisfaction with school* (Nie & Lau, 2009). This scale is unidimensional and is composed of four items (e.g. "I am happy to be at this school"). Its internal consistency estimate was .75.
4. *Grades*. Academic performance is externally measured, it was not self-reported by the students. It is modeled as a latent factor considering students' marks on Spanish language, Mathematics, Social Sciences, Natural Sciences, English, Artistic Education, and Physical education as indicators. The marks in all of these subjects have been considered for all the participants. The marks in the Dominican Republic range between 0 and 100, being 70 the minimum to pass the subject.

Psychometric information for all the scales employed in the model and for this sample are presented in Reyes (2019).

Procedure

After receiving the approval of the Ministry of Education of the Dominican Republic, the research team contacted all the regions. The study was conducted, within the regions that showed interest in participating, in two districts that were chosen in consideration of their indicators of academic success (low and high). The chosen districts were districts 04–03 and 11–01. 1712 participants were sampled from the 3387 students in the aforementioned districts, taking into account a 3% margin of error (with $p = q = 0.5$) and a level of confidence of 99%. Therefore, the sampling procedure was in part intentional (the two districts chosen) and then in these two districts the sample was randomly selected (probabilistic).

The procedure meets the ethical standards of the American Psychological Association (APA). Firstly, the educational authorities (school directors) of the institutions were contacted, and they approved the survey characteristics. Then teachers and families were informed about the objective and procedure of the survey. The participation was voluntary, confidential and not rewarded. The informed consents from the participants and families were obtained. The survey was completed during the first teaching hour, and it took 45 minutes. The survey

was administered by the teachers who had received training for this purpose from the research team. The number of incomplete questionnaires was negligible.

DATA ANALYSIS

Statistical analyses were carried out with IBM SPSS Statistics for Windows, Version 26.0 (IBM, 2019) and Mplus 8.7 (Muthén and Muthén, 1998-2017). Descriptive statistics and Cronbach's alphas were calculated with IBM SPSS Statistics. A value of Crobach's alpha above .70 was considered adequate (Kline, 2015). Mplus was employed to test for structural models. The estimation method in these structural models was WLSMV, adequate for non-normal and ordinal variables as the ones in this research. The theoretical model that proposes the mediation role of school engagement between academic support and satisfaction with school and grades was tested. Once the model was considered to fit the data for the total sample, the model was tested separately for each group: men and women. And finally, an invariance routine for gender was carried out.

This invariance routine is a sequence of increasingly constrained models for testing configural, metric invariance, and equal effects of the model (van de Schoot et al., 2012). First, the configural invariance checks the structural equivalence: if the pattern of relationships between the variables across the groups is common. In the configural model, parameters are freely estimated in both groups. The fit of the configural model was considered as a baseline fit. Second, a metric invariance was tested. Metric invariance fixes factor loadings across the groups. Metric invariance has to be stablished before relationships among constructs can be compared across groups. Third, equal effects were tested, forcing structural coefficients of the relationships among latent variables to be the same across groups.

The models fit was assessed through several indexes: (a) the chi-square statistic; (b) the Comparative Fit Index (CFI); (c) the Root Mean Square Error of Approximation (RMSEA); and (d) the Standardized Root Mean Residual (SRMR). Usually, an adequate fit is considered when CFI is above .90 and RMSEA and SRMS below .08 (Marsh et al., 2004). To compare the nested models in the invariance routine, CFI differences (ΔCFI) were used. An alternative is to use χ^2 differences ($\Delta\chi^2$) to compare nested models, but this statistical comparison presents the well-known problem of being too sensitive to trivial differences (Cheung & Rensvold, 2002). Regarding the interpretation of CFI differences, differences lower than .01 or .05 are usually used as cut off criteria for equivalence across groups (Cheung & Rensvold, 2002; Little, 1997). This evaluation was complemented with the consideration of changes in RMSEA and SRMR. For adequate metric invariance, changes on RMSEA and SRMR should be < .010 and < .025, respectively (Chen, 2007).

Results

Table 1 includes the descriptive statistics of the studied variables in the general sample, males and females. Table 2 presents the bivariate correlations of the observed construct that will be modeled as latent variables in the model. Firstly, the theoretical model shown in Figure 1 was tested. The structural coefficients presented in Figure 1 are standardized. The model fitted the data adequately: $\chi^2(338) = 1926.207$, $p < .001$, RMSEA = .052, 90% confidence interval [CI] = [.050, .055], CFI = .933, SRMR = .048. For clarity's sake, standardized factor loadings of the latent factors' indicators are not included in Figure 1, but they can be seen in Table 3. All of the indicators showed high loadings, ranging between .48 and .84 ($p < .001$), except for two of them. In school engagement, behavioral engagement showed a low negative coefficient (-.18, $p < .001$). Additionally, the third indicator of school satisfaction had a low loading (.22, $p < .001$), being an inverted item.

Table 1
Descriptive Statistics

	Full sample			Male			Female		
	M(SD)	**Kurt**	**Skew**	**M(SD)**	**Kurt**	**Skew**	**M(SD)**	**Kurt**	**Skew**
Parental support	4.27 (0.78)	2.92	-1.64	4.19 (0.84)	1.85	-1.44	4.34 (0.71)	4.31	-1.85
Teacher support	3.88 (0.91)	0.44	-0.83	3.84 (0.93)	0.22	-0.76	3.92 (0.89)	0.66	-0.90
Peer support	3.82 (0.99)	0.12	-0.79	3.67 (0.99)	-0.21	-0.57	3.96 (0.96)	0.69	-1.02
School engagement	3.16 (0.55)	0.70	0.23	3.19 (0.60)	0.59	0.30	3.14 (0.51)	0.59	0.08
Satisfaction with school	3.61 (0.71)	1.16	-0.73	3.58 (0.76)	0.75	-0.65	3.63 (0.66)	1.60	-0.80
Grades	83.75 (5.44)	-0.13	-0.00	82.72 (5.40)	-0.27	0.09	84.67 (5.31)	0.11	-0.07

Note. M=Mean; SD=Standard deviation; Kurt=Kurtosis; Skew=Skewness.

Table 2
Bivariate Correlations

	1	2	3	4	5	6
Age (1)	-					
Parental support (2)	-.164**	-				
Teacher support (3)	-.047ns	.368**	-			
Peer support (4)	-.093**	.316**	.498**	-		
School engagement (5)	.104**	.277**	.384**	.334**	-	
Satisfaction with school (6)	-.020ns	.345**	.370**	.322**	.398**	
Grades (7)	-.243**	.133**	.150**	.149**	.037ns	.104**

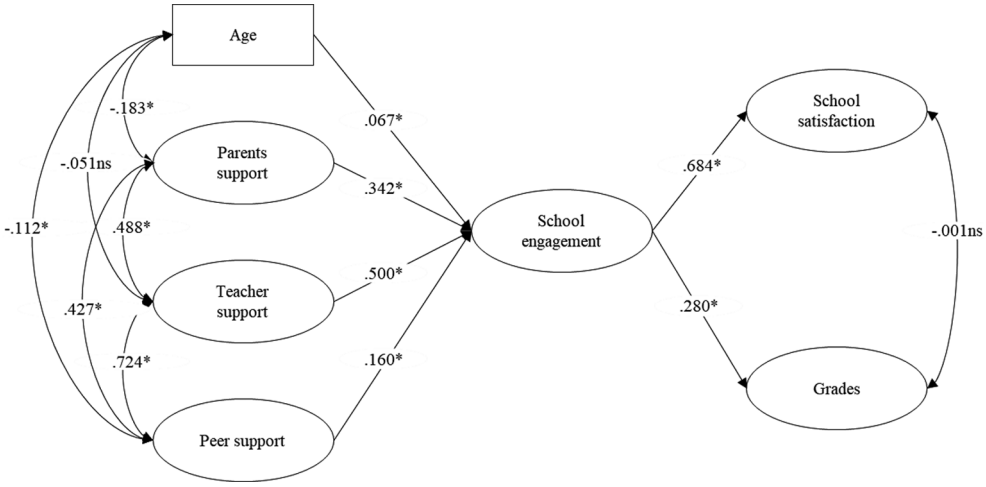
Note. ** p <.01.

Table 3
Standardized Factor Loadings

Indicator	Parental support	Teacher support	Peer support	School engagement	Satisfaction with school	Grades
I1	.740	.676	.780	.586	.835	.742
I2	.812	.773	.716	.512	.768	.614
I3	.803	.711	.716	.619	.219	.739
I4	.805	--	--	-.175	.630	.630
I5	.788	--	--	--	--	.655
I6	.753	--	--	--	--	.600
I7	--	--	--	--	--	.483

Note. I1-I7: General naming for the indicators of each factor, more information could be found in the section of Instruments. all of the standardized factor loadings were statistically significant p < .001.

Figure 1
Structural Equation Model



Note. The figure shows the standardized coefficients. For clarity's sake, indicators are not included in figure 1. *p<.001.

The model showed a direct effect of parents' support, teachers' support, and peers' support on school engagement, with structural coefficients of β = .34, p < .001; β =.50, p < .001 and β = .16, p < .001, respectively. These effects jointly explained 74% of the variance of school engagement. Regarding the prediction of satisfaction with school, the direct effect of school engagement explained 46% of its variance (β = .68, p = .001). Nevertheless, the effect of school engagement only explained 7.8% of the variance of grades (β = .28, p < .001). Additionally, there was no significant correlation between satisfaction with school and grades (β = -.00, p = .975).

Regarding the effect of the control variable, age showed a low negative effect on school engagement (β = -.07, p < .001). Additionally, age showed statistically significant correlations with parental support (β = -.18, p < .001) and peer support (β = -.11, p < .001). The correlation between teacher support and age was not statistically significant (β = -.051, p = .085). Its indirect effects on satisfaction with school and grades were statistically significant and negative (-.05, p = .018, and -.02, p = .035, respectively).

The indirect effects of parents, teachers, and peers' support on satisfaction with school were all positive and statistically significant (p < .05). Teachers' support was the strongest predictor among them (β = .34, p < .001), followed by parents' support (β = .23, p < .001) and peers (β = .11, p = .012). Similarly, the three sources of academic support presented an indirect impact on grades (p < .05). However,

their impact was lower compared with their effect on satisfaction with school. Teachers' support had the strongest indirect effect on grades (β=.14, $p < .001$). Parental support showed an indirect impact equal to .10 ($p < .001$) and the indirect impact of peers' support was .05 ($p = .013$).

Gender Invariance

The invariance routine starts testing the model fit in both samples: girls and boys. Table 4 shows goodness-of-fit indices for both groups, showing an adequate fit. When the overall fit in each group is guaranteed, configural invariance may be tested to set a baseline fit. As can be seen in Table 4, the configural model fitted the data well, and the same happened for the metric invariance model. Both models, configural and metric, were statistically different because the metric invariance model has significantly reduced the chi-square value. Moreover, the CFI improved with increasing degrees of freedom. Regarding the equal effects model, it was expected that the model fit decreased when introducing equality constrains, but indeed, it has shown an increase. Therefore, the three levels of invariance were verified. This means that girls and boys showed the same pattern of relationships in the prediction of satisfaction with school and grades with academic support through school engagement.

Table 4

Goodness-of-fit indices for each group studied and for the set of nested models to test for measurement invariance by gender

Model	χ^2	df	*p*	$\Delta\chi^2$	Δdf	*p*	CFI	ΔCFI	SRMR	ΔSRMR	RMSEA	ΔRMSEA	90% CI
Male	1092.596	338	< .001	--	--	--	.932	--	.054	--	.053	--	.049-.056
Female	1086.179	338	< .001	--	--	--	.935	--	.050	--	.050	--	.046-.053
Configural	2305.396	735	< .001	--	--	--	.930	--	.053	--	.050	--	.048-.052
Metric	2293.719	749	< .001	-48.308	14	< .001	.931	-.001	.054	.001	.049	-.001	.047-.051
Equal effects	2135.201	755	< .001	-4.800	6	.5697	.939	-.008	.054	.000	.046	-.003	.044-.049

Note. df = degrees of freedom; Δ = differences.

DISCUSSION AND CONCLUSIONS

Previous research evidences the importance of academic engagement in promoting academic achievement, whether measured through grades or including satisfaction with school. Although teachers' support and parents' support are key environmental factors for the development of academic engagement, peers' support presents more disparate results across research (Fernández-Lasarte et al., 2019, 2020; Gutiérrez et al., 2017). Regarding the effect of gender on these relationships, although gender differences in each of the aforementioned variables have been previously studied (e.g. Fernández-Zabala et al., 2016; Oga-Baldwin & Fryer, 2020; Ramos-Díaz et al., 2017), the moderating effect of gender is understudied. Consequently, the present paper attempts to provide evidence in favor of the mediating effect of academic engagement on the relationship between academic support and academic achievement, across genders.

As expected from previous literature (Elmore & Huebner, 2010; Li et al., 2011; Sivandini et al., 2013), our results show that academic support promotes satisfaction with school and student grades. Likewise, the different sources of academic support showed a positive impact on academic engagement and, through it, on academic achievement. These results support hypotheses 1, 2 and 3. When considering the academic support received by parents, teachers, and peers, we found that teachers are the group with the greatest impact on academic engagement. These results agree with those obtained by Fernández-Lasarte et al. (2019, 2020) and Gutiérrez et al. (2017) in samples of high school students. Concerning peers' support, in our study, it has a positive and statistically significant impact, although this result is not unanimous in previous literature (Fernández-Lasarte et al., 2020; Gutiérrez et al., 2017; Lam et al., 2012).

Regarding hypothesis 4, it was not supported by our results. Hypothesis 4 stated that grades and school engagement are positively correlated and the structural equation model presented a non-statistically significant relationship between both constructs. These results highlight the importance of considering both, direct and indirect measures of adequate students' educational functioning (Antičević et al., 2018).

The model evidenced that the three dimensions of academic support presented an indirect impact on satisfaction with school and grades, supporting hypotheses 5 and 6. Among them, the most impactful source of academic support was the teacher, followed by parents and peers. Our results agree with Gutiérrez et al. (2017) findings by showing teachers' support as the strongest indirect predictor of satisfaction with school. However, the indirect effect of peers' support in their study was not statistically significant (Gutiérrez et al., 2017).

Regarding the role of gender in the model, our study provides evidence of the robustness of the model across genders. The different relationships included in the model are invariant across the two groups, girls and boys. This tells us that, although some studies show mean differences in variables such as academic engagement or academic support as a function of gender (Fernández-Zabala et al., 2016; Ramos-Díaz et al., 2017), the importance of those variables in predicting academic performance is identical for both genders. Although some previous studies argued that boys and girls have different criteria for choosing their friends during school (Ciarrochi et al., 2016; Shadra et al., 2015), the academic support received from them is equally important for the development of academic engagement and, consequently, academic performance. These results extend previous research by considering support from groups other than teachers, and including the consequences of academic engagement in the study (Bru et al., 2021; Lietaert et al., 2015).

Our research presents some limitations that point out future research lines. First, the present study is based on cross-sectional data, which limits conclusions about causality between the variables. Also, like most previous research, gender has been treated as a dichotomous variable. Future research should delve deeper into the effect of gender identity and gender roles beyond the traditionally binary conception. Using latent profile analysis, Yu et al. (2020) found that different classes emerged according to gender role conformity between the boys and girls. Each of these profiles showed different school performance. These results show the need to test the gender invariance of the models with more detailed and plural classifications.

Additionally, our study focuses on the effect of academic support, without differentiating emotional and instrumental, and on academic engagement, without considering the effect of its different dimensions. Our results highlight the importance of considering different types of engagement because not all of them are positively correlated. Behavioral engagement presented a negative factor loading on general school engagement. Although these results could seem surprisingly, it has been found in previous literature in the Dominican Republic and Angola (Tomás et al., 2016). Bru et al. (2021) showed that the moderator effect of gender could vary across kinds of support and engagement dimensions. Further research is needed to understand in detail the complexity of the phenomenon considering different sources of academic support and different types of engagement.

The present study highlights the relevance of academic engagement as a precursor to satisfaction with school and academic achievement. Furthermore, it evidences the importance of academic support, especially that received by teachers, as an antecedent of academic engagement. These relationships are robust across boys and girls, being the academic support equally relevant for correct involvement and performance in school. These results help to understand the elements to

take into account when developing psychoeducational interventions that seek to improve the school adjustment of both boys and girls. These interventions may give rise to future longitudinal studies to test the causal relationships to which the present research points.

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Institutional policies to avoid dishonest practices in Spanish universities

Políticas institucionales para evitar prácticas deshonestas en las universidades españolas

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ABSTRACT

Dishonest behavior or practices are a concern in all universities around the world and are addressed differently in university institutions in different countries. This study focuses on the topic of academic integrity and pursues two objectives: on the one hand, to review the academic integrity policies aimed at avoiding plagiarism in Spanish universities, through the documents available there and, on the other hand, describe those documents in terms of their characteristics and their content. An analysis of the content of the 275 documents in the websites of 47 public universities Spanish is carried out. For the collection of information, a Computerized Registration Form was designed, and the information obtained was

analyzed both qualitatively and quantitatively. The main findings underline that most of the documents located are in the vice-rectorates for scientific policy, innovation and transfer, in the Faculties of Education and Humanities and in degrees corresponding to the branch of knowledge of Social Sciences. Due to their regulatory nature, most of these documents are textual, or have an HTML format, and are linked to informative measures aimed at the university community in general and refer to applicable rules focused on informing, detailing ways of proceeding and even controlling or sanctioning certain behaviors, especially those aimed at the student body. The main conclusion of the study is the coincidence, in all the universities studied, of the need to carry out preventive, informative and sanctioning actions that should form part of a regulatory institutional framework.

Keywords: academic dishonesty, ethics, integrity, plagiarism, institutional policies, university

RESUMEN

Las conductas o prácticas deshonestas preocupan en todas las universidades del mundo y se abordan de modo diferente en las instituciones universitarias de los diferentes países. Centrándose en la integridad académica, se persiguen dos objetivos: por un lado, revisar las políticas de integridad académica dirigidas a evitar el plagio existente en las universidades españolas, a través de los documentos en ellas disponibles y, por otro, describir esos documentos en cuanto a sus características y a su contenido. Para lograr dichos objetivos se analizan 275 documentos localizados en los sitios web de 47 universidades públicas españolas. Para la recogida de información se diseñó una Ficha de Registro Informatizada y se analizó la información obtenida tanto de modo cualitativo como cuantitativo. Los principales hallazgos subrayan que la mayoría de los documentos localizados se encuentran en los vicerrectorados de política científica, innovación y transferencia, en las Facultades de Educación y de Humanidades y en titulaciones que corresponden a la rama de conocimiento de Ciencias Sociales. Por su carácter normativo, la mayoría de estos documentos son textuales, o tienen un formato HTML, están vinculados a medidas informativas dirigidas a la comunidad universitaria en general y hacen referencia a normas aplicables y enfocadas a informar, detallar formas de proceder e incluso controlar o sancionar determinadas conductas, especialmente aquellas dirigidas al alumnado. Como principal conclusión del estudio destaca la coincidencia, en todas las universidades objeto de estudio, de la necesidad de llevar a cabo actuaciones preventivas, informativas y sancionadoras que deben formar parte de un marco institucional regulatorio.

Palabras clave: deshonestidad académica, ética, integridad, plagio, políticas institucionales, universidad

INTRODUCTION

In higher education institutions, lack of academic integrity is a growing problem in the learning process as well as in teaching, research and academic management (Ahmed, 2020).

In order to understand the scope of this wide-ranging problem, it is useful to study and delimit the concept of academic integrity, as well as the different behaviors that fall under this multidimensional construct (Hensley et al., 2013) including academic plagiarism in students, on which this work will focus more specifically. Academic dishonesty «constitutes a violation of rules or norms prescribed by educational institutions» (Vaamonde & Omar, 2008 p. 11) and can be classified into four types: exam cheating; plagiarism; false excuses; and cyber-plagiarism. The International Center for Academic Integrity (2021) defines academic integrity as «the commitment of institutions to six core values: honesty, trust, fairness, respect, responsibility and courage» (p. 4).

Among the most common dishonest behaviors is plagiarism, which consists of using «other people's ideas and/or words as one's own or without attribution of authorship» (Vargas-Franco, 2019, p. 159). It is, therefore, a dishonest behavior that may be intentional or unintentional, depending on whether or not the referenced authorship is cited (Dumitrina et al., 2019).

Honesty implies, on the one hand, that universities adopt policies aimed at making the university community aware that «falsifying data, lying, fraud, theft and other dishonest behavior are unacceptable» (Morales-Montes & Lujano-Vilchis, 2021, p. 4). On the other hand, it is also essential to know how universities deal with these types of practices that threaten academic integrity, to identify the general structure that governs the governance of universities and the regulations available on this matter, which are vital elements in order to significantly reduce unethical behavior in the organization (Stoesz & Eaton, 2020). As Wijaya and Gruber (2018) point out, if there are no rules or laws regulating this issue, plagiarism practices will increase.

The existing literature on the subject highlights that this issue is of concern in universities around the world and is dealt with differently in universities in different countries. For example, according to Mohd et al. (2021) in Malaysia, there are no common policies to address plagiarism in universities. In the same vein, Akter (2021) notes that very few higher education institutions in Bangladesh adopt policies to prevent plagiarism, have access to plagiarism detection programs, and offer very few training courses to prevent plagiarism.

Anti-plagiarism policies are found to be insufficient. Thus, according to Morales-Montes and Lujano-Vilchis (2021), in Mexican public universities, there are regulations to prevent and combat academic plagiarism, but there is no policy to

prevent this type of practice, nor are there specialized resources. Along the same lines, Stoesz et al. (2019) consider that in Canadian universities there is a need to review sanctioning policies and raise student awareness of the importance of academic integrity.

In the European context, studies analyze plagiarism policies in university institutions reach similar results. The study conducted by Foltýnek and Glendinning (2015) in 27 European Union member states on existing policies on academic integrity in higher education institutions shows differences between countries in anti-plagiarism policies and in the sanctions applied to this type of practice. Specifically, in the case of Germany incorporating changes in regulations aimed at increasing the penalties for plagiarism behavior depending on its typology, creating the figure of the Ombudsman for Science (Ombudsmann für die Wis senschaft) and making widespread use of anti-plagiarism software (Ruipérez & García-Cabrero, 2016). In other European countries such as Spain, there are no specific studies on how plagiarism policies are being developed in universities, although it is worth mentioning the work of Sureda-Negre et al. (2016) on the regulation of assessment fraud in Spanish universities. In this respect, these authors point out that, although the rules, regulations and ethical codes address this issue, their treatment is very limited.

In view of the above, it should be noted that, although legal initiatives are relevant to lay the foundations for a culture of academic integrity, policies in this regard should emphasis the value of what academic integrity means. It should be noted, as indicated by Morales-Montes and Lujano-Vilchis (2021), that legal initiatives to combat plagiarism cannot be the only strategy to confront dishonest behavior; however, they seem to be the basis for the design of actions and resources to eradicate it; therefore, it is necessary to know and evaluate the resources that university institutions make available to the university community to combat dishonest acts (Ramos-Quispe et al., 2019).

In order to understand how academic integrity policies are dealt with in the university context, it is useful to know first of all the general and formal structure that governs university governance, as well as the regulations available on this matter. In the specific case of the Spanish University System, it should be pointed out, first, that is made up of 85 universities (50 public and 35 private). These universities offer official degrees, which are structured in three cycles: Bachelor's, Master's and Ph.D. degree, are structured in collegiate bodies (Social Council, Governing Council, University Senate, School and Faculty Boards and Department Councils) and in single-person bodies (Rector, Vice-rectors, General Secretary, Manager, Deans of Faculties, Directors of Schools, Departments and University Research Institutes) and are organized into faculties and schools, departments and university research institutes, being the faculties and schools responsible for the organization

of teaching and academic, administrative and management processes leading to the obtaining of university degrees (Ley Orgánica 6/2001, de 21 de diciembre, de universidades).

The European Higher Education Area has forced a process of adaptation of Spanish university studies, but, in the words of Casado et al. (2018), in this process «the training of the responsible citizen» (p. 66) has been neglected. Thus, numerous studies call for the need to incorporate the values that make up academic integrity (honesty, trust, responsibility, justice, respect and courage) in the curricula as well as in the different university regulations, so that students are educated in a comprehensive manner and so that teachers focus their attention on the teaching and assessment practices they carry out (Stoesz & Eaton, 2020). As Morales-Montes and Lujano-Vilchis (2021) point out, «a culture of academic integrity maintains the social legitimacy of the university» (p. 4).

Understanding academic integrity policies requires knowledge not only of the general and formal structure that controls the governance of universities, but also of the available regulations that they develop in this regard, a vital element to significantly reduce unethical behavior in the organization (Stoesz & Eaton, 2020). In this regard, in the case of Spanish universities, it is worth highlighting, firstly, the Real Decreto Legislativo 1/1996, 12th April, by which the consolidated text is approved by Ley de Propiedad Intelectual, which states in Article 32 that:

It is lawful to include in one's own work fragments of other works of a written, audio or audio-visual nature, as well as isolated works of a plastic or figurative photographic nature, as long as they have already been published and their inclusion is made by way of quotation or for their analysis, commentary or critical judgement. Such use may only be made for teaching or research purposes, to the extent justified by the purpose of such incorporation and indicating the source and the name of the author of the work used.

Likewise, the Real Decreto 1791/2010, 30th December, which approves the University Student Statue, recognises that university activities must be governed by honesty, truthfulness, rigor, justice, efficiency, respect and responsibility (article 63. 1) and establishes, as one of the duties of university students, to refrain from using or cooperating in fraudulent procedures in assessment tests, in the work carried out or in official university documents (art. 13).

It is also necessary to refer to the recently approved Ley 3/2022, 24th February, of university coexistence, whose article 11.g establishes as a very serious offence:

Plagiarism totally or partially a work, or committing academic fraud in the preparation of the Bachelor´s and Master's Degree final Projects or the Ph.D. Thesis. Academic fraud shall be understood to be any premeditated behavior aimed at falsifying the results of an exam or work, whether one's own or someone else's, taken as a requirement for passing a subject or accrediting academic performance.

In view of the above, this article presents a review of academic integrity policies in Spanish universities. Furthermore, given that one of the main university manifestations of academic integrity is centered on the commission of plagiarism, whether and how this specific type of academic misconduct is addressed within the academic integrity policy is also examined. It should be borne in mind that plagiarism, as a multifaceted phenomenon, depends on the regulatory framework of the university institutions themselves.

This article poses the following research questions: what kind of documents are available in Spanish universities to deal with plagiarism?; what are the main characteristics of these documents?; and what is the specific content of these documents?

The objectives pursued in this article are, on the one hand, to review the academic integrity policies aimed at avoiding plagiarism in Spanish universities, through the documents available in them and, on the other hand, to describe the main characteristics of these documents both in terms of their format and their content.

METHOD

To achieve the purpose of the research, it was decided to carry out a descriptive study, of documentary review, based on the analysis of the documents available in Spanish public universities, to identify their initiatives around university academic integrity and plagiarism, in line with other studies such as the one carried out by Morales-Montes and Lujano-Vilchis (2021). The study involves a quantitative approach, based on the quantification of the documents analyzed and their typology, and a qualitative approach, focused on the analysis of content from categories and subcategories.

Selection of participating institutions

To determine the participating institutions to study, a search was first carried out by accessing the Register of Universities, Centers and Degrees of the Department of Universities and the existing universities were verified on the website. Of the 50 public universities in Spain, we worked with a total of 47, as they met the selection criteria previously set in the study and which are specified in the following three:

— To be a Spanish university financed with public funds, legally recognized as a university and regulated by the legislation in force in the Spanish state in relation to university studies. As research institutions, we assume that they are more aware of the ethics of academic work. Also, as they are

public institutions, their information is more accessible than that of private universities.
- To offer a degree in each of the five branches of knowledge of Law and Social Sciences, Arts and Humanities, Health Sciences, Sciences and Engineering and Architecture.
- To offer at least one double degree in each of the five aforementioned branches of knowledge.
- To carry out the search, the Ministry of Universities' Register of Universities, Centers and Degrees was used and the existing universities were checked on the website. The final result was the identification of 47 universities that met the previously established requirements.

The sample of documents consists of 275 documents available on the websites of the 47 universities, relating to rules, regulations, codes, etc., which include references to academic integrity, and specifically to academic plagiarism. The search included those that affect universities in general, the different university services, faculties and degrees (both undergraduate and postgraduate).

Instrument

For the collection of data, a computerized registration form was designed to collect the information found on the websites of the universities under study. On the project website (integridadacademica.com), a digital tool EVALREDPLAXIO was created for internal access by the working team, in which three forms were introduced to search for information on university services, faculties and degrees. The fields on the form were as follows:

a) Information on the university, university service, faculty or university center, university degree, body on which it depends and branch of knowledge.
b) Type of the document.
c) Format of the document.
d) Name of the document.
e) Location of the document (web link including http or https).
f) Type of measure to which the document refers (coercive/punitive, plagiarism detection, educational or informative).
g) Target group.

Information collection procedure

The information was collected by the research team, distributing among its members the search for and analysis of the information from the 47 universities under study.

The following keywords were used to search for information: plagiarism, academic plagiarism, ethics, academic honesty, academic dishonesty, academic integrity, intellectual property, dishonest practices, quotation and authorship.

Once the universities had been identified and distributed among the members of the research team, a common work protocol was established to be developed in different phases:

- The first phase involved accessing each university's website to identify its structure, to be carried out from April 1 to May 30 2021.
- The second phase involved accessing the different governing bodies (vice-rectorships, collegiate and statutory bodies, representative bodies, etc.) of each university and locating the different available documents. It was carried out from June 1 to July 31 2021.
- A third phase involved, initially, the downloading, reading and analysis of all the documents located, a total of 275, on regulations, legislation, guides, informative courses, training courses, PowerPoint, videos, guidelines, seminars, tutorials, anti-plagiarism tools, conferences, congresses, manuals, etc., and secondly, the reading and detailed analysis of the information contained in each document. It was carried out during the month of September 2021.
- Finally, the documents located, they were grouped into three basic categories: regulations or legislation on plagiarism; ethical codes; codes of good practice.

Analysis of the information

The data collected through the Computerized Registration Form used were subjected to quantitative and qualitative treatment for analysis. The quantitative analysis focused on the description, in terms of frequencies and percentages, of the data referring to the location (university, faculty, branch of knowledge and body), type and format of the documents, type of plagiarism avoidance measures to which they refer and recipients. For this analysis, the statistical program IBM SPSS Statistics version 27.0 was used.

The qualitative analysis focused on the content of the localized documents, taking into account several categories of analysis that emerged depending on the type of document: regulations and code of ethics and code of good practices. In turn, the following subcategories were established: intellectual property regulations, evaluation standards, regulations for the preparation, tutoring and evaluation of the TFG / TFM, doctoral regulations, external internship regulations, disciplinary regime regulations, academic dedication plans, publications regulations, university

statutes, strategic plans and specific regulations on academic fraud. The qualitative analysis was carried out using the MAXQDA program.

RESULTS

The results obtained are presented below and organized according to the type of analysis carried out; firstly, the results referring to the quantitative descriptive analysis and, secondly, the qualitative analysis.

Quantitative results

Information was collected on the university where the documents were located, as well as the faculty or center, the branch of knowledge of the degree in which they were located and the body to which they belong. Thus, it should be noted that most of the documents were located at the University of Huelva (7.64%), followed by the University of Seville and the University of A Coruña (5.82%), University of Santiago de Compostela and University of Murcia (4.73%), Rovira i Virgili University (4.36%), Rey Juan Carlos University and University of Malaga (3.64%). In the rest of the universities studied, the total number of documents located was below ten.

The total documents were located in a total of 91 different centers, mainly in the Faculties of Education (17.58%) and Humanities (10.99%). In the rest of the centers (71.43%), the number of documents is below ten.

Most of the documents correspond to university degrees belonging to the branch of Law and Social Sciences (34.07%), followed by the branch of Arts and Humanities (21.98%), Engineering and Architecture (20.88%), Sciences (18.68%) and Health Sciences (4.39%).

Most of the documents are located in the Vice-Rectors' Offices for Science Policy, Innovation and Transfer (30.00%), followed by the General Secretariat (22.94%), Vice-Rectors' Offices for Academic Organization, Teaching and Faculty (20.59%), Governing Council (11.18%), Vice-Rectors' Office for Students (8.82%), Vice-Rectors' Office for Strategy, Digital Education and Technologies (2. 94%), Vice-Rector's Office for Infrastructure (1.18%), Vice-Rector's Office for Communication and Institutional Relations (1.18%), University Senate (0.59%) and Vice-Rector's Office for Culture, Sport and University Extension (0.59%). It should be noted that many documents could not be assigned to a specific body, in 61.82% of cases.

Table 1 shows the main characteristics of the documents analyzed.

Table 1
Records relating to institutional policies

Types of documents	Percentage	Types of measures	Percentage	People	Percentage
Regulations or legislation	79.64%	Informative	71.63%	All members	52%
Code of ethics	20%	Coercive or punitive	16.73%	Undergraduated students	25.45%
Code of good practice	0.36%	Formative	10.91%	Master´s students	9.45%
		Plagiarism detection	0.73%	Ph.D. students	8.36%
				Research staff	3.64%
				Teaching staff	1.10%

As show in table 1, out of total documents, 219 (79.64%) were coded as regulations or legislation on plagiarism (most of these documents are text documents, others are in html format, video or Power point or Prezi presentations); 55 documents (20%) were categorized as code of ethics and only one document as a code of good practice (0.36%). In the specific case of the code of ethics, the format of the documents is mostly text-based. Finally, as far as the code of good practice is concerned, the only one located is also in text format.

As for the types of measures addressed, the most of documents are coded as regulations refer to coercive or punitive measures and to training measures; the remaining cases refer to the detection of plagiarism. The documents coded as code of ethics are of an informative and formative nature; the code of good practice is of an informative nature.

Finally, the people to whom the documents are addressed are, for the most part, all members of the university community in this order: at undergraduate students, at Master's students, at Ph.D. students, for research staff and for teaching staff. The documents codified as Ethical codes are mainly intended, like the regulations, for the entire university community and for undergraduate students. In the case of the localization Code of Good Practice, research staff are the main target group.

Results of document content analysis

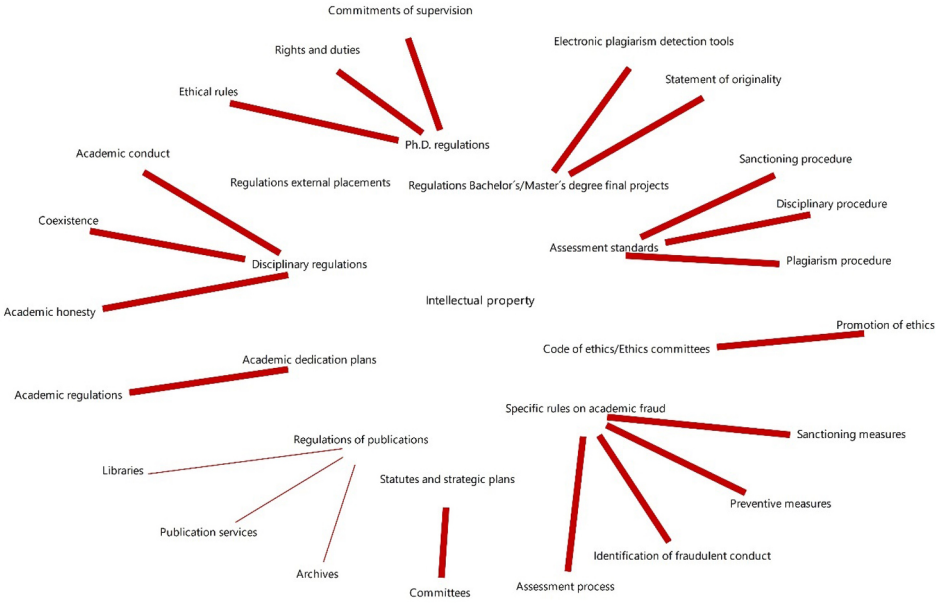
In general, the content of the documents found is linked to the Ley de Propiedad Intelectual (Real Decreto Legislativo 1/1996), and as reflected in figure 1, in order to expand on or specify the information contained in each university's own regulations.

Thus, in general, those universities that draw up their own regulations on intellectual property establish that the authorship of inventions in academic and research activities corresponds to the students and their lecturers, although there are more restrictive universities that attribute this property to themselves.

There are also documents that delve deeper into the characteristics of the university teaching-learning process, determining who is responsible for the authorship and exploitation of the results derived from assessable academic activities, as in the case of academic work, Bachelor's and Master's Degree Final Projects and Ph.D. Theses.

Figure 1

Categories and subcategories of information



Those documents that refer to assessment standards establish the way to proceed when academic plagiarism is detected. In most universities, when this behavior is detected, they opt for assigning a numerical mark of zero, either in the specific assessment test or in the final mark for the subject, in addition to applying the corresponding disciplinary or sanctioning procedure, in accordance with the legislation in force at each university. With regard to Bachelor's and Master's Degree Final Projects, in some cases, in addition to a failing grade, a change of subject and director is ruled for.

Other documents refer to the regulations for the preparation, tutoring and assessment of Bachelor´s /Master's Degree final Projects and, specifically, once again the regulations establish that these projects are protected by the Ley de Propiedad Intelectual (Real Decreto Legislativo 1/1996) and focus, above all, on how to proceed when academic plagiarism is detected, in line with the aforementioned assessment regulations. With regard to plagiarism, many university institutions require a declaration in which the originality of the work is assumed, understood as the fact that no sources were used without citing them properly and, furthermore, that if plagiarism is detected before the public defender, the student will lose the right to the defender. At the time of applying for the defender, university regulations focus on ensuring that the legal obligations regarding intellectual and industrial property and the originality required of a Bachelor's /Master's Degree Final Project have been complied with and, to this end, in most cases, electronic plagiarism detection tools are used, both during the defender application period and during the performance of the panel assessing the work.

The Ph.D. regulations are also present in the regulatory documents located and analyzed; in this sense, with respect to Ph.D. studies, most of the documents analyzed follow the same line of action as in the other regulations (on intellectual property, evaluation, ...), establishing commitments of supervision that guarantee a good academic relationship between Ph.D. students and the university, as well as the main rights and duties of the persons involved, including possible academic property rights.). At the same time, special emphasis is placed in several of these documents on the duty to avoid any kind of plagiarism and on compliance with ethical rules by all those involved, making available to them electronic anti-plagiarism tools which, in the event of detecting a high number of coincidences, will lead to the non-authorization of the reading of the thesis.

Another type of regulatory documents found are those referring to the regulations governing external placements, which refer to intellectual and industrial property rights as a right of students on placements. Few universities address this issue in their external placement regulations, and where reference is made to it, the intellectual and industrial property of students' work is also guaranteed as a student right.

Also included are the disciplinary regulations, academic conduct or rules of coexistence, which make direct reference to academic honesty based on mutual respect, courtesy, recognition of people's dignity, insisting on not carrying out fraudulent actions such as signing the attendance of classmates who do not attend class, plagiarism in the development of work, disseminating teaching materials provided by the teaching staff that have intellectual property. Other documents of an academic nature were also found, in which the universities include aspects related to intellectual property, academic fraud, the rights and duties of students in relation to this issue, and plagiarism in assessment tests. In general, these regulations correspond to the academic dedication plans of teaching and research staff, general academic regulations, academic regulations for degree programs or regulations with special indications for students.

Likewise, documents were found that refer to Regulations on Publications; in this case, and although few universities contemplate it, in some libraries and publication services or university archives, through their regulations, they refer to issues related to academic integrity, focusing on the intellectual property of the documents they work with (books, journals, publishing products, etc.).

Some university statutes and strategic plans also refer to issues related to ensuring the intellectual property of students' original work, as well as to committees in charge of ensuring originality and respect for the intellectual property of research carried out in the university context. Some cases refer to the avoidance of the use of fraudulent procedures in assessment tests, and in official university papers and documents, encouraging ethically correct behavior in all academic activity.

The universities also draw up specific rules on academic fraud to discourage dishonest conduct. More specifically, the universities analyzed refer, above all, to the student assessment process, establishing the types of conduct that will be identified as academic fraud. Basically, the following are considered: using unauthorized information tracking media, using unauthorized or authorized electronic media for unauthorized purposes, impersonating identities when taking tests, copying or allowing oneself to be copied, manipulating certificates or minutes, etc.

Reference is also made to what is considered as plagiarism in the academic work submitted by students, i.e.: including fragments as if they were their own without citing the original authorship, copying from the Internet, composing a work based on copied fragments without making reference to their authorship, handing in work from other courses or from other classmates, commissioning one's own work to another person/s and preventive measures for fraud or plagiarism and sanctioning measures are introduced in the event that plagiarism is detected, with consequences in the grade or the possible opening of disciplinary proceedings.

Finally, universities also have numerous codes of ethics provided by the Ethics Committees that operate in them, reflecting concern for ethical issues, authorship of work, honest conduct, etc. In the Code of ethics and Code of good practice of the universities analyzed, there are clear references to the promotion of ethics in the institutions, identifying what conduct is considered to be fraudulent, the tools for detecting it, the measures aimed at preventing academic fraud, as well as the guidelines for both preventive and punitive action, by means of the regulations to be applied in all cases of academic fraud.

DISCUSSION AND CONCLUSIONS

The aim of this study was none other than to show how academic integrity is contemplated in the documents available in different public universities in Spain. The main results obtained include, on the one hand, that the number of documents found referring to institutional policies on dishonest practices such as plagiarism in academic work reveals that the universities analyzed are concerned about this issue, This is especially true of those universities with the highest number of documents referring to academic integrity and, more specifically, plagiarism and that these documents are mainly located in vice-rectors' offices related to Science Policy, Innovation and Transfer. Similarly, it is noteworthy that most of them are located in faculties of Education and Humanities and correspond to degrees in the branch of Law and Social Sciences.

Due to their normative nature, most of these documents are of a textual nature, or in html format, and are linked to informative measures aimed at the university community in general. In general terms, it is worth noting that most of the documents located refer to applicable rules focused on informing, detailing ways of proceeding and even monitoring or sanctioning certain conducts, especially those referring to the student body, in line with studies such as Stoesz and Eaton (2020).

If the information in the documents that universities collect on their websites is analyzed more closely, it is observed that the majority of those located emphasize the responsibility of those who prepare their academic work regarding the use of good practices, so as not to have to assume negative consequences, but the co-responsibility of the management and governing bodies of the universities is also highlighted, which must facilitate a change in the culture of the organization that emphasizes values and ethical behavior in university life.

In general, it was noted that Spanish universities are working to transfer the principles and requirements of general policies, both national and European, to their own regulatory framework or institutional regulations. The data confirm that the universities analyzed, on the basis of the Ley de Propiedad Intelectual (Real Decreto Legislativo 1/1996), make more use of quotations, reviews and illustrations

for educational or scientific research purposes, highlighting the use that university teaching and research staff can make of certain fragments of works by other authors as part of their research function.

The important work of the Research Committees of Ethics are essential to ensure scientific and academic integrity, as is the role of the University Ombudsman in ensuring respect for individual rights and freedoms and university quality.

However, it is also necessary to point out the importance given to this issue in relation to undergraduate, Master's and Ph.D. students and their academic work that can be assessed (work carried out during their studies, research work, external internship reports, Bachelor´s and Master's Degree Final Projects, Ph.D. Theses), in which reference is made to intellectual property regulations and to the express authorization of the authorship of the fragments that are reproduced in whole or in part in such work.

Some works in this regard point to the need to standardized criteria on what constitutes plagiarism in textbooks and seminars, establishing deterrent measures such as prevention (Porto et al., 2019), teaching students to exploit information in an appropriate manner (Chankova, 2017), or helping them to «acquire the awareness that in this field there are also specific moral regulations that must be followed» (Miranda, 2013, p. 723). Prevention is also pointed out by some authors (Caldevilla, 2010). In this sense, there is a lack of actions that establish gradations of plagiarism and differentiated sanctions depending on the number of plagiarized texts, as pointed out by Glendinning (2013) and Ruipérez and García-Cabrero (2016). Educational organizations, as pointed out by Casado et al. (2018), Díaz-Arce (2016) and Egaña (2012), must establish effective policies for the prevention of this problem, hence the need to adopt measures in this regard in the context of the Spanish university system.

In short, the main conclusion that can be drawn from this study is that, considering the findings, the measures to be adopted by teaching staff, students and those responsible for the academic management of the centers, faculties, services, vice-rectorates and universities coincide in the need to carry out preventive, informative and punitive actions to ensure that dishonest academic conduct and lack of ethics cease to be common practice in the university context. These actions must form part of an institutional framework that regulates them.

Among the main limitations of the study, it should be pointed out that the possible differences between the different universities studied in terms of their size, specialization, the degrees they offer and also their age have not been considered, aspects that may be shaping a different approach to the problem of academic integrity in the institution from the point of view of the policies developed. In line with this limitation, it is also considered interesting to carry out a study in the immediate future to extend, from a geographical point of view, the research to

countries in the immediate vicinity or to those with which Spanish universities have traditionally maintained close contacts derived, among other things, from the use of a common language. It would also be of interest to study the role of universities in the integral formation of students and their commitment to the transmission of ethical values.

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Psychometric properties of the abbreviated Professional Educational Climate questionnaire (CPE-A)

Propiedades psicométricas del cuestionario abreviado Clima Profesional Educativo (CPE-A)

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ABSTRACT

The aim of this study was to assess the professional teaching climate in secondary schools in Asturias by designing a questionnaire with 55 items to assess the dimensions of the work climate and 25 items to assess job satisfaction and teacher effectiveness. The target population was 4,581 teachers from secondary schools and CPEBs in Asturias. 2,000 teachers were selected using a stratified random procedure without item replacement, with a sampling error rate of 1.7% at 95% confidence and a confidence level of 0.95. A panel of experts comprising researchers from different universities and secondary school teachers participated in its construction. In addition, the «expert competence coefficient» or «K coefficient» procedure was used to establish six scales: teacher-student relationship, teacher-peer relationship, teacher-superior relationship, new proposals in education, degree of effectiveness and degree of satisfaction. The results obtained indicate that the questionnaire is valid and reliable for measuring teacher dimensions in the field of education; it gives value to the degree of teacher satisfaction in developing effective academic management. The results are discussed in terms of their contribution to the generation of sustainable, positive and supportive work environments to improve the teaching climate, which is expected to have a positive impact on the quality of teaching and learning processes. This article confirms the relevance of work climate in educational organisations and presents an effective tool for its assessment at regional, national and international levels.

Keywords: organizational climate, job satisfaction, teaching effectiveness, evaluation questionnaire, work climate dimensions

RESUMEN

El artículo tiene como objetivo analizar el clima laboral docente en los centros públicos que imparten educación secundaria obligatoria en la Comunidad Autónoma del Principado de Asturias con la intención de establecer relaciones con la satisfacción laboral y la eficacia docente. El objetivo de este estudio fue evaluar el clima profesional docente en los institutos de educación secundaria de Asturias. A este respecto se diseñó un cuestionario con 55 ítems para evaluar las dimensiones del clima laboral y 25 ítems para evaluar la satisfacción y eficacia laboral del profesorado. La población objeto de estudio fueron los 4581 docentes de IES y CPEB de Asturias. Se seleccionó una muestra de 2000 docentes mediante un procedimiento aleatorio estratificado sin reposición de elementos, con una tasa de error muestral del 1.7% al 95% de confianza y un nivel de confianza de 0.95. En su construcción participó un panel de expertos compuesto por investigadores de diferentes universidades y profesorado de secundaria. Además, se utilizó el procedimiento del «coeficiente de competencia experta» o «coeficiente K» para establecer seis escalas: relación profesor-alumno, relación profesor-compañeros, relación profesor-superiores, nuevas propuestas en educación, grado de eficacia y grado de satisfacción. Los resultados obtenidos indican que el cuestionario es válido y confiable para medir las dimensiones del profesorado en el ámbito educativo; concede valor al grado de satisfacción docente cuando se quiere desarrollar una gestión académica eficaz.

Se discuten los resultados en cuanto a su contribución a la generación de ambientes laborales sostenibles, positivos y de apoyo para mejorar el clima del profesorado lo que se espera tenga un impacto positivo en la calidad de los procesos de enseñanza aprendizaje. Este artículo ratifica la relevancia del clima laboral en las organizaciones educativas y se presenta como una herramienta eficaz su evaluación en los ámbitos autonómico, nacional e internacional.

Palabras clave: clima organizativo, satisfacción en el trabajo, eficacia docente, cuestionario de evaluación, dimensiones del clima laboral

INTRODUCTION

The work environment can be seen as a complex ecosystem, given that it involves and interacts with multiple elements and factors that influence job satisfaction and employee performance due to the actors involved, the dynamic nature of the interactions, the interdependencies that are generated and the adaptability mechanisms that are set in motion (Bravo et al., 2023; García-Herrero et al., 2024; Robbins, & Judge, 2019).

In this scenario, a positive work environment can be created that increases the commitment of those involved with their roles and organisations. In the case of teachers, the professional climate is fundamental for their emotional well-being and for the development of their teaching activity (Eva et al., 2019; García-Montalvo et al., 2021; Newman et al., 2017; Quinteros-Durand et al. 2023). These three components are closely interconnected and influence each other, hence when teachers are highly qualified and motivated, their impact on professional climate can be very positive, and a favourable work environment translates into improved job satisfaction and teacher performance (Halbesleben, & Buckley, 2004). In turn, committed teachers who perform their duties in a positive professional climate are more likely to develop innovative, collaborative and student-centred teaching practices. Therefore, it is important for educational institutions to encourage and promote the holistic development of teachers, the establishment of a positive professional climate and the continuous improvement of teaching activity to ensure quality education (García-Herrero, et al., 2024; Oliveira et al., 2023).

Therefore, understanding the factors that influence the professional climate of teachers is essential for improving the quality of education and teachers' job satisfaction. In this area, the quality of the work environment can have a significant impact on teachers' motivation and job satisfaction, which in turn can affect the quality of educational processes with students (Hakanen et al., 2006; Quinteros-Durand et al., 2023; Sara-Agrati, 2021).

The Job Characteristics Model (JCM) is a theoretical framework used in occupational psychology and human resource management to describe and analyse

the inherent characteristics of a job (Coelho, & Augusto, 2010; Quinteros-Durand, et al. 2023). These characteristics influence employee motivation, job satisfaction and performance, i.e. it suggests that enriched or complex jobs lead to higher job satisfaction, motivation and performance. The model postulates five core characteristics: skill variety, task identity and meaning, autonomy, and feedback, which will influence three critical psychological states: experienced meaningfulness of work, responsibility associated with work outcomes, and knowledge of the real impacts of work activities, educational for us.

These psychological states have effects on work outcomes in the case of internal work motivation, satisfaction with growth, overall job satisfaction, professional efficacy and absenteeism, proposing three moderators of the relationships between task characteristics, psychological states and work outcomes: need for growth, strength, knowledge, skills, and satisfaction in context (García- Montalvo, et al., 2021; Mori, et al., 2021; Quinteros-Durand, et al., 2023). The importance of task identity, autonomy and feedback will also be emphasised to foster teachers' motivation, learning and skill development (Molina-Vicuña, 2023; Mori, et al., 2021). Therefore, the JCM provides a useful framework for understanding how job design can influence teacher motivation and performance, arguing that the professional climate of educational organisations is related to teachers' job satisfaction (Cortina et al., 2018; Fernández-Ballesteros et al., 2019), their motivation and commitment (Sánchez et al., 2020), the quality of their teaching (García-Santos, García-Santos, & Romero-Rodríguez, 2017; García-Herrero et al., 2024) and their emotional well-being (Chughtai, 2018; García-Montalvo et al., 2021; Oliveira et al., 2023).

There are several tools for assessing the work climate of teachers in secondary schools and public elementary schools. Among them, the University of Valencia's Work Climate Questionnaire (Gil-Monte, 2002), the Organisational Climate Evaluation Questionnaire (González-Romá et al., 2002), the Social Climate in the Classroom Questionnaire (Mérida-Lopez et al., 2017), the Work Climate Scale in Educational Centres (García-Santos et al., 2019), the scale to develop and identify attitudes, as a key element to boost the social dimension of Higher Education (Rodríguez-Martín, & Álvarez-Arregui, 2013). These tools have been designed to assess job satisfaction, motivation, commitment and emotional well-being of teachers in different educational contexts. However, it is important to bear in mind that many of these tools were developed pre-pandemic, so it is necessary to adapt them to the new post-pandemic realities (Basualdo, 2022; Consejo de Transparencia y Buen Gobierno, 2023) and to evaluate the work climate taking into account the situational conditioning factors that are emerging (Vidal Acosta, 2021) to take into account all those dimensions and variables that should be considered

in terms of motivational and latent profiles (Del Valle, et al., 2020) associated with self-satisfaction and academic effectiveness in organisations.

It is now assumed that satisfaction with job resources encompasses individual, leadership, group and organisational levels, which will lead to improvements in: (1) task-related resources (performance feedback), (2) implementation of new job resources (peer support) and (3) improvement of social resources in the workplace (supervisory coaching) (Molina-Vicuña, 2023; Spontón, et al., 2019). Workplace resources will therefore include physical, psychological, social and organisational aspects of work, such as social support and job control. Three main objectives can be identified in this regard: (1) to help achieve work goals, i.e. satisfaction; (2) to reduce demands and costs, i.e. effectiveness; and (3) to stimulate personal development, learning and growth within a competent teaching work climate (Quinteros-Durand et al., 2023; Schaufeli, & Bakker, 2004).

Based on these arguments, it should be noted that the analysis of teacher work climate is relevant when it comes to understanding job satisfaction and its impact on the quality of education (Quinteros-Durand, et al., 2023). Dimensions such as organisational culture, workload and compensation need to be addressed to identify the factors that contribute to a positive or negative work environment. Satisfaction with job resources such as administrative support, training and professional development are considered to play an important role in teachers' life satisfaction (García-Herrero, et al., 2024; Nanjundeswaraswamy, 2021). The aim is to gain a better understanding of satisfaction with job resources, as this relationship is intended to enable a better understanding of the dynamics of the determinants of subjective well-being in the compulsory education teaching population. These factors are expected to provide knowledge that can help educational institutions to create a more positive and supportive work environment for their teaching staff. In other words, a healthier and more productive work ecosystem is created for professionals, which in turn is expected to have a positive impact on improving the quality of education offered to students and, therefore, to the educational community. This leads to the following specific objectives:

- Identify the dimensions of the professional teaching climate through institutional behaviours.
- To determine the significant differences in the indicators of the professional teaching climate according to the variables of the institution.

The identification of teacher work climate indicators and the significant differences, according to prioritised institutional variables, can help to guide effective strategies to improve the work climate and job satisfaction of teachers, which is intended to improve the quality of education offered to students.

METHOD

This research used a non-experimental, descriptive-transversal-quantitative design with stratified random sampling, in a community population, implementing the correlational approach using the structural equation method (SEM) and invariance analysis to achieve the proposed objectives.

Participants

The target population was the 4581 teachers of IES and CPEB in Asturias. A sample of 2000 teachers was selected using stratified random sampling, without replacement of elements, with a sampling error rate of 1.7% at 95% confidence. Of the 2000 teachers selected, valid data were obtained for 1906 teachers working in Asturias during the 2017-2018 academic year. This sample offers a typical socio-occupational profile characterised by being female (64%), from the Western area of the Principality of Asturias (20%), working in a school of line 4 or higher (38%), with experience of between 24 and 30 years (28%), having been at the same school for less than 7 years (61%), belonging to the Natural Sciences Department (17%) and teaching up to 4th ESO (43%). They are not heads of department or members of management teams (59%), have a university degree in general (83%) and are permanent career civil servants (71%).

Instrument

In order to assess the professional teaching climate in secondary schools in Asturias, we used the «Abbreviated Questionnaire of Professional Educational Climate (CPE-A)» designed by Álvarez-Arregui et al. (2023), with the aim of assessing the professional teaching climate in educational centres that teach pre-school, primary, secondary and vocational education and training. Carrasco-Ortiz (2005), Collell, & Escudé (2006) Esteve (2009), Jennings, & Greenberg (2009), Kuperminc, Leadbeater, & Blatt (2001), Mantilla, & Fernández-Díaz (2015) and Westling (2002). On the other hand, it is made up of a panel of experts composed of four researchers from different universities and four secondary school teachers, specialised professionals who independently evaluated the items of the instrument; this made it possible to refine its formulation and decide its inclusion or exclusion in the final questionnaire. Based on the «expert competence coefficient» or «K coefficient» procedure, the experts' degree of knowledge (Kn: 0.8) and their degree of confidence (Sn: 0.88) in their evaluations and opinions were established, leading to the establishment of six scales: teacher-student relationship, teacher-peer

relationship, teacher-superiors' relationship, new proposals in education, degree of effectiveness and degree of satisfaction. Likewise, the coherence and internal consistency of the tool was ensured by means of direct questions, to create a valid and reliable questionnaire to assess the professional teaching climate in schools.

The questionnaire was finally structured into 48 items to assess the professional climate, 25 items to assess satisfaction and 25 items to assess effectiveness, in order to provide a picture of the professional teaching climate in schools (see Annex I). This instrument was applied to a sample of teachers classified by socio-demographic characteristics, identified by gender, geographical location, size of the educational institution, years of teaching experience, years of experience in the same educational institution, department or area of specialisation, educational levels at which they teach, current position within the educational institution, level of qualification and administrative status. The use of the questionnaire and the composition of the sample aimed to collect accurate and relevant data to help improve working conditions and the quality of education in schools in this autonomous community.

Data analysis

The study was carried out with the statistical programmes IBM SPSS Statistics for Windows, version 27 (IBM Corp., 2019) and JASP, version 0.18.1.0 (JASP Team, 2023), by means of which the data obtained by CPE-A were analysed. The response to the first objective leads to descriptive analyses of the socio-demographic data and the questionnaire items, as well as preliminary analyses to verify the assumptions of normality of the data, for which the Shapiro-Wilk test was applied, which will indicate whether the data follow a normal distribution ($p < 0.001$). In addition, confirmatory factor analysis with the DWLS estimation method has been used to confirm the original test structure, while several indices were used to assess the overall goodness-of-fit of the model, such as the statistically non-significant $\chi 2$ (sensitive to sample size), the normalised chi-square values ($\chi 2/gl$) <5 (Tabachnick, & Fidell, 2007), comparative fit index (CFI) >0.90 (Schumacker, & Lomax, 2010), standardised root mean square residual (SRMR) ≤ 0.05 and root mean square error of approximation (RMSEA) ≤ 0.08 (Diamantopoulos, & Siguaw, 2000). The factor solution achieved was established by local posterior fit indicators and cut-off points, with statistical significance and standardised regression weights (λ) ≥.40 (Tabachnick, & Fidell, 2007). However, values above.70 were indicative of an acceptable solution (Fornell, & Larcker, 1981), while convergent validity was established by estimating the average variance extracted (AVE), which is proposed to be equal to or greater than.50 (Hair et al., 1998). In addition, the ratio of heterotrait-monotrait correlations was calculated to test the discriminant validity between subscales, accepting good discrimination for values <0.85, although

values <0.90 have also been accepted (Henseler, Ringle, & Sarstedt, 2015). The reliability of each scale was assessed using Cronbach's α coefficient and McDonald's ω coefficient.

In order to respond to the second objective of the study of establishing the presence of significant differences in the indicators of the professional teaching climate, according to the variables of the institution, the invariance of the test was determined for variables such as gender, area, size of the school, teaching seniority, seniority of the school and administrative situation (See Annex 2).

RESULTS

Identify the dimensions of the professional teaching climate through institutional behaviours

Descriptive analysis

The results of the CPE-A on the various dimensions of job climate and job satisfaction, carried out on 1882 teachers, report that on average teachers report a moderate level of job satisfaction and job effectiveness. The job climate scales in general and the specific factors in particular obtained moderate values, with the standard deviation being relatively high, suggesting significant variability in teachers' responses. The standard deviation, minimum and maximum as a range suggest that the items of the instrument have a high variability. The values of the Shapiro-Wilk test indicate a non-normal distribution (see table 1).

Confirmatory Factor Analysis

The results (see table 2) provide the model fit. The Chi-square (666) = 1984.957, p<.001, indicates that there is a significant difference between the theoretical model and the observed data, i.e. the model does not fit the data well and is assumed to be affected by the sample size. This problem leads to replacing it with the standardised Chi-square, X2/gl = 2.98. Other indices of model fit were obtained, including the CFI=.991 and the TLI=.990; in addition, complementary indices of model fit were obtained, such as the RMSEA=.034 CI 90% [.032.036], which gives a good model fit, and the SRMR=.044, which also indicates an adequate model fit.

Table 1

Descriptive statistics of the FPC-A scale

Descriptive Statistics									
	Scale Sat	**Scale Eficac**	**Scale Cli1**	**Scale Cli2**	**Scale Cli3**	**Scale Climate**	**Scale Eficac2**	**P eficaF1**	**P eficaF2**
Valid	1882	1882	1882	1882	1882	1882	1882	1882	1882
Lost	0	0	0	0	0	0	0	0	0
Media	55.800	48.932	26.090	55.823	56.408	138.321	16.875	12.579	10.178
Standard Deviation	9.425	9.811	4.364	9.389	9.716	19.423	4.691	3.429	2.214
Shapiro-Wilk	0.996	0.979	0.988	0.992	0.953	0.996	0.957	0.949	0.952
Shapiro-Wilk P-value	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001
Minimum	20.000	20.000	12.000	28.000	15.000	70.000	6.000	4.000	4.000
Maximum	85.000	85.000	35.000	80.000	70.000	185.000	30.000	20.000	15.000

Table 2
Comparative index, chi-square and RMSEA

Adjustment of the model			
Model	**X^2**	**Gl**	**p**
Baseline Model	148307.961	666	<.001
Model	1984.957	626	<.001
Index			
Comparative Index (CFI)			0.991
Tucker-Lewis Index (TLI)			0.990
Other Adjustment Measures			
Root mean square error of approximation (RMSEA)			0.034
Standardised root mean square residual (SRMR)			0.044
Expected cross validation index (ECVI)			1.137

Table 3 shows the Predictor Model of Social Climate in the professional educational setting, F (2, 1879) = 1015.511, p<.001, R^2 =.519. The Regression Coefficients are significant for the Satisfaction Scale, β=.644, *t=28*.618, *p*<.001, and for the Efficacy Scale, β=.103, *t=4*.588, *p*<.001; this shows a greater weight in the forecast for the Satisfaction Scale.

Table 4 refers, on the one hand, to the convergent validity results, with acceptable levels in the range of.454 to.596; on the other hand, the discriminant validity obtained by the HTMT index is below the 0.85 threshold, suggesting that the factors have good validity.

Table 3

Regression model obtained for the Social Climate Scale

Model Summary - Climate Scale						
Model	**R**	**R^2**	**Adjusted R^2 Adjusted**		**RMSE**	
H_1	0.721	0.519	0.519		13.472	
ANOVA						
Model		**Sum of Squares**	**gl**	**Quadratic Mean**	**F**	**p**
H_1	Regression	55.010	2	184308.805	1015.511	<.001
	Residual	1.328	1879	181.494		
	Total	0.906	1881			
Model		**Non-standardised**	**Standard Error**	**Standardised**	**t**	**p**
H_1	(Intercept)	55.010	1.875		29.346	<.001
	EscalaSat	1.328	0.046	0.644	28.618	<.001
	PreficaF2	0.906	0.198	0.103	4.588	<.001

Table 4

Table of coefficients of determination, Average Variance Extracted (AVE) and Heterotrait-Monotrait Ratio (HTMT)

Average Variance Extracted	
Factor	**AVE**
Factor 1	0.475
Factor 2	0.454
Factor 3	0.596
HTMT	
Factor 1	**Factor 2**

0.442	---
0.452	0.633

The reliability of the CPE-A was established using Cronbach's omega and alpha reliability coefficients (see Table 5). The results showed that the reliability coefficients for each factor are high, with values of.855/.865 for Factor 1,.925/.930 for Factor 2 and.946/.954 for Factor 3. Furthermore, the overall reliability coefficient of the questionnaire was.962 for omega and.954 for Cronbach's alpha, indicating high internal consistency in the questionnaire responses.

Table 5
Table of reliability coefficients

	Reliability	
	Coefficient ω	**Coefficient α**
Factor 1	0.855	0.865
Factor 2	0.925	0.930
Factor 3	0.946	0.954
Total	0.962	0.954

To determine the significant differences in the indicators of the professional teaching climate according to the variables of the institution.

The invariance results show that the scale is invariant to the groupings by gender, area, school size, teaching seniority, school seniority and administrative situation, i.e. it is stable for the different grouping variables with an impact on the professional educational climate (absolute increase in the CFI <.01).

DISCUSSION AND CONCLUSIONS

The results of the CPE-A on the various dimensions of work climate and job satisfaction among 1882 teachers report that the questionnaire is a valid instrument for assessing the different domains of teacher work climate, offering interest in its relationship to job satisfaction in the educational setting. The results assume that the quality of the atmosphere in the institutions is relevant because of the significant impact it has on the well-being, motivation and performance of teachers, which in turn is expected to be related to the educational outcomes of students (Alvarado-Calderón, 2022). Therefore, the deployment of periodic analyses of the teaching work climate becomes an intrinsic demand of the educational models that are deployed, given that the elements and interactions emerging in the processes of organisational communication, leadership, teamwork, work and personal balance,

professional development opportunities and performance recognition must be identified and evaluated.

The results to be obtained provide us with valuable information on the strengths and areas for improvement in the work environment, allowing educational institutions to implement strategies and policies aimed at improving the work climate and promoting teacher satisfaction and well-being (García-Montalvo, et al., 2024; Nanjundeswaraswamy, 2021). It is important that this regular identification and contextualisation of indicators is carried out on a regular basis to ensure that interventions are relevant and effective in improving the teacher work environment (Bravo-Sanzana et al., 2023). Therefore, institutional behaviours associated with teaching should be analysed to determine the significant differences in teaching climate indicators, according to singular situational variables, since from these it will be possible to guide effective strategies for improving the work climate given their impact on the job satisfaction of the professionals involved, which in turn leads to an improvement in the quality of the teaching and learning processes that are promoted (García-Herrero, et al., 2024).

Based on these arguments, a confirmatory factor analysis (CFA) was conducted using data from 1882 teachers, distributed according to gender, type of school, professional seniority and educational level to present the results of the study. The response to our main study objective found that institutional behaviours related to collaboration, communication, support and recognition were positively associated with teacher professional climate (Quinteros-Durand, et al., 2023; Sara-Agrati, 2021). Furthermore, even with the same structure and invariance of the questionnaire, it is possible to identify significant differences in the indicators of teacher professional climate according to gender, type of school, professional seniority and educational level, as already found by García-Herrero, et al. (2024) and Rodríguez-Marulanda, & Lechuga-Cardozo, (2019).

Overall, the analysis of the study objectives provides valuable information on the indicators of teacher professional climate and the institutional variables that may influence them. The results suggest that satisfaction and effectiveness are interrelated, and that organisational climate can have a significant impact on teachers' effectiveness and well-being (Quinteros-Durand, et al., 2023). These findings can be useful for managers and organisational leaders seeking to improve teacher performance and satisfaction, as they show how organisational climate can affect teachers and their performance (García- Montalvo, et al., 2021). They are also useful in providing relevant information on how organisational climate and other independent variables may affect teachers and their performance (García-Herrero, et al., 2024; Molina-Vicuña, 2023).

The results of the study also make it possible to explain how variables related to teachers' well-being and satisfaction can affect their performance and productivity,

which can help them to design interventions and policies to improve the well-being and effectiveness of their employees and teachers in education, as Quinteros-Durand et al. (2023) have already pointed out. The results, in this line, indicate that the Satisfaction Scale has a direct effect on the Climate Scale and suggest that as the Satisfaction Scale increases, the Climate Scale also increases, which implies improving the well-being and effectiveness of teachers through specific interventions on these variables (García-Montalvo et al., 2021; Sara-Agrati, 2021).

In conclusion, this study provides valuable information on the indicators of teacher professional climate and the institutional variables that may influence them. On the one hand, the results of the exploratory and confirmatory factor analysis indicate that institutional behaviours related to collaboration, communication, support and recognition are positively associated with the professional teaching climate, which is in line with those obtained by Rodríguez-Marulanda, & Lechuga-Cardozo (2019). Furthermore, by maintaining invariance in the structure of the questionnaire, it will be possible to establish and support previous research by Rodríguez-Marulanda, & Lechuga-Cardozo (2019) which has shown that teachers' professional seniority and educational level influence work climate. In short, these results offer relevant implications for intervention to improve the professional work climate in schools, with the aim not only of achieving greater satisfaction (improvement in mental health), but also greater efficiency in the development of the professional teaching activity to promote the performance and adaptation of this professional group. At the same time, it provides a better understanding of how organisational climate can affect teachers and their adaptation, which can help design interventions and policies to improve their well-being and effectiveness (Dimitrova et al., 2016; García-Montalvo et al., 2021; Sara-Agrati, 2021).

In addition to providing interesting results, it is important to be aware of the limitations of the study. It should be noted that this is a self-report questionnaire, where other factors that could influence the professional climate of teachers, such as educational policies or organisational culture, have not been considered, as Bravo-Sanzana et al. (2023) have already pointed out. However, the results make it possible to support the idea that work climate is an important factor in teacher well-being and performance (Smith et al., 2020) and leads to the need, beyond this study, to seek a better understanding of teacher professional climate and the implementation of effective policies and practices to improve teachers' work environment (Molina-Vicuña; 2023).

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ANNEXES

Annex 1. Questionnaire. Analysis of the professional climate

Section 1: Personal and professional data

Sex:
❒ Male ❒ Female

Region where the organisation is located:
❒ Asturias ❒ Cantabria ❒ León ❒ Burgos

Support for the centre:
❒ Public ❒ Subsidised ❒ Private

Age
❒ - 25 years ❒ 25 - 35 ❒ 36 - 45 ❒ 46 - 55 ❒ over 55

Years of professional seniority
❒ 0-3 ❒ 4-7 ❒ 8-15 ❒ 16-23 ❒ 24 a 30 ❒ over 31

Years of seniority in this organisation/institution
❒ 0-7 ❒ 8-23 ❒ more than 24

Current job title (please tick as appropriate)
❒ Direction ❒ Coordination ❒ Teacher

Size of the centre
❒ Small (< 12 units) ❒ Medium (13 - 20 units) ❒ Large (+ than 20 units)

Highest qualification held
❒ Degree ❒ Bachelor's degree ❒ Doctorate ❒ Basic Vocational Training
❒ Intermediate Vocational Training ❒ Higher Vocational Training

Administrative Status
❒ Permanent ❒ Interim ❒ Otros_____

For the second part, we present a series of questions about the working climate in your educational institution.

Answer the different items honestly by adjusting your degree of agreement (from 1 to 5) with the statements made.

There are no good or bad responses, but different ways of perceiving what happens in institutions, as all contexts and communities are unique.

1	*2*	*3*	*4*	*5*
Fully at odds	**Little agreement**	**Agreed.**	**Very much in agreement**	**Fully in agreement**

In general, with regard to the following issues related to the climate of my educational institution, I consider that…

1 Students allow me to teach my classes 1 2 3 4 5
2 Students participate in my classes 1 2 3 4 5
3 I maintain good relations with students. 1 2 3 4 5
4 Students come to me when they are having academic difficulties . . 1 2 3 4 5
5 There is a socio-affective environment in the classroom that is conducive to learning 1 2 3 4 5
6 Students entrust me with their personal affairs 1 2 3 4 5
7 Students respect the teacher's authority. 1 2 3 4 5
8 Behavioural rules are respected in my class 1 2 3 4 5
9 My relationship with students is close 1 2 3 4 5
10 When there are conflicts between students, I am asked to act as a mediator 12 3 4 5
11 Positive attitude of the teacher to teamwork 1 2 3 4 5
12 I feel valued by my peers. 1 2 3 4 5
13 Teachers have good relationships with each other 1 2 3 4 5
14 Teachers are involved in the improvement of the institution 1 2 3 4 5
15 The teacher is individualistic (everyone goes his or her own way) . 1 2 3 4 5
16 Communication between teachers is fluid 1 2 3 4 5
17 Teachers collaborate in the institution's events 1 2 3 4 5
18 A competitive atmosphere is perceived among teachers. 1 2 3 4 5
19 I maintain good relations with all my colleagues 1 2 3 4 5
20 The attitude of some colleagues makes it difficult for me to express my opinions 1 2 3 4 5
21 Teachers help each other when they have difficulties 1 2 3 4 5
22 I feel that I am negatively criticised by other teachers 1 2 3 4 5
23 Teachers are enthusiastic about the tasks they carry out 1 2 3 4 5

24 My professional proposals are taken into account by my colleagues 1 2 3 4 5
25 I have professional conflicts with other teachers 1 2 3 4 5
26 I am satisfied with the way my colleagues work 1 2 3 4 5
27 Colleagues comply with assigned schedules 1 2 3 4 5
28 My colleagues have a good opinion of me 1 2 3 4 5
29 Teachers work professionally 1 2 3 4 5
30 Teachers have a sense of belonging to the institution 1 2 3 4 5
31 Teachers share materials and resources with other colleagues. . . . 1 2 3 4 5
32 The management team addresses the needs of the teachers 1 2 3 4 5
33 The management team is effective in resolving teachers' problems 1 2 3 4 5
34 The management team takes into account different opinions in decision making 12 3 4 5
35 The management team supports in-service training for teachers. . 1 2 3 4 5
36 Working teams develop actions relevant to the training task 12 3 4 5
37 The management of institutional actions is effective 1 2 3 4 5
38 The management team improvises rather than plans 1 2 3 4 5
39 The management team distributes information effectively 1 2 3 4 5
40 The management team publicly recognises teaching merit. 1 2 3 4 5
41 The management team has a cordial relationship with its teachers 1 2 3 4 5
42 Relevant decisions are made between management and teachers 1 2 3 4 5
43 The management team takes account of majority decisions. 1 2 3 4 5
44 There are good relations between teachers and the management team 1 2 3 4 5
45 The pedagogical management of the institution is effective. 1 2 3 4 5
46 Current initial teacher training is inadequate 1 2 3 4 5
47 A system of in-service training would improve teacher professional performance. 1 2 3 4 5
48 Teachers' salaries should be complemented by professional evaluations 12 3 4 5

1	2	3	4	5
Fully at odds	***Little in agreement***	***Agreed.***	***Very in***	***Fully in agreement***
For the third part, please indicate *how satisfied you are.*				
1. The infrastructure of the institution				1 2 3 4 5
2. The educational model developed in the centre				1 2 3 4 5
3. Interdisciplinary projects between different subjects				1 2 3 4 5
4. The level of bureaucracy				1 2 3 4 5
5. The educational resources available to develop my work				1 2 3 4 5
6. The technology available to develop my work				1 2 3 4 5
7. Vocational training opportunities at the centre				1 2 3 4 5
8. The management team				1 2 3 4 5
9. Academic/curricular coordination				1 2 3 4 5
10. Coordination with my fellow teachers				1 2 3 4 5
11. The area of knowledge in which I work				1 2 3 4 5
12. Relations between members of the educational community				1 2 3 4 5
13. The premises available for teaching tasks				1 2 3 4 5
14. Diversity measures				1 2 3 4 5
15. The participation of families				1 2 3 4 5
16. External monitoring (inspection)				1 2 3 4 5
17. The guidance department				1 2 3 4 5
18. The freedom to organise my work				1 2 3 4 5
19. The hourly load				1 2 3 4 5
20. The number of additional hours				1 2 3 4 5
21. The wage-labour relationship				1 2 3 4 5
22. The social prestige of my profession				1 2 3 4 5
23. Professional development opportunities				1 2 3 4 5
24. The academic results of the student body				1 2 3 4 5
25. Social recognition of the institution				1 2 3 4 5
For the fourth part, indicate the DEGREE OF EFFECTIVENESS OF THE EDUCATION SYSTEM				
1. The infrastructure of the institution				1 2 3 4 5
2. The educational model developed in the centre				1 2 3 4 5

3. Interdisciplinary projects between different subjects	1 2 3 4 5
4. The level of bureaucracy	1 2 3 4 5
5. The educational resources available to develop my work	1 2 3 4 5
6. The technology available to develop my work	1 2 3 4 5
7. Professional teacher training opportunities at the school level	1 2 3 4 5
8. The management team	1 2 3 4 5
9. Academic/curricular coordination	1 2 3 4 5
10. Coordination with my fellow teachers	1 2 3 4 5
11. The area of knowledge in which I work	1 2 3 4 5
12. Relations between members of the educational community	1 2 3 4 5
13. The premises available for teaching tasks	1 2 3 4 5
14. Diversity measures	1 2 3 4 5
15. The participation of families	1 2 3 4 5
16. External monitoring (inspection)	1 2 3 4 5
17. The guidance department	1 2 3 4 5
18. The freedom to organise my work	1 2 3 4 5
19. The hourly load	1 2 3 4 5
20. The number of additional hours	1 2 3 4 5
21. The wage-labour relationship	1 2 3 4 5
22. The social prestige of my profession	1 2 3 4 5
23. Professional development opportunities	1 2 3 4 5
24. The academic results of the student body	1 2 3 4 5
25. Social recognition of the institution	1 2 3 4 5

Indicate at least THREE INITIATIVES that could IMPROVE the professional climate; and provide a brief explanation.

1ª.

2ª.

3ª.

We welcome your comments on the QUESTIONNAIRE in general and on SATISFACTION, EFFECTIVENESS and ENTREPRENEURIAL CULTURE. Your input will help us to improve.

Thank you for your cooperation

Annex 2
Invariance Table

Model		Chi-2	GL	p	CHI/GL	RMSEA	SRMR	IFC	I-CHI2	I-GL	p	I-RMSEA	I-SRMR	I-CFI
	All	**1984.957**	**626**		**3.171**	**0.034**	**0.044**	**0.991**	-			-	-	-
Configural	Sex	2372.605	1252	0.000	1.895	0.031	0.048	0.992						
Loads		2824.294	1286	0.000	2.196	0.036	0.052	0.990	451.689	34	0.000	0.005	0.004	-0.002
Intercepts		2918.043	1320	0.000	2.211	0.036	0.051	0.989	93.749	34	0.000	0.000	-0.001	-0.001
Waste		2965.039	1357	0.000	2.185	0.036	0.052	0.989	46.996	37	0.126	0.000	0.001	0.000
Configural	Zone	2357.880	1252	0.000	1.883	0.031	0.048	0.992						
Loads		2712.608	1286	0.000	2.109	0.034	0.051	0.990	354.728	34	0.000	0.003	0.003	-0.002
Intercepts		2767.253	1320	0.000	2.096	0.034	0.050	0.990	54.645	34	0.014	0.000	-0.001	0.000
Waste		2815.630	1357	0.000	2.075	0.034	0.051	0.990	48.377	37	0.100	0.000	0.001	0.000
Configural	Size	2715.327	1878	0.000	1.446	0.027	0.051	0.994						
Loads		3360.329	1946	0.000	1.727	0.034	0.056	0.991	645.002	68	0.000	0.007	0.005	-0.003
Intercepts		3468.611	2014	0.000	1.722	0.034	0.055	0.990	108.282	68	0.001	0.000	-0.001	-0.001
Waste		3582.122	2088	0.000	1.716	0.034	0.057	0.990	113.511	74	0.002	0.000	0.002	0.000
Configural	Seniority	3359.719	3130	0.002	1.073	0.014	0.056	0.998						
Loads		4249.786	3266	0.000	1.301	0.028	0.062	0.994	890.067	136	0.000	0.014	0.006	-0.004
Intercepts		4379.014	3402	0.000	1.287	0.028	0.061	0.994	129.228	136	0.647	0.000	-0.001	0.000
Waste		4575.649	3550	0.000	1.289	0.028	0.063	0.993	196.635	148	0.005	0.000	0.002	-0.001
Configural	Seniority centre	2285.495	1252	0.000	1.825	0.030	0.047	0.993						
Loads		2557.535	1286	0.000	1.989	0.032	0.050	0.991	272.040	34	0.000	0.002	0.003	-0.002
Intercepts		2623.389	1320	0.000	1.987	0.032	0.049	0.991	65.854	34	0.001	0.000	-0.001	0.000

Model		Chi-2	GL	p	CHI/GL	RMSEA	SRMR	IFC	I-CHI2	I-GL	p	I-RMSEA	I-SRMR	I-CFI
Waste		2678.668	1357	0.000	1.974	0.032	0.049	0.991	55.279	37	0.027	0.000	0.000	0.000
Configural	Situation Administration	2348.687	1252	0.000	1.876	0.031	0.047	0.993						
Loads		2550.674	1286	0.000	1.983	0.032	0.049	0.991	201.987	34	0.000	0.001	0.002	-0.002
Intercepts		2618.864	1320	0.000	1.984	0.032	0.048	0.991	68.190	34	0.000	0.000	-0.001	0.000
Waste		2663.325	1357	0.000	1.963	0.032	0.049	0.991	44.461	37	0.186	0.000	0.001	0.000

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Impact of cyber-ostracism on social anxiety and Internet use in university students

Impacto del ciberostracismo sobre la ansiedad social y uso de Internet en estudiantes universitarios

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ABSTRACT

The use of Relationship, Information and Communication Technologies (RICTs) has changed the way in which university students interact and relate to each other, giving rise to both positive and negative experiences, in which they must deal with risky cyber-behavior. Cyber-ostracism is a form of social exclusion in the virtual space that leads to feelings of social anxiety and that can occur in university students, causing harmful consequences. However, it has not been sufficiently explored whether this feeling can be related to an increase of Internet use due to perceived online exclusion. Focusing on this, the aim of this paper is to find out the association between cyber-ostracism and social anxiety, as well as the possible indirect effect of Internet use. A total of 1605 students from different Spanish universities participated in the study, aged between 17 and 25 years old (M = 19.59, SD = 1.75), where

66.3% were women, 31.7% men and 2% did not indicate their gender. The Internet-Related Experiences Scale (CERI), the Social Anxiety Scale for Adolescents (SAS-A) and the Cyber-ostracism Experience Scale for Adolescents were used. Statistical analyses included Student's t-test and mediation analysis with the macro PROCESS. Results indicated that men showed higher levels of cyber-ostracism, while women scored higher levels of social anxiety. Cyber-ostracism was related with a higher social anxiety among university students, associated to Internet use. We discuss how this form of virtual ostracism continues to increase and how it affects students of higher education. We also discuss how Internet use may increase the risk of social anxiety in victims of cyber-ostracism. These findings have important implications for future prevention and intervention programs.

Keywords: social anxiety, social exclusion, social networking, cyber-ostracism, higher education

RESUMEN

El uso de las Tecnologías en la Relación, la Información y Comunicación (TRIC) ha cambiado la manera en que los estudiantes universitarios interactúan y se relacionan entre sí, dando lugar a experiencias tanto positivas como negativas, en las que han de enfrentarse a ciberconductas de riesgo. El ciberostracismo es una forma de exclusión social en el espacio virtual que conlleva sentimientos de ansiedad social y que puede darse en estudiantes universitarios, provocando consecuencias perniciosas. Sin embargo, aún no se ha explorado lo suficiente si este sentimiento puede relacionarse con un aumento del uso de Internet al percibir la exclusión online. Tomando este reto como foco, el objetivo de este trabajo es conocer la asociación entre el ciberostracismo y la ansiedad social, así como el posible efecto indirecto del uso de Internet. En el estudio participaron un total de 1605 estudiantes de diferentes universidades españolas, con edades comprendidas entre los 17 y 25 años (M = 19.59, DT = 1.75), siendo 66.3% mujeres, el 31.7% hombres y el 2% no indicó su género. Se utilizaron diferentes instrumentos: Cuestionario de Experiencias Relacionadas con Internet (CERI), Escala de Ansiedad Social para Adolescentes (SAS-A) y Escala de Experiencia de Ciberostracismo para Adolescentes. Los análisis estadísticos incluyeron la prueba t Student y el análisis de mediación con la macro PROCESS. Los resultados indicaron que los hombres mostraron mayores niveles de ciberostracismo, mientras que en ansiedad social puntuaron más alto las mujeres. El ciberostracismo se asoció con mayor ansiedad social entre estudiantes universitarios, mediado por el uso de Internet. Se discute cómo esta forma de ostracismo virtual continúa progresando y afectando a estudiantes de educación superior y cómo el uso de Internet puede aumentar el riesgo de ansiedad social en víctimas de ciberostracismo. Estos hallazgos tienen importantes implicaciones prácticas en futuros programas de prevención e intervención.

Palabras clave: ansiedad social, exclusión social, redes sociales, ciberostracismo, educación superior

INTRODUCTION

The university stage is an important and critical period for the personal and social development of students, but also a period of certain vulnerability and fragility (Lohner & Aprea, 2021). This stage is characterized by the constant search for well-being and is linked to the exploration of new social relationships (Silke et al., 2018). The bonds created among peers and the perception of belonging to a group are key in the state and psychological functioning of individuals (Eisenberger et al., 2003). In this sense, the high presence of Relationship, Information and Communication Technologies (IRCT) has changed the way people relate to each other. The use of Internet and social networks has become an essential tool in the lives of young university students (Valerio & Serna, 2018). However, although the use of Internet can help to have satisfying experiences during the connection, it can also generate challenges and difficulties in interpersonal relationships (Pyżalski, 2023). The management of social relationships through Internet can facilitate or generate exclusionary behaviors, in which the person can be ignored by others, as is the case of cyber-ostracism or online ostracism (Galbava et al., 2021).

Cyber-ostracism is a form of social exclusion in the virtual space (Williams & Nida, 2016). This cyber behavior can be manifest by a lack of social interaction, but also when people do not receive the expected or desired feedback during their connection through social networks or other online environments (Galbava et al., 2021). This phenomenon is manifested among users worldwide, including the young population in higher education, particularly during their first academic year (Smith et al., 2017). Some studies conducted on cyber-ostracism in young university students have not detected significant gender differences in that population (Abrams et al., 2011; Tang & Duan, 2021), unlike what it has been observed in adolescence, where levels of cyber-ostracism are higher in boys than in girls (Niu et al., 2018).

Cyber-ostracism is understood as an unpleasant social cyber-behavior, which negatively affects the mental health of those who suffer from it (Williams & Nida, 2016). A previous work has pointed out that any form of cyber-ostracism, even the most sporadic, is painful and it has consequences on victims. Moreover, it can affect their social connectedness as well as their mood (Galbava et al., 2021). Being excluded or ignored can produce feelings of anxiety, associated with the sensitivity of status loss (Azoulay & Gilboa-Schechtman, 2022), and with the individual's social well-being (Silke et al., 2018). Based on these investigations, it is expected that the exclusion and loneliness caused by cyber-ostracism may drive the search for social support in social networks to offset the impact of this type of cyber-behavior, thereby increasing the hours of Internet connection (O'Day & Gross, 2021), generating a greater social anxiety. Thus, the aim of this research is exploring the effects of this

type of cyber-behavior that undermines the well-being of those who are excluded, focusing on examining whether the abuse of time spent on Internet for reasons of cyber-ostracism may be associated with episodes of social anxiety in an educational stage, in which new networks and social bonds are being built.

CYBER-OSTRACISM AND SOCIAL ANXIETY IN UNIVERSITY STUDENTS

People, and especially young people, feel the need to be connected in different social networks (Giraldo-Luque & Fernández-Rovira, 2020). This need for connection with other people is harmful when they are socially excluded or ignored (Smith et al., 2021). A study carried out with neuroimaging measures showed that being excluded activated the same areas of the brain as those of physical pain. Interestingly, this effect was not a consequence of the rejection itself, but because the sense of belonging was affected (Eisenberger et al., 2003). According to Hogg's (2007) identity theory, this needs to belong makes the human being feel like a useful and active part of the group and creates affective bonds that generate positive attitudes towards the group and calm feelings of social anxiety and uncertainty (Videla et al., 2023). Therefore, people who are excluded from a group suffer both physical and psychologically when they are deprived of these connections (Wesselmann et al., 2022). The social pain caused by being excluded or ignored increases the negative affect, leading to feelings of anxiety in the individuals who suffer from it (Wolf et al., 2015).

Social anxiety is considered as the intense or persistent fear of being observed and judged negatively by others (National Institute of Mental Health, 2022). This disorder is associated with sensitivity to the loss of status (Azoulay & Gilboa-Schechtman, 2022). According to Lang's (1968) three-dimensional theory, social anxiety arises through a three-dimensional response system (cognitive, physiological and behavioral), extensible or valid to all other emotions. The first dimension of this system is related to the fear of being evaluated or judged by others. The second dimension, the physiological, can provoke moments of restlessness and anguish that can be accompanied by bodily symptoms. Meanwhile, the third dimension, behavioral, refers to the movements or actions performed by the individual when suffering social anxiety, both involuntarily (tics or stuttering) and voluntarily (e.g., alcohol or drug abuse, etc.) (Cano-Vindel et al., 2020). Several studies confirmed that this disorder occurs more frequently in women than in men, obtaining higher scores in adolescents and emerging youth (Hawes et al., 2020).

At the university environment, a stage in which new social networks are configured and in which the connection with many groups becomes an important element in their interpersonal relationships, cyber-ostracism is one of the risks that generates higher levels of social anxiety (Lin et al., 2017). The effect of social

exclusion on the mental health of young university students is increased by the characteristics of the online context, which allow the harm to be asynchronous, anonymous and with a lack of social cues, promoting that aggression can be illusory or unreal and can be continued in the imagination, increasing feelings of social anxiety (Wolf et al., 2015). However, most of the works with university population had focused on other forms of online mistreatment such as cyberbullying, which refers to different forms of violence through the screen, in addition to exclusion (Souza et al., 2022). In contrast, research in the university setting that focuses on this specific type of cyber-behavior is scarce and, moreover, the few studies conducted on cyber-ostracism used very specific samples. For instance, the study by Akçay and Kayis (2023), which was conducted with prospective teachers and at a single university. It is therefore necessary to continue exploring the effects of cyber-ostracism on the behavior and well-being of young university students using a large number of participants from different regions and different degrees, which would provide a deeper understanding of an underexplored phenomenon.

The mediating effect of Internet use among young people

It has been shown how Internet use impacts people's well-being (Paez et al., 2019). Nowadays, more and more young people are making use of the Internet and social networks, using it as their primary means of communication (Stockdale & Coyne, 2020). National studies indicate that young people between the ages of 16 and 24, with 99.7% in males and 99.8% in females make use of the Internet (Instituto Nacional de Estadística [INE], 2022). While the use of the Internet has facilitated interpersonal interactions, it has also generated the need to be continuously connected so as not to be left out of what is happening in the online world (Milan, 2018).

The high level of proficiency with digital technologies has caused an increase in young people's online hours, sometimes for the purpose of boosting social support seeking (O'Day & Gross, 2021). This appears to increase during the first academic year of university, when young people may be in an unstable and transitional period (Smith et al., 2017). According to Poon (2018), people experiencing social exclusion have a limited ability to control their impulses and may spend a large amount of their time surfing the web. In addition, social exclusion alters the way a person processes information, motivating them to change their behavior to seek acceptance among their peers (Kawamoto et al., 2015). The problems of exclusion and isolation suffered can induce the active search for social support through social networks, with the aim of compensating for their lack, which in turn translates into an increase in hours of Internet connection (O'Day & Gross, 2021) and its associated problems, such as social anxiety. Along these lines, some authors found that abusive

Internet use influences certain characteristics related to student well-being, such as social anxiety (Romero-Rodríguez et al., 2021). People with social anxiety find in Internet a refuge where they can find social support, thus exploring the mediating effect of problematic Internet use is one of the objectives of this study. Knowing the impact of cyber-ostracism on the use of the Internet in young university students will provide important clues to reduce the effects on the anxiety levels of those who are victims of this type of cyber-behavior.

Objectives and hypotheses of the study

The objectives of this study are (1) to analyze the relationship between cyber-ostracism and social anxiety and (2) to explore the mediation effect that Internet use has on the relationship between cyber-ostracism and social anxiety in university students.

To this end, the following hypotheses were proposed:

(H1) There will be a relationship between cyber-ostracism and social anxiety. This hypothesis is based on previous findings focused on those who are socially excluded during their interactions may experience a combination of negative emotions, generating feelings of social anxiety (Akçay & Kayiş, 2023).

(H2) Internet use will have an indirect effect between cyber-ostracism and social anxiety, in accordance with previous studies that highlight that Internet use can generate a possible increase in stress, anxiety, and lack of communication and social interaction (Romero-Rodriguez et al., 2021).

METHOD

Participants

The present study used a non-probability convenience sampling (Singleton & Straits, 2004). A total of 1605 students from different Spanish universities participated in the study. There was a greater presence of women, with a representation of 66.3%, compared to 31.7% men and 2% who preferred not to indicate their gender. The age range of the students was between 17 and 25 years old, with a mean of 19.59 years *(SD* = 1.75). Regarding the educational branch of the degree, 57.8% of the students were from social and legal sciences, 12.2% from arts and humanities, 12.2% from health sciences, 6.7% from sciences and 11.1% from engineering and architecture.

Instruments

A series of sociodemographic questions were asked about gender, age and educational branch. In addition, the following scales were used:

Internet-Related Experiences Questionnaire (CERI), developed by Beranuy et al. (2009). This instrument consists of 10 items with Likert-type responses organized into four levels, ranging from *never* (1) to *quite a lot* (4). The questionnaire covers two factors: intrapersonal conflicts (e.g., «when you are not connected to Internet, do you feel altered or worried?») and interpersonal conflicts (e.g., «do you find it easier or more comfortable to relate to people through Internet than in person?»). This questionnaire obtained good reliability indices with the sample of this study (α = .74).

Social Anxiety Scale for Adolescents (SAS-A), adapted by Jiménez et al. (2013) from the original version (La Greca & López, 1988). The scale contained 18 items and was organized into five levels, ranging from *never* (1) to *always* (5). SAS-A measures the same three factors as the original: fear of negative evaluation (e.g., «I worry about what others think of me»), anxiety and social avoidance in new situations (e.g., «I am nervous about talking to people of my age whom I do not know well»), and anxiety and social avoidance in general (e.g., «I find it difficult to ask others to do things with me»). This questionnaire presented good reliability with the sample of this study (α = .95).

Cyber-ostracism Experience Scale for Adolescents (Niu et al., 2018). The scale consists of 14 items, whose response options range from *never* (1) to *always* (5). The scale has three dimensions: cyber-ostracism in personal chat (e.g., «I get no response when I try to chat with someone online»), cyber-ostracism in group chat (e.g., «few or no members respond when I start a small conversation in an online group»), and cyber-ostracism in personal webspace (e.g., «I get no response after sending comments to others in personal webspace»). The reliability of the scale for the study sample was optimal (α = .92).

Design and procedure

This is an *ex post facto* retrospective design through a cross-sectional study. First, different teachers from several Spanish universities were contacted and provided with information on the aim of the study and asked for their possible collaboration. Subsequently, the questionnaire, together with the protocol for its administration, was sent to the students. The online questionnaire was carried out using Google Forms. On the first page, the consent of the university students was requested in order to carry out the survey. It indicated that the questionnaire complied with the

ethical principles of the Declaration of Helsinki on anonymity, confidentiality and voluntariness. The approximate duration of the survey was 10 to 15 minutes.

Date analysis

After data collection, the information was processed using the IBM SPSS Statistics statistical program, version 24 for Windows. Descriptive analyses, Student's t-test for gender differences and bivariate correlations were performed to test the association between variables. Subsequently, the macro–PROCESS V.4.2 or extension for SPSS was used to standardize all the variables in order to be able to make comparisons between them, both for direct and indirect effects.

For hypotheses 1 and 2, model 4 of Hayes (2013) was used to assess the effect of Internet use on the relationship between cyber-ostracism (predictor variable) and social anxiety (dependent variable) was evaluated. Both gender and age were used as covariates. The indirect effects were interfered by the Bootstrapping method, since this method considers the distribution and sample size of the empirical data themselves, considering an interval as significant if it does not include zero. Finally, the mediation effect was calculated through the ratio between the indirect effect and the total (Wen & Fan, 2015).

RESULTS

Descriptive results

Table 1 shows the means, standard deviations, Student's *t*-test and effect size for the three study variables. The data indicated that there were differences between men and women in cyber-ostracism, with a higher mean in men, and in social anxiety with higher scores in women. There were no significant differences in Internet use (see Table 1).

Table 1
Means, standard deviations, differences by gender and effect size for all study variables

	Total		Men		Women			
	M	SD	M	SD	M	SD	t	d
Cyber-ostracism	1.70	.60	1.78	.60	1.67	.59	-3.41***	.19
Social Anxiety	2.34	.86	2.16	.76	2.41	.88	5.51***	.30
Internet use	2.32	.48	2.34	.47	2.30	.49	-1.34	.08

Note. *M* = means; *SD* = standard deviation; *t* = value of Student´s *t*; *d* = Cohen´s *d*; *** $p < .001$.

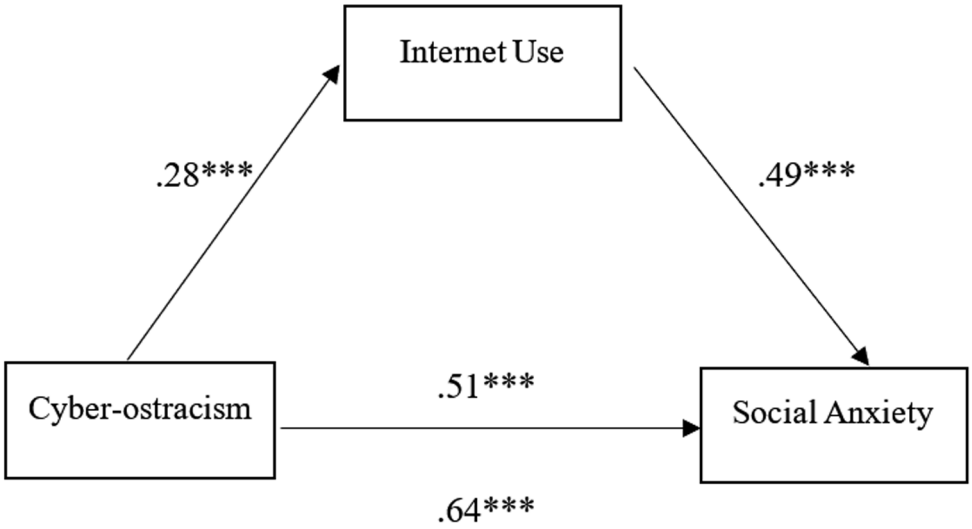
Correlational results showed a significant and positive association in all variables through Pearson's correlation. The values were: $r = .35$ in the relationship between cyber-ostracism and Internet use; $r = .40$ between social anxiety and Internet use; and $r = .44$ between cyber-ostracism and social anxiety.

Mediation analysis

Mediation analyses were conducted using the model 4 of Hayes (2013). The effect of cyber-ostracism (predictor variable) on social anxiety (dependent variable), mediated by Internet use, was shown to be significant ($F_{(4, 1600)} = 153.734$; $R^2 = .28$; $p < .001$). In the first step, it was identified that there was a direct relationship of cyber-ostracism on social anxiety, which was significant ($\beta = .51$, $t = 15.54$, $p < .001$). In the second step, a direct and positive relationship of cyber-ostracism on Internet use was found ($\beta = .28$, $t = 14.82$, $p < .001$). Thirdly, a direct relationship of Internet use on social anxiety was observed ($\beta = .49$, $t = 12.22$, $p < .001$). Lastly, the total effect of cyber-ostracism on social anxiety was found ($\beta = .64$, $t = 20.19$, $p < .001$).

To evaluate the indirect effect and the Confidence Intervals (CI), the bootstrap procedure was used. A positive indirect effect relationship of cyber-ostracism on social anxiety was shown through the use of the Internet, this effect being significant ($\beta = 0.14$, 95% *CI* = [0.11, 0.17]). The mediation of Internet use accounted for 21.45% of the total effect. Figure 1 shows the significance in each of the pathways of the model.

Figure 1
Mediation effect of Internet use on the relationship between cyber-ostracism and social anxiety



Note. ***p < .001.

DISCUSSION AND CONCLUSIONS

The purpose of the present study was to determine the impact of cyber-ostracism in young university students. First, it was analyzed whether social exclusion through virtual space could be related to social anxiety in higher education students. Subsequently, it was examined whether the increased use of Internet could have a mediating effect on this relationship. In this sense, this type of online behaviors, which promote the exclusion of certain people from the group, allude to an unpleasant social phenomenon that negatively affects the feeling of belonging during social relationships and whose impact has repercussions on people's well-being and mental health (Galbava et al., 2021). Previous studies confirmed the relationship of this online behavior with social anxiety problems in university trainees, specifically in future teachers (Akçay & Kayiş, 2023). But there was a need to explore this association with a broader population of students and from different university degrees, as well as to know the possible mediating variables that can help to understand this connection between online exclusion and social anxiety.

Descriptive analyses indicated significant differences in social anxiety, being higher in women than in men, in line with the results obtained in previous studies (Hawes et al., 2020). In fact, the National Institute of Mental Health (2022) indicates that the gender difference is more pronounced in adolescents and young adults, in agreement with the ages of the sample in this study. The analyses of the study also found gender differences in cyber-ostracism, being higher in males than in females, in contrast to the results obtained in other studies, in which no significant gender differences were found (Tang & Duan, 2021). These discrepancies may be since previous studies were conducted with participants from different countries, so that the cultural component could influence the gender differences for this type of online exclusion. In the present study the effect sizes were weak, so it seems that gender is not an important differentiating variable in cyber-ostracism, at least with higher education students. No significant gender differences were found in Internet use. Despite its massive use, especially among university students, this study agrees with previous studies in finding no gender differences at this educational stage (Ramírez et al., 2020).

Hypothesis 1 was confirmed. The results obtained indicated a positive and significant relationship between cyber-ostracism and social anxiety. These data showed that university students' social anxiety may be related to their perceived cyber-ostracism, causing negative feelings of discomfort and fear of being judged or evaluated, as found in a recent study (Akçay & Kayiş, 2023). This may be because, when these relationships are affected by rejecting behaviors such as cyber-ostracism, it can cause students to feel a sense of loss of social connectedness (Azoulay & Gilboa-Schechtman, 2022) and generate feelings of social anxiety that damages their mental health and interferes in different areas of their lives.

Hypothesis 2 was also confirmed. The results obtained demonstrated a positive relationship of Internet use as a mediator between cyber-ostracism and social anxiety. Previous research had evidenced that an interpersonal experience of exclusion could cause an increase in the hours spent online (Poon, 2018), possibly to seek new relationships or avoid feeling discomfort. A previous work indicated that there was a positive relationship between Internet use and social anxiety (Romero-Rodríguez et al., 2021). Thus, the data from this study add valuable information on how the experience of social exclusion experienced by young university students who suffer cyber-ostracism can drive them to seek new friendships or to try to divert their attention from this aversive situation, leading to an increase in Internet use, which can generate greater social anxiety. Therefore, Internet use increases the relationship between online ostracism and social anxiety in college students.

An interesting aspect that emerges from this hypothesis is the paradox of Internet use in the search for social support and its impact on emotional well-being. While Internet provides a platform for social interaction and bonding, it has also

been shown that it can contribute to social exclusion and increased anxiety. This illustrates how digital technology can have both positive and negative effects on people's lives and highlights the importance of a balanced and conscious approach to Internet use in modern society.

The present study has some limitations that would be important to highlight for future studies. A longitudinal study, rather than a cross-sectional one, would allow us to know the causal effects of the variables. For example, information could be collected during different time intervals, from the first to the fourth year of university, giving special attention during the first academic year, due to the social vulnerability that young people suffer during that year (Smith et al., 2017), thus exploring the evolution during the different university courses. Also, it is proposed to extend the sample to other countries and to be able to carry out cross-cultural studies that allow comparing the influence of cultural variables. Likewise, it would be interesting to use other qualitative instruments (interviews, observation, focus groups, etc.) to understand the decision-making process in the face of suffering from this type of cyber-behavior.

In summary, the results of this study offer a valuable contribution to knowledge about the impact of cyber-ostracism on the social anxiety of young university students, with Internet use as a mediating effect. The results obtained reveal a positive and significant correlation between these variables. Cyber-ostracism leads to a greater social anxiety among university students, mediated using the Internet. This is why the present study highlights the need to expand research on cyber-ostracism beyond the adolescent stage. It is important to understand how this form of virtual ostracism continues to progress during their transition to higher education and the role played by the use of Internet, which paradoxically can be used as a way to try to resolve the online exclusion they feel through cyberspace and instead become a way to increase their social anxiety (Pyżalski, 2023).

Following these findings, it is suggested that universities and other educational institutions can take steps to address this emerging issue. The implementation of awareness and sensitization programs can play a key role in the prevention and mitigation of cyber-ostracism and social anxiety among students. These programs could include educational activities for teacher training and support resources for students experiencing cyber-ostracism and social anxiety. It would also be important to work on the use of Internet by students who are being excluded by their peers in intervention programs or through the psychological care units of the universities themselves, since misuse can lead to higher levels of social anxiety. But beyond working to reduce online social exclusion at the university environment, universities should encourage and promote, through their policies and plans, the good coexistence of students, promoting an inclusive, sustainable and peaceful education. Social support and the development of strong and consolidated social

relationships have important benefits for university students, not only in the academic field but also in well-being and mental health.

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Profiles of coping strategies in university students in relation to personal and academic variables

Perfiles de estrategias de afrontamiento en estudiantes universitarios en relación con variables personales y académicas

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ABSTRACT

University spaces are characterized by high levels of academic stress derived from various personal and academic variables. Coping, therefore, emerges as a central issue in the university experiences of students due to its consequences both on academic satisfaction and psychosocial well-being. Thus, the aim of the study was to identify profiles of coping strategies among Complutense University students in relation to personal and academic variables. The sample consisted of 2835 students (71.1% women, 28.9% men), with an average age of 21.8 years (SD = 2.97), belonging to the three cycles of different degrees

offered at UCM. Results obtained from a multilevel latent class modelling show that the three-cluster model of students is the most parsimonious and best-fitting. Coping profiles are constructed based on four indicators corresponding to standardized scores of coping strategies: adequate problem-focused coping (Wald = 27.083, p < .001), adequate emotion-focused coping (Wald = 25.823, p < .001), inadequate emotion-focused coping (Wald = 133.691, p < .001), and inadequate problem-focused coping (Wald = 134.628, p < .001). Covariates significantly associated with the identified profiles include, at a personal level, gender, sex, and conflicts that generate greater distress in the university environment, as well as at an academic level, course, area of knowledge, and academic satisfaction. The results reveal high percentages of students using inadequate strategies to cope with stressful situations and how covariates are associated with these strategies. This underscores, due to its consequences on psychosocial well-being, the need for university policies to focus on actions aimed at both learning and experiences of appropriate coping strategies in stressful situations, as well as the identification of variables that could intersectionally promote their development.

Keywords: university students, multilevel latent class analysis, coping strategies, stress, gender, academic satisfaction

RESUMEN

Los espacios universitarios se caracterizan por elevados niveles de estrés académico derivado de variables personales y académicas. El afrontamiento, por tanto, emerge como cuestión medular en las experiencias universitarias del alumnado por sus consecuencias tanto en su satisfacción académica, como en su bienestar psicosocial. Por ello, el objetivo del estudio fue identificar perfiles de estrategias de afrontamiento del alumnado universitario complutense en relación con variables personales y académicas. La muestra está conformada por 2835 estudiantes (71.1% mujeres, 28.9 % hombres), con edad media de 21.8 años (DT= 2.97), pertenecientes a los tres ciclos de las diferentes titulaciones impartidas en la UCM. Los resultados obtenidos a partir de una modelización de clases latentes multinivel evidencian que el modelo de tres clústeres de estudiantes resulta ser el más parsimonioso y con mejor ajuste. Los perfiles de afrontamiento son construidos sobre cuatro indicadores que corresponden a las puntuaciones estandarizadas de estrategias de afrontamiento: manejo adecuado centrado en el problema (Wald=27.083, p < .001), manejo adecuado centrado en la emoción (Wald =25.823, p < .001), manejo inadecuado centrado en la emoción (Wald= 133.691, p < .001) y manejo inadecuado centrado en el problema (Wald= 134.628, p < .001). Las covariables que asocian significativamente con los perfiles identificados son: a nivel personal, género y conflictos que generan mayor malestar en el ámbito universitario, y a nivel académico, curso, área de conocimiento y satisfacción académica. Los resultados muestran elevados porcentajes de alumnado que utiliza estrategias inadecuadas para afrontar situaciones de estrés y cómo las covariables asocian con dichas estrategias. Ello, evidencia, por sus consecuencias en el bienestar psicosocial del alumnado, la necesidad de incidir desde políticas universitarias en actuaciones encaminadas tanto a aprendizajes y

experiencias de estrategias adecuadas de afrontamiento ante situaciones estresantes, como en la identificación de variables que interseccionalmente podrían promover su desarrollo.

Palabras clave: alumnado universitario, análisis de clases latentes multinivel, estrategias de afrontamiento, estrés, género, satisfacción académica

INTRODUCTION

Higher Education spaces are configured as the peak of academic stress derived from different variables that fluctuate between greater workload compared to other educational stages, greater assumption of commitments and responsibilities, new personal and academic networks, psychosocial changes associated with students' own life development (Beck et al., 2003) and the increase in conflicts associated with academic and social variables (Harrison, 2007). In addition, after the COVID-19 pandemic, a considerable amount of research has shown increased stress levels among university students (González et al., 2022).

Stress, in its broadest sense, refers to the possible imbalance a person perceives between the demands placed on them by a situation and their available coping resources (Ongarato et al., 2009). Lazarus and Folkman (1986) define stress as the interaction between personal appraisal of a given situation and the ability to cope with it. In this sense, stress is conceived as a relational process between the person and their environment based on individual characteristics and environmental demands. This relationship can trigger tensions and emotional, cognitive and behavioral responses that affect people's well-being in response to personal appraisals of real or perceived threatening situations (Selye, 1993). It should be noted that stress is considered a public health problem by the World Health Organisation (WHO), as it has a widespread impact on the entire world population, and its prevalence has been increasing in recent decades.

When responses or reactions to the demands of the context take place in the academic environment, it is common to refer to the coping mechanisms that people carry out in terms of academic stress (Rull et al., 2011). Thus, academic stress is defined as a systemic process of an adaptive nature, which appears when students detect a series of demands perceived as stressors (Valdivieso-León, 2020); in addition, Zárate et al. (2018) estimate that academic stress occurs when a student perceives demands from his/her environment causing distress because he/she does not have the resources to cope with them. This can generate physical and emotional symptoms and have academic consequences associated with low performance (Fernandez de Calvo & Luevano, 2018), disinterest, absenteeism or even dropout (Clavabaug & Fields, 2021). Barraza (2009) considers that the persistence of these

stressors produces systemic imbalances that result in the consequences and require students to confront stressful academic situations to regain their equilibrium. For all these reasons, numerous studies have shown the relevance of coping strategies as complex and multidimensional processes with significant consequences for psychosocial well-being (Bello-Castillo et al., 2021; Piergovanni & Depaula, 2018). In this line, it is necessary to consider the growing body of research that has related coping and stress to variables such as socioemotional well-being and resilience (Morales, 2021).

When faced with situations perceived as stressful, people use different coping strategies, defined as those skills and behaviors used by people to cope with internal and/or external demands that they perceive as stressful (Folkman, 1984). Coping is linked to cognitive and behavioral efforts to find individual and environmental resources to manage situations perceived as threatening and/or alarming (Lazarus & Folkman, 1984). These resources may involve seeking to modify the environment or using internal processes that allow reconstructing or reassigning the meaning associated with these stressful situations. Thus, coping involves self-regulation processes as the person detects the discrepancy between the demands of the situation and his or her resources to cope with it (González-Cabanech, 2018). In addition to the above, coping should be considered a dynamic and complex process whose purpose is the adaptation of subjects to contexts of insecurity, conflict and/or threat (González et al., 2007).

In this regard, conflicts arising from personal and academic development are the main stressful situations students face in their university experience (Mendoza et al., 2010). Likewise, conflicts in relationships with peers or with teaching staff represent a clear destabilizing element in emotional well-being (Llanes et al., 2021) and, therefore, Gutiérrez et al. (2021) consider the notable prominence of the coping strategies used by students to manage conflicts in their university experiences. Based on this prominence in people's psychosocial well-being, there are many existing classifications and measurement instruments applicable to coping strategies in psychosocial research. Thus, there are classifications based on the support required to cope self-sufficiently (Litman, 2006), according to the approach or avoidance of the problem (Gol & Cook, 2004), or based on the orientation to solve the problem or regulate the emotional response (Folkman & Lazarus, 1980). In this regard, two relevant issues should be highlighted:

a. The above-mentioned dimensions are not mutually exclusive, as coping strategies may involve different categorizations simultaneously, depending on their function and the context in which they are generated (Stanisławski, 2019).
b. Adaptive processes are mutable, and, therefore, coping flexibility is particularly relevant, i.e., the ability of individuals to modify, interrupt and/

or extinguish coping strategies perceived as inadequate to respond to the stressful situation and implement new strategies that offer appropriate responses to such situations and, therefore, reduce their perception of stress (Kato, 2012). Based on this, coping strategies are not monolithic and immovable variables but responses that may vary in the same person depending on their adaptive capacity for learning, development and well-being (Ziemmer-Gembeck, 2021).

It should be added, as Tobin et al. (1989) point out, that a distinction can be made between adequate coping strategies (their use has a positive impact on psychosocial well-being) and inadequate coping strategies (with a negative impact on psychosocial well-being). Based on these two dimensions, adequate and inadequate strategies, a classification has often been made into four broad categories: adequate problem-focused strategies (problem-solving and cognitive restructuring), adequate emotion-focused strategies (emotional expression and social support), inadequate problem-focused strategies (problem avoidance and desiderative thinking) and inadequate emotion-focused strategies (social withdrawal and self-criticism). It should be noted that despite the historical difficulty in adopting a common position on the possible grouping of adequate and inadequate strategies, it is feasible to evaluate coping strategies to discern which are beneficial and harmful, considering several criteria such as: a) the emotional state of the individual at the time he/she uses them, b) the socio-personal characteristics of each subject, c)the characteristics of each strategy and d) their possible long-term effects (Skinner et al., 2016). Thus, the use of appropriate problem-focused strategies has been associated with better health and reduced stress (Sasaki & Yamasaki, 2007). On the other hand, the use of inappropriate emotion-focused strategies, such as avoidance and social withdrawal, has been related to higher levels of stress and poorer health (Pritchard et al., 2007). Finally, the use of appropriate emotion-focused strategies has been associated with greater emotional well-being (Scheier et al. 1994).

On the other hand, academic stress has a direct impact on students' academic satisfaction (Castillo et al., 2020) due to the alteration it causes in people at the cognitive, motor and physiological levels (Reddy et al., 2018). In this sense, it seems evident to point out that if there is a proven relationship between academic satisfaction and stress in university students, the first construct can be a determining variable in the analysis and understanding of the implementation of some coping strategies in stressful situations related to the university environment (González et al., 2023). Thus, both pre-pandemic studies (Chraif, 2015) and pandemic studies (Shehadeh, 2020) highlighted the negative association between academic stress

and student satisfaction, in the sense that the greater the stress experienced by students, the lower their satisfaction.

Based on the considerations made, therefore, on the empirical evidence available on the relevance of coping strategies as a key issue in the management of stress processes and, therefore, in the personal, social, emotional and academic well-being of students in stressful situations (Hatunoglu, 2020) and, also, on the concept of flexibility described above, the suitability of studies focused on the person is located. In this sense, the possibility of coexistence in the same person of the four categories of coping detracts relevance from the study of the variable itself, giving prominence to the functionality perceived by individuals to implement those strategies that serve them optimally to the challenges they must face in specific situations (Cheng et al., 2014; Siltanen et al., 2019). Despite a plausible scarcity of studies that analyze coping strategies from this person-centered perspective, Freire et al. (2020) show the existence of coping profiles in Spanish university students that differ in the level of flexibility and the simultaneous use of different strategies.

Likewise, under the person-centered approach, the context in which coping strategies are implemented takes on special relevance. In this sense, in university education, academic stress has a direct impact on students' academic satisfaction (Castillo et al., 2020) due to the alteration it causes in people at the cognitive, motor and physiological levels (Reddy et al., 2018). In addition, previous studies indicate that new students tend to have a higher level of academic stress and lower academic satisfaction (Verger et al.,2009; Cheung et al.,2020), which could be associated with the level of maturity and the ability to adapt to stressful situations, finding that older students (which may correspond to second or third cycle students) show lower levels of anxiety, depression and stress (Bayram & Bilgel, 2008). In relation to gender, female university students tend to use more emotion-focused coping strategies than males (Graves et al., 2021). Finally, despite the scarcity of studies that evaluate coping strategies by subject area, students from Social Sciences and Humanities tend to experience conflict in a more «naturalized» way (Arias & Arias, 2017), which may imply greater flexibility to be able to use, to a greater extent, appropriate coping strategies in relation to students from other subject areas.

In view of the above, firstly, the association between coping strategies and emotional well-being and the relevance of academic satisfaction as a predictor of emotional well-being and, secondly, the scarcity of studies that address the analysis of coping strategies and their possible relationship with academic satisfaction in the university population from a person-centered approach, the aim of the present study is to identify profiles of coping strategies in a sample of university students in Spain and their possible relationship with academic satisfaction and personal and academic variables.

In order to achieve the proposed objective, 4 hypotheses were formulated: hypothesis 1(h1), students use, to a lesser extent, adequate coping strategies, both problem-focused and emotion-focused; hypothesis 2 (h2), students who use to a lesser extent adequate coping strategies focused on the problem and on emotion present lower levels of academic satisfaction and are enrolled in the first year of the Bachelor's degree level; Hypothesis 3 (h3), the students who use to a greater extent adequate coping strategies focused on the problem and on emotion present higher levels of academic satisfaction, are enrolled in postgraduate levels (Master's, Doctorate, or their own degree), belong to the area of knowledge of Arts and Humanities and/or Social and Legal Sciences, and are mostly identified as women, and, finally, hypothesis 4 (h4), students who use inadequate coping strategies focused on the problem and emotion to a greater extent present lower levels of academic satisfaction, identify themselves, for the most part, as men and the university conflicts that cause them the greatest discomfort are a consequence of their relationships with the teaching staff.

METHOD

Participants

Participants were selected through non-probability sampling, and the inclusion criterion was «being enrolled at UCM in the 2021-2022 academic year» and giving informed consent for participation in the study. In that academic year, there were a total of 6,4952 people enrolled at UCM. The final sample comprised 2803 students (71.1% female and 28.9% male), with a mean age equal to 21.8 (SD= 2.97), obtaining an acceptance rate of 4.31%. The instruments were completely answered, and no missing cases were recorded since all the items were obligatory. Regarding the level of studies in which they were enrolled at the time of response, 19.3% were first-year Degree or Double Degree students, 16.8% were second year Degree or Double Degree students, 15.7% were third year Degree or Double Degree students, 18.2% were fourth year Degree or Double degree students, 4.7% were fifth year Degree or Double Degree students, 12% were Master's degree students, 10.5% were Doctoral degree students and 1.7% were Undergraduate students, and 1.7% were students from degrees granted by the Universities. Regarding the distribution by areas, 1106 people belonged to the area of Social and Legal Sciences (39.4%), 597 to the area of Health Sciences (21.3%), 599 to Arts and Humanities (21.4%), 398 to the area of Sciences (14%) and 103 to the area of Engineering and Architecture (3.7%).

Instruments

A sociodemographic questionnaire with closed-ended questions was applied: gender, disability, level of studies, year of enrollment and area of knowledge. To find out the type of conflict that generated the most discomfort in their university experience, a question was asked with four response options: 1) conflicts with the teaching staff, 2) conflicts with the rest of the student body, 3) conflicts with the administrative staff and 4) conflicts with the rules/regulations of the university itself.

In addition, the Spanish adaptation of the Academic Satisfaction Scale (Escala de Satisfacción Académica, ESA in Spanish) developed by Medrano & Pérez (2010) and validated in the Spanish university context (González et al., 2023) was applied. The ESA is a measure that evaluates the subjective perception of students regarding their academic satisfaction and is composed of 8 items that are answered on an ordinal scale (1 = never, 4 = always). The ESA has a single dimension structure called academic satisfaction (8 items: «The classes interest me»; «I feel motivated with the course»; «I like my professors»; «I like the classes»; «The course meets my expectations»; «I feel at ease with the course»; «the professors are open to dialogue» and «I feel that the contents of the classes correspond to those of my profession.» The scores range from 8 (lowest level of academic satisfaction) to 32 (highest level of academic satisfaction).

Concerning coping strategies, the Spanish adaptation of the Coping Strategies Inventory (CSI) developed by Cano et al. (2007) based on the original study by Tobin et al. (1989) and validated in the Spanish university context (Dorado et al., 2023) was applied. The CSI is a self-report measure that assesses the subjective perception of individuals regarding the use of coping strategies in stressful situations. It comprises 40 items that are answered on a Likert-type scale (0=not at all, 4=totally). The CSI has a structure of 8 dimensions called: problem-solving (5 items, e.g. «I struggled to solve the problem); self-criticism (5 items, e.g. «I realized that I was personally responsible for my difficulties and I reproached myself»); emotional expression (5 items, e.g. «I let my feelings out to reduce stress»); desiderative thinking (5 items, e.g. «I wished that the situation would never happen again»); and desiderative thinking (5 items, e.g. «I wished that the situation would never happen again»). «I wished the situation had never started»); social support (5 items, e.g., «I found someone who listened to my problem»); cognitive restructuring (5 items, e.g., «I went over the problem again and again in my mind and in the end I saw things differently»); problem avoidance (5 items, e.g., «I didn't let it get to me, I avoided thinking about it too much» and social withdrawal (5 items, e.g., «I spent some time alone»). These 8 dimensions, in turn, are organized around a second-order structure composed of 4 dimensions: problem-focused coping (including the

dimensions of problem-solving and cognitive restructuring), emotion-focused coping (including the dimensions of emotional expression and social support), emotion-focused coping (including the dimensions of social withdrawal and self-criticism), and problem-focused coping (including the dimensions of problem avoidance and desiderative thinking). These dimensions, in turn, can be regrouped into a third-order structure, adequate coping and inadequate coping strategies.

Finally, the factor structures of the scales used in the analysis were evaluated. As shown in Table 1, both scales presented satisfactory goodness-of-fit indices for the factorial structures and the reliability coefficients.

Table 1

Goodness-of-fit indices for confirmatory factor analysis and reliability coefficient

Scale	RMSEA	SRMR	CFI	TLI	λ Min.	λ Max.	ω
ESA	.078	.045	.968	.955	.646	.907	.905
CSI	.072	.078	.928	.912	.612	.921	.918

Note. ESA: Academic Satisfaction Scale; CSI: Coping Strategies Inventory.; RMSEA: root mean square error of approximation; SRMR: Standardized Root Mean Square Residual; CFI: comparative fit index; TLI: Tucker–Lewis index; λ = Factor loadings. ω = Omega de McDonald.

Procedure

The study and the administration of the instruments were financed and collaborated with the UCM Student Observatory. The research was approved by the UCM Research Ethics and Biosafety Committee (ref. CE_20211118-11 SOC). Informed consent was applied to the students participating in the study. The questionnaire was administered online and sent from the UCM Vice-Rectorate for Students via institutional mail to all students enrolled in the 2021-2022 academic year.

Data analysis

First, a preliminary analysis was performed, and the psychometric properties of the scales were evaluated, for which a confirmatory factor analysis (CFA) was implemented. MPLUS v.8.1 (Muthén & Muthén, 2017) was used, operating a matrix of polychoric correlations and the Weighted Least Squares with mean and variance adjusted (WLSMV) estimation method. To assess model quality, three goodness-of-fit indices were used: comparative fit index (CFI ≥ 0.90), Tucker-Lewis index (TLI ≥ 0.90) and the root mean square error of approximation of the indices

and Standardized root mean square residual (RMSEA, SRMR ≤ 0.08) (Schumacker & Lomax, 2016). Subsequently, a latent profile cluster analysis (LPA), estimated through Latent Gold 5.1 software (Vermunt & Magidson, 2016), was used. LPA has several advantages compared to other cluster analysis techniques (Oppewal et al., 2010). The LPA was chosen in this research for three main reasons: (1) the selection of the optimal number of clusters is based on statistical criteria such as the Bayesian information criterion (BIC) or the consistent Akaike information criterion (CAIC); (2) the LPA is particularly useful when the number of clusters is not known in advance, as was the case in this study; and (3) the LPA allows the simultaneous inclusion of variables measured on different types of scale (continuous, ordinal or nominal), which allows flexible characterization of the clusters obtained.

The proposed model includes (1) four indicators that correspond to the standardized scores of coping strategies: adequate coping focused on the problem, adequate coping focused on the emotion, inadequate coping focused on the emotion and inadequate coping focused on the problem; (2) a series of covariates (used to characterize the groups obtained: gender, course, area of knowledge, university conflicts generating the highest levels of discomfort and academic satisfaction); (3) and a series of covariates (used to characterize the groups obtained: gender, course, area of knowledge, university conflicts generating the highest levels of discomfort and academic satisfaction.

The selection of the optimal number of clusters was based on the following goodness-of-fit criteria: the Bayesian Information Criterion (BIC, Schwars, 1978), the Akaike Information Criterion (AIC, Akaike, 1987) and the sample-size adjusted Bayesian information criterion (SABIC). Such criteria are more conservative than the Akaike information criterion (CAIC) and tend to favor the choice of simpler (parsimonious) models in the case of LPA models (Tein et al., 2013; Wedel & Kamakura, 2000). Both criteria are more conservative than the Akaike information criterion (AIC) and tend to favor the choice of simpler (parsimonious) models (Wedel & Kamakura, 2000). Full details on the parameter estimation method with Latent Gold 5.1 are available in the work of Vermunt and Magidson (2016).

RESULTS

Preliminary analysis

First, the bivariate correlations between the model indicators were analyzed. As shown in Table 2, the indicators presented positive and significant correlations, demonstrating their association and relevance for inclusion in subsequent analyses. In addition, the results of the descriptive analysis are presented for each indicator.

Table 2

Pearson's r correlation matrix and descriptive statistics

	Adequate problem-centered management	Adequate emotion-focused management	Inadequate emotion-focused management	Inadequate problem-focused management
Adequate problem-centered management	1	.607**	.248**	.,376**
Adequate emotion-focused management	.607**	1	.156**	.324**
Inadequate emotion-focused management	.248**	.156**	1	.889**
Inadequate problem-focused management	.376**	.324**	.889**	1
	Mean	Standard Deviation	Asymmetry	Kurtosis
Adequate problem-centered management	18.4085	8.26573	-.066	-.226
Adequate emotion-focused management	18.183	8.77767	.016	-.425
Inadequate emotion-focused management	10.1891	8.8284	.857	.157
Inadequate problem-focused management	28.2483	14.65403	.361	-.123

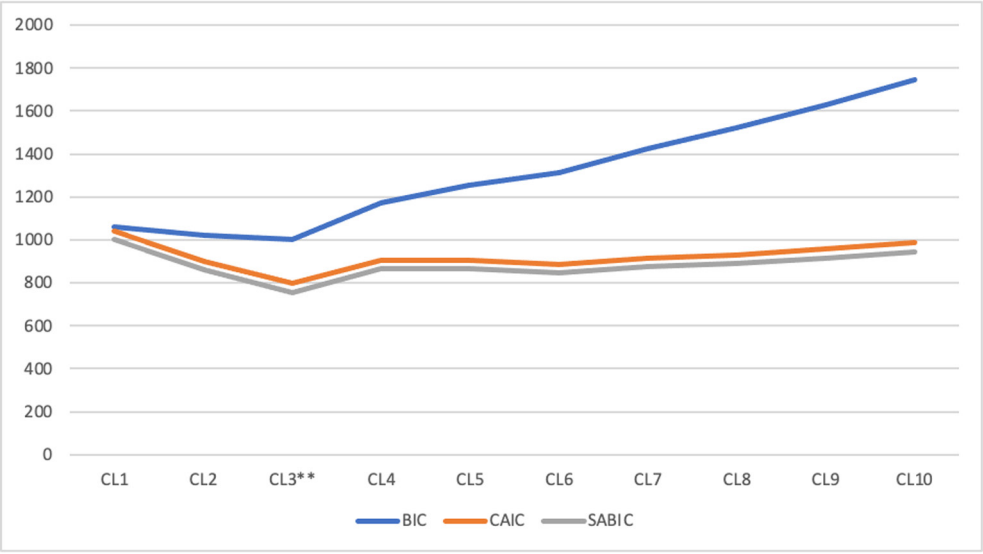
Note. ** = $p < .001$, the correlation is statistically significant (bilateral).

Identification of the number of coping style clusters, utility of indicators and covariates

The BIC, CAIC, and SABIC criteria were used to determine the optimal number of latent profiles. Ten different models ranging from 1 cluster (representing complete homogeneity in the sample) to 10 clusters were evaluated. The three-cluster model obtained the lowest values for all three criteria, indicating that it was the most parsimonious and best fit for the data, as shown in the figure below.

Figure 1

Criteria for selecting the number of coping strategy clusters



Note. BIC: Bayesian information criterion; CAIC: Akaike's consistent information criterion; SABIC: Bayesian information criterion adjusted for sample size. **Best model according to BIC, CAIC, and SABIC.

Once the number of clusters (3 latent profiles) was determined, we proceeded to evaluate the significance of the indicators used to classify the groups and of the covariates that contributed to their characterization. Regarding the four indicators, it was found that the Wald statistic showed significance levels below .001, indicating that the four indicators used were statistically significant for the segmentation of the sample into three distinct groups based on the perception of adequate problem-focused coping, adequate emotion-focused coping, inadequate emotion-focused coping, and inadequate problem-focused coping. The percentage

of variance explained by these four indicators ranged from 16.88% for adequate problem-centered coping to 65.15% for inadequate problem-centered coping. As for the covariates, significant effects were observed for gender, course, level of studies, area of knowledge, conflicts that generate greater stress in the university context and academic satisfaction, which were used to characterize the groups obtained (Table 3).

Table 3

Significance values and proportion of variance explained for model indicators

Indicators	Robust Wald statistic	p	R^2
Zadequate problem-centered management	27.083	<.001	.1791
Zadequate emotion-focused management	25.823	<.001	.1688
Zinadequate emotion-focused management	133.691	<.001	.6303
Zinadequate problem-focused management	134.628	<.001	.6515
Covariates			
Gender	106.1356	<.001	
Course	109.4901	<.001	
Knowledge area	99.8727	<.001	
Conflicts that generate the greatest unrest in the university environment	115.8677	<.001	
Academic satisfaction	8.1916	.017	

Note. Variables with a «Z» in front of the indicators were introduced in the latent profile model as typed variables. (M = 0 y DT =1).

Description of academic coping style profiles

Figure 2 shows the three profiles corresponding to the three clusters. Each cluster represents an underlying pattern of students' coping styles, and the standardized average of each indicator is shown. An analysis of the behavior of each profile, as well as the associations with the model's covariates, is presented below:

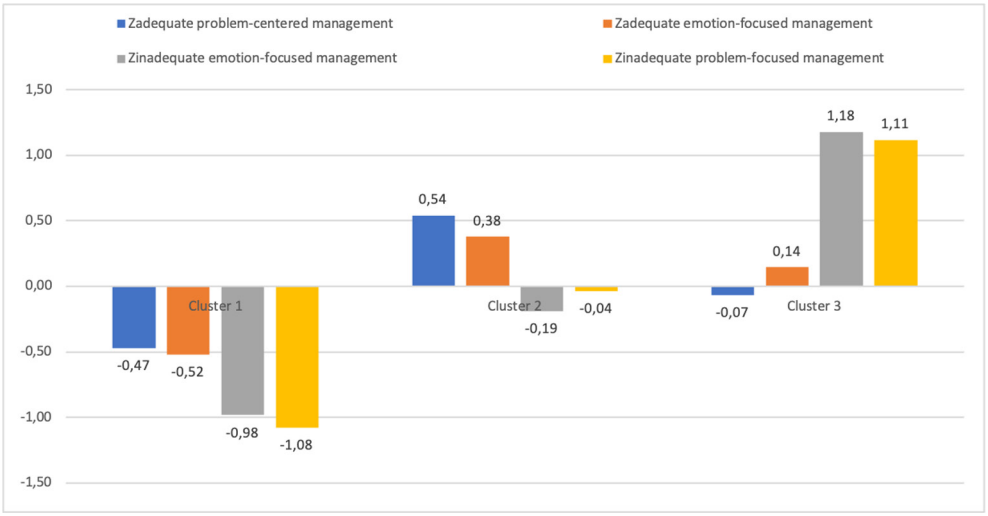
Cluster 1 (BNMA): «Students with low levels of adequate management of coping strategies.» This group of students constitutes the largest of the three clusters, representing 48.6% of the sample. Students in this cluster manifest the lowest levels of adequate coping, both problem-focused and emotion-focused. In addition, this cluster is characterized by the lowest levels of academic satisfaction, with a mean of 14.72. Most of the students in this cluster are in the first year of a Bachelor's or Double Degree, representing 30.2% of them.

Cluster 2 (ANMA): «Students with high levels of problem-focused and emotion-focused coping strategies» This group represents 29.65% of the student body and obtains the highest scores in the dimensions «problem-focused coping» and «emotion-focused coping.» They are characterized by belonging mostly to the Master's and Doctorate level (5.4%), to the Health Sciences area of knowledge (34.8%) and identify as women (53.78%).

Cluster 3 (ANMI): «Students with high levels of inadequate management of coping strategies.» This group is the smallest, representing 21.76% of the student body. This student body presents the highest levels of «inadequate emotion-focused coping» and «inadequate problem-focused coping.» Likewise, this cluster is characterized by low levels of academic satisfaction (M = 15.46); the students perceive that the conflicts that cause them the most discomfort are those derived from university rules and regulations, and, in addition, most of them define themselves as men (52.57%).

Figure 2

Average scores on the indicators for the three clusters.



Note. Indicators incorporate a «Z» before their acronym because they were introduced in the latent profile model as typed variables (M = 0 and DT =1).

DISCUSSION AND CONCLUSIONS

This study aimed to analyze the coping strategies used by Spanish university students according to gender, academic year, area of knowledge, type of university conflicts that generate greater discomfort in the university environment, and academic satisfaction.

The results confirmed the first hypothesis (h1), which indicates that students use less adequate coping strategies, both problem-focused and emotion-focused. In this sense, ANMA is shown to be the only cluster in which students use to a greater extent adequate coping strategies focused on the problem and on emotion, accounting for 29.65% of the total university population analyzed (therefore, 70.35% of students use inadequate strategies to a greater extent). In this sense, post-COVID studies indicate how the university population is increasingly considered a vulnerable population due to high levels of anxiety and stress (Browning et al., 2021). In this regard, we should bear in mind that Generation Z (people born between 1995 and 2012 and who are currently the majority population at university) is a generation that has developed in a culture of more overprotective parents and less face-to-face social interaction, which may imply a lower development of certain management

and coping skills in stressful situations (Gabrielova & Buchko, 2021). Thus, we agree with Luna (2020) on the need to generate more knowledge about the coping strategies of students, in this case, university students, and to influence the design of university policies aimed at acquiring adequate coping skills for students to deal with stressful situations.

In relation to (h2), the results confirm, based on the BNMA, that the students who used less adequate coping strategies (both problem and emotion-focused) would present lower levels of academic satisfaction and would be in the initial levels of undergraduate studies. Stress in the university environment is linked to academic success (Ocaña et al., 2021) and also to academic satisfaction (Naeem et al., 2020); therefore, the use of appropriate coping strategies is a determining factor in ensuring correct development, both personal and curricular, in higher education spaces (Cabras & Mondo, 2018). In addition to the above, the transition to adulthood increases vulnerability to stress in university students (Towbes & Cohen, 1996). This fact becomes even more latent in first-year students since the transition from secondary education to university can pose a challenge related to the beginning of an independent life, the modification of previously assigned roles, the adaptation to new academic demands (Brougham et al., 2009), new personal and interpersonal relationships, the modification of study techniques and the establishment of new beliefs and values to adapt to the university sociocultural context (Páramo Fernández et al., 2017). All these issues require the use of adaptive resources to face such change processes (Cabras & Mondo, 2018), being the first university course, the occasion in which they must adapt to all the new circumstances mentioned. In this sense, such issues favor that first-year students present a greater vulnerability concerning the development of pathologies related to depression (Brandy et al., 2015) and, therefore, lower levels of academic satisfaction are observed for students in higher courses. Analogous studies identify how age is a fundamental factor in the configuration and implementation of appropriate coping strategies, observing how first-year students have greater difficulties adapting (through such strategies) to stressful situations (Alarcón et al., 2013; Cabras & Mondo, 2018).

In relation to the third hypothesis (h3), the results obtained in the ANMA partially confirm its predictions, in the sense that students who use adequate coping strategies to a greater extent present higher levels of academic satisfaction, are enrolled in Master's and/or Doctoral programs and identify themselves, for the most part, as women. However, the prediction that this would be associated, for the most part, with the area of knowledge Arts and Humanities and/or Social Sciences rather than, as has been shown with Health Sciences, is not confirmed. In this sense, there are studies that report that, for the most part, health sciences students adopt positive attitudes to stressful events using appropriate coping strategies (Awoke et al., 2021), mainly problem-focused (Henderson et al., 2021).

It is worth noting empirical evidence on how the use of appropriate coping strategies is related to greater emotional intelligence to cope with stressful situations (Majumdar & Ray, 2010), as well as to personal socioemotional skills (Freire et al., 2020). Likewise, how a person copes with stressful situations determines the impact that these situations will have on his or her well-being, health and quality of life (Gustems-Carnicers & Calderón, 2013), and finally, with the number of occasions that a person has faced a given stressful and/or conflictive situation and, therefore, with the degree of experience in coping with such situations. Taking into account that Master's and/or Doctoral students are people who have already completed a Bachelor's Degree at the University and, therefore, have a background in coping with stressful situations related to the field of Higher Education, as well as a greater support network than first-year students, they may have a greater number of appropriate strategies to cope with such situations. In this sense, the use of appropriate coping strategies is directly related to stress and academic success (Karaman et al., 2019).

Regarding gender, the results are consistent with other research that confirms that female university students use more appropriate emotion-focused coping strategies compared to men (Brougham et al., 2009). Female university students tend to report greater use of coping strategies such as emotional expression and social support (Eaton & Bradley, 2008). Additionally, studies have reported that the greater use of appropriate emotion-focused strategies could be due to the socialization process of female university students and the adoption of 'traditional gender roles' related to caregiving (Dyson & Renk, 2006).

Finally, and in relation to hypothesis 4 (h4), the results obtained in the ANMI cluster are partially confirmed in the sense that students who use inadequate coping strategies to a greater extent (both those focused on the problem and emotion) present low levels of academic satisfaction and identify themselves, for the most part, as men. However, h4 is not confirmed in the sense that the conflicts that generate greater student discomfort are those derived from university rules and not those produced because of relationships with the faculty. In this regard, previous studies have found a direct relationship between coping strategies and academic satisfaction and performance (Meneghel et al.,2019). This could be explained using appropriate coping strategies, which are directly associated with stress reduction, and, in turn, this appears to be related to increased self-efficacy and satisfaction (Crego et al., 2016).

As mentioned above, coping strategies are mostly implemented by students to cope with conflict situations that generate stress. Conflict management in university life requires the use of coping strategies that can lead to a) emotionally adverse consequences (related to the use of inadequate coping strategies or b) constructive processes that facilitate social, emotional and personal development

(Arias & Arias, 2017) and, therefore, an increase in academic satisfaction (Palomino, 2018).

Taking into account that conflict is an inevitable part of coexistence and personal and social development (Dorado et al., 2015), it should be taken into account that the experiences that students accumulate throughout their university experience will determine, to a large extent, their ability to modify and adapt the coping strategies they will use in the future to manage stressful situations derived from conflicts (González & Jurado, 2022). In this sense, previous research highlights gender differences in relation to the use of coping strategies, finding that men tend to use avoidant strategies more frequently than women (Eschenbeck et al., 2007), and women more frequently use strategies related to emotional expression and social support (Salgado & Leria, 2018). This could be due to the roles socially assigned to the male gender and its relationship with a greater burden of competitiveness and individualism. Thus, Gatinno et al. (2015) state that there is a direct relationship between the use of inadequate coping strategies in men and the decrease in their quality of life.

It should be added that despite the scarce existence of person-focused studies that associate coping strategies with the variables analyzed in the present research, some of the results are analogous to those obtained in similar studies. In this regard, Freire et al. (2016) found how the use of adequate coping strategies was related to greater psychological well-being in university students, which can be associated with the results obtained in the present study on the relationship between higher levels of academic satisfaction and the use of adequate problem-focused and emotion-focused strategies. Along the same lines, studies conducted during the pandemic caused by COVID-19 showed how younger students used inadequate coping strategies to a greater extent (Babicka-Wirkus et al., 2021). In addition to the above, recent research conducted through latent profile analysis has identified how university students who use adequate coping strategies are more confident and optimistic with respect to discouraged students who use such strategies to a lesser extent (Zhao, 2024).

Based on the results obtained and in line with the recommendations issued by the World Health Organization (WHO), the need to implement strategic actions aimed at increasing emotional well-being and reducing academic stress as a vehicle for improving the mental health of students becomes a priority; for this, it is essential to develop skills related to the use of appropriate coping strategies to minimize the impact of stress-generating situations of a conflictive nature (De Vicente & Villamarín, 2018). In this scenario, Higher Education should be established as a space capable of favouring spaces, both in proactive and reactive mode, for learning and development of flexibility and adaptation competencies in the coping

of students, focused on reducing the negative effects of stress both in physical and emotional well-being and in academic satisfaction.

In conclusion, the results of the present study bring as a novelty the plausible relationship between the coping strategies used by university students and variables such as gender, course, perception of the discomfort of conflicts in the university experience and academic satisfaction. In this sense, the results obtained, firstly, provide innovative evidence on how the use of appropriate coping strategies is related to greater academic satisfaction of students based on latent profile analysis, and, secondly, how this is conditioned by gender, course, level of studies in which they are enrolled and the perception of students in relation to the conflicts that generate greater discomfort during their university experience.

Therefore, coping strategies emerge as a key element in the design of university curricula since they should be considered determinants both for improving students' university experiences and, therefore, their academic satisfaction and for facilitating learning spaces and training in the adequate management of stressful situations in their future professional and personal environments. Likewise, coping strategies should be understood as a consubstantial element of the emotional well-being of university students and, therefore, as a key factor in relation to the increased concern for the mental health of young people.

We agree with Casullo and García (2015) that analyzing the personal resources of students to successfully face situations of adversity (from a person-centered approach) should be considered an exciting challenge in the context of Higher Education. Universities are, today more than ever, not only producers, depositories and transmitters of knowledge but also responsible for promoting the welfare of citizens and with an outstanding social projection aimed at the development of human relations based on respect and dignity of people.

To conclude, the present study is not free of limitations that should be considered for future research. In this regard, despite the significant size of the sample, all the students participating in the study belong to the same public university (UCM), so it would be interesting in future research to replicate this study in other universities, both national and international, as well as in the private sector. Likewise, it would be interesting to include variables associated with both mental health and stress perception to analyze possible relationships with the coping strategies of university students. There are also limitations derived from the study methodology itself since its cross-sectional design has provided data from a single survey at a given time. This issue does not facilitate the understanding and analysis of the flexibility and continuous adaptation of students to stressful situations. A longitudinal design would be required to deepen and analyze possible changes over time. Finally, the output of the software used in the present study does not allow the recording of adjustment and classification statistics, so in future

research, it would be advisable to use software that allows these parameters to be performed to determine with greater robustness the suitability of the chosen profiling solution.

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Relationship between teachers' invitations and the parental use of technology for involvement in children's education

Relaciones entre invitaciones docentes y el uso parental de las TIC para participar en educación

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ABSTRACT

The present study examined the direct and indirect relationships between teacher invitations, technological self-efficacy, the value attributed to ICT, and parents' use of these resources to participate in their children's education. Six hundred thirty-nine mothers and 447 fathers of public primary school students participated in the study. Subsequently, a structural model with two mediators was calculated. It was found that teacher invitations positively related to parental use of ICT to communicate with the school and support their children's learning at home. Additionally, it was found that technological self-efficacy and the value attributed to

ICT mediated the relationships studied. It was concluded that teacher invitations promoted the use of ICT by parents to become involved in their children's education.

Keywords: teachers, public education, elementary school, parent involvement, technology use in education

RESUMEN

El presente estudio examinó las relaciones directas e indirectas entre las invitaciones docentes, la autoeficacia tecnológica, el valor atribuido a las TIC y el uso parental de estos recursos para participar en la educación de los hijos. Participaron 639 madres y 447 padres de estudiantes de primarias públicas. Se calculó un modelo estructural con dos mediadores. Se encontró que las invitaciones docentes se relacionan positivamente con la utilización parental de las TIC para comunicarse con la escuela y apoyar el aprendizaje en casa de los hijos. Adicionalmente, se halló que la autoeficacia tecnológica y el valor atribuido a las TIC median las relaciones estudiadas. Se concluyó que las invitaciones de los docentes promueven el uso de las TIC por parte de los padres para involucrarse en la educación de los hijos.

Palabras clave: docentes, educación pública, escuelas primarias, participación parental, uso de la tecnología en educación

INTRODUCTION

Decision-makers in education policy are under pressure to create the conditions to provide quality public education for all. In Mexico, this is purpose has not been fully achieved, as it is estimated that approximately 10 percent of students of secondary school age have not completed elementary education. Moreover, this percentage is even higher for students with disabilities and those living in conditions of poverty (The National Commission for the Continuous Improvement of Education [MEJOREDU], 2022). Moreover, a substantial proportion of students in elementary education, particularly those from economically disadvantaged backgrounds, do not attain the desired educational goals (Graña & Murillo, 2023; Organization for Economic Cooperation and Development [OCDE], 2018). Such a condition remains critical given that a deficient acquisition of school curriculum learning usually leads to considerable negative consequences on students' academic trajectories, and it can also hinder the economic and social development of the country (Adelman & Szekely, 2016).

PARENTAL INVOLVEMENT IN EDUCATION

Although various factors influence educational quality, the literature acknowledges the importance of the student's family context. Empirical evidence shows that parental involvement in education, which includes the efforts and resources dedicated by fathers and mothers to support education (Epstein & Sheldon, 2022; Wilder, 2014), is related to the academic success of their children (Boonk et al., 2018; Castro et al., 2015; Tan et al., 2020). While there are multiple expressions of parental involvement in education, they are grouped into those centered at home and those centered at school (Boonk et al., 2018; Fantuzzo et al., 2000). An important indicator of school-centered parental involvement is communication between parents and teachers and with other parents about issues related to their child's performance at school and school-related activities. On the other hand, home-based learning support provided by parents is a central element of home-centered parental involvement (Epstein & Sheldon, 2022; Wong et al., 2018).

Home-centered parental involvement encompasses elements such as parents (father and mother) communicating with their children about school-related matters, providing assistance with homework, setting rules, and creating an appropriate environment for studying and organizing extracurricular activities that support the curriculum. On the other hand, school-centered parental involvement involves communication with teachers as well as participation in school-based activities (e.g., attending parent-teacher conferences, participating in extracurricular activities, getting involved in the parent's association) (Benner et al., 2016; Boonk et al., 2018; Epstein & Sheldon, 2022; Gubbins & Otero, 2020).

The empirical evidence confirms that both types of parental involvement in education are positively associated with a sense of school belonging, academic self-efficacy, engagement with learning, and academic performance of students (Gubbins & Otero, 2020; Lara & Saracostti, 2019; Murillo & Hernández-Castilla, 2020; Solís Castillo & Aguiar Sierra, 2017; Xiong et al., 2021). Furthermore, parental involvement creates opportunities for the exchange of information and increases trust and a sense of shared responsibility between parents and teachers for the performance of students (Acevedo et al., 2017; Li et al., 2019; Thompson et al., 2017; Urías et al., 2017).

In Mexico, the educational policy recognizes the importance of family involvement in achieving equitable access to education for all students (Secretariat of Public Education [SEP], 2013; Undersecretariat of Higher Education, 2019). Therefore, educational reforms consider implementing strategies to strengthen family involvement in their children's education. Regardless of its relevance, several studies (Márquez et al., 2015; Martín & Guzmán Flores, 2016; Meza-Rodríguez &

Trimiño-Quiala, 2020) indicate that parental involvement in education is limited, both at home and at school.

In recent times, the growth in the use of information and communication technologies (ICT), particularly the Internet, among the population (National Institute of Statistics and Geography [INEGI], 2022; We Are Social, 2022) offers an opportunity to increase parental involvement in education, as these technologies can facilitate distance communication between parents and teachers, as well as among parents themselves. Furthermore, ICT enables parents to access open educational resources and information to support their children's learning (Blau & Hameiri, 2017; Bonanati & Buhl, 2022; Head, 2020; Macià, 2016; Ramos et al., 2015).

Teachers and parental involvement in education

However, parental involvement is not solely reliant on access to technological mediums that facilitate communication and access to information. Instead, it is a social phenomenon influenced by multiple factors (Gubbins & Otero, 2020; Oswald et al., 2018). Several scholars suggest that teaching practices can encourage or inhibit parental communication with the school and their support for home learning (Gubbins & Otero, 2020; Valdés-Cuervo et al., 2022). In this regard, some scholars (Smith & Sheridan, 2019; Yulianti et al., 2022) consider teacher invitations to parental involvement essential for understanding prevailing disparities.

Invitations to parents include requests, opportunities, and support offered by teachers to encourage and share responsibilities with parents in promoting the social, emotional, and academic development of students (Bazán-Ramírez et al., 2020; Castro et al., 2015; Yulianti et al., 2023). There is a plethora of empirical evidence showing that teacher invitations positively affect parental involvement in school and at home to support children's learning (Reynolds et al., 2015; Sandoval et al., 2017; Valdés-Cuervo et al., 2022; Yulianti et al., 2022). While the literature highlights that teachers' actions explain differences in parental involvement in education, research on how teachers' practices relate to parents' use of TICs to participate in their children's education is limited, particularly in Mexico. To address this gap, the present study examines how teacher invitations, directly and indirectly, related to parental use of TICs to communicate with the school and support learning at home.

The mediating role of technological self-efficacy and the value attributed to ICTs

In the framework of cognitive social theory, it is generally acknowledged that individuals' beliefs significantly impact their behavior. Specifically, self-efficacy and

the value assigned to the task are regarded as crucial factors in explaining individuals' decisions, perseverance, and performance in certain activities (Bandura, 1982; Eccles & Wigfield (2002). These constructs mediate social influences, impacting how people perceive, interpret, establish goals, and respond to various situations in their contexts (Eccles & Wigfield, 2020; Plante et al., 2013).

Self-efficacy encompasses an individual's perception of their ability to effectively organize and perform in specific activities and social contexts (Bandura, 1982, 1995). Research confirmed that parents' perception of their self-efficacy in their involvement in their child's education is linked to improved communication with teachers, increased participation in school activities, and more effective support for learning at home (Gruchel et al., 2022; Gubbins & Otero, 2020; Liu & Leighton, 2021; Sandoval et al., 2017; Tazouti & Jargélan, 2019). Moreover, empirical evidence indicates that parental perception of technological self-efficacy is associated with increased use of ICT to support their child's learning (Han et al., 2022; Osorio-Saez et al., 2021).

The value of a task is associated with an individual's perception of its importance to their identity, the enjoyment it provides, its usefulness in achieving short and long-term objectives, and the cognitive effort and emotional exhaustion required to complete it (Eccles & Wigfield, 2020; Wigfield & Eccles, 2020). In line with this, some studies have found that parents hold positive beliefs about the value of ICT in the educational process (Angulo-Armenta et al., 2019; Ramírez-Rueda et al., 2021; Segura et al., 2022). While the empirical evidence is limited, research suggests that parents' beliefs about the value of ICT are associated with the frequency with which they use it in their children's education (Bradley, 2020; Hammer et al., 2021).

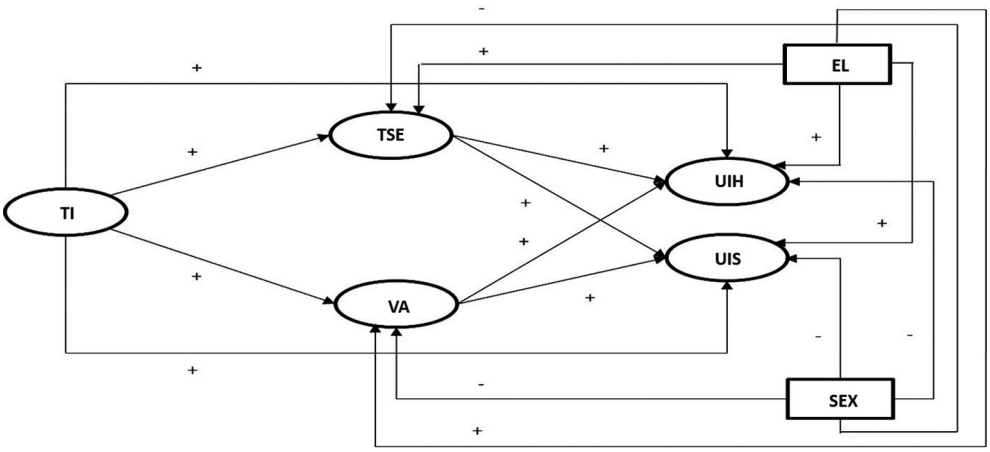
The present study

In this context, the present research examines, in a sample of primary school student's parents, the relationship between teaching invitations, parental technological self-efficacy, and the value that parents attach to ICT with the extent to which they employ these tools to communicate with the school and support their children's learning at home. The analyses will be conducted, controlling for sex and parents' education level (see Figure 1).

The following hypotheses are proposed to guide the study: (a) There is a positive association between teacher invitations and perceived technological self-efficacy, and the value that parents attribute to ICT; (b) There is a positive relationship between teacher invitations and the use of ICT by parents to communicate with the school and support children's learning at home; (c) Perceived technological self-efficacy and the value that parents attribute to ICT in their children's education are positively associated with the use of ICT to communicate with the school and

support children's learning at home; and (d) Parents' perceived technological self-efficacy and the value they attribute to ICT partially mediate the relationship between teacher invitations and parental involvement in the home and school.

Figure 1
Theoretical model of the relationships between the variables involved in the study



Note. TI = Teacher invitations to use ICT; TSE = Technological self-efficacy; VA = Value attributed to ICT; UIS = Use of ICT to communicate with the school; UIH = Use of ICT to support learning at home; EL = Educational level.

METHOD

Participants

A total of 639 mothers (*M* age = 37.1 years, *SD* = 6.1) and 447 fathers (*M* age = 39.7 years, *SD* = 6.6) of 679 fourth (29.9%), fifth (37.7%), and sixth (32.3%) grade students from 25 public primary schools located in different school zones of a city in southern Sonora participated in the study. All these schools had some form of internet access. As the study aimed to investigate parental participation, questionnaires completed by caregivers other than parents were excluded from the sample. Of the participants, 0.6% did not complete primary education, 4.1% had primary education, 28.7% had secondary education, 36.1% had upper secondary education, and 30.5% had post-secondary education. 75% of the participants reported having internet access at home, while 25% accessed the internet via mobile data.

Instruments

Invitations from teachers to use ICT

The Teacher Practices to Involvement Family scale was adapted (Valdés-Cuervo et al., 2016) to measure parents' perceptions of the frequency with which teachers invite them to use ICT to become involved in their children's education. The items were grouped into two dimensions: (a) Communication with the school (4 items, e.g., The teacher (a) of my child (a) invites me to participate in social groups on the Internet (e.g., WhatsApp) to inform me about school activities), and (b) Support for learning at home (3 items, e.g., The teacher (a) of my child (a) suggests web pages to reinforce my child's (a) learning of the school curriculum). A Likert-type response format was used with options ranging from 0 (Never) to 4 (Always).

Perceived value of ICT

The present study adapted items of previous scales proposed items to measure the parental perception of the value of ICT for becoming involved in their children's education (Eccles & Wigfield, 1995; Muenks et al., 2023). The response format was a Likert scale with options ranging from 0 (Completely disagree) to 4 (Completely agree). The items assessed parents' perception of the intrinsic value (2 items, e.g., I like using ICT to communicate with my child's teacher), the importance (2 items, e.g., I think it is good to use ICT to help my child with schoolwork), and the usefulness of ICT in education (3 items, e.g., I believe that ICT facilitates my communication with the teacher about concerns expressed by my child).

Technological self-efficacy

Building on the research of previous scholars (Grijalva-Quiñonez, 2023; Gruchel et al., 2022; Huang et al., 2018), we developed a scale to measure technological self-efficacy for the present study. Parents were questioned about how effective they perceived using ICT in activities related to their children's education (e.g., using technology to keep informed about school activities). The response format was a Likert-type scale with five options: 0 (Not at all skilled), 1 (Slightly skilled), 2 (Moderately skilled), 3 (Highly skilled), and 4 (Extremely skilled).

Parental involvement in ICT-supported education

The scale was developed for the study, drawing on previous research (Dueñas et al., 2022; Valdés Cuervo et al., 2009). The scale is comprised of 13 items that measure the use of ICT by parents for supporting learning at home (8 items, e.g., I help my child (a) search for information on the internet to complete assignments) and (b) communicating with the school (5 items, e.g., I use my cell phone, email, or social media to communicate with my child's teacher about how they complete assignments and participate in class). The response format was a Likert-type scale with options ranging from 1 (Never) to 5 (Always).

Control variables

Empirical studies indicate that mothers are typically more involved in their children's education than fathers (Ortiz-Zavaleta & Moreno-Almazán, 2016). Furthermore, parental involvement in education is positively associated with the parent's educational level (Chaparro Caso et al., 2016; Harris et al., 2017; Jang et al., 2017). Therefore, the study aimed to control for the sex (0 = female, 1 = male) and educational level of the parents (1 = not complete primary education, 2 = primary education, 3 = secondary, 4 = upper secondary education, and 5 = post-secondary education) to determine whether these factors better explain the use of TICs for educational purposes than the variables under study.

Procedure

Approval from the University's Ethics Committee was obtained. Subsequently, school authorities sought authorization to access students and their parents. As the instruments were specifically adapted or developed for the study, in all cases, the items were evaluated by expert judges (3 researchers, 3 teachers, and 3 parents) who rated the items as 1 = irrelevant, 2 = needs major revisions to be relevant, 3 = relevant, and 4 = highly relevant. The items with a content validity index equal to or greater than .78 were included in the scales (Almanasreh et al., 2019). Information was obtained by sending students an invitation to their parents, informing them of the purpose of the study, and soliciting their voluntary participation. Parents who agreed to participate signed an informed consent letter. The questionnaires were returned directly by the parents or through their children to the researchers.

Statistical analysis

In the present study, the missing data was less than 5% for all the variables examined, and this was addressed utilizing the multiple imputation techniques accessible in the SPSS 27 software. The validity of the internal structure of the scales used in the study was examined through confirmatory factor analysis (CFA). The CFAs were conducted using the method of weighted least squares robust estimation (DWLS) (Chen et al., 2023; Finney & DiStefano, 2013). The reliability of the scores was analyzed using McDonald's Omega coefficient (ω); values equal to or greater than .70 are considered indicators of adequate reliability of the scores (Green & Yang, 2015).

The median, standard deviation, and Spearman's correlation coefficient between the variables were calculated. Although there is no complete consensus regarding the interpretation of effect sizes, several authors (Bakker et al., 2019; Funder & Ozer, 2019; Lovakov & Agadullina, 2021) maintain that non-significant or small effect sizes, as per Cohen's (1988) proposed criteria, have significant practical and theoretical implications in the social sciences. In this context, in the present study, effect sizes of less than or equal to .10 were considered as indicators of a small effect size, those of less than or equal to .20 as indicators of a medium effect size, and those equal to or greater than .30 as indicators of a large effect size (Funder & Ozer, 2019; Gignac & Szodorai, 2016).

A structural model with latent variables and two parallel mediators was estimated. Since the variables were measured at an ordinal level, the robust weighted least squares method with diagonalized covariance matrix (DWLS) was employed with support from JASP 18 (Chen et al., 2023; Finney & DiStefano, 2013). Acceptable model fit indices for the structural model were considered, including Satorra-Bentler Chi-square (SBX^2) with associated *p*-values > .05, Comparative Fit Index (CFI ≥ .95), Tucker-Lewis Index (TLI ≥ .95), Root Mean Square Error of Approximation (RMSEA ≤ .08), and Root Mean Square Residual (SRMR ≤ .08) (Byrne, 2016; Kline, 2023).

RESULTS

Psychometric properties

Invitations from teachers to use ICT. The results of the confirmatory factor analysis (CFA) indicate a good fit of the measurement model to the data (SBX^2 = 30.7, *df* = 13, *p* = .004; SRMR = .01; CFI = .99; TLI = .99; RMSEA = .03, 90% CI [.02, .05]). A global score for teacher invitations was obtained since the correlations

between the factors were high (r = .76). The reliability values for both dimensions were acceptable: Communication with School (ω = .73) and Learning Support at Home (ω = .70).

Perceived value of ICT. The AFC results indicate a good fit of the one-dimensional measurement model to the data (SBX^2 = 46.74, df = 12, p < .001; SRMR= .03; TLI = .99; CFI = .99; RMSEA= .05, 90% CI [.03, .06]). The reliability of the scores was acceptable (ω = .92).

Technological self-efficacy. The findings from the AFC indicate a good fit of the measurement model to the data (SBX^2 = 25.2, df = 13, p = .02; SRMR = .04; CFI = .99; TLI = .97; RMSEA = .04, 90% CI [.01, .06]). The reliability of the scores was acceptable (ω = .90).

Parental involvement in ICT-supported education. The AFC demonstrates a good fit of the measurement model to the data (SBX^2 = 231.63, df = 62, p < .001; SRMR = .03; TLI = .99; CFI = .99; RMSEA = .05, 90% CI [.04, .06]). The value of McDonald's omega coefficient indicates that the reliability of the scores for the dimensions that measure the use of ICT by parents to support learning at home (ω = .92) and communicating with the school (ω = .89) is acceptable.

Preliminary analysis

Table 1 indicates that when parents were asked about invitations from teachers to utilize ICT for communication with the school or to support their children's learning at home, their responses predominantly fell within the 'almost never' category. Additionally, the medians of the responses suggest that parents and guardians value TICs as important for becoming involved in their children's education and find them effective for using these tools for this purpose. Finally, parents report that they rarely use TICs to communicate with the school and only occasionally use them to support children's learning at home.

Statically significant positive correlations were found among all the variables studied. The magnitudes of the effect sizes suggest practical and theoretical implications of these correlations. In regard to control variables, the results showed statistically significant positive correlations between the level of education and the variables included in the study. On the other hand, the sex of the parents did not correlate with the invitations to teach and the value attributed to TIC. However, it correlated negatively (0 = female, 1 = male) with technology self-efficacy and two types of parental involvement. The effect sizes suggest theoretical and practical implications of the correlations.

Table 1
Mean, standard deviation and correlation between the studied variables

Variable	*M*	*DE*	1	2	3	4	5	6	7
1. TI	2.01	1.12	-	.29***	.33***	.47***	.32***	.01	-.03
2. TSE	3.51	1.14		-	.54***	.33***	.52***	.28***	-.11***
3. VA	2.80	0.74			-	.30***	.43***	.13***	-.01
4. UIS	1.83	0.95				-	.46***	.14***	-.14***
5. UIH	2.35	1.05					-	.26***	-.12***
6. EL								-	-.01
7. Sex									-

Note. TI = Teacher invitations to use ICT; TSE = Technological self-efficacy; VA = Value attributed to ICT; UIS = Use of ICT to communicate with the school; UIH = Use of ICTs to support learning at home; EL = Educational level.

***$p < .001$.

Structural model

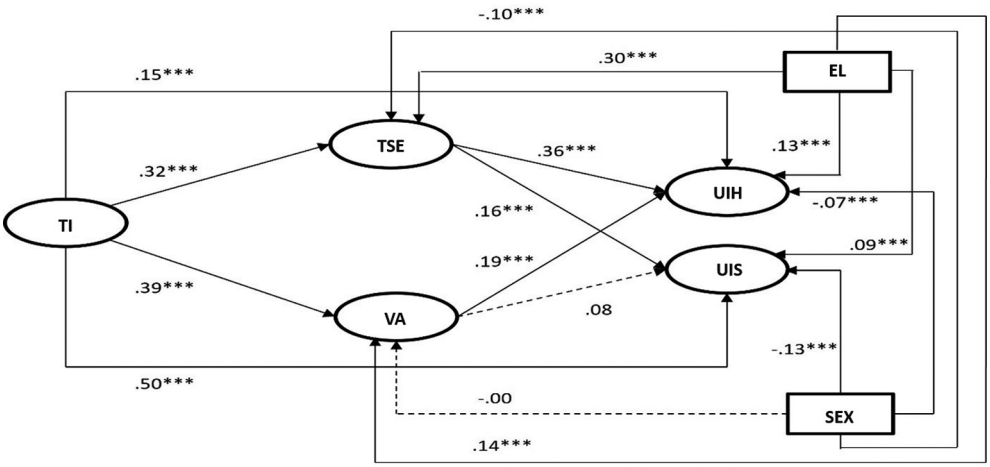
Results indicated a good fit of the structural equation model to the data (SBX^2 = 2471.97, *df* = 529, $p < .001$; SRMR = .03; CFI = .99; TLI = .99, RMSEA= .03, 90 CI [.02, .04]). The model explained 40% of the variance in parental use of ICT communicating with the school and 42% of the use of these resources to support home learning (see Figure 2). The direct relationships indicated that instructional invitations were positively related to parental evaluation of technology (β = .39, $p < .001$, 95% CI [.06, .15]), parental perception of technological self-efficacy (β = .32, $p< .001$, 95% CI [.25, .35]), use of technology for supporting home learning (β = .15, $p < .001$, 95% CI [.07, .15]), and communicating with school (β = .50, $p < .001$, CI 95% [.29, .43]). On the other hand, technological self-efficacy was positively related to parental participation in using technology to support learning (β = .36, $p < .001$, 95% CI [.20, .35]) and communicating with school (β = .16, $p< .001$, 95% CI [.06, .18]). Finally, parental evaluation of technology was positively related to support for home learning (β = .19, $p < .001$, 95% CI [.13, .35]), while its relationship with communicating with the school was non-significant (β = .08, $p = .062$, 95% CI [-.01, .20]).

About indirect relationships, the results indicated that the value attributed by parents to technology partially mediated the relationship between teaching invitations and the use of technology to support home learning (β = .07, $p < .001$, 95% CI [.02, .07]). However, it did not mediate the relationship between teaching

invitations and using technology to communicate with the school (β = .03, *p* = .058, 95% CI [-.01, .05]). On the other hand, parental technology self-efficacy partially mediated the relationship between teaching invitations and the use of technology to support home learning (β = .12, *p* < .001, 95% CI [.06, .11]) and to communicate with the school (β = .05, *p* < .001, 95% CI [.02, .11]).

Figure 2

Results of the structural model between the variables involved in the study



Note. TI = Teacher invitations to use ICT; TSE = Technological self-efficacy; VA = Value attributed to ICT; UIS = Use of ICT to communicate with the school; UIH = Use of ICTs to support learning at home; EL = Educational level.

***$p \leq .001$.

DISCUSSION

The literature recognizes that parental engagement in education is critical for fostering equitable and inclusive educational experiences. Whereas multiple scholars (Hornby & Blackwell, 2018; Meza-Rodríguez & Trimiño-Quiala, 2020) have underlined that several variables can obstruct parental participation in children's education, remains crucial for the educational research agenda to investigate ways, such as technology, that can facilitate and enhance parental participation in education. In this sense, the present study elucidates how teaching practices relate to parental use of technology to participate in their children's education. In general, our results suggest that invitations from teachers are directly associated with the use of technology by parents to communicate with the school and support their

children's learning at home and that these relationships are mediated by cognitive and social variables of parents, such as technological self-efficacy and the value they attribute to technology in education.

Direct relations of the invitations from teachers

The study demonstrates that teaching invitations are positively related to the use of technology by parents to support their children's learning at home and to communicate with the school. These findings align with previous research that reports a positive influence of teaching invitations on parental involvement in their children's education (Sandoval et al., 2017; Valdés-Cuervo et al., 2022; Yulianti et al., 2022).

An important finding is that teacher invitations are more strongly associated with parental use of ICT for school communication than with their use to support children's home learning. Although further studies are needed to clarify this finding, it is possible to consider that teachers' lack of familiarity with the use of technology as a support resource in teaching (Gallegos-Fernandez et al., 2021; Gómez et al., 2019) may cause them to lack the skills to effectively guide the use of these resources by parents as support for their children's learning at home. Additionally, limited parental skills in using technology as a support resource for acquiring the competencies demanded by the curriculum may also be associated with this (Castellanos et al., 2022; Misirli & Ergulec, 2021).

Consistent with previous literature, this study demonstrates that teacher invitations are positively associated with parents' technological self-efficacy and the value they attribute to ICT in their children's education (Liu & Leighton, 2021; Smith & Sheridan, 2019). These results suggest that when teachers invite parents to use ICT, they model technologically competent behaviors, provide guidance and support, create collaborative spaces, and achieve positive outcomes that enhance both parents' perceptions of their own ICT competence and the value they place on ICT in education.

Direct relationships between technological self-efficacy and the value attributed by parents to ICT

Furthermore, as anticipated, a direct and positive association was observed between technological self-efficacy and the frequency parents use ICT to communicate with schools and support their children's learning at home. This finding aligns with theory and empirical evidence, suggesting that self-efficacy is a crucial regulator of behavior (Han et al., 2022; Osorio-Saez et al., 2021).

The findings partially validate the hypotheses proposed in the study regarding the value of ICT. According to the considerations, the value parents attribute to ICT is positively associated with their use to support home learning (Bradley, 2020; Hammer et al., 2021). However, contrary to what was hypothesized, no significant relationship was observed between the value attributed to ICT and its use by parents to communicate with the school. Although new studies are needed to clarify this result, it is possible to hypothesize that the value attributed to ICT is more associated with its use in the home because this requires a significant formative effort and autonomous motivation on the part of parents, while the use of ICT to participate in school occurs in many cases as a response to direct invitations from the teacher. In general, it occurs through social networks (e.g., WhatsApp) that many parents handle beforehand.

Mediation of technological self-efficacy and the value parents attach to ICT to the relationship between teacher invitations and parental ICT use

The analysis of indirect relationships reveals that the perceived technological self-efficacy partially explains the relationship between teacher invitations and both types of parental involvement (communication with the school and support for learning at home). However, the value attributed by parents to ICT only partially mediates the relationship between teacher invitations and the use of technology to support learning at home. This finding confirms that teacher invitations have an influence that extends beyond the present situation, as they foster the development of psychological resources that can impact well-being, resilience, and autonomous motivation for parents to use ICT in their children's education (Hammer et al., 2021; Han et al., 2022).

LIMITATIONS

The study contributes to understanding the influence of teachers' practices on parental involvement in children's education. Nevertheless, it is essential to acknowledge certain limitations that should be considered when using its findings. Firstly, the study followed a cross-sectional design, which does not allow for the specification of cause-and-effect relationships between the variables studied. Therefore, future studies employ experimental or longitudinal designs to investigate the variables' relationships. Secondly, the information relied on self-reported measures administered to parents. It is essential to involve other informants (e.g., teachers, administrators, and students) and measurement methods (e.g., interviews and observations). Third, the study examines only two types of parental involvement in education. However, it is necessary also to examine teachers'

influence in different forms of parental involvement, such as decision-making and volunteering. Finally, while the sample was adequate for the study, it is proposed to involve more diverse samples of parents from the country, such as those from rural and indigenous schools, and to conduct transcultural studies.

CONCLUSIONS

The study suggests that the role of the teacher in implementing reforms and strategies to promote parental involvement should be reevaluated. Importantly, the study results indicate that teachers can empower parents to actively participate in their children's education through the use of ICT. Additionally, teachers play a significant role in fostering parents' psychological resources that favor the autonomous use of TICs in their children's education.

In practical terms, the study suggests that teachers must be informed about the importance of inviting parents to use ICT, both for communicating with the school and for supporting children's learning at home. Furthermore, it is confirmed that Mexican teachers must be equipped with the necessary skills to guide parents' use of ICT effectively. This effort requires the cooperation and accountability of educational authorities, teachers, and families.

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Homework amount, time spent, and time management: a latent profile analysis in secondary education

Cantidad de deberes, tiempo dedicado y gestión del tiempo: un análisis de perfiles latentes en educación secundaria

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ABSTRACT

Previous research suggests that the amount of homework done, the time spent on it, and even how that time is managed, are not positively related to better academic performance when taken individually. Therefore, the main purpose of this study is to identify student profiles, defined on the basis of the amount of homework students complete, the time they spend doing it, and their management of that time. The aim is to determine the various

combinations with respect to participants' behavioral engagement in academic tasks performed at home, incorporating a person-centered perspective rather than taking the variables independently. Once potential profiles are identified, defined and characterized, the aim is to determine differences at an affective-motivational and cognitive level, and in terms of academic performance. The sample comprised 1935 students in compulsory secondary education (ESO) from 22 schools in Galicia and Asturias. Three behavioral involvement profiles were identified according to their level of involvement: medium-high, medium, and low. In turn, these three profiles were differently related to intrinsic motivation, anxiety, approach to learning, and academic performance. Specifically, the higher the level of behavioral engagement, the higher the intrinsic motivation, the lower the homework anxiety, the deeper the homework approach, and the better the academic performance. In conclusion, we discuss the need to consider at least these three behavioral engagement variables—amount of homework completed by the student, time spent, and time management—in light of the profiles identified in the study in order to be able to ensure optimal personal homework work conditions and good academic achievement.

Keywords: homework, secondary education, profiles, student behavior, student motivation, cognitive style

RESUMEN

La investigación pasada sugiere que la cantidad de deberes realizados, el tiempo dedicado a los mismos o, incluso, la gestión del tiempo, no se relacionan positivamente con un mayor rendimiento cuando se toman individualmente. Por ello, el principal propósito de este estudio es identificar perfiles de estudiantes, definidos en base a la cantidad de deberes escolares que realizan, el tiempo que dedican a realizarlos y la gestión de ese tiempo. Se trata de comprobar las diversas combinaciones que se dan dentro de las y los participantes con respecto a la implicación conductual en las tareas académicas realizadas en el hogar, integrando una perspectiva centrada en la persona y no tomando las variables de forma independiente. Una vez identificados, definidos y caracterizados potenciales perfiles, se pretende averiguar cuáles son sus diferencias a nivel afectivo-motivacional y cognitivo y también con respecto al rendimiento académico. La muestra está integrada por 1935 estudiantes de Educación Secundaria Obligatoria (ESO) pertenecientes a 22 centros educativos de Galicia y de Asturias. Se han identificado tres perfiles de implicación conductual según su nivel de implicación: media-alta, media y baja. A su vez, estos tres perfiles se relacionan de manera diferente con la motivación, la ansiedad, el enfoque de trabajo y el rendimiento académico. En concreto, y en general, cuanto mayor es el nivel de implicación conductual mayor es la motivación intrínseca, menor la ansiedad ante los deberes, más profundo el enfoque de trabajo sobre los mismos y mayor el rendimiento académico. Como conclusión, se discute la necesidad de tomar en cuenta, al menos, estas tres variables de implicación conductual –cantidad de deberes realizados, tiempo dedicado y gestión del tiempo– según los perfiles encontrados para ser capaces de

asegurar condiciones óptimas personales de trabajo en los deberes y un buen rendimiento académico.

Palabras clave: deberes, enseñanza secundaria, perfil del alumno, conducta del alumno, motivación, estilo cognitivo

INTRODUCTION

The quality of students' behavioral engagement with homework is fundamental in explaining school success. However, examining the relationship of each component element with academic performance has often produced contradictory results. For example, various studies looking at time spent on homework have found it to be a relatively unimportant factor in academic performance (Valle, Pan, Núñez, et al., 2015), whereas other studies have found it to be an important—albeit sometimes negative and sometimes positive—aspect (Kalenkoski & Pabilonia, 2017).

Most of these studies used a variable-based approach, and the disparate results are one reason why more recent studies have adopted a person-centered approach (Estévez et al., 2023; Valle et al., 2019). Such an approach allows the complexity of the associations between diverse variables to be evaluated and provides a broader explanation of the possible interactions between them (Lanza & Cooper, 2016). In addition, by emphasizing the individual, this approach facilitates the identification of homogeneous student profiles who present similar characteristics in a range of variables (Hickendorff et al., 2018). This approach has been increasingly adopted in educational psychology research (see, e.g., Estévez et al., 2023; Xu, 2022).

Interest in the present study lies in using a person-centered approach to determine the types of profiles that can be found via a combination of the amount of homework that students are set by their teachers, the time they spend doing that homework, and the management of that time—which refers to the effort and quality of student dedication in qualitative terms (Valle et al., 2019). Once these profiles are identified, the study aims to determine which are more effective and less effective, in affective-motivational and cognitive terms, related to the homework process, and in terms of academic performance.

This will provide an understanding of how teachers should be setting homework that best fits the different profiles, and therefore improve how they deal with diversity. This will help provide quality homework that manages to be tailored to the affective-motivational, cognitive, and behavioral differences between students.

BEHAVIORAL ENGAGEMENT WITH HOMEWORK

Doing homework—tasks that teachers set for students to complete outside the classroom (Cooper, 1989)—is associated with a series of benefits, such as a positive

impact on academic performance (Özyildirim, 2022) and on school engagement (Vieites et al., 2023). However, this impact largely depends on the students' behaviors when doing their homework (Rodríguez et al., 2020).

Homework engagement refers to the students' efforts and persistence when doing it (Regueiro, 2018). When students are engaged in homework tasks, they complete more of the tasks that teachers set them in class (Estévez et al., 2018); they are also more effective at managing their time doing homework, avoiding possible distractions, and staying focused until they finish (Valle et al., 2019). In addition, students who are highly engaged in homework tasks will spend a certain amount of time on that work (Özyildirim, 2022). Although there is no consensus about the number of hours spent on homework that best explains its positive effects on learning (see, e.g., Kalenkoski & Pabilonia, 2017; Valle, Pan, Núñez, et al., 2015), the 2012 PISA report showed that Spanish adolescents spent more than six hours a week on homework, 2.9 percentage points above the Organization for Economic Cooperation and Development (OECD) mean, but did not necessarily perform better in these tests (OECD, 2013).

This has led various studies to note the importance of studying the variables of behavioral engagement with homework in combination in order to determine what specific combination of time spent and time management is most beneficial (Valle et al., 2019; Xu, 2022). For example, Estévez et al. (2023) examined secondary school students and identified four profiles resulting from combinations of these two homework engagement variables. Two were defined as more adaptive for effective time management, with differences in time spent. There were similar results from Valle et al. (2019) using a sample of primary-school students.

In addition, time spent on homework and time management are positively related to the amount of homework set by the teacher that students complete (Núñez et al., 2015; Rodríguez et al., 2020). However, to the best of our knowledge, no studies have explored profiles that combine these three variables.

Affective-motivational and cognitive engagement with homework

When students decide to engage with homework tasks, as well as directing their behavior towards doing these tasks, they also demonstrate specific affective and emotional states and ascribe them a certain value (Regueiro, 2018). In this regard, students who are motivationally and emotionally engaged with their homework show interest in and positive attitudes towards their homework (Xu, 2018), perceive its usefulness, and are intrinsically motivated to do it (Suárez et al., 2019).

Intrinsic motivation towards homework tasks exhibits particularly strong positive relationships with time management, the amount of homework completed from what has been set, and time spent—in that order (Estévez et al., 2018; Rodríguez et

al., 2020). Recent studies have explored differences in students adopting intrinsic motives for doing homework. They found that students with an effective behavioral engagement profile—better time management and more mean time spent—demonstrated higher values in this variable (Estévez et al., 2023; Flunger et al., 2017).

Anxiety, as an affective component present in homework execution, is also related to students' behavioral engagement with the tasks (Flunger et al., 2017). More specifically, when secondary-school students do more homework, spend more time on it, and manage the time better, they demonstrate less homework-related anxiety (Regueiro et al., 2016). In the study by Estévez et al. (2023) there were differences between students who spent approximately the same amounts of time doing homework, with those who managed their time better demonstrating lower levels of anxiety. Despite that, this variable has not yet been sufficiently well-explored in secondary education in relation to the other variables noted above.

In addition, students are also cognitively engaged in homework, managing the personal and contextual resources available to them to complete their tasks, such as adopting a specific approach to the work (Valle et al., 2016). In this regard, students who adopt deeper approaches when doing homework—such as doing so with the goal of learning—manage the time they spend better, but do not necessarily spend more time on their homework (Valle, Pan, Regueiro, et al., 2015).

Homework and academic performance

Nowadays, there is sufficient empirical evidence showing that homework generally has a positive impact on secondary-school students' academic performance, with larger effects than are seen in primary-school students (see, e.g., Magalhães et al., 2020; Özyildirim, 2022). However, this relationship is influenced by a variety of personal and contextual variables (Xu, 2018). Among those variables, students' behavioral engagement with homework has been identified as a key element in explaining performance (see, e.g., Rodríguez et al., 2019)—understood as the knowledge and abilities demonstrated by the student in school subjects, operationalized as a final mark, score, or grade (González-Pienda, 2003).

Looking at the overall effect of behavioral engagement variables on school performance, efficient secondary-school students—with profiles indicating good use of homework time, regardless of actual time spent—achieve higher academic grades than students who do not make the best use of this time (Valle et al., 2019; Xu, 2022). Given that the amount of homework completed out of what was set by the teacher also has a positive impact on performance (Rodríguez et al., 2019), it would be interesting to explore the effects of profiles of behavioral engagement with homework considering the three variables in combination.

THE PRESENT STUDY

With the aim of determining inter-individual differences in homework effects, the study adopted a person-centered approach, considering the variables involved in the process of doing homework together rather than independently (Flunger et al., 2017; Xu, 2022). The study had two main objectives: (a) to identify different possible student profiles based on *behavioral engagement* with homework—the proportion of homework completed from what was set by the teacher, the amount of time spent, and time management—in a sample of students in compulsory secondary education; and (b) to analyze the differences between the identified behavioral engagement profiles in *affective-motivational engagement*—intrinsic motivation and anxiety—, *cognitive engagement*—a deep learning approach—, and *academic performance*.

The last aim of the study is to contribute to the design of homework policies that are tailored to the characteristics of secondary-school students. One reason for studying this population is that, compared to primary-school students, those in secondary education usually have more freedom and autonomy to decide where and when to focus on their homework and are more able to manage themselves (Xu, 2012).

METHOD

Study design

This was an empirical study, performed using an associative strategy (Ato et al., 2013), as it aimed to examine the functional relationship between a set of variables. It used a non-experimental design with the objective of classifying groups (predictive study) and comparing the groups in various external variables (comparative study).

Participants

The sample comprised 1935 students (51.2% girls) in compulsory secondary education attending 22 schools (15 state-funded, 7 private or independent) in Galicia and Asturias (regions in the north of Spain). At the time the study was performed 550 participants (28.4%) were in the first year of secondary education, 488 (25.2%) were in the second year, 429 (22.2%) were in the third year, and 468 (24.2%) were in the fourth year.

The sample selection process was as follows. Firstly, all the secondary schools in the two regions were invited to participate in the study. Schools who agreed to

participate then sent letters to the families of the students to be involved seeking their consent. This meant that the participating students had the consent of their families, as well as agreeing to participate themselves. Data was produced from those students with consent who were in class at the time of the evaluation.

Variables and instruments

The variables related to students' behavioral and affective-motivational engagement with homework were assessed using the Homework Survey (*Encuesta sobre los Deberes Escolares*, EDE), a questionnaire that has been used in various studies into homework (see, e.g., Valle et al., 2019). The scale uses a Likert-type response with five options to measure the following variables:

- *Behavioral engagement with homework*: information was collected about the amount of homework students do compare to what the teachers set, the time they spend on the homework, and whether they effectively manage that time:
  - *Amount of homework done compared to what teachers set*: this is assessed with the response to a single item, «How much of the homework that the teachers set you do you normally complete?» Responses are: 1 = none of it, 2 = a little, 3 = half, 4 = almost all, 5 = all of it.
  - *Time spent on homework:* this is assessed with the item, «How much time do you usually spend doing homework each day?» The responses are: 1 = less than 30 minutes, 2 = between 30 and 60 minutes, 3 = between an hour and an hour-and-a-half, 4 = between an-hour-and-a-half and two hours, 5 = more than 2 hours.
  - *Management of homework time:* this is assessed with the response to the item, «When I start to do my homework, I concentrate and I don't think about anything else until I have finished». The responses range from 1 (never) to 5 (always).
- *Affective-motivational engagement with homework:* this area of engagement was assessed using information about intrinsic motivation and anxiety associated with homework collected using the EDE subscales for each variable. These subscales use a five-point Likert-type scale from 1 (completely false) to 5 (completely true).
  - *Intrinsic motivation*: to determine whether students' motivations when they do homework are linked to enjoyment, satisfaction, and learning, their intrinsic motivation is assessed using eight items: e.g., «Doing homework helps me to understand what is being taught in class». The reliability of the scale is adequate (α = .86; ω = .88; AVE = .52), as is the

structural validity (χ^2 = 179.998, *p* <.001; CFI = .988; TLI = .981; SRMR = .028).

- *Anxiety:* students' levels of homework-related anxiety are measured using four items: e.g., «Just thinking about doing homework makes me nervous». Despite the small number of items in the scale, the data indicate adequate reliability (α = .79; = .82; AVE = .63) and adequate structural validity (χ^2 = 69.014, *p* <.001; CFI = .987; TLI = .960; SRMR = .031).

Students' cognitive engagement with homework was measured by applying the Study Process Inventory [*Inventario de Procesos de Estudio*] (IPE) (Rosário et al., 2006). The specific variable chosen for the study was the adoption of a deep learning approach by the students when they did their homework:

— *Deep learning approach to homework:* how students approach their homework and the strategies they use to do it are assessed using six items: e.g., «Before starting my homework, I usually think about whether I am sure about what we were taught in class, and if I'm not, I review the lesson before I start my homework.» The responses are given on a five-point Likert-type scale ranging from 1 (completely false) to 5 (completely true). Both reliability (α = .83; ω = .83; AVE = .55) and structural validity (χ^2 = 32.579, *p* <.001; CFI = .982; TLI = .966; SRMR = .027) are adequate.

Academic performance was assessed using the students' mean grades in Spanish and Mathematics. The responses ranged from 1 to 5 (1 = Fail, 2 = Pass, 3 = Good, 4 = Very good, 5 = Outstanding). These two subjects were chosen because they are common to all four school years and they are the most important in the secondary school curriculum.

Procedure

Data were collected during class time, with the prior agreement of the teachers, school management, the students, and their families. The questionnaires were applied at a single time point and the participants completed their responses individually, without a time limit. In compliance with the University of A Coruña Ethics Committee, and the ethical principles of the Helsinki Declaration, the data were only used for statistical purposes, and each student's responses were confidential and anonymous.

Data analysis

The data were analyzed using a variety of analytical techniques depending on the study objective. Firstly, the descriptive statistics, correlations, and measures of normality were calculated for the measures taken. Secondly, to address the first objective, we performed a Latent Profile Analysis (LPA) using MPlus, version 7.11 (Muthén & Muthén, 1998-2012). In line with commonly established recommendations for LPA (Lanza et al., 2003), the best model was selected based on data from the Lo-Mendell-Rubin likelihood ratio test (LMRT) (Lo et al., 2001), the Akaike information criterion (AIC), Schwarz's Bayesian information criterion (BIC), and the sample-size-adjusted BIC (SSA-BIC), along with the entropy values and the size of each subgroup. The *p* value associated with the LMRT indicates whether the solution with more classes ($p < .05$) or less classes ($p > .05$) has a better fit to the data. The AIC, BIC, and SSA-BIC are descriptive indices of fit, with lower values indicating better fit for the model. Small classes (containing less than 5% of the sample) are often considered spurious, and may indicate that there are too many profiles in the model (Hipp & Bauer, 2006). The accuracy of classification of the selected model was assessed by calculating the *posteriori* probability and the entropy value. This statistic ranges between zero and one, with values closer to one indicating better classification accuracy.

To address the second objective, following the guidance from Vermunt and Magidson (2021), the AUXILIAR option, with «e-setting», was selected in the same Latent Profile Analysis model to examine the relationship between the identified profiles and the dependent variables (intrinsic motivation, anxiety, deep learning approach, academic performance). Where the χ^2 indicated statistically significant differences between classes or profiles, we performed pairwise mean comparisons. Effect sizes were interpreted using the criteria established by Cohen (1988), according to which, $d = 0.20$ indicates a small effect, $d = 0.50$ indicates a medium effect, and $d = 0.80$ indicates a large effect.

RESULTS

Descriptive analysis and correlations

Table 1 shows the descriptive statistics, skewness, and kurtosis for the study variables along with the correlations between them. The values for asymmetry and kurtosis indicate that the variables follow a normal distribution (Finney & DiStefano, 2013).

Table 1
Means, standard deviations, skewness, kurtosis, and correlation matrix

	1	2	3	4	5	6	7
1. Homework amount	–						
2. Time spent	.41*	–					
3. Time management	.38*	.17*	–				
4. Intrinsic motivation	.41*	.25*	.37*	–			
5. Anxiety	-.14*	-.01	-.18*	-.07*	–		
6. Deep learning approach	.30*	.18*	.26*	.42*	-.07*	–	
7. Academic performance	.35*	.12*	.21*	.19*	-.21*	.10*	–
M	4.08	3.14	3.22	3.44	1.64	3.04	2.65
SD	1.03	1.15	1.07	0.82	0.79	0.52	1.29
Skewness	-1.12	-0.08	-0.25	-0.51	1.55	-0.38	0.24
Kurtosis	0.47	-0.80	-0.50	-0.04	2.47	4.84	-1.25

Note. Measurement scale for variables: 1 minimum, 5 maximum. *$p < .01$.

Table 1 indicates that the correlations between the variables in the study were statistically significant—except for the relationship between time spent on homework and anxiety. There were also positive relationships between the three variables used for the latent profile analysis—amount of homework done compared to what was set, time spent on homework, and management of homework time. In addition, these three variables were positively related with three of the external variables—intrinsic motivation, deep learning approach, and academic performance—and negatively related with anxiety.

Identifying profiles of behavioral engagement with homework

The latent classes were specified based on three variables: the amount of homework set that students completed, the time spent on homework, and management of homework time. The process involved successively evaluating models with increasing numbers of latent classes, stopping when a model produced no substantial improvements over the previous one based on the criteria used to assess the model fit. In this case, the process was stopped at a model with four latent classes. The results of model fit are shown in Table 2.

This stopping point was chosen for various reasons. Firstly, although the AIC, BIC, and SSA-BIC were lower than in the three-class model, the LMRT statistic was not statistically significant (LMRT = 2531.627; p = .119), indicating that the four-class model did not improve on the classification of the three-class model. Secondly, the three-class model is more parsimonious than the four-class model—the fourth class is merely a subgroup of one of the three classes in the previous model. Thirdly, the entropy value for the selected model was excellent, indicating excellent classification accuracy—of subjects within classes—from the three-class model. In fact, the probability of assigning subjects to classes was excellent, class 1 = 1.000, class 2 = 1.000, class 3 = .997.

Table 2
Results for the fit of the latent class models

	Latent class models		
	M2	**M3**	M4
AIC	15669.396	**15010.700**	12403.442
BIC	15725.074	**15088.650**	12503.664
SSA-BIC	15693.304	**15044.171**	12446.477
LMRT	1117.291	**645.377**	2531.627
(LMRT *p* value)	(.000)	**(.000)**	(.1192)
Entropy	.941	**.991**	1.000
NG *n*<5%	0	**0**	0

Note. M2 = Model with 2 latent classes, ... M4 = Model with 4 latent classes; AIC = Akaike Information Criterion; BIC = Schwarz's Bayesian Information Criterion; SSA-BIC = Sample-size-adjusted BIC; LMRT = Lo-Mendell-Rubin likelihood ratio test.

Description of profiles of behavioral engagement with homework

Table 3 shows the mean scores (direct and standardized), standard errors, and confidence intervals for the three homework behavioral engagement profiles. Figure 1 gives a graphical representation of the three profiles by standardized scores in the three variables (*Z* scores: *M* = 0, SE = 1).

To describe the profiles, we considered both direct scores (1 to 5) and standardized scores (between -0.5 and 0.5: moderate; between 0.5 and 1.0: high; between -1.0 and -0.5: low; greater than 1.0: very high; lower than -1.0: very low). Profile 1 was characterized by moderately high scores in the three behavioral engagement variables (particularly the amount of homework done out of what was set). This group can be considered to have effective behavioral engagement with homework, and we labelled them students with *medium-high engagement* (MHE Group). Based on their raw mean scores and their position on the Likert-type scales, the students in this group do all the homework their teachers set them, spend an hour and a half each day on homework, and almost always concentrate when doing homework. The group made up 42.07% of the total sample of students (41.36% were girls), with the following distribution by school year: 38.70% (1st year), 30.46% (2nd year), 16.71% (3rd year), 14.13% (4th year).

Table 3

Description of profiles of behavioral engagement with homework

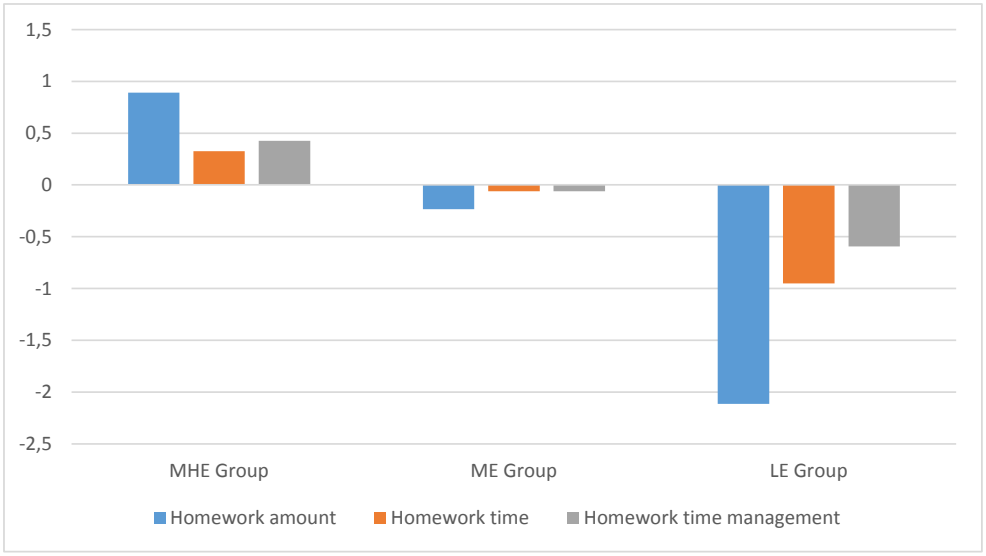
	Direct mean scores (Z scores)	*Standard Errors*	Confidence intervals	
			LCI 5%	UCI 5%
Profile 1 (class 1: n = 814; 42.07%)				
Homework amount	5.00 (0.89)	0.00 (0.00)	4.99(0.89)	5.00(0.89)
Time spent	3.53 (0.33)	0.04 (0.03)	3.44(0.28)	3.62(0.38)
Time management	3.63 (0.43)	0.03 (0.04)	3.54(0.37)	3.72(0.49)
Profile 2 (class 2: n = 229; 11.83%)				
Homework amount	1.88 (-2.11)	0.02 (0.02)	1.82(-2.15)	1.94(-2.08)
Time spent	2.09 (-0.95)	0.07 (0.07)	1.90(-1.06)	2.27(-0.84)
Time management	2.43 (-0.59)	0.07 (0.08)	2.26(-0.72)	2.60(-0.46)
Profile 3 (class 3: n = 892; 46.10%)				
Homework amount	3.85 (-0.23)	0.01 (0.01)	3.82(-0.25)	3.88(-0.22)
Time spent	3.08 (-0.06)	0.04 (0.03)	2.98(-0.11)	3.17(-0.01)
Time management	3.05 (-0.06)	0.03 (0.04)	2.97(-0.12)	3.13(-0.00)

Profile 2 was characterized by very low scores in the amount of homework done, and moderately low scores in time spent and time management. This group may be considered to have a relatively ineffective profile of behavioral engagement with homework, and we called these students with *low engagement* (LE Group). The students in this group do little of the homework their teacher set them, spend on average half an hour a day on their homework, and almost never or very rarely concentrate on their homework. The LE group made up 11.83% of the student sample (46.4% were girls), distributed by school year as follows: 15.72% (1st year), 18.34% (2nd year), 27.07% (3rd year), 38.87% (4th year).

Profile 3 was characterized by moderate scores in the three behavioral engagement variables. They may be considered moderately effective and are students with *medium engagement* (ME Group). In other words, students with these profiles do almost all of the homework they are set, spend between an hour and an hour and a half on their homework and only occasionally concentrate while doing it. The group made up 46.10% of the sample (51.33% were girls), distributed by school year as follows: 23.88% (1st year), 23.32% (2nd year), 27.02% (3rd year), 25.78% (4th year).

Figure 1

Graphical representation of the homework behavioral engagement profiles (Z scores)



Relationship between behavioral engagement profiles and external variables—affective-motivational variables, deep learning approach, and academic performance

Table 4 shows the descriptive statistics (means and errors of estimation) for the four dependent variables in each behavioral profile.

Table 4

Descriptive statistics for intrinsic motivation, anxiety, deep learning approach, and academic performance for each of the three profiles

	Intrinsic motivation		Anxiety		Deep learning approach		Academic performance	
	M	S.E.	M	S.E.	M	S.E.	M	*S.E.*
MHE Group	3.722	0.026	1.513	0.025	3.163	0.018	3.203	0.043
ME Group	3.294	0.026	1.770	0.029	3.006	0.017	2.293	0.039
LE Group	2.802	0.055	1.816	0.057	2.773	0.037	1.935	0.071

Note. M (Mean), S.E. (Standard Error), MHE (Medium-high Engagement), ME (Medium Engagement), LE (Low Engagement).

Tests of equality of means between classes (behavioral profiles) using multiple imputations based on posterior probability (with 2 degrees of freedom for the total test and 1 degree of freedom for the pairwise tests) demonstrated statistically significant differences between groups in the four external variables. Overall, there were statistically significant differences for intrinsic motivation (χ^2 = 277.228, p < .001, d = 0.818), anxiety (χ^2 = 54.941, p < .001, d = 0.342), a deep learning approach (χ^2 = 103.521, p < .001, d = 0.476), and academic performance (χ^2 = 337.783, p < .001, d = 0.919). The differences for intrinsic motivation and academic performance were large, the differences for a deep learning approach were moderate, and for anxiety they were small. Finally, as Table 5 shows, within each dependent variable, the three pairwise comparisons were statistically significant, except for anxiety, where the comparison between the low and moderately engaged groups was not statistically significant (χ^2 = 0.520, p > .05).

Table 5
Multiple comparisons

	χ^2	*p* <	*d*
Intrinsic motivation			
MHE *vs* LE	225.261	< .001	1.049
MHE *vs* ME	132.989	< .001	0.582
LE *vs* ME	64.529	< .001	0.494
Anxiety			
MHE *vs* LE	23.579	< .001	0.304
MHE *vs* ME	45.352	< .001	0.331
LE *vs* ME	0.520	.471	-----
Deep learning approach			
MHE *vs* LE	89.147	< .001	0.611
MHE *vs* ME	42.287	< .001	0.319
LE *vs* ME	32.266	< .001	0.344
Academic performance			
MHE *vs* LE	229.882	< .001	1.063
MHE *vs* ME	241.074	< .001	0.811
LE *vs* ME	19.168	< .001	0.264

Note. MHE (Medium-High Engagement), ME (Medium Engagement), LE (Low Engagement).

DISCUSSION AND CONCLUSIONS

The results obtained allow us to identify three groups of students who show different profiles of behavioral involvement with homework—medium-high engagement, medium engagement, and low engagement—based on the different combinations of how much of their set homework they complete, the time they spend on it, and how they manage this time. These results are not entirely consistent with results from previous research (e.g., Estévez et al., 2023; Valle et al., 2019; Xu, 2022), although those studies did not consider the amount of homework completed. Therefore, it seems as though including the proportion of set homework students complete produces a clearer differentiation between the profiles than considering solely time spent and time management (Estévez et al., 2023).

The data from our study suggest that doing *all the homework* set by the teacher, spending on average *an hour and a half* doing it, and *managing the time well* (the MHE group) was the most effective and adaptive combination. And it was this Medium-high Engagement group who had the highest levels of intrinsic motivation towards homework, who adopted the deepest learning approach, who achieved the best academic performance, and who had the lowest levels of homework-related anxiety.

In contrast, doing *only some of the set homework*, spending on average *half an hour* on it, and *ineffectively managing this time* is the least adaptive, least effective approach (LE group). This low engagement group includes the participants demonstrating the lowest intrinsic motivation, a shallower learning approach, the lowest levels of performance, and the highest levels of homework-related anxiety.

We also found a Medium Engagement profile (ME group), characterized by doing *almost all the set homework*, spending *between an hour and an hour-and-a-half* each day on homework, and *only partially managing this time*. This profile had lower scores than the moderate-high group and higher scores than the low engagement group in intrinsic motivation, academic performance, and use of a deep learning approach, whereas in anxiety, this group scored higher than the MHE group and lower than the LE group.

Considering the results of the study, students' levels of behavioral engagement may be linked to a specific pattern of affective-motivational and cognitive variables and performance. In this regard, intrinsic motivation towards homework, working in a focused manner when doing it, and academic performance may be associated with moderate to high engagement with homework. Previous studies have demonstrated a profile of students who complete more homework and achieve higher grades in mathematics (Xu & Núñez, 2023). Adopting a deep learning approach to homework (Valle, Pan, Regueiro, et al., 2015) would increase the perceived value of the tasks, and contribute to better management of the homework process, generally

associated with better results (Magalhães et al., 2020). In addition, low levels of anxiety were only seen in the most behaviorally engaged students (the MHE group), who had the highest levels of intrinsic motivation and who adopted the deepest study approaches to their homework. In contrast, the other two profiles—characterized by moderate and low levels of intrinsic motivation and deep learning approach—did not exhibit differences.

Lastly, it is worth noting that the combination of suitable behavioral engagement and a deep learning approach to homework was associated with better academic performance and lower levels of homework-related anxiety. This means that not spending much time on homework is no guarantee of effectiveness, especially if the time is not well managed. In short, when students are interested in doing homework with the aim of learning, and when they believe that it is useful in that aim, that leads to greater engagement, and fundamentally, better quality (Rodríguez et al., 2020).

Hence it seems that students with various motivational profiles towards homework characterized by mastery-oriented motivation or a combination of goals demonstrate greater behavioral engagement towards their homework than students whose profiles indicate low levels of goal-oriented motivation or motivation aimed at avoiding learning or performance (Regueiro et al., 2016). In contrast, students with low levels of motivation towards homework are less behaviorally engaged and exhibit more anxiety related to it (Regueiro et al., 2016). In line with previous research, our study reiterates how important it is for secondary-school students to have high behavioral engagement, moderate levels of motivation, and low levels of anxiety to ensure quality engagement.

It seems clear that intrinsically oriented motivation will help students to maintain their own sense of personal efficacy in the face of failure, protect them against negative factors such as anxiety, and facilitate higher levels of cognitive engagement. This will lead to better academic performance.

The results of our study have educational implications for both families and teachers. For teachers, the study reaffirms the need to tailor the tasks they set to the diverse range of students, considering the three profiles the study identified. This may begin with helping students plan how they will use their time when doing homework, especially the low engagement group, but also students with medium engagement. In addition students might be motivated by helping them to understand the value of the homework activities they are set (Valle & Rodríguez, 2020), again especially in the two lower engagement groups. Help for students in the medium-high engagement group should be aimed at maintaining this behavioral engagement, for example by offering positive motivating feedback (Fong et al., 2019) or by varying the types of homework tasks being set (Valle & Rodríguez, 2020).

When it comes to implications for families, we know that out of the various forms of parental involvement in homework—autonomy support, content support, control, frequency of involvement, or a combination of different types—only autonomy support has a significant positive effect on children's academic performance (Xu et al., 2018). Families need to be able to encourage their children's autonomy in relation to managing the amount of time they need to properly do their homework and to reducing this time by managing it more effectively. In general terms, given that parental control is not usually a suitable strategy (e.g., Núñez et al., 2015), families should help their children to develop skills for autonomy, such as moving progressively from external regulation—by parents—to full self-regulation by the children. To do that, it is essential to help families involve themselves properly in supporting their children's autonomy when it comes to doing homework. One way to do this may be training sessions for parents that could be given in schools (Suárez et al., 2022).

LIMITATIONS

Although the results of our study indicate clear theoretical and practical implications, there are some limitations that mean the results must be considered with some caution, as well as some lines of future research that will allow the phenomenon being studied to be examined more deeply and current potential biases to be addressed. One clear limitation was some variables being measured using a single item. There is also a clear bias in taking solely self-reported measures. Future studies can minimize this limitation by using other measurement procedures. It would also be interesting to measure the variables qualitatively, and capturing the opinions of other agents in the homework process, such as the family and the teachers. This would contribute to improving on the results of the present study, and in consequence, on the way homework is set.

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The challenge to design and assess learning outcomes in higher education

El reto del diseño de los resultados de aprendizaje y su evaluación en educación superior

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ABSTRACT

Establishing learning outcomes and the system for monitoring and assessing their achievement is an essential aspect of planning and organising the teaching-learning process, and also a crucial function of university teaching staff. In addition, it is also a key activity to provide coherence in higher education to curriculum design based on constructive alignment. This study presents an analysis and assessment of the descriptions of the following curricular elements in the university master's degree programmes: learning outcomes and assessment methods and instruments. Employing a textual and content analysis, 9419 descriptions of learning outcomes and 6729 descriptions of assessment methods and instruments have

been analysed, which correspond to 89 master's programmes in the branch of Social Sciences and Law taught in six Spanish universities in different autonomous regions. Textual analysis was performed with the *Xplortext* software. For the content analysis, firstly, an *ad hoc* evaluation instrument (ANVALDOC) was designed and, secondly, a computer tool (CORAMeval) was developed to implement and use the scale. The results show the association between the language used and the university of origin or the discipline in which the degree is contextualised. Likewise, there is a clear difference between universities and disciplines in terms of the quality of the learning outcome descriptions, assessed in terms of correctness, verifiability, authenticity, or underlying cognitive process. Moreover, these differences are maintained in the correctness and authenticity of the assessment methods and instruments.

Keywords: higher education, learning outcomes. educational assessment, performance assessment

RESUMEN

Determinar los resultados de aprendizaje y el sistema para el seguimiento y evaluación de la consecución de estos constituye uno de los aspectos fundamentales de la planificación y organización del proceso de enseñanza-aprendizaje, siendo igualmente una de las funciones esenciales que desempeña el profesorado universitario. Así mismo, se trata de una actividad básica para dar coherencia en la educación superior a un diseño curricular basado en el alineamiento constructivo. En este estudio se presenta un análisis y valoración de las descripciones realizadas en las memorias de verificación de títulos universitarios de máster de los siguientes elementos curriculares: resultados de aprendizaje y medios e instrumentos de evaluación. Mediante un análisis textual y de contenido se han analizado 9419 descripciones de resultados de aprendizaje y 6729 de medios e instrumentos de evaluación, que se corresponden con las memorias de 89 títulos de máster de la rama de ciencias sociales y jurídicas impartidos en seis universidades españolas de diferentes regiones autónomas. El análisis textual se ha realizado con el software *Xplortext*. Para el análisis de contenido se ha diseñado, en primer lugar, un instrumento de evaluación ad hoc (ANVALDOC) y, en segundo lugar, se ha desarrollado una herramienta informática (CORAMeval) para la implementación y uso de la citada escala. Los resultados muestran la asociación existente entre el lenguaje utilizado y la universidad de procedencia o el ámbito de conocimiento en el que se contextualiza el título. Así mismo, se evidencia una clara diferencia según las universidades y ámbitos en cuanto a la calidad de las descripciones de los resultados de aprendizaje, valorada en términos de corrección, verificabilidad, autenticidad o proceso cognitivo subyacente. Igualmente, estas diferencias se mantienen en la corrección y autenticidad de los medios e instrumentos de evaluación.

Palabras clave: educación superior, resultados de aprendizaje, evaluación formativa, evaluación sumativa

INTRODUCTION

One critical and essential role of universities is to design programmes and so also the content within each programme. Among several possible approaches to curriculum design, Biggs et al. (2022) propose constructive alignment, which emphasises the need for coherence between intended learning outcomes (ILO), teaching-learning activities and assessment tasks. This approach represents a change in paradigm as it focuses attention on student learning, an aspect highlighted by the European Higher Education Area (Barboyon Combey & Gargallo López, 2022).

Constructive alignment proposes curriculum design based on four basic activities (Biggs, 2014): 1) determine the ILO that the students should achieve by specifying the action to be performed; 2) create a learning environment using teaching-learning activities that make the students get involved in achieving the intended outcomes; 3) design and use assessment tasks to evaluate ILO achievement; and 4) turn these judgements into final scores.

Despite this approach highlights the ILO, qualifications designed in Spain have focused on skills as an essential part of the programmes. However, Royal Decree 822/2021, on organising university teaching and the quality assurance procedure, put learning outcomes centre stage, turning them into «the key element to define study plans and harmonise higher education systems» (ANECA, 2022, p. 5), which causes some confusion from a curriculum point of view and represents a further challenge for university teachers.

This change of direction, plus our limited evidence on the use of ILO by academics (Dobbins et al., 2016), back the need to analyse master's programmes to understand how the ILO are being designed and which assessment methods and instruments are being proposed to evaluate how well the ILO are achieved, which will make it possible to offer improvement guidelines to effectively address the master's redesign to match current international trends.

LEARNING OUTCOMES IN CURRICULUM DESIGN

Various authors have defended the importance of re-focusing subject or content design and planning this from the student's perspective, in other words, taking assessment as a starting point, since it is the focus of interest from which students approach their activity (Biggs et al., 2022; Ibarra-Sáiz & Rodríguez-Gómez, 2022a) and so determines how they learn (Ajjawi et al., 2022; Boud, 2020). This requires coherence between the expected ILO and the assessment tasks which will demonstrate how far the ILO have been achieved (Ibarra-Sáiz & Rodríguez-Gómez, 2022a). In short, assessment tasks should explicitly align with

the ILO (Coates, 2016) and they should use the appropriate assessment methods and instruments.

We conceive the ILO as declarations that provide information on what a learner is expected to know, understand, use, perform, demonstrate or apply and prove by performances or achievements in a specific context with determined levels of achievement at the end of the learning process» (Rodríguez-Gómez & Ibarra-Sáiz, 2022, 0m37s). The ILO offer greater transparency and clarity as they take what students are supposed to achieve during their university training and make it clearer and easier to understand. These learning outcomes thereby become a very useful course design tool. Figure 1 represents this relationship between these curricular elements, beginning with the ILO, as drivers of the assessment tasks and the teaching and learning activities (Boud, 2020). In short, establishing coherence between the ILO, the assessment tasks and the students' learning when performing the various activities (Ajjawi et al., 2022).

Figure 1

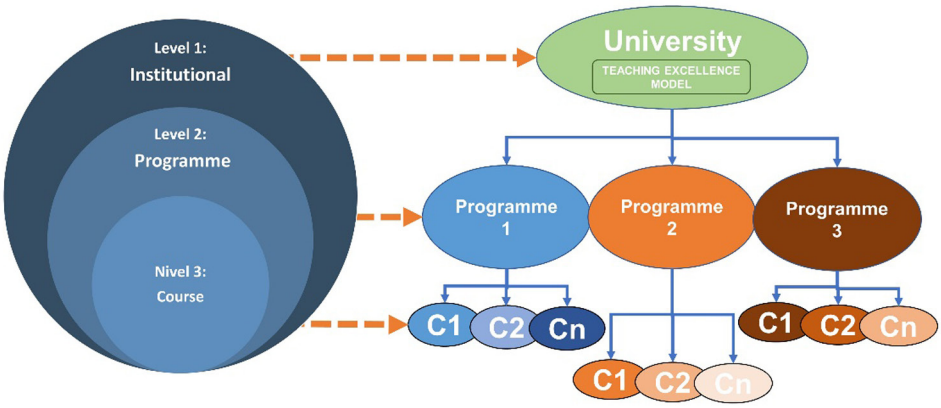
Learning outcomes as curricular design drivers

SPECIFYING THE LEARNING OUTCOMES IN CURRICULUM DESIGN

When specifying the ILO, two fundamental aspects should be considered: the level of specification and its constitutive parts.

Approaching the curricular design from the constructive alignment is considered a fundamental principle for the university level teaching-learning process (Ajjawi et al., 2023; Barboyon Combey & Gargallo López, 2022) not only in the subjects/content but also at an institutional level. Biggs et al. (2022) thereby propose three levels of ILO (institutional, programme and unit) which should be coherent to each other when rolled out. It should also be considered that the RD 882/2021 states that the ILO must be in line with QF-EHEA Master's degree level in the European Higher Education Area and be coherent to its designation, its discipline and the graduate profile which, inexorably, requires considering various levels or standards and a benchmark teaching excellence model for the roll out (Figure 2).

Figure 2
Levels of ILO specification and roll-out



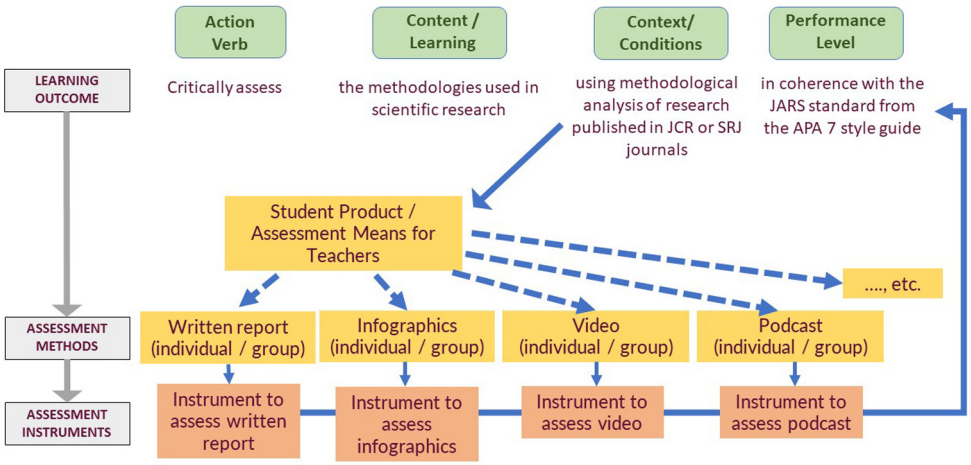
At an operative level, to consider these outcomes to be properly formulated, ILO formulation must include a series of components. Consequently, an ILO statement should specify an action verb which informs the learner what they are expected to be capable of doing, and this action must also appear in the assessment task(s) which, in turn, will provide the backbone of the teaching-learning activities (Biggs et al., 2022).

Table 1 presents the components that various authors and institutions consider should be included in an ILO declaration.

Table 1
Components of an ILO

Biggs et al. (2022)	Verb which specifies the application of what is expected or level of comprehension	Content of the topic understood to be the object of the verb	Context of the discipline in which it must be used	
Soares et al. (2020)	Verb which indicates what the student is expected to be capable of doing when they finish their learning.	Word/s indicating what student is performing on or with	Words which indicate the nature of the performance	
AQU (2022)	Verb which indicates what is expected	Words which indicate on what or with what to act	Words which indicate the context or standard	
Rodríguez-Gómez and Ibarra-Sáiz (2022)	Action verb	Content or learning object to be acted on	Conditions or context to do it	Intended performance level

Figure 3
Specifying the components of an ILO



Note. Rodríguez-Gómez & Ibarra-Sáiz (2022).

Great similarity is seen among them all, specifying the chosen performance level considered by Rodríguez-Gómez e Ibarra-Sáiz (2022), which is an aspect related to the levels or standards, although these authors highlight the complementary nature of the latter two components.

As represented in Figure 3, specifying these components makes it easier to specify other curricular elements such as the assessment methods and, therefore, the type of assessment instrument likely to be used in coherence to the intended performance level.

MONITORING AND ASSESSMENT OF THE LEARNING OUTCOMES

Outcome-oriented higher education programmes have introduced long-term changes in assessment, particularly in OECD countries (Zlatkin-Troitschanskaia et al., 2016). However, despite contributions from various international and local initiatives to assess the ILO, assessment today is still the same as it was a century ago (Coates, 2020), and the time has come to look into updating it by designing innovative registering, assessing and certifying systems (Ibarra-Sáiz & Rodríguez-Gómez, 2022b).

Following Coates et al. (2021) in their new-generation assessment proposal, and in line with the constructive alignment approach, we advocate an evidence-based assessment design. This means that the assessment tasks must explicitly align with the ILO and guarantee that there is sufficient valid evidence to consistently assess how far the ILO have been achieved.

In this respect, monitoring and assessing the ILO requires assessment methods (products and actions by the students) which can be used to collect information on the assessment object, and assessment instruments that make it possible to pass judgement based on clear, known criteria to assess the level of achievement attained (Ibarra-Sáiz et al., 2023).

Regarding the ILO approach in the university curriculum, we encountered some curriculum redefinition, methodological and evaluative experiences (Astigarraga Echeverría et al., 2020) and others which provide content and textual analysis of the programmes and teaching guides (Schoepp, 2019; Soares et al., 2020) which demonstrate weaknesses in the design and planning of the subject material, but lack greater attention to the topic in terms of curriculum specification (Gamboa Solano et al., 2021).

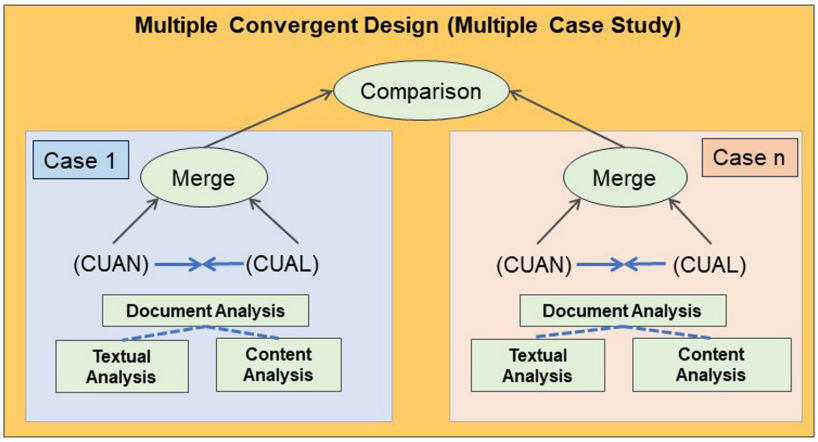
From these prior considerations, the aim of this study was to analyse the design of the learning outcomes and the assessment methods and instruments declared in the university master's degree programmes, to answer the following research questions:

1) What type of learning outcomes are specified in the master's degree programmes?
2) Which assessment methods and instruments are specified to monitor and assess the intended learning outcomes?
3) Are there any differences in characterisation of the learning outcomes and in the assessment methods and instruments used depending on the university or the discipline?

METHOD

This study was performed in the context of the FLOASS Project (http://floass.uca.es) from a mixed-methodology approach (Creswell & Creswell, 2022). This study has specifically followed a multiple convergent design (Figure 4).

Figure 4
Study design



SAMPLE

To make it easier to describe the sample, and the subsequent presentation of results and conclusions, Table 2 outlines the acronyms used and Table 3 presents the acronyms for the participating universities.

The project focused on analysing qualifications given in the universities, classified as level 3 in the *Spanish Framework* of Higher Education Qualifications (master's degree) due to the specialisation and variability of these courses between

various universities. Furthermore, a selection was made from the Social and Legal Sciences area, due to the project's limited human and time resources, which meant that only Social Sciences qualifications taught at each university were analysed (See Appendix I). A total of 89 master's degrees were analysed (Table 3): 38.20% were from the discipline of Education, 51.69% from Economics and Business Studies and 10.11% from Communication, specifically understanding these as the disciplines for this study.

Table 2
Glossary of Acronyms

Acronym	Meaning
COM	Communication
ECO	Economics and Business
EDU	Education
AMI	Assessment Methods and Instruments
ILO	Intended Learning Outcomes

Table 3
Distribution of master's degrees according to the university and the disciplines

University	Disciplines			Total
	COM	ECO	EDU	
UCA	2	8	5	15
UNIOVI	-	6	4	10
UDC	1	5	6	12
UPV/EHU	3	9	6	18
UV	2	14	8	24
URV	1	4	5	10
Total	9	46	34	89

Note. Universidad de Cádiz-UCA; Universidade da Coruña-UDC; Universidad de Oviedo-UNIOVI; Universidad del País Vasco-UPV/EHU; Universitat Rovira i Virgili-URV; Universitat de València-UV.

The programmes for these 89 qualifications were used to extract descriptions of the ILO and the assessment methods and instruments (AMI) specified in each of them, which meant analysing 9,419 ILO and 6,729 AMI (Table 4).

Table 4
Distribution of ILO and AMI by university and disciplines

University	Disciplines						Total	
	COM		ECO		EDU			
	ILO	AMI	ILO	AMI	ILO	AMI	ILO	AMI
UCA	80	88	335	466	925	566	1340	1120
UNIOVI	0	0	1,408	528	746	405	2154	933
UDC	34	47	185	209	488	934	707	1190
UPV/EHU	0	133	38	552	0	513	38	1198
UV	60	59	387	135	2778	908	3,225	1102
URV	62	57	765	589	1128	540	1955	1186
Total	236	384	3118	2479	6065	3866	9419	6729

Instrumentation

To collect, organise and simplify the information to be extracted from the master's programmes, a database was set up in Excel format (Register of master's degrees in social sciences) adding the following data: university, discipline, qualification, subject, skills, learning outcomes and assessment methods and instruments.

The ANVALDOC scale (Ibarra-Sáiz et al., 2022) was defined to analyse the content of the ILO definitions and the AMI descriptions. Researchers used this scale to assess the ILO definitions according to the criteria of correctness, verifiability, authenticity and cognitive level. The AMI were assessed for correctness and authenticity. The CORAMeval computer tool (Balderas et al., 2021) was developed as a support for the assessment process, helping to run the assessments quickly and easily.

Data analysis

The descriptions of the ILO and the AMI proposed in the master's programmes constitute two textual corpora which can be analysed using multi-dimensional statistic methods to explore their form and structure and their lexical content. This textual analysis was performed using several functions from the *Xplortext* (Bécue-

Bertaut et al., 2022) package in the *RStudio* (RStudio Team, 2022) environment. Specifically, the *TexData* function was used to build the textual and contextual tables, the *LexCa* function to perform the correspondence analysis from the lexical tables, and the *LexChar* function to determine the characteristic words from the documents.

The subsequent content analysis expressed in the judges' assessments was performed using descriptive statistics technique and non-parametric contrast tests, as these are ordinal measurements that do not fit reality (K-S test, $p<.001$). *IBM SPSS* (IBM Corp., 2017) and *R* (R Core Team, 2022) were used for these analyses.

RESULTS

Textual analysis of the learning outcomes and the assessment methods and instruments

Exploratory textual analysis

In the case of the ILO, a total of 9419 definitions were analysed, using 5642 different words. Table 5 presents a dictionary of the 30 words which are used 400 times or more, and the number of universities and discipliines where they appear. Consequently, the most frequent word 'conocer' (know) is used in 1625 definitions, found in all six universities and in the three disciplines. The word 'analizar' (analyse) is used 674 times and it is present in five universities and all three disciplines.

Table 5
Dictionary of most frequent words in the ILO descriptions

	Words	Frequency	Universities	Disciplines
1	Know	1625	6	3
2	learning	1352	5	3
3	teaching	1049	5	2
4	processes	976	6	3
5	Research	852	6	3
6	knowledge	847	6	3
7	find out	808	5	3
8	Apply	741	6	3
9	develop	691	6	3

	Words	Frequency	Universities	Disciplines
10	analyse	674	5	3
11	social	659	6	3
12	strategies	655	5	3
13	different	649	6	3
14	assessment	633	6	3
15	information	626	6	3
16	be	530	5	3
17	Design	522	5	3
18	identify	513	6	3
19	problems	492	5	3
20	social	491	5	3
21	analysis	487	6	3
22	techniques	485	6	3
23	education	476	5	3
24	development	467	6	3
25	student body	463	5	3
26	Process	448	6	3
27	professional	441	6	3
28	training	437	5	3
29	knowledge	433	6	3
30	language	428	5	2

On the other hand, a total of 6729 definitions referring to AMI were analysed (Table 6), which used 1224 different words. Only ten words pass the threshold of being used 400+ times, and out of those 'trabajo' (assignment) and 'pruebas' (tests) were the most used.

Table 6
Dictionary of most frequent words in the AMI descriptions

Words		Frequency	Universities	Disciplines
1	assignments	1738	6	3
2	tests	1490	5	3
3	participation	869	6	3
4	activities	827	5	3
5	group	629	5	3
6	practices	614	6	3
7	classroom	601	6	3
8	exam	570	5	3
9	practical	488	6	3
10	assessment	465	6	3

Contextual association with the university and the disciplines

The fundamental aim of the correspondence analysis from the lexical table (documents by words) is to study and visualise the proximities between documents, the proximities between words and the association between documents and words (Bécue-Bertaut, 2018). Nouns and verbs used 400+ times were used in the correspondence analysis.

By comparing the row/column profiles, we can confirm the model of independence among all the documents and the vocabulary. Significant Chi-squared values were attained in both the case of the universities and the disciplines (Table 7), which make it possible to reject the hypothesis of independence, clearly showing an association between documents and vocabulary, between the various universities and the vocabulary that they use in each case, as well as between the various disciplines and the language used in each of them.

Using Cramer's V values, we can see that the values are equal to or higher than 0.2. This can be interpreted as a moderate association, according to the rule which determines values between 0.2 and 0.6 as moderate. In the case of the ILO and university, there is an association of 0.18. The total inertia percentages for the first two axes of each factorial axis demonstrate values over 80% in all cases.

Table 7

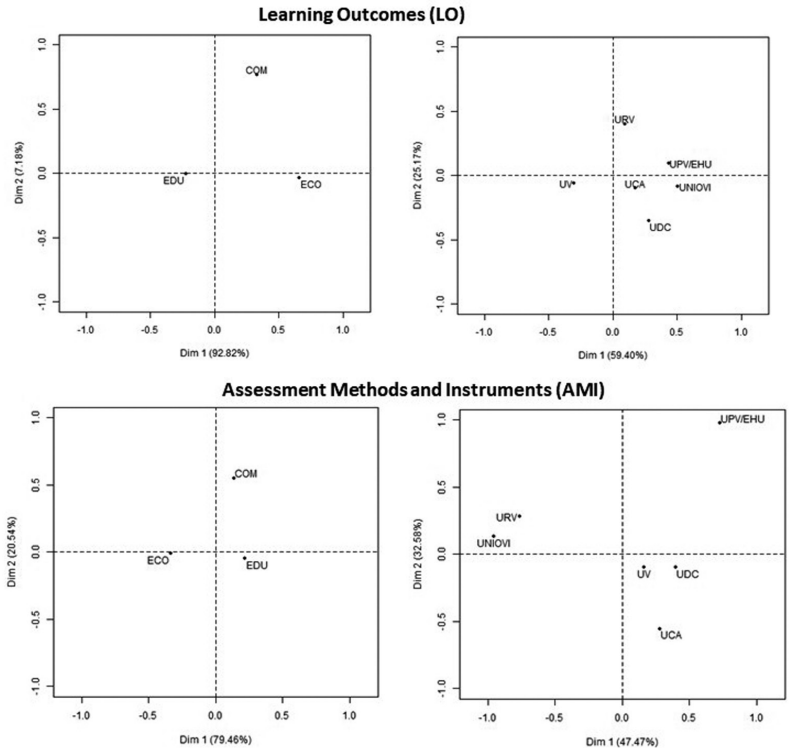
Chi-squared values, Cramer's V values and total inertia percentage by disciplines (A) and university (U)

	Chi-Square				Cramer's V			
	ILO		AMI		ILO		AMI	
	X^2	p	X^2	p	V	% Inertia	V	% Inertia
A	3192.4	<2.2e-16	737.59	<2.2e-16	0,278	100	0,211	100
U	3337.3	<2.2e-16	5862.4	<2.2e-16	0,180	84.6	0,376	80

This association relationship is presented as a graph using the factorial planes shown in Figure 5.

Figure 5

Factorial planes to analyse correspondences on ILO and AMI for the disciplines and university categories



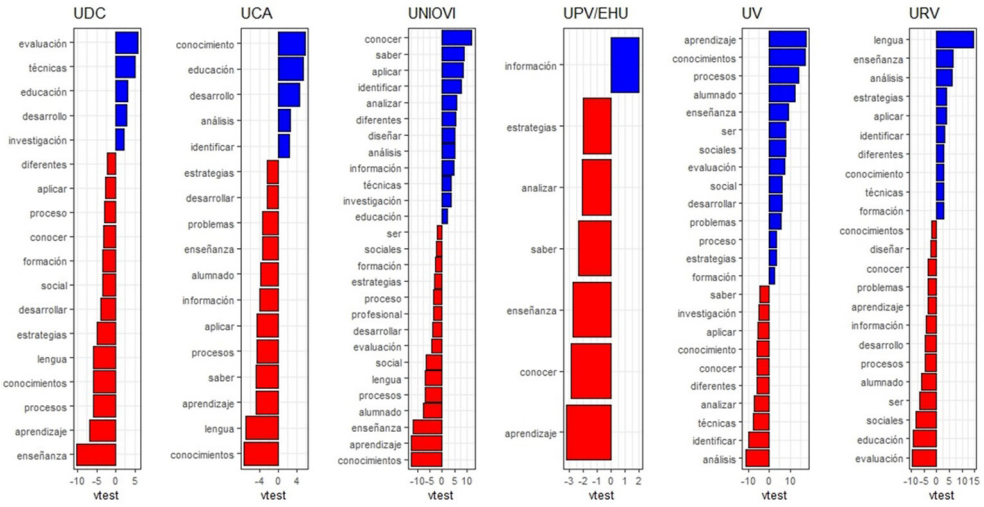
Textual characterisation according to the university and the disciplines

To demonstrate these associations more clearly, the results after identifying the characteristic words are presented below.

Characterisation by university

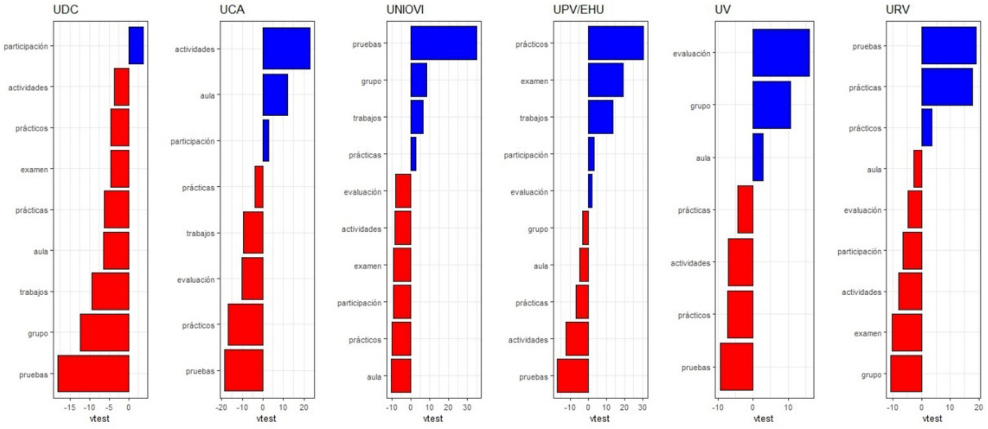
Figure 6 presents the over-represented (blue) and under-represented (red) words in the ILO descriptions depending on the university. For example, at the UCA, the word 'conocimiento' (knowledge) is over-represented as it is used 102 times, and this represents 0.36% of use as opposed to 0.21% of use in all the universities as a whole.

Figure 6
Characteristic words in the descriptions of the ILO by university



Along the same line, Figure 7 shows the characteristic words referring to the AMI. The words 'actividades' (activities), 'aula' (classroom) and 'participación' (participation) are characteristic of the UCA. Participation appears over-represented in three universities as overall it is used in 1.57% of the descriptions, and the use in these universities represents 2% (UDC), 1.8% (UCA) and 2.1% (UPV/EHU).

Figure 7
Characteristic words in the descriptions of the AMI by university



The most characteristic textual segments for each university are presented in Table 7.

Table 8
Textual matrix for AMI by university

UDC	• Attendance and participation in classes, seminars, tutorials and discussion groups. • Active participation in classes, discussions, etc. • Attendance and participation in face-to-face sessions and tutorials. • Participation in guided discussions, classes, seminars and tutorials.
UCA	• Online activities. Results of the resolution of online tasks of different nature. • Student contributions in discussion sessions and student attitude in the various activities. • Resolution of online activities • Completion of the distance activities assigned as compulsory in each case. • Virtual classroom activities • Practical classroom activities

UNIOVI	• Written tests of various kinds • Written tests on the work done • Written tests (objective tests, short-answer tests and/or extended response type tests) • Execution tests of real and/or simulated tasks
UPV/EHU	• Resolution of case studies • Practical tasks • Theoretical-practical tests
UV	• Peer assessment • Assessment of the report • Continuous assessment • Final assessment • Completion of the proposed tasks, both individually and/or in groups. • Group work • Assessment of coursework • Periodic monitoring of students' progress, both in the classroom and in individual tutorials
URV	• Objective short-question tests taken throughout the academic year • Written and oral tests • Objective tests • Extended response tests • Oral tests • Mixed tests • Extended response and objective tests (short questions or multiple-choice tests)

Characterisation according to the disciplines

In the description of the ILO, the words 'técnicas' (techniques) and 'análisis' (analysis) are presented as characteristic of the COM disciplines (Figure 8). The ECO discipline is characterised by terms such as 'conocer' (know), 'análisis' (analysis), 'saber' (find out), 'identificar' (identify), 'aplicar' (apply), 'analizar' (analyse), 'técnicas' (techniques) and 'información' (information). The EDU discipline presents a higher quantity of characteristic words, with outstanding use of terms such as 'aprendizaje' (learning), 'enseñanza' (teaching), 'educación' (education), 'evaluación' (evaluation), 'lengua' (language), 'formación' (training), 'procesos' (processes) or 'alumnado' (students).

Figure 8

Characteristic words in the descriptions of the ILO in each discipline

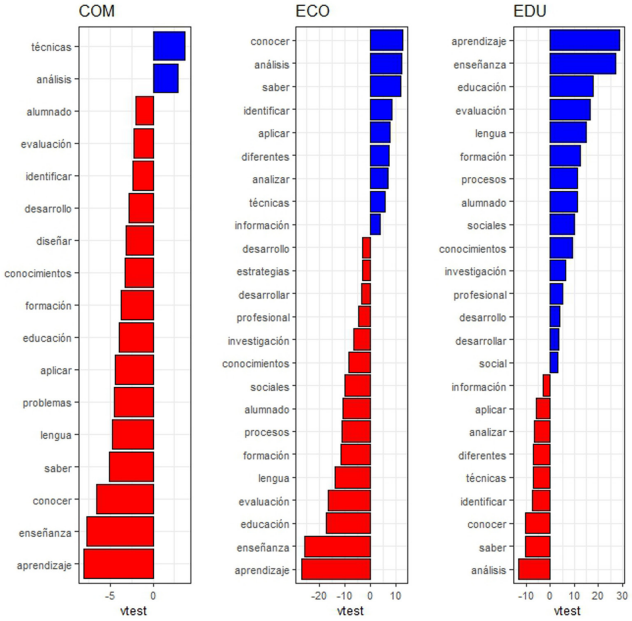
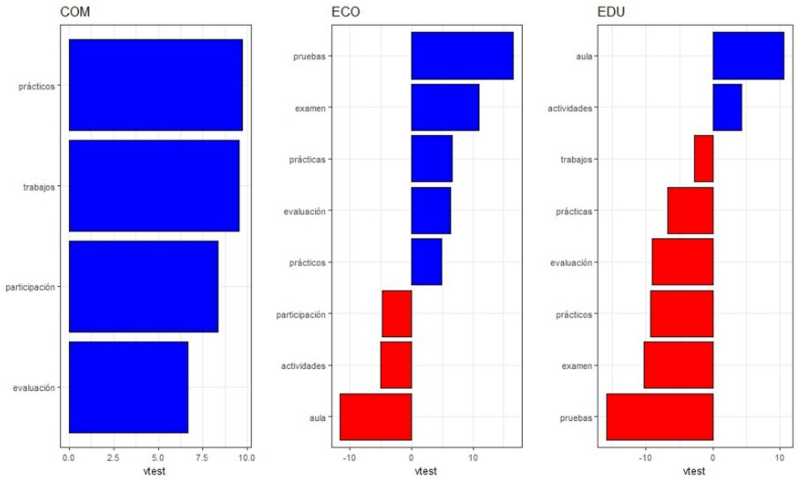


Figure 9

Graphic representation of the characteristic words used in the descriptions of the AMI in each discipline



Finally, Figure 9 shows that the words 'prácticos' (practical), 'trabajos' (assignments), 'participación' (participation) and 'evaluación' (assessment) are characteristic of the COM disciplines as they describe the assessment methods and instruments. 'Pruebas' (tests), 'examen' (exam), 'prácticas' (practices), 'evaluación' (assessment) and 'prácticos' (practical) characterise the ECO discipline and 'aula' (classroom) and 'actividades' (activities) feature most in EDU.

Table 9 presents the characteristic textual segments depending on the discipline.

Table 9
Textual matrix for AMI by discipline

COM	• Assignments • Practical assignments • Practical assignment presentations • Individual assignments • Individual practical assignments • Design and execution of assignments • Presentation and discussion of assignments
ECO	• Oral and written tests • Written knowledge tests, either face-to-face or virtual. • Written tests (objective tests, short-answer tests and/or extended response tests) • Real and/or simulated tasks execution tests.
EDU	• Critical debate in the classroom • Problem solving, exercises in the regular classroom • Classroom participation • Regular monitoring of students' progress, both in the classroom and in individual tutorials.

Content analysis on the learning outcomes and the assessment methods and instruments

Characterisation of the learning outcomes

Out of the 9419 ILO definitions analysed, 20.2% (1898) were scored as correctly defined (maximum score, 2), 42.4% (3995) had limitations in their definition (score=1) and 37.4% (3526) were not defined correctly (score=0). We can thereby see in Table 10 that the correctness average is 0.83 (out of a maximum score of 2). In the case of the universities, this ranges between 0.22 at the UDC and 1.28 at the UV; and regarding the discipline, it ranges between 0.40 from Communication and 0.95 in Education.

Table 10

Descriptors of correctness, verifiability, authenticity and cognitive level of the ILO, according to the university and discipline

Context	Correctness (n=9419)			Verifiability (n=5893)			Authenticity (n=5893)			Cognitive level (n=5893)		
	Md	M	SD	Md	M	SD	Md	M	SD	Md	M	SD
University												
UCA	0.00	0.47	0,698	4.00	3.88	0,963	4.00	4.14	0,819	4.00	4.29	1,555
UDC	0.00	0.22	0,463	3.00	3.76	0,920	5.00	4.77	0,470	6.00	4.73	1,661
UNIOVI	1.00	0.75	0,527	3.00	3.35	1,183	4.00	3.81	1,124	3.00	3.84	1,422
UPV/EHU	1.00	1.26	0,644	4.00	3.76	0,987	4.00	4.35	0,734	4.00	3.91	1,264
URV	1.00	0.61	0,619	2.00	2.62	1,365	4.00	3.82	1,015	3.00	3.72	1,338
UV	1.00	1.28	0,742	4.00	3.65	0,966	4.00	4.01	0,917	4.00	3.86	1,449
Disciplines												
COM	0.00	0.40	0,572	4.00	4.15	0,932	5.00	4.26	0,928	4.00	4.39	1,551
ECO	1.00	0.62	0,601	3.00	3.43	1,364	4.00	4.09	1,019	3.00	3.82	1,417
EDU	1.00	0.95	0,777	3.00	3.39	1,083	4.00	3.97	0,867	4.00	3.86	1,459
Total	1.00	0.83	0,739	3.00	3.41	1,174	4.00	4.01	0,917	4.00	3.86	1,449

Focusing on the 5893 ILO defined correctly or with limitations, 22.7% (1337) are considered to be entirely observable, measurable or assessable. We find a verifiability average of 3.41 (on a scale of 1 to 5), ranging between 2.62 from the URV and 3.88 from the UCA, and 3.39 for Education compared to 4.15 for Communication.

As for ILO, 33.6% (1981) are assessed as authentic, to the extent that their definitions are focused on the action and the professional context. This produces an authenticity average of 4.01 (on a scale from 1 to 5), ranging between an average of 3.81 from UNIOVI and 4.77 from the UDC, and 3.97 from Education compared to 4.26 from Communication.

Finally, referring to the cognitive processes determined by Anderson et al. (2001), it is seen that 20.3% (1194) attain the maximum level (creation), obtaining an average score of 3.86 (on a scale of 1 to 6). The majority of the ILO (50.6%) are scored between levels 3 and 4 (apply and analyse), 15.1% in levels 1 and 2 (remember and understand) and 34.4% between levels 5 and 6 (evaluate and create). Table 9 shows that in this case, the averages from the universities lie between 3.86 from the UV and 4.73 from the UDC and in the disciplines 3.86 from Education and 4.39 from Communication.

Characterisation of assessment methods and instruments

Out of the 6729 AMI analysed, 47.3% (3182) were evaluated correctly, 39.1% (2629) had limitations in their definition as the product or action was not properly explained and 13.6% (918) lacked information on the product or action. The correctness average for the AMI (Table 11) is 1.34 (out of a maximum score of 2), ranging between 0.88 from the URV and 1.91 from the UNIOVI, and 0.98 from the discipline of Communication compared to 1.40 in the Education discipline.

Table 11

Descriptive statistics for correctness and authenticity of the AMI according to university and disciplines

Context	Correctness (n=6729)			Authenticity (n=5811)		
	Md	M	SD	Md	M	SD
University						
UCA	2.00	1.64	0,587	4.00	3.65	1,004
UDC	2.00	1.31	0,886	3.00	3.80	1,047
UNIOVI	2.00	1.91	0,322	3.00	3.75	1,068

Context	Correctness (n=6729)			Authenticity (n=5811)		
	Md	M	SD	Md	M	SD
UPV/EHU	1.00	0.99	0,395	3.00	3.18	0,740
URV	1.00	0.88	0,725	3.00	3.14	1,283
UV	1.00	1.44	0,515	4.00	3.87	0,694
Discipline						
COM	1.00	0.98	0,737	3.00	3.25	1,341
ECO	1.00	1.30	0,729	3.00	3.57	1,102
EDU	2.00	1.40	0,672	4.00	3.60	0,918
Total	1.00	1.34	0,704	3.00	3.57	1,013

Out of the 5811 assessment methods and instruments defined correctly or with limitations, 22.4% (1301) are scored as authentic, as they are focussed on the action and the professional context. Regarding the AMI, 39.9% (2318) are at an intermediate level, with an average authenticity of 3.57. The averages range between 3.14 from the URV and 3.87 from the UV; regarding the discipline, they range between 3.25 from Communication and 3.60 from Education.

The university and the discipline as differentiation factors

The Kruskal-Wallis H-test was performed to check the significance of the differences described above, and its results are presented in Table 12, alongside the effect sizes (η_H^2) and the confidence intervals (CI). The differences between the evaluations carried out according to the university and disciplines are statistically significant ($p<.05$). In the case of the universities, the effect size varies, although correctness provides the greatest effect size both in the ILO (0.23) and in the AMI (0.27), that can both be considered as large. In terms of verifiability, it is moderate (0.10) and regarding the authenticity and the cognitive processes, the effect size is small in the ILO (0.04 and 0.02 respectively); and in the authenticity of the AMI (0.08). Regarding the disciplines, the effect sizes are remarkably small or very small.

Table 12

Results of the Kruskal-Wallis H test depending on the university and discipline

	University				Discipline			
	H	Sig.	η_H^2	IC	H	Sig.	η_H^2	IC
ILO								
Correctness	2150.2	.000	0.23***	[0.21, 0.24]	459.5	.000	0.05*	[0.04, 0.06]
Verifiability	578.13	.000	0.10**	[0.08, 0.11]	41.74	.000	0.006+	[0.00, 0.01]
Authenticity	216.16	.000	0.04*	[0.03, 0.05]	53.53	.000	0.009+	[0.00, 0.01]
Cognitive process	110.57	.000	0.02*	[0.01, 0.03]	12.31	.000	0.002+	[0.00, 0.00]
MIE								
Correctness	1835.8	.000	0.27***	[0.26, 0.29]	123.68	.000	0.02*	[0.01, 0.02]
Authenticity	477.81	.000	0.08**	[0.07, 0.09]	16.03	.000	0.002+	[0.00, 0.01]

+<0.01 (very small) *0.01-0.05 (small) **0.06-0.13 (moderate) *** >=0.14 (large).

DISCUSSION AND CONCLUSIONS

The aim of this study was to analyse the design of the learning outcomes and the assessment methods and instruments declared in the university master's degree programmes for Social Sciences.

To answer the first question raised on what type of ILO are specified in the master's degree programmes, the textual analysis demonstrated that the most frequent word is 'conocer' (know), found in all six universities and all three disciplines. In the same way, content analysis confirmed that 49.3% of the ILO correspond to the lowest levels (remember, understand or apply) of the taxonomy by Anderson et al. (2001). These results coincide with contributions from Boud (2020) on the emphasis placed on low-level knowledge during assessment, as with other studies where the majority of the ILO were classified at the lowest level (Bone & Ross, 2021). This situation might be the consequence of Spanish regulations which allude to the student 'knowing' when they refer to the ILO (RD 1027/20119) and also because, as mentioned by Jiménez Hernández et al. (2020), the teacher-centred teaching model is still present. Furthermore, analysis of the ILO definitions evaluated as corrected formulated or with some limitations concluded that the majority cannot be verified (*observable, measurable or evaluable) nor are they authentic (focused on the action or the professional context).*

However, regarding the cognitive level, a little over one third of the ILO (34.4%) are assessed as the high levels (evaluate and create) of the taxonomy by Anderson et al. (2001), which gives a more encouraging vision in comparison with the studies mentioned by Boud (2020) and Bone & Ross (2021), although insufficient as these are master's degrees corresponding to level 3 of the Spanish Framework of Qualifications for Education.

On the other hand, it is worth mentioning that the definitions are limited for a high percentage of the ILO described, as they do not contain all the components in Table 1 that so many agencies like AQU (2022) and authors such as Biggs et al. (2022), Rodríguez-Gómez & Ibarra-Sáiz (2022) or Soares et al. (2020) consider necessary for proper formulation. In this respect, this confirms what Astigarraga Echeverría et al. (2020) mention as a great difficulty in the design and conceptualisation for curriculum change, as teachers are not sure how to identify and describe the ILO and confuse them with skills.

Regarding the second question in the research, referring to which AMI are specified for monitoring and assessment of the ILO, the textual analysis tells us that the most-used terms are: assignments, tests, participation, activities, group, practices, classroom, exam, practical and assessment. The AMI are clearly diverse, which fits with the study by Ibarrra-Sáiz et al. (2023) and reveals a more innovative

evolution regarding prior contributions by Panadero et al. (2019) which highlight more traditional practice.

The content analysis shows that there are limitations in the formulation of more than half the AMI or they do not provide information on the product or specific action that must be performed or completed by the students. This might be due to the confusion around its meaning, understanding methods and instruments to be one and the same (Ibarra-Sáiz et al., 2023). On the other hand, only a very small number of AMI stand out for their authenticity. This fact contrasts with what happens in other university contexts where there is an increase in the use of tasks, assessment processes and AMI which are more in line with professional practice (Boud, 2020), through which teaching staff can get students involved in important learning for employability (Ajjawi et al., 2022).

Finally, regarding the third question on possible differences in characterisation of the ILO and in the AMI depending on the university or the discipline, the results demonstrate divergences regarding the university of origin, although less when regarding the disciplines. Some of the difference found between universities might be due to each university analysing its own master's degree with a team of its own researchers, thereby giving a scoring discrepancy that might be considered as usual in this type of inter-judge processes. However, the variability of the different contexts (greater between universities than between disciplines) leads us to consider the possible influence of both the university's own organisational culture and the specific nature of each of the disciplines.

A series of limitations should be considered in this study. Firstly, although the sample originates from various universities, sufficiently diverse and large enough to draw conclusions, it is exclusively centred on three disciplines of Social Sciences (Communication, Education and Economics and Business). It could therefore be widened to other disciplines to generalise the result more effectively. Secondly, the results are only obtained through documentary analysis of programmes. Although this method is considered to be appropriate to find out about the current state of the ILO (Schoepp, 2019), future research is suggested to contrast the results obtained by other collection techniques and information sources such as interviews with the coordinators of the actual master's degrees being analysed, a questionnaire sent to teachers on their ILO assessment practice (Ibarra-Sáiz et al., 2023) and focus groups which collect information from students. This will provide a better understanding and an overall perspective of the ILO and AMI, by including viewpoints from everyone involved.

The findings of this study demonstrate the challenge represented by designing ILO to respond to a reform that focuses on them as the central axis of the curriculum design (Gamboa Solano et al., 2021; García-Olalla et al., 2022). Only analysis, reflection, review and assessment of the ILO can bring about real change

in educational practice (Bone & Ross, 2021), in an attempt to bring the majority of the results into line with internationally-accepted best practices (Schoepp, 2019). However, as Biggs (1996) reminded us, a university is a holistic, interactive system managed by many procedures with specific functional uses that determine the teaching and evaluation processes and that, in turn, affect students' perceptions and experiences regarding what and how they will learn. Consequently, it is not enough to let teachers individually juggle as best they can with the conflictive bureaucratic demands imposed by quality assurance systems. Each higher education institution must have an assessment policy and guidelines which provide a coherent set of principles and procedural knowledge sustained in the teaching excellence model that has been chosen by each institution independently. This requires training and professional development for its teaching staff to bring about a change in their conceptions and a reflection that allows them to identify and specify the ILO so that the curricula design is definitively focused on the students' learning (Biggs, 2014). Constructive alignment is a suitable framework to achieve this (Astigarraga et al., 2020).

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ANNEX I

List of master's degree reports analyzed by universities and disciplines

UNIVERSITY	DISCIPLINE	MASTER'S TITLE
UCA	COM	Máster Universitario en Dirección Estratégica e Innovación en Comunicación
		Máster Universitario en Dirección de Marketing Digital y Social
	ECO	Máster Universitario en Contabilidad y Auditoría
		Máster Universitario en Creación de Empresas, Nuevos Negocios y Proyectos Innovadores (MasterUp)
		Máster Universitario en Dirección de Empresas
		Máster Universitario en Dirección de los Recursos Humanos
		Máster Universitario en Dirección Turística
		Máster Universitario en Economía y Desarrollo Territorial
		Máster Universitario en Mediación por la Universidad de Cádiz
		Máster Oficial en Gestión y Administración Pública
	EDU	Máster Interuniversitario en Cultura de Paz, Conflictos, Educación y Derechos Humanos
		Máster Interuniversitario en Educación Ambiental
		Máster Interuniversitario en Evaluación e Investigación en Organizaciones y Contextos de Aprendizaje (MEVINAP)
		Máster Universitario en Investigación Educativa para el Desarrollo Profesional del Docente
		Máster Universitario en Profesorado de Educación Secundaria Obligatoria y Bachillerato, Formación Profesional y Enseñanza de Idiomas
UNIOVI	ECO	Máster Universitario en Administración y Dirección de Empresas
		Máster Universitario en Análisis de Datos para la Inteligencia de Negocios
		Máster Universitario en Dirección y Planificación del Turismo
		Máster Universitario en Estudios de Economía Sectorial
		Máster Universitario en Recursos Territoriales y Estrategias de Ordenación
		Máster Universitario en Sistemas de Información y Análisis Contable
	EDU	Máster Universitario en Enseñanza integrada de lengua inglesa y contenidos: Educación Infantil y Primaria

UNIVERSITY	DISCIPLINE	MASTER'S TITLE
UNIOVI	EDU	Máster Universitario en Formación del Profesorado de Educación Secundaria Obligatoria, Bachillerato Formación Profesional
		Máster Universitario en Intervención e Investigación Socioeducativa
		Máster Universitario en Investigación e Innovación en Educación Infantil y Primaria
UDC	COM	Máster Universitario en Producción Periodística y Audiovisual
	ECO	Máster Universitario en Banca y Finanzas
		Máster Universitario en Contabilidad Superior y Auditoría de Cuentas
		Máster Universitario en Dirección y Administración de Empresas (MBA)
		Máster Universitario en Gestión y Dirección Laboral
		Máster Universitario en Planificación y Gestión de Destinos y Productos Turísticos
	EDU	Máster Interuniversitario en Actividad Física, Deporte y Salud
		Máster Universitario en Estudios Avanzados sobre el Lenguaje, la Comunicación y sus Patologías
		Máster Universitario en Políticas Sociales e Intervención Sociocomunitaria
		Máster Universitario en Investigación e Innovación en Didácticas Específicas para Educación Infantil y Primaria
		Máster Universitario en Profesorado de Educación Secundaria Obligatoria y Bachillerato, Formación Profesional y Enseñanza de Idiomas
		Máster Universitario en Psicopedagogía
UPV/EHU	COM	Máster Universitario en Comunicación Multimedia UPV/EHU
		Máster Universitario en Comunicación Social
		Máster Universitario en Periodismo Multimedia
	ECO	Máster Universitario en Auditoría de Cuentas y Contabilidad Superior
		Máster Universitario en Banca y Finanzas Cuantitativas
		Máster Universitario en Ciencias Actuariales y Financieras
		Máster Universitario en Dirección Empresarial desde la Innovación y la Internacionalización
		Máster Universitario en Economía Social y Solidaria
		Máster Universitario en Economía: Aplicaciones Empíricas y Políticas
		Máster Universitario en Economía: Instrumentos del Análisis Económico

UNIVERSITY	DISCIPLINE	MASTER'S TITLE
UPV/EHU	ECO	Máster Universitario en Finanzas y Dirección Financiera
		Máster Universitario en Gestión de los Recursos Humanos y del Empleo
	EDU	Máster Universitario en Ciencias de la Actividad Física y del Deporte
		Máster Universitario en Formación del Profesorado de Educación Secundaria Obligatoria y Bachillerato, Formación Profesional y Enseñanzas de Idiomas
		Máster Universitario en Investigación en Ámbitos Socioeducativos
		Máster Universitario en Multilingüismo y Educación
		Máster Universitario en Participación y Desarrollo Comunitario
		Máster Universitario en Psicodidáctica: Psicología de la Educación y Didácticas Específicas
UV	COM	Máster Universitario en Contenidos y Formatos Audiovisuales
		Máster Universitario en Nuevos Periodismos, Comunicación Política y Sociedad del Conocimiento
	ECO	Máster Universitario en Ciencias Actuariales y Financieras
		Máster Universitario en Contabilidad, Auditoría y Control de Gestión
		Máster Universitario en Creación y Gestión de Empresas Innovadoras
		Máster Universitario en Dirección de Empresas - MBA
		Máster Universitario en Dirección y Gestión de Recursos Humanos
		Máster Universitario en Dirección y Planificación del Turismo
		Máster Universitario en Economía
		Máster Universitario en Economía Social (Cooperativas y Entidades no Lucrativas)
		Máster Universitario en Estrategia de Empresa
		Máster Universitario en Finanzas Corporativas
		Máster Universitario en Internacionalización Económica: Gestión del Comercio Internacional
		Máster Universitario en Marketing e Investigación de Mercados
		Máster Universitario en Planificación y Gestión de Procesos Empresariales
		Máster Universitario en Política Económica y Economía Pública
	EDU	Máster Universitario en Acción Social y Educativa
		Máster Universitario en Dirección y Gestión de la Actividad Física y el Deporte
		Máster Universitario en Educación Especial

UNIVERSITY	DISCIPLINE	MASTER'S TITLE
UV	EDU	Máster Universitario en Investigación e Intervención en Ciencias de la Actividad Física y el Deporte
		Máster Universitario en Investigación en Didácticas Especificas
		Máster Universitario en Política, Gestión y Dirección de Organizaciones Educativas
		Máster Universitario en Profesor/a de Educación Secundaria
		Máster Universitario en Psicopedagogía
URV	COM	Máster Universitario en Comunicación Estratégica en la sociedad del riesgo
	ECO	Máster Universitario en Dirección de Empresas
		Máster Universitario en Emprendimiento e Innovación
		Máster Universitario en Gestión de Empresas Tecnológicas
		Máster Universitario en Mercados Internacionales
	EDU	Máster Universitario en Enseñanza de Lenguas: Español como Lengua Extranjera
		Máster Universitario en Enseñanza y Adquisición de Inglés como Lengua Extranjera/Segunda Lengua (ILE/ISL)
		Máster Universitario en Formación del Profesorado de Educación Secundaria Obligatoria y Bachillerato, Formación Profesional y Enseñanza de Idiomas
		Máster Universitario en Innovación en la Intervención Social y Educativa
		Máster Universitario en Tecnología Educativa: e-Learning y Gestión del Conocimiento

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Learning experiences outside the university classroom: an analysis of field trips to innovative schools

Experiencias de aprendizaje fuera del aula universitaria: análisis de salidas a centros escolares innovadores

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ABSTRACT

Education outside the university classroom, based on observation, experimentation, research and reflection, involves students helping with the organisation of the outings, thus preparing them for their future profession both critically and creatively. The main objective of this study is to analyse the impact that visits to innovative schools have on initial teacher education. The paper seeks to look into how the experience can contribute to improving the personal and social development of students, as well as aiding their academic and professional development. The innovative schools visited are linked to various educational models, such as the state school model, the inclusive model, the model that simulates daily life, the forest school model, the rural school model, the Free School model and the model based on the pedagogy of trust. By means of qualitative methodology and content analysis

utilising Atlas.ti software the study reviews 224 travel journals of groups of Early Childhood Education students who took part in visits over four academic years. The findings reveal that these experiences allow students, from both a personal and social perspective, to get away from the daily routine, promote understanding between them and their teachers, and contribute to the strengthening of group cohesion and emotional well-being. From an academic perspective, participating in such experiences stimulates active, deep and meaningful learning. This not only increases students' motivation and commitment to their studies, the university and their future profession, but also helps them move beyond the traditional separation between theory and practice, preparing them for curricular practice. Furthermore, it facilitates the application of acquired competencies in the development of their professional identity, improves their job opportunities and promotes the implementation of innovative strategies in their future teaching careers.

Keywords: learning experience, initial teacher education, active learning, reflection, theory-practice relationship, educational innovation.

RESUMEN

La educación fuera del aula universitaria, basada en la observación, la experimentación, la investigación y la reflexión, involucra a los estudiantes en su organización, preparándolos crítica y creativamente para su futura profesión. El objetivo principal de este trabajo es analizar el impacto que tienen las visitas a centros escolares innovadores en la formación inicial del profesorado. En este sentido, nos planteamos investigar cómo esta experiencia puede contribuir a mejorar el desarrollo personal y social de los estudiantes, así como su desarrollo académico y profesional. Los centros escolares innovadores visitados se vinculan con diversos modelos educativos, tales como el modelo de escuela pública, el modelo inclusivo, el modelo que simula la vida cotidiana, el modelo bosquescuela, el modelo de escuela rural, el modelo de escuela libertaria y el modelo basado en la pedagogía de la confianza. Mediante una metodología cualitativa y a través de un análisis de contenido, se hizo uso del *software* Atlas.ti para revisar 224 cuadernos de viajes de grupos de estudiantes del grado de Educación Infantil que participaron en visitas a lo largo de cuatro cursos académicos. Los hallazgos revelan que estas experiencias permiten a los estudiantes, desde una perspectiva personal y social, romper con la rutina cotidiana, promover el conocimiento mutuo entre ellos y los docentes, y contribuir al fortalecimiento de la cohesión grupal y bienestar emocional. Desde la perspectiva académica, participar en estas experiencias estimula un aprendizaje activo, profundo y significativo. Esto no solo aumenta la motivación y el compromiso de los estudiantes con sus estudios, la universidad y su futura profesión, sino que también les ayuda a superar la tradicional separación entre teoría y práctica, preparándolos para las prácticas curriculares. Además, facilita la aplicación de las competencias adquiridas en el desarrollo de su identidad profesional, mejora sus oportunidades laborales y promueve la implementación de estrategias innovadoras en su futura carrera docente.

Palabras clave: experiencia de aprendizaje, formación inicial del profesorado, aprendizaje activo, reflexión, relación teoría-práctica, innovación educativa.

INTRODUCTION

The *Institución Libre de Enseñanza* (ILE) promoted the renewal of the traditional Spanish learning system in the 19th century, advocating observation, experimentation and research, valuing experiences beyond the confines of the traditional classroom. This approach facilitated the overcoming of the classic theory-practice dichotomy. The Board for the Expansion of Scientific Studies and Research [*Junta de Ampliación de Estudios e Investigaciones Científicas*] was to later allow recent graduates and new teachers to learn about the most avant-garde pedagogical currents of the time, especially those coming from the New Education (Ruiz Berrio, 2000). Between 1907 and 1939, more than 400 teachers travelled around Spain and the rest of Europe with the aim of updating teaching methods upon their return and sharing their experiences with their colleagues (Bernal Martínez & López Martínez, 2007). Current initiatives such as «MentorACTÚA» and «Observa acción» continue this tradition. «MentorACTÚA» (Madrid, 2022) organises pairings between teachers from different educational centres and at different levels with the purpose of exchanging teaching experiences through six visits based on active and guided observation. In the case of «Observa_Acción» (Regional Govt of Castille & León, 2023), teachers observe a mentor who uses innovative methodologies and Information and Communication Technologies in their teaching. They subsequently apply what they learn in their classrooms, while the mentor supervises their practice. This process promotes the exchange of experiences and joint reflection, while contributing to the teachers' professional development.

Outside-the-classroom education is a reflective practice derived from experiential learning (Dewey, 1915). A practice involving students in its organisation which prepares them for the exercise of their future profession, both critically and creatively (Towers & Lynch, 2017). In fact, Dawson & Leytham (2020) affirm that it could be considered a potential agent of «powerful change» in the training of future teachers, by increasing retention, improving academic performance and offering networking opportunities. Numerous studies demonstrate the benefits that this type of experiences offer participating students. Firstly, they improve social skills, not only among students, but also between them and their professors, by fostering connection, understanding and mutual trust, while promoting the creation of shared memories (Bølling et al., 2019; Ortega-Torres & Moncholí, 2021; Turke et al., 2017). Participation in this type of experiences also favours the development of personal identity, critical thinking and emotional well-being in university students, enabling an increase in positive belief in self-efficacy (Richmond et al., 2018), as well as in their academic commitment to their studies (Kuo et al., 2018). However, for this pedagogical model to be truly effective, it must be of a certain quality, that is, it must be planned, implemented and carefully evaluated by the teaching staff

responsible (Sjöblom & Eklund, 2021). It is essential that this model facilitates periods dedicated to reflection on the experience, both during its development and afterwards, and that it incorporates a certain regularity in experiences outside the university classroom (Leadbetter et al., 2019).

Despite such benefits, directive, unidirectional teaching practices still predominate, practices where student learning is passive and of little significance (Parra & Fuertes, 2019). Furthermore, experiences outside the university classroom imply an added difficulty to the current organisation of teaching didactics due, among other factors, to logistical issues such as their high cost, safety, access to adequate spaces, and the time and effort required for their preparation (Shume & Blatt, 2019), as well as professors' lack of confidence concerning their knowledge of this pedagogical model (Barrable & Lakin, 2020). Traditionally, initial teacher training has suffered from a lack of linkage between theory and practice; between university teaching and the reality in schools (Aranda & López, 2017; Colomo & Esteban, 2020). The current context calls for a rethinking and a re-evaluation of how this initial training can adapt to the didactic needs of future teachers and existing professional demands (Guardino et al., 2019).

Experiences outside the university classroom are valued by students as one of the most efficient and motivating strategies for their learning (Felices & Chaparro, 2021). They represent an opportunity to configure their identity as teachers, by enabling the transfer of innovative practices to their future performance in the classroom (Barrable & Lakin, 2020; Dawson & Leytham, 2020). There is research in other fields such as Ong & Wong (2023) in Economics, Samarawickrema & Raponi (2020) in Law and González-Herrera & Giralt-Escobar (2021) in Tourism, where visits are made to settings and places that are considered references or that carry out best practices in their disciplines. Thus, students acquire skills that can later be put into practice. However, there have yet to be scientific studies published in Spain linked to visits to innovative schools. Hence the importance of and need for a study of these characteristics.

The main objective of this study is to analyse the results of an educational experience outside the university classroom in the initial training of teachers in the subject of General Didactics in the degree in Pre-school Education. We pose the following research questions: How might out-of-classroom experiences for university students, involving visits to innovative schools, contribute to improving students' personal and social development? And how might this experience enhance the academic and professional development of students training to become future Pre-school teachers?

METHOD

Context and participants

The «Pedagogical Outings» project consists of visits to innovative schools. Any transport costs incurred in these visits are covered by the University of Valladolid, Spain. The project is included in the General Didactics subject of the degree in Pre-school Education. The subject is taught in the first term of the 2nd year. The average number of students per group is 25, the majority being women, and participation in this project is voluntary though a majority choose to take part. Table 1 shows the distribution of students participating in each «Pedagogical Outing» by academic year. Each year an average of four trips were made: three short one-day trips (a round-trip on the same day) and one long two- or three-day trip (with overnight stay(s) and a sociocultural programme). This project records the experiences over four academic years from 2017-18 to 2022-23, excepting the two years of the pandemic (2019-20 and 2020-21), when visits could not take place due to the in-person nature of the project.

The following criteria were used for selecting the visits to the innovative schools: a) the students' interests; b) type (state/semi-public/private); c) context (rural/urban); d) distance from the university, time (one, two or three days) and travel cost (accommodation, food and drink and, where appropriate, training); e) trajectory and diversity of principles and pedagogical currents associated with the schools. As a result, the following innovative schools were visited: state schools with teachers linked to the Pedagogical Renewal Movements [*Movimientos de Renovación Pedagógica*] (MRP) and the Popular School Cooperative Movement [*Movimiento Cooperativo de Escuela Popular*] (MCEP): Preschool Centre and Primary School [*Centro de Educación Infantil y Primaria*] (CEIP) **«**Núñez de Arenas» and «Palomeras Bajas» in Madrid; an inclusive model: «O Pelouro» Neuro-psycho pedagogical Centre in Tui, Pontevedra; the Amara Berri model: CEIP «Ferrerías» in Donostia; Forest school model: «Bosquescuela» in Cerceda, Madrid; rural school model: Gathered Rural School [*Centro Rural Agrupado*] (CRA) «El Pizarral» in Santa María la Real de Nieva, Segovia; libertarian pedagogy: «Aserrín» in Segovia; and a model based on the pedagogy of trust: «Zumaiena» in Zumaia, Guipúzcoa.

Visits to the centres were organised as follows:

a) academically: prior reading and class discussion of texts concerning the schools, principles and methodologies that are the subject of the visits; shared evaluation at the end of the observation process; and subsequent individual reflection in a travel journal, emulating the learning output that the ILE students did after their visits. In addition, the subject's teacher provided personalised feedback to each student.
b) logistically: participatory design of the sociocultural programme, choice of accommodation, etc.

Table 1

Number of students participating in each «Pedagogical Outing» per academic year

Academic year	CEIP Ferrerías»	CEIP Ferrerías and CEIP Zumaiena (joint trip)	Bosquescuela	Aserrin School	CRA El Pizarral»	CEIP Núñez Arenas	CEIP Palomeras Bajas	O Pelouro» Neuropsychopedagogical Centre	Total
2017-18				18	16		15	15	64
2018-19		19	17			19			55
2021-22	16		16			18			50
2022-23		17	20			18			55
Total	16	36	53	18	16	55	15	15	224

Note. the number of participating students ranges between 15 and 18, out of a total of 25 enrolled on average each academic year.

Instruments

This research has used qualitative methodology in order to achieve a detailed understanding of the complexity of students' experiences, analysed from their own perspective (Flick, 2018). To this end, content analysis has been carried out (Luke, 1995) by reviewing 224 travel journals corresponding to the academic years 2017-18, 2018-19, 2021-22 and 2022-23. The travel journals were written for the first two years, switching to video format after the pandemic, the videos being transcribed for correct coding. The structure was as follows: reflection on the experience from several points of view; personal (regarding the experience shared with classmates); academic (concerning the contents linked to the subject); and professional (in relation to the profession of teacher). The students signed an informed consent form for academic and scientific use. Likewise, the anonymity and confidentiality of the data has been ensured, so as to prevent any harm to the informants.

Information analysis procedure

The data was processed with the help of Atlas.ti software, version 23. Following Saldaña's proposal (2021), the data analysis was performed inductively, maintaining the relationship with the context where the experiences took place, considering the main objective and the research questions, as well as the theoretical background presented. To achieve this, different rounds of iteration were carried out, as explained below. First, an analysis of the narrative of a case (a travelogue of a «Pedagogical Outing») was carried out. From this analysis, codes and categories were identified, each with their own examples and definitions. We then moved on to the next case, using the codes and categories generated, creating a library of codes and categories. When different codes and categories appeared, we went back to the initial case for a fresh review, before then proceeding to a sequential analysis of the remaining cases, applying the same previously established codes and categories. This process was repeated until no new categories or codes emerged and saturation was reached. Regarding triangulation, each case was analysed to identify which categories were represented. Cases in which the same codes and categories emerged were compared to verify their consistency and any nuances. Table 2 shows the system utilised to encode the data and ensure the confidentiality of data and sources.

Table 2
An example of data encoding

Student	Academic year*	Travel journal**
E34	21-22	I

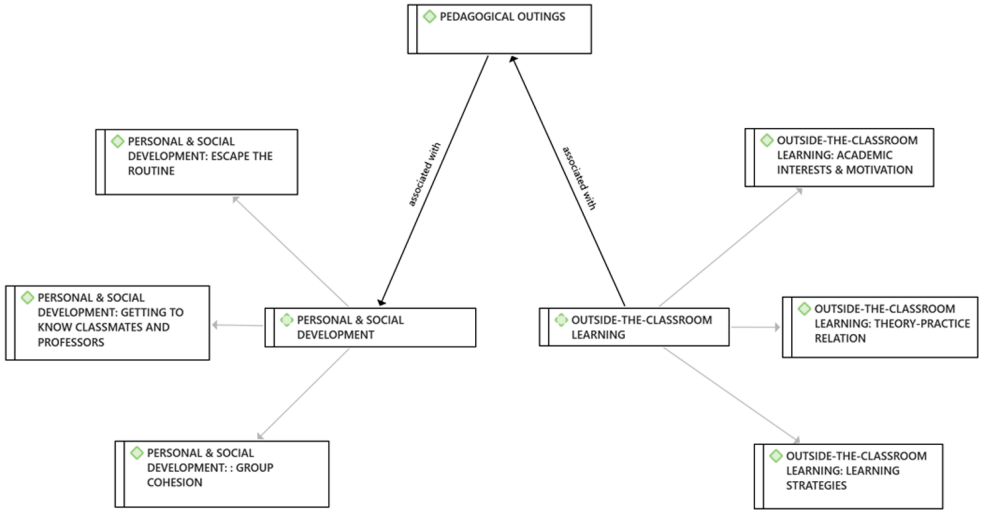
* Year: 17-18; Year: 18-19; Year: 21-22; Year: 22-23.

**Travel journal I.- Amara Berri System: CEIP «Ferrerías»; Travel journal II.- Amara Berri System and Pedagogy of Trust: CEIP «Ferrerías» and CEIP «Zumaiena» (joint trip); Travel journal III.- Forest school Pedagogy – «Bosquescuela»; Travel journal IV.- Libertarian Pedagogy: «Aserrín» School; Travel journal V.- Rural School: CRA «El Pizarral»; Travel journal VI.- Public School linked to the MRP: CEIP «Núñez de Arenas»; Travel journal VII.- Public School linked to the MCEP: CEIP «Palomeras Bajas»; Travel journal VIII.- Inclusive model: «O Pelouro».

RESULTS

Two categories emerged from the analysis of the travel journals. The first addresses the personal and social development derived from the experience, highlighting the departure from daily routines, familiarity gained with classmates and teachers, and the cohesion of the group-class. The second focuses on any learning that takes place outside the university classroom, highlighting the increase in motivation and interest, the connection between theory and practice, and the development of learning strategies (Figure 1). The results for each category and subcategory are described below.

Figure 1
Tree of categories and subcategories



Personal and social development

The first category includes all aspects related to the personal experience derived from the group of students' participation in the «Pedagogical Outings». The account includes the experience of leaving the university and spending time together, the bus trip, accommodation, lunch, free time for sightseeing and rest, any overnight stay (in the case of trips that called for it, for example, Donostia and Pontevedra), and the return trip to the university. Breaking with one's routine, meeting classmates and teachers, and cohesion as a group are the main elements that stand out in the results of this category. As shown below.

Escaping from the routine

«On a personal level, we had never had an excursion like this with our university classmates» (E34_21-22_I). Breaking with our routine, disconnecting from the «university classroom» space, from the teacher-student environment (E53_21-22_I), from rivalries in class, is a great incentive to participate in the «Pedagogical Outings» (E61_21-22_I). «Personally, I think the experience has meant a great disconnection from my private life, not only in terms of university, but also in terms of work» (E69 _22-23_II). «We were quite nervous about the trip, but we ended up loving the whole thing,» says a student (E74_22-23_II).

Furthermore, the outing helped them get to know somewhere they had never been to before (E59_22-23_II). A change of scenery (E76_22-23_II) is an experience that has left its mark (E62_22-23_I). It is memorable because the students enjoy themselves with their classmates and teachers (E56_21-22_III). It is an experience that has to be «lived and felt» (E61_21-22_I); a comforting experience (E39_21-22_III) which gives them peace of mind, after being in class every day, while they learn directly and visually (E68_22-23_I). «The moments on the bus were unforgettable, as the songs, the jokes, chatting with my classmates, etc., all made the trip much more enjoyable» (E46_21-22_I).

Getting to know your classmates and professors

The context of a university classroom is often cold. The experience of getting away from it contributes to classmates getting to know each other and working together in a friendlier, more informal setting. In addition to learning more about teaching practices and innovative active methodologies, the students go through a series of emotions that they had not previously experienced in this training stage. Emotions such as trust, joy and camaraderie, among others (E44_21-22_I).

It is also important to foster social relationships. This aspect is frequently forgotten at university (E33_22-23_I; E68_22-23_III). «It provided us with a space and time to get to know each other better» (E33_22-23_I). «The free time in Donosti was also useful, although we started off in groups, we all ended up together in a bar, having a drink and talking» (E34_21-22_I). These informal get-togethers allowed them to discover new facets to their classmates (E69_22-23_I). The experience seemed to them to be all too brief, although significant for their personal and academic lives (E2_21-22_I; E74_22-23_I):

> It was a very intense, deep experience. Not everyone has a chance to travel with their classmates to another city and to be able to visit an innovative educational centre. What I took from this trip was being able to get to know a little more about the people I spend hours with every day. (E56_21-22_I)

The students felt they had lived unique moments not only with their classmates but with their professors as well (E 44_21-22_ I). As one student put it: «the trip (…) helps, in a way, to get away from the university and get closer to you, the professors, in a totally different setting than what we are used to» (E2_21-22_III). In this context, they do not perceive their professors as separate, but rather each of them as one more in the group; without academic or social distinctions or classifications (E20_21-22_III).

Group cohesion

A notable aspect is the positive coexistence generated during trips: «This experience has fostered a climate of respect and affection that would not have come about spontaneously by going to class at the university» (E20_21-22_I). In the class environment, students usually remain seated and tend to interact with like-minded people, which makes it difficult for a «large group» to form (E28_21-22_I). «Yes, it is true that I get along better with some than with others, but this trip has served to bring us closer to those who we had less contact with» (E34_21-22_I) and «to leave behind all the bad vibes or any problems we had.» (…) (E44_21-22_I). This was reflected in the anecdotes shared, such as, for example, the one told by a student on the trip to O Pelouro:

> (…) the bus lost the GPS connection, we got lost in the forest and couldn't find our accommodation, that seemed unforgettable to me, or going to get firewood to light a bonfire because it was really cold in the place where we were all going to sleep together. (E32_17-18_VI)

Or this other one: «we spent that afternoon visiting Zumaia, a really beautiful town, though very hilly, the best part was visiting it with our friends from

university» (E68_22-23_I). Or on the way back from visiting Bosquescuela, on the road to Segovia, when we stopped at the Cotos pass, in the middle of the Sierra de Guadarrama: «and started throwing snowballs at each other, we sank into the snow… And though we weren't there long, it was really cool and we had a few laughs» (E19_21-22_III).

Learning outside the university classroom

In this second category we analyse the students' learning of the discipline acquired outside the university classroom. An aspect reflected in their interests and reasons for taking part in the trip, the link established between the theory provided in class and the practice of visiting the schools and, finally, the learning strategies acquired during the observation and direct experimentation related to their future teaching profession.

Academic interests and motivation

With regards to motivation, the students took great satisfaction from their participation in the «Pedagogical Outings», something that allowed them to discover new ways of teaching and learning (E74_22-23_V). They wished the experience could be repeated in other years and other subjects, because they learned a lot and found that what they learned was both useful and real, in addition to being a beautiful and motivating experience (E72_22-23_V). Motivating because it allowed them to learn about alternative, non-traditional learning methods (E38_17-18_II), something which offered them a wider range of references and best practices (E46_17-18_II). Participation in the «Pedagogical Outings» meant a before and after in their way of seeing and conceiving education. They discovered a school model in which they would love to work in the future, a place where they could feel happy (...) (E38_17-18_II; E45_17-18_VI). The «Pedagogical Outings» also serve, as another student put it, to open one's mind and realise everything that can be achieved with courage, effort and perseverance (E50_17-18_V). The academic interest that their participation in the experience entailed can strengthen their teaching vocation as potential innovative teachers: they want their future students' learning to be real, active, not rote and not even using textbooks, they do not want to settle for less (E66_17- 18_V).

> The director of the school requested a sabbatical year to travel to different cities around the country to find out about schools and new and innovative teaching-learning methods, just as Fuencisla Moreno did when she was pensioned off by the Segovia Provincial Council during the Second Spanish Republic. From there

> came her idea of starting to work on projects, through observation, association, experimentation, research... (E29_17-18_IV)

The experience of visiting innovative schools opened the students' eyes to a reality that exists, one which they wish to direct their thinking and actions towards: «We must strive towards a different way of being, acting and doing. We must have convictions that are reflected in actions, in personal and ethical commitments» (E3_17-18_VI). For example, visiting O Pelouro moved them greatly. They were taken by the look in the teachers' eyes, in those of the children, by the relationship between them: «through them, my soul opened up, they drew out of me that feeling of working, of striving and fighting to be what I want to be, taking them as an example,» said one student (E26_17-18_VI). They also questioned how it is that the innovative experiences they witnessed are not transferable to other contexts and have not been generally adopted (E45_17-18_VI; E47_17-18_VI). Furthermore, they saw and experienced that the schools they visited have committed teaching staff, capable of fostering meaningful, participatory and truly transformative experiences (E44_21-22_V).

> I came away from the excursion with something more than just didactic learning. I took with me feeling, enthusiasm and strength. I had an experience where we applauded a lot, but honestly, the ones who deserve applause are the founders of Pelouro: Teresa Ubeira and Juan Rodríguez de Llauder, for their work, for their dynamic educational resolve. (E50_17-18-VI)

On a personal level, going to see the school has been a beacon of hope. Seeing that you really can change the world through education (E20_21-22_V). Through the «Pedagogical Outings», the students came to realise that what matters is not only resources, age, diversity..., the difficulties dictated by circumstances or those that the school may come up against, but the desire and commitment shown by each teacher, how interested and involved he/she is in offering the children the best possible education (E27_17-18_IV).

The relation between theory and practice

Visits to educational centres allow a greater connection between theory and practice in the initial training of future teachers. This is how one of them puts it: «Inside the classroom I could see that everything I had read in the centre's educational project was true: that through play, a child can learn in a more natural and meaningful way, without the need for directive teaching.» (E38_17-18_II). The visits also allow for first-hand learning about educational reality, from the real world, in order to confirm or refute any previously-held theoretical constructs and to rebuilt them from scratch. They also offer the opportunity to have direct contact with one's future

job before doing work practice (E2_21-22_V). Thus, «Pedagogical Outings» can be an effective pedagogical model for a first (and decisive) contact with the reality of pedagogical innovation and renewal, as well as providing a broadening of teaching skills and knowledge (what are currently termed «competences» in educational jargon). Contact with boys and girls is especially motivating for the students: «their pupils of tomorrow.» (E2_21-22_V). Furthermore, these experiences allow one to associate and connect the contents seen during the degree:

> This «Outing» has been quite special for me because last year, in a 1st year subject called «Pedagogical Currents» we were involved in a tutored learning project where we had to look into an innovative methodology. My group and I chose Bosquescuela, because it seemed like a totally different methodology to what we had experienced throughout our school lives. (…) I've been able to learn about this methodology in a practical, direct way, after having studied it in class. I really wanted to see what it was truly like with my own eyes and not just rely on the theory we had come across. (E74_22-23_III)

The students were struck by the fact that what they had read and studied at a theoretical level could be put into practice in class; they could not imagine the reality until they saw it *in situ*. That part or face of learning was missing (E24_17-18_II). «We were able to observe in that little school what had previously been talked about in classroom discussions: the children play freely, they don't follow a rigid timetable, only some basic routines» (E45_17-18_II). Likewise, the students prefer, in their initial training, that theoretical reflection be a derivative of the induction processes of educational practice. They criticise the fact that the learning of educational theory is sometimes devoid of an educational reality that they can live and experience for themselves.

> (…) Most teachers in the faculty teach theory in a traditional way, where they explain it to you, you take it in, you let it out in the exam, and you forget it afterwards. But, with the «Pedagogical Outing» I came to realise that by looking at reality with your own eyes you can learn more effectively, you can respond to theory with educational practice. (E34_21-22_I)

However, the students warn of the risk of considering mere educational practice as the only element necessary in improving educational reality, given that educational practice devoid of theoretical reflection, ongoing training and pedagogical research does not lead to change, but rather stagnation, routine, to going through the motions. «With them (the pre-school teachers) I learned that it doesn't matter how many years of experience you have in a profession if you've always been doing the same thing. Your years of experience must imply a search for constant updating, information and learning» (E75_17-18_IV).

Learning strategies

The type of learning acquired on the «Pedagogical Outings» is linked to the fact of getting out of the university classroom, as already indicated, which in itself is a teaching methodology, but also with the design, development and evaluation of a didactic project, before, during and after the visit to the innovative school centres. For university students, as for children, «it is essential to live new experiences, because from them and from subsequent reflection on them one learns a lot and well» (E2_21-22_I). Such learning is also more playful and direct (E2021-22_I). In reality, it is learning based on observation, research, discovery, and reflection as a result of all of the above (E20_21-22_I). For this reason, they are experiences that students will arguably never forget, due to their disruptive nature. That is in clear contrast to what happens in other experiences within the university classroom, where students' role is reduced to that of passive actors and recipients of information, where learning is neither deep nor lasting (E11_22-23_IV; E44_21-22_I).

In terms of the design of the visit to the centre, the students found it interesting and effective that as few as two or three of them were able to be in a classroom interacting with children, because in this way they have seen something similar to what they will experience next year in their work placement (E33_21-22_V). They also remarked that it was of great use to them that the teachers were observing them and available to answer any questions, and provided them with information about their school model, as well as how the teaching methodologies work in practice. The centre's management had an opportunity to demonstrate a distributed, horizontal and participatory leadership model, sharing and discussing the educational philosophy and the school's organisational model, as well as the different projects and activities they carry out (E38_17-18_IV). In general, the students appreciated the human warmth in the centre, its transparency, openness and the self-criticism evident when pointing out the weaker points and aspects to improve (E26_17-18_IV).

> At first I didn't find it very useful to go to schools just to «look and do nothing.» But that idea, like the previous one, changed. All the schools we went to surprised me by their desire to change traditional methodology for something innovative, by their way of working, their initiative and imagination in projects, by families participating... everything. Before doing anything, you have to understand and design a school model based on lived examples of best practices. (E50_17-18_V)

In the process of direct observation in the classroom, the students learned and really enjoyed the children's behaviour and their learning dynamics (E24_17-18_II). «In the classroom you could observe Fröebel gifts or Montessori material, a tutored library, a telephone, letter games, colours...» (E38_17-18_II). That is where they

realized the importance of the stage, as well as the pedagogical currents from which the observed experiences are nourished (E27_17-18_IV). They were also delighted by the communication, sincerity and closeness between teachers and families (E26_17-18_II). In short, they observed how the schools visited departed from the traditional model and went one step further (E1417-18_IV). One student said this: «being able to learn children's didactics in a better way through these experiences makes you see life and school from another perspective» (E23_22-23_III).

DISCUSSION AND CONCLUSIONS

Participation in experiences outside the university classroom has contributed to creating an emotional relationship between the participating students, in addition to promoting greater learning in the university context (Leadbetter et al., 2019). These experiences have aided social and communication skills, both among the students themselves and between them and their professors, something endorsed by Turke et al. (2017), in addition to contributing to developing their identity, motivation and academic commitment. Group cohesion is promoted by the experiences analysed in this study, as long as the experiences take place in relatively low ratios (Bølling et al., 2019; Ortega-Torres & Moncholí, 2021)**.** The students acknowledged that they initially felt divided, if not in actual opposition to each other. However, the experience has provided them with unique and unforgettable moments that made it worthwhile, by increasing communication and mutual appreciation, whereas in class they interacted only with their reference group (Dawson & Leytham, 2020). Moreover, the participating students found their emotional well-being improved, especially during the first years of studies (a period where friendships are forged), because they widened their circle of interpersonal relationships (Peñarrubia-Lozano et al., 2021). Hence the importance that some university professors attach to creating a good atmosphere in class, given that it conditions good learning, as demonstrated by Thornton et al. (2019). Kuh (1993) coincides with all of the above, finding results that confirm that out-of-classroom activities can improve students' personal (self-awareness, independence, confidence and self-esteem) and social (horizontal and vertical interaction, respect, listening, empathy) competence. Furthermore, experiences outside the classroom are, according to Barfod (2018), a key element in achieving deeper and more lasting learning, even more so if it means breaking the daily routine of going to class, and if the incentive is to visit new and attractive places such as innovative schools (Orenes Cárceles et al., 2022).

Experiences outside the university classroom significantly increase students' motivation, as demonstrated in the study. They provide constant, constructive feedback, both from the professor to the student and vice versa, this is based on observation, self-reflection and evaluation, and enhances the learning process, as

corroborated by Cure et al. (2018). Thus, after completing the visits, the students detailed their personal, academic and professional experiences in a sort of diary. The professor then gave them personalised feedback, such that evaluation was intended to improve learning, not assign a grade (Santos-Guerra, 2014). The motivation provided by these experiences captured the students' attention and interest in the subject, as also shown in the study by Kuo et al. (2018). If students are motivated, learning arises naturally and spontaneously, as they will feel the need to know, to strive and to persevere in the process of gaining new knowledge (Mace et al., 2012). Barrable & Lakin (2020) found experiences outside the classroom are positively correlated with students' motivation to replicate or transfer similar experiences in the future as teachers, and thus move away from traditional teaching-learning models.

Such experiences are an educational tool capable of connecting theory with practice, through direct observation in the classroom, by stimulating the interest, knowledge and motivation of students towards their profession (Liceras, 2021), in addition to being a source of reflection (Higgins, 2009). Thus, the contents of the subject are linked to educational reality (Guardino et al., 2019; Moreno-Vera & Monteagudo Fernández, 2019). Furthermore, utilising the intuitive method, based on observation, experimentation and research, the students were able to gain a deeper and more holistic understanding of the subject, by living new experiences with their classmates and even with the professors, as well as greater connection with the degree course and with the profession for which they are training (Anwar, 2019). Likewise, learning outside the classroom is more holistic, not as fragmented, as it tends to be in current curricula, designed by topics, subjects, materials and years (Henriksson, 2018).

Experiences outside the university classroom that include activities for academic, personal and professional development improve students' employability, especially in the case of future teachers, because they come into contact with practicing professionals (Dawson & Leytham, 2020). The visits offered the students an opportunity to interact with the schools' own teachers who explained the educational project, teaching-learning methods and material, to ask questions and make comments. These teachers on occasions became references and models helping the students forge their vocation and professional identities as innovative and committed teachers of tomorrow.

To guarantee the success of an outing beyond the university classroom, good planning, selection and preparation of the students were all necessary before the outing could take place, as recommended by Sjöblom & Eklund (2021), these ensured positive personal, academic and professional development and impact (Towers & Lynch, 2017). As a result of the implementation of the Bologna Process or for personal or work reasons, university students have very tight schedules (Ariño et al., 2012), which hinder their participation in extracurricular activities, even when

these are voluntary, as in the case analysed. Students' involvement in organising visits to innovative schools promotes the development of their personal, work and academic skills. It also represents a challenge for professors, in terms of additional work to strive to guarantee the success of the outside-the-classroom experience (Achen et al., 2019).

In conclusion, educational experiences outside the university classroom, such as those presented in this paper, offer new epistemological perspectives in the initial training of teachers, by complementing academic education with the development of personal, social and professional competencies. Future teachers are thereby prepared to be agents of change, able to adapt and respond to the needs and challenges of society and schools in the 21st century.

LIMITATIONS AND FUTURE LINES OF RESEARCH

This study presents critical aspects that can be considered as points for improvement for future studies. Firstly, it would have been beneficial to complement the analysis through triangulation of techniques, including, for example, interviews with the participating students and the professor in charge. Secondly, the application of an evaluation instrument, both before and after the experiences (Parejo et al., 2024), could assess the impact. Thirdly, the incorporation of a greater variety of schools and pedagogical currents (for example, Waldorf, Decroly, Malaguzzi, etc.), together with an expansion in the number and duration of visits, could enrich the diversity of data and benefit the students' academic and professional development. Another alternative, which would involve the systematisation of the project, would contribute to the replication of this proposal in other subjects forming part of degrees in Education, thus fostering students' direct contact with and awareness of pedagogical innovations and their application in work placements and in future classrooms. These experiences not only offer academic and personal benefits, as this study shows, but could also precede the implementation of a dual training model, strengthening the connection between universities and schools, between theory and practice. Finally, it would be of interest to look into how these experiences relate to the professional development and shaping of the teaching identity of trainee teachers, especially in the integration of alternative educational models and references in their educational practice.

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University teaching practices and learning-oriented motivation: the mediating effect of basic psychological needs satisfaction

Prácticas docentes universitarias y motivación orientada al aprendizaje: efecto mediador de la satisfacción de las necesidades psicológicas básicas

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ABSTRACT

Several studies recognize the importance of the relationship between academic motivation and learning in the university context, contrasting with the smaller number of studies addressing mediating variables' influence. This research aimed to evaluate the mediating role of Basic Psychological Needs in the relationship between practices performed by university professors perceived by students as motivating and learning-oriented motivation. The study involved 763 students from health and education programs at different Chilean universities. The PROCESS macro for SPSS was used to evaluate the mediating effect. The results indicate that the satisfaction of basic psychological needs partially mediates the effect of teaching practices on the type of learning-oriented motivation. This reinforces the idea of a situated, explicit, and frequent teaching practice with motivational formative actions that strengthen usefulness, importance, and autonomy. The findings show the relevance of these teaching practices to generating learning-oriented motivation and the role of the Satisfaction of Basic Psychological Needs in this relationship.

Keywords: learning, motivation, teacher practices, motivational orientation, basic psychological needs

RESUMEN

Diversos estudios reconocen la importancia de la relación entre la motivación académica y el aprendizaje en el contexto universitario, lo que contrasta con el menor número de trabajos que abordan la influencia de las variables mediadoras. Esta investigación tuvo como objetivo evaluar el rol mediador de las Necesidades Psicológicas Básicas en la relación entre las prácticas realizadas por profesores universitarios percibidas por los estudiantes como motivadoras y la motivación orientada hacia el aprendizaje. En el estudio participaron 763 estudiantes de programas de salud y educación de diferentes universidades chilenas. Para evaluar el efecto mediador se utilizó la macro PROCESS para SPSS. Los resultados indican que la satisfacción de las necesidades psicológicas básicas media parcialmente el efecto de las prácticas docentes sobre el tipo de motivación orientada hacia el aprendizaje, lo que refuerza la idea de realizar una práctica docente situada, explícita y frecuente con acciones formativas motivadoras que fortalezcan la utilidad, la importancia y la autonomía. Estos hallazgos muestran la relevancia de estas prácticas docentes para generar motivación orientada hacia el aprendizaje, así como el papel de la Satisfacción de las Necesidades Psicológicas Básicas en esta relación.

Palabras clave: aprendizaje, motivación, prácticas docentes, orientación motivacional, necesidades psicológicas básicas

INTRODUCTION

Academic motivation is defined as the «process by which goal-directed [academic] activity is prompted and maintained» (Schunk et al., 2015, p. 5). In the past fifty years, research on academic motivation has flourished, allowing for a more in-depth understanding of learning processes. In the university context, academic motivation has been the object of study from different theories. We focus our analysis on two of them: Goal Theory and Self-Determination Theory. The former identifies the motivational orientation towards learning or mastery. As part of its sub-theories, the latter contributes to the notion of satisfaction of basic psychological needs, which would be at the basis of internalizing the motives that lead us to action.

Goal Theory [hereafter, GT] is a family of theories that focus on characterizing the motivational orientation of subjects in the academic domain (Elliot, 2020; Elliot et al., 2018; Harackiewicz et al., 2002; Urdan & Kaplan, 2020). These orientations are determined by the types of goals that individuals set for themselves regarding the academic task (Hulleman et al., 2010). Within this perspective, students tend to engage in academic tasks oriented toward content mastery [Learning or Mastery Goals] or towards execution [Performance or Performance goals] (Urdan & Kaplan, 2020), and two dynamics can be distinguished within each of these orientations or types of goals: approximation and avoidance (Elliot, 2020; Elliot & Friedman, 2017). This crossover gives rise to four basic orientations [mastery approach, mastery avoidance, performance approach, and performance avoidance]. Studies under this theoretical perspective show that different orientations have differential effects on learning outcomes (Barca et al., 2011; Bircan & Sungur, 2016; Hulleman et al., 2010), self-efficacy and critical thinking (Phan, 2009), cognitive and self-regulation strategies (Valle et al., 2006) and epistemic beliefs (Zhou et al., 2019). In all these, mastery goals [Mastery] yield better benefits for the learner, except in cases where only performance is to be assessed, for example, through multiple-choice questions (Senko, 2019).

Additionally, Self-Determination Theory [hereafter, SDT] (Ryan & Deci, 2020) focuses on the quality of motivation and the types of regulation that underlie and guide a particular type of motivation. Indeed, SDT has contributed to understanding this phenomenon (Deci et al., 2017; Roth, 2019; Vansteenkiste et al., 2006) in different learning settings, including online formats, so present in current education (Chiu, 2022).

Self-Determination Theory postulates that humans naturally tend towards growth and general well-being, driven by the satisfaction of three basic psychological needs: autonomy, competence, and relatedness. Autonomy refers to a person's ability to feel free to act on their own initiative and freely choose what they want

to engage in (Chen et al., 2019), relatedness is associated with having a sense of belonging, bonding, connection, and caring (Liu & Sitoe, 2020; Vansteenkiste et al., 2020), and competence refers to valuing efficacy and feeling capable and effective. However, it is also recognized that social, family, educational, cultural, and other environments can frustrate the satisfaction of these three needs, generating a sense of external control that affects levels of self-determined motivation (Legault, 2017).

In contrast to the educational tradition that linked motivation and learning as influenced by external factors, self-determination theory emphasizes the natural propensity of individuals to grow and achieve psychological integration, allowing the development of autonomous or intrinsic motivation. However, achieving this type of motivation requires certain conditions that support the satisfaction of the three basic psychological needs (Ryan & Deci, 2020).

SDT recognizes types of motivation located on a continuum that considers amotivation, extrinsic motivation, and intrinsic motivation, each composed of different regulatory factors that affect people's behavior and performance in different situations. Amotivation refers to a lack of intentionality, not feeling competent to perform an activity or a lack of energy or interest in performing a task (Howard et al., 2021). Extrinsic motivation refers to behaviors aimed at obtaining rewards, avoiding punishment, shame, guilt, or fear of failure. This type of motivation is externally regulated. On the other hand, intrinsic motivation is characterized by activities or actions performed for interest, enjoyment, and satisfaction in the tasks undertaken (Chen et al., 2019; Ryan & Deci, 2020) and would be at the base of a motivational orientation towards learning.

Different studies under the Self-Determination Theory framework (Cheon et al., 2023; Hosseini et al., 2022; Neufeld, 2021) recognize the importance of the satisfaction of basic psychological needs as a mediating variable and its influence on learning, commitment to academic activities, academic performance, psychological well-being and particularly, on the regulatory styles that affect the type of motivation (Botnaru et al., 2021).

Recent research has shown that teachers meeting basic psychological needs leads to a type of autonomous motivation among students, which significantly impacts their academic performance, engagement, and well-being (Bureau et al., 2022). Additionally, evidence suggests that academic motivation changes when basic psychological needs are met, particularly autonomy, which generates a type of motivation that predicts and positively affects learning, engagement, and effort (Johansen et al., 2023).

Previous studies have indicated that the satisfaction of each of the basic psychological needs has been significantly related to self-determined behaviors and autonomous motivation (Carriedo et al., 2023; Hosseini et al., 2022) whereas the frustration of these needs has effects on certain types of behaviors that are guided

by external factors and, therefore, with high levels of controlled motivation (Ryan & Deci, 2020; Wild et al., 2023). In addition, the specialized literature has shown that they are essential nutrients for effective functioning and psychological health independent of people's culture (Deci & Ryan, 2008).

In this study, the two theoretical perspectives (GT & SDT) allow for the broadening and deepening of the understanding of the academic motivation of university students. Goal Theory emphasizes motivational orientation, either approach or avoidance to Mastery or performance (Elliot, 2020), depending on the goals pursued by students. On the other hand, Self-Determination Theory has shown that the satisfaction of basic psychological needs is related to a type of autonomous motivation that has effects on psychological well-being, academic engagement, and learning (Botnaru et al., 2021; Johansen et al., 2023). Thus, a student's motivational orientation might change depending on whether or not he or she has satisfied basic psychological needs as a function of certain teaching practices.

Although many factors can favor the development of motivation or the satisfaction of basic psychological needs, teachers are relevant actors. Through them and their practices, motives for learning (Valenzuela et al., 2021) and the conditions for satisfying the needs for relatedness, autonomy, and competence (Ryan & Deci, 2020) can be favored. In this context, *teaching practice* is defined as a set of visible actions carried out by academics to improve students' learning experience (Osorio Pérez & Moreno Martínez, 2023). It constitutes a system of activities wherein various factors interact simultaneously in a culturally defined context, such as the learning space. Among these practices, some are oriented explicitly toward generating motivation in students. To qualify them as «motivational», there must be a theoretical basis for assuming that they have such an effect and, ideally, empirical evidence of this effect. In this sense, motivation theories help us identify teaching practices with motivational potential.

The literature agrees that motivation can be regulated internally or externally. In the latter case, through rewards or punishments (Guay, 2021). Similarly, we know that intrinsic motivation arises from a process of internalization of motives and self-determination, predominantly mediated by experiences of autonomy (Ryan & Deci, 2020), and that although both types of motivation affect learning, they contribute differently. Thus, to understand why students develop an internal or external motivational orientation toward learning (Cf. Bieg et al., 2017), it is important to observe the dynamic of rewards and punishments and the promotion of self-determination (autonomy).

For its part, it is known that the feeling of self-efficacy is a determinant for the choice of goals, and we have evidence that it plays a crucial role in the development of goal orientation (see mastery goal in Babenko & Oswald, 2019). So, self-efficacy seen from the perspective of teaching practices, can be translated into experiences

of cognitive challenge or challenge, where the teacher implicitly expresses his or her beliefs that the student can successfully solve the task. Added to this is the value of the task as an explanatory variable. This last dimension includes the task's perceived utility, importance, cost, and interest.

Additionally, two other factors can be identified that act as a necessary but hardly sufficient condition for learning motivation: emotional support practices and classroom climate. The former, refers to those teaching practices of emotional support and containment to the student, individually. The latter are those that are carried out collectively and are expressed as the creation of an adequate and safe classroom climate for learning. Recent reports linked to online teaching show that students identify these emotional support factors as crucial in their desire to learn (Frenk et al., 2010; Miranda Ossandón et al., 2023; Schenke et al., 2018).

In this line, our team examined the effect of nine types of teaching practices with motivational potential on the motivational orientation toward learning in a university context (Valenzuela et al., 2024). It should be noted that these practices arise from the analysis of the reports developed by the teachers and students themselves, and the theoretical frameworks of reference on motivation support their definition. These nine practices (Valenzuela et al., 2022) are centered on rewards, punishments, autonomy, challenge, utility, self-efficacy, importance, emotional support, and a safe classroom environment.

Analyses performed through Bayesian multiple regression showed that the motivational practices that most affect learning-oriented motivation focus on the *importance* of what is to be learned and on student *autonomy*. In some cases, motivational practices focused on showing the *utility* of the content addressed. This last type of practice has been observed to be relevant in health students. Although it is a variable that is located in the margins of the significance of the explanatory model (BFinclusion= 1.45; P(excl|data) = .489), we have decided not to exclude it because, in some types of students, this kind of motivational practice may be relevant (Valenzuela et al., 2024).

Some research examines the satisfaction of these basic psychological needs as a mediator (Babenko & Oswald, 2019). However, we did not find any research that explicitly observes it as a mediator of the motivational effect of teaching practices on motivational orientation towards learning (mastery). Therefore, in a sample of undergraduates, this study analyses the mediating effect of the satisfaction of basic psychological needs on the relationship between these three motivational practices (utility, importance, and autonomy) and learning-oriented motivation.

According to the above, we seek to test four hypotheses derived from the theoretical review that account for the directionality of the variables: exogenous (motivational teaching practices), exogenous mediating (basic psychological needs),

and endogenous (learning-oriented motivation), considering the paths of simple mediation analysis.

1. The three teaching practices students perceive as motivating (importance, utility, and autonomy) directly and significantly affect the type of learning-oriented motivation (path c).
2. The three teaching practices students perceive as motivating directly and significantly affect the satisfaction of basic psychological needs (path a).
3. The satisfaction of basic psychological needs directly and significantly affects learning-oriented motivation (path b).
4. Satisfaction of basic psychological needs mediates the effect between the teaching practices of utility, importance, and autonomy perceived as motivating by students on motivational orientation towards learning (path c').

METHOD

Participants

Although all professions are important and contribute to society in a specific way, there are those whose practice has a more significant social impact. As such, we focus on undergraduates in health and education programs. Moreover, the number of professionals in these areas is also an aspect to consider. Currently, 28.5% of the total enrollment of university students in Chile is associated with the areas of health (19.4%) or education (9.1%) (Mifuturo.cl, 2023).

In the present study, 763 Chilean university students of both sexes (79% women) from different universities in the country participated in the Health (n=398) and Education (n=365) areas. The research used a combination of convenience and simple random sampling. The first case corresponds to the selection of the areas of Education and Health because the careers of these faculties have a high social impact. Simple random sampling was used to take the sample (within the respective careers).

The Health area included careers were Medicine, Nursing, Kinesiology, Occupational Therapy, Psychology, Chemistry and Pharmacy, Medical Bioengineering, Nutrition, Dentistry, Obstetrics, and Speech Therapy. The education area considered careers in preschool, elementary, and secondary pedagogy in different specialties: Mathematics, Language, Religion/Philosophy, English, History, Science, and Physical Education. The average age of the participants was 20.9 years (SD= 3.39), concentrated in the 18 to 24 years age group (91.1% of the sample).

Instruments

Basic psychological needs were assessed through the Basic Psychological Needs Satisfaction and Frustration Scale by Chen et al. (2015), adapted to Spanish by Del Valle et al., (2018). This instrument is composed of 24 items grouped into the three dimensions that measure the levels of satisfaction and frustration of each of the basic psychological needs proposed by the self-determination theory; autonomy, competence, and relatedness. The scale was validated in a sample of Chilean university students presenting adequate psychometric properties, CFI = .92; TLI = .90; RMSEA = .05 [.042, .058] and a SRMR = .05 (Del Valle et al., 2018). The items were answered on a 5-degree Likert scale ranging from (1) «strongly disagree» to (5) «Strongly agree». In this study, the subscale of satisfaction of basic psychological needs (α = .90) was used, composed of 12 items measuring autonomy (e.g., «I feel I have the freedom and possibility to choose the things I take on»), competence (e.g., «I feel I can do things well») and the dimension, relatedness that measures the relationship with others and sense of belonging (e.g., «I feel I matter to the people who matter to me»).

The Mastery Goal subscale of the Achievement Goal Scale (Elliot & Church, 1997) was used to assess motivational orientation. The scale evidenced in this study adequate psychometric properties $Chi^2(7) = 23$; p = .001; CFI = .987; TLI = .973; SMRS = .019; RMSEA = .057 [.03, .08] and a Cronbach's alpha of α = .80. The applied subscale is derived from the 2x2 model of personal achievement goals and seeks to assess the degree of agreement with questions using a 5-grade Likert scale ranging from (1) «strongly disagree» to (5) «strongly agree» and measuring approximation-mastery (e.g., «my goal is to learn as much as I can»).

To assess the motivational potential of teaching practices, the scale of motivating teaching practices was used (Valenzuela et al., 2024). This scale evaluates the motivational potential of nine teaching practices based on the frequency of the practice (PF) and the motivational effect attributed to the practice (MEP). The frequency was measured through the question: How often do your teachers carry out the following practices... (0=never - 5=always) and the perceived motivational effect through the item: The following teacher practices make me want to learn in my career (0=Strongly disagree 5=Strongly agree). The motivational potential variable of the teaching practices was constructed from these two variables, which corresponds to the square root of the product between frequency and the motivational effect attributed to each type of practice (MP= PF*MEP).

The practices evaluated are related to the aspects that the literature recognizes as factors that influence motivation: rewards, punishments, utility, importance, self-efficacy, emotional support, classroom climate, and the development of autonomy. Each of these dimensions was measured using items that show prototypical

practices of each of these dimensions (Cf. Valenzuela et al., 2022). The scale, thus constructed, shows good levels of fit $Chi^2(13) = 52.7$, $p < .001$; CFI = .981; TLI = .970; SRMR = .031; RMSEA = .06 [.04, .08] and reliability $\alpha = .80$; $\omega = .86$.

Based on this scale and considering those significant aspects in explaining the motivational orientation to learning (Valenzuela et al., 2024), this study will use only the motivational potential of practices oriented towards utility, importance, and autonomy.

Procedure

The study was conducted according to the ethical principles defined for research involving human subjects, ratified by the Scientific Research Ethics Committee of the sponsoring institution. All instruments were administered online with prior permission from the corresponding university authorities. The participation of the students was voluntary and ratified by signing the informed consent form, which indicates that all responses will be strictly confidential and used only for academic purposes.

Data Analysis

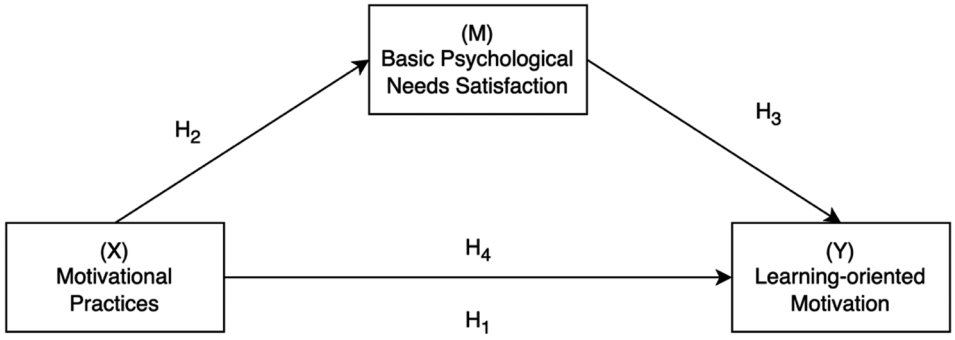
Cronbach's alpha coefficient was used to evaluate the internal consistency of the scales used in the research, using as criteria an $\alpha = .70$ to consider acceptable reliability (Taber, 2018).

The study considered teachers' practice an exogenous variable that students perceive as motivating; in this case, the practice was focused on utility, importance, and autonomy. It also considered the satisfaction of basic psychological needs an endogenous mediating variable. Finally, learning-oriented motivation is an endogenous variable.

Three simple mediation analyses assessed the effect of Basic Psychological Need Satisfaction (BPNS) on the relationship between teaching practices students perceive as motivating (importance, utility, and autonomy) and learning-oriented motivation. The mediation analysis procedure used the bootstrapping procedure with 5000 repetitions.

To verify the mediating effect of BPNS, 95% confidence intervals were estimated. The indirect effect is assumed to be significant ($p < .05$) if the confidence intervals of the indirect effect do not pass through zero (Shrout & Bolger, 2002). The PROCESS macro for SPSS (Preacher et al., 2007) was used to perform the analyses.

Figure 1
Hypothetic model



RESULTS

Correlation analysis

Previous analyses identified that of the nine teaching practices with motivational potential, only three were identified by students as having a significant motivational effect on motivational orientation towards learning: utility, importance, and autonomy. The analyses conducted in this study show that these practices correlate significantly with a motivational orientation toward learning and a positive and significant correlation with Basic Psychological Needs Satisfaction.

Table 1
Correlation matrix

		1	2	3	4
1	Learning-oriented motivation	—			
2	Utility-oriented motivational practices	.332***	—		
3	Importance-oriented motivational practices	.415***	.679***	—	
4	Autonomy-oriented motivational practices	.350***	.461***	.495***	—
5	Basic Psychological Needs Satisfaction	.502***	.313***	.371***	.411***

Note. *** p < .001.

Mediation analysis

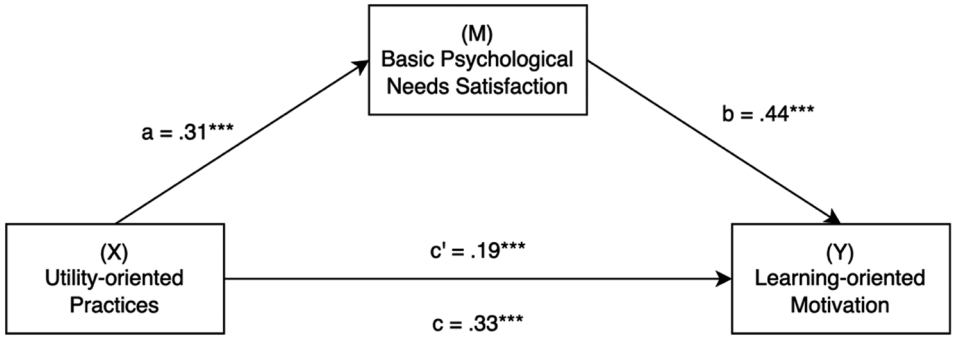
Figures 2, 3, and 4 show the simple mediation models, including the Basic Psychological Needs Satisfaction, mediating the relationship between the three practices perceived by the students as motivating and learning-oriented motivation.

Mediation analysis 1 (utility-oriented practices): According to the standardized coefficients, it was observed for the case of utility-oriented teaching practice that there is a significant overall effect on learning-oriented motivation ($r = .33$, $p < .001$; path c) and also a significant effect on satisfaction of basic psychological needs ($r = .31$, $p < .001$; path a). In addition, a significant effect of basic psychological needs satisfaction on learning-oriented motivation is observed ($r = .44$, $p < .001$; path b).

This first mediation model shows a significant indirect effect (standardized) of utility teaching practices perceived by students as motivating on learning-oriented motivation (B = .14), as the confidence intervals do not pass through zero [.09, .19]. However, a significant direct effect remains when controlling for the effects of basic psychological needs satisfaction ($r = .19$, $p < .001$; path c'), indicating partial mediation. For this teaching practice, the proposed mediation model explains 29% of the variance.

Figure 2

Model of mediation 1 (Utility-oriented practices)

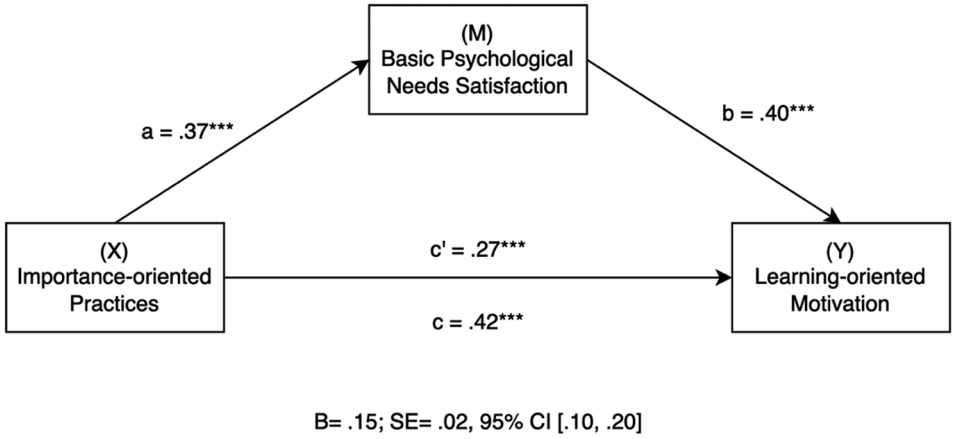


Mediation analysis 2 (importance-oriented practice): For this case, it was observed that importance-oriented teaching practice has a significant overall effect on learning-oriented motivation (r = .42, p < .001; path c) and also a significant effect on satisfaction of basic psychological needs (r = .37, p < .001; path a). In addition, basic psychological needs satisfaction significantly affects learning-oriented motivation (r = .40, p < .001; path b).

The second mediation model shows a significant indirect effect of this practice on learning-oriented motivation (B = .15, p < .001), as the confidence intervals do not pass through zero [.10, .20]. However, a significant direct effect remains when controlling for the effects of satisfaction of basic psychological needs (r = .27, p < .001; path c'), indicating partial mediation. The proposed mediation model explains 31 % of the variance for this teaching practice.

Figure 3

Model of mediation 2 (Importance-oriented practices)



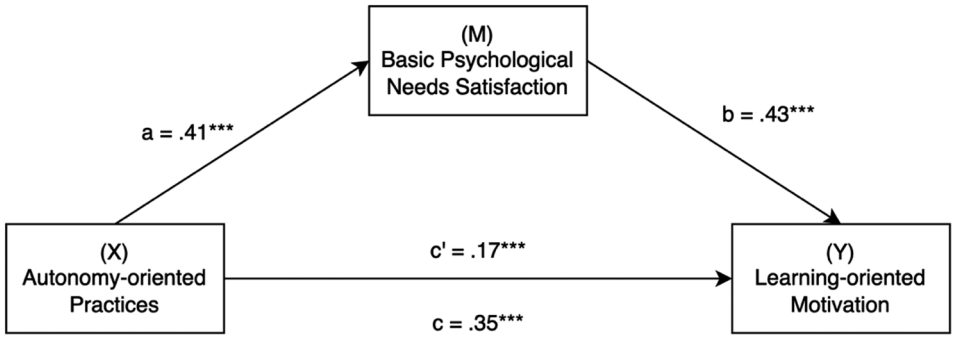
Mediation analysis 3 (autonomy-oriented practices): For the case of autonomy-enhancing teaching practice, the standardized coefficients show that there is a significant overall effect on learning-oriented motivation (r= .34, p < .001; path c) and also a significant effect on satisfaction of basic psychological needs (r= .41, p < .001; path a). Basic psychological needs satisfaction also significantly affects learning-oriented motivation (r = .43, p < .001; path b).

This mediation model shows a significant indirect effect of autonomy-enhancing teaching practice on learning-oriented motivation (B = .18, p < .001), as

the confidence intervals do not pass through zero [.13, .22]. However, a significant direct effect remains when controlling for the effects of basic psychological needs satisfaction (r = .17; p < .001; path c'), indicating partial mediation. The proposed model explains 28 % of the variance.

Figure 4

Model of mediation 3 (Autonomy-oriented practices)



The analyses show the mediating effect of the satisfaction of basic psychological needs (BPNS) on the relationship between teaching practices (oriented on utility, importance, and autonomy) and learning-oriented motivation.

As Table 2 shows, in all the proposed mediation models (1, 2, and 3), the correlation between the different teaching practices (utility, importance, and autonomy) and learning-oriented motivation is greater than the β (X, Y, M) estimator, which quantifies the proportion of the variance explained once the effect of the mediating variable (in this case basic psychological needs) is included, which shows a partial mediating effect that explains a significant percentage of the variance.

Table 2
Effects of basic psychological needs satisfaction as a mediator in the 3 models evaluated

Mediation Analysis	TP – BPNS X→M. (a)	BPNS – LOM M→Y. (b)	TP –LOM X→Y (c)	β(X,Y,M) (c')	% Mediating Effect of BPNS
Model 1 (Utility-oriented practices)	.31	.44	.33	.13	28.57
Model 2 (Importance-oriented practices)	.37	.40	.42	.15	31.33
Model 3 (Autonomy-oriented practices)	.41	.43	.35	.18	27.63

Note. BPNS= Basic Psychological Needs Satisfaction; LOM: Learning-oriented Motivation; TP: Teachers motivational practices (oriented to utility, importance, and autonomy).

The indirect effect is explained by the presence of a mediating variable, in this case, basic psychological needs, which indicates that the practices implemented by teachers can increase learning-oriented motivation on the condition that the three basic psychological needs of competence, relatedness, and autonomy, proposed by the Self-Determination Theory, are satisfied.

DISCUSSION AND CONCLUSIONS

This research aimed to evaluate the mediating effect of the BPNS on the relationship between three types of motivational teaching practices and the motivational orientation towards learning in university students.

The study set out to test four hypotheses. Regarding the first one, the results show a direct and significant relationship between three teaching practices with motivational potential on learning-oriented motivation. These teaching practices, which emphasize the importance and utility of the content and promote student autonomy, encourage students to engage authentically in the learning process.

The results also show that these three teaching practices, perceived by students as motivating, directly and significantly affect the satisfaction of basic psychological needs (hypothesis 2). From SDT, several studies have shown that basic psychological needs are considered essential for effective functioning and psychological health (Deci & Ryan, 2008). As a mediating variable, they influence both performance, learning, academic activities, and the regulation styles of different types of motivation (Botnaru et al., 2021; Cheon et al., 2023).

In turn, like Janke (2022), this study corroborates that the satisfaction of basic psychological needs directly and significantly affects motivational orientation towards learning (hypothesis 3). Thus, students will be more motivated to learn to the extent that teachers provide conditions that promote autonomy and stimulate meaningful relationships and a sense of belonging, strengthening their academic competence.

Chilean university context, there is evidence that shows that satisfying the basic psychological needs of students in general, or specifically supporting the development of autonomy, increases academic satisfaction and well-being associated with learning activities, as well as the intention to remain and not drop out of higher education (Barrientos et al., 2021; Vergara-Morales & Del Valle, 2021). On the other hand, there is evidence that in this context, when university professors have satisfied their basic psychological needs, they are more interested in promoting their students' willingness to study (Abello et al., 2022), which directly impacts academic motivation and learning.

These results align with previous studies (Cf. Johansen et al., 2023), which recognize that the types of practices used by university teachers directly affects the type of motivation, effort, and engagement students develop in their learning.

Finally, the results show a partial mediation of BPNS in the relationship between motivational teaching practices (utility, importance, and autonomy) and motivational orientation toward learning (hypothesis 4). This finding is relevant because it shows that the mediating variable does not explain all the variability in motivational orientation toward learning. This finding emphasizes the importance of situated, explicit, and frequent teaching practices that favor formative motivational actions oriented toward utility, importance, and autonomy.

The results of this study imply important challenges. Firstly, given that a practice's motivational potential requires a motivational character for the student, teachers need to know their students to adjust their motivational efforts to the students' reality and context.

A second challenge for teachers is to have an adequate understanding of the autonomy construct from Self-Determination Theory to avoid meaningless practices (e.g., planning unsupervised activities), believing that this creates a space for autonomy. Instead, it is about generating experiences so that the student can, in a self-determined way, carry out activities committed to his or her learning process.

In short, activities, or practices should be encouraged that allow students to develop regulatory styles based on personal goals without seeking rewards or avoiding punishment. Evidence shows that frustration with basic psychological needs is related to a lack of academic engagement and a type of controlled motivation (Howard et al., 2021; Johansen et al., 2023).

One limitation of this study lies in how the motivational potential of teaching practices was assessed. Indeed, for this study, we chose to evaluate the motivational potential from the students' perception. Although this is an indirect measure, it is logical to think that the motivational potential of practice will be more effective, the more meaningful it is for the student. Considering the difficulties of an experimental design in regular classrooms, this design was the most appropriate to simultaneously contrast the different types of practices and their effect on motivational orientation towards learning. The design of experiments with each of these practices was not possible. The challenge remains to implement experimental designs to confirm the individual effect of the three motivational practices identified in this study as significant in their effect on this specific type of motivational orientation.

On the other hand, the results invite us to plan future studies that point in at least two directions. The first is to investigate the understanding of the concept of autonomy in the learning process by the different actors (teachers, students, managers). The second is to critically analyze the real possibility that the university system has today of fostering the satisfaction of basic psychological needs in a mass-education context such as the current one.

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DATA AVAILABILITY STATEMENT

The data supporting this study's findings are available from the corresponding author, [JV], upon a reasonable request.

CONFLICT OF INTEREST

The authors declare that no competing financial interests or personal relationships could have appeared to influence the work reported in this paper.

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The Dispositions for Culturally Responsive Pedagogy Scale (DCRPS): psychometric validation and results among spanish teachers

The Dispositions for Culturally Responsive Pedagogy Scale (DCRPS): validación psicométrica y resultados en el profesorado español

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ABSTRACT

Educational classrooms are a true reflection of increasingly diverse and unequal societies. Teachers therefore require specific pedagogical dispositions towards their students and their teaching that ensure greater social justice. In this paper, an instrumental study is described that is focused on the adaptation of the Dispositions for Culturally Responsive Pedagogy Scale (Whitaker & Valtierra, 2018) to the Spanish population and its validation. The main goal is to analyze the psychometric characteristics of the scale, which is used to evaluate

the disposition towards Culturally Responsive Education (CRE). No specific instruments have been found and none are known in Spanish for the analysis of attitudes and beliefs towards CRE. A quantitative methodology was applied through the administration of surveys to teachers at various educational levels and regions in Spain (N = 538). Confirmatory factor analysis revealed an optimal fit, after removing two original items, for a three-factor structure: educational praxis, community, and social justice. The reliability analysis showed adequate internal consistency, according to both Cronbach's Alpha (α = .942) and McDonald's Omega (ω = .943). Significant differences between dispositions towards CRE were found based on sex, educational level, and specialty, suggesting the importance of considering those variables when evaluating dispositions towards CRE in different educational contexts. In conclusion, a first valid and reliable tool to assess teachers' dispositions towards CRE is provided in this study, contributing to more inclusive and equitable education.

Keywords: culturally responsive education, teacher evaluation, teacher training, multicultural education, validation

RESUMEN

Las aulas educativas son un fiel reflejo de las sociedades cada vez más diversas y desiguales, es por ello que el profesorado precisa de una determinada disposición docente hacia sus estudiantes y su enseñanza que garantice una mayor justicia social. Este artículo describe una investigación instrumental centrada en la adaptación y validación en población española de la Disposition for Culturally Responsive Pedagogy Scale (Whitaker & Valtierra, 2018). El objetivo principal es analizar las características psicométricas de esta escala, que evalúa la disposición docente hacia la Educación Culturalmente Receptiva (ECR). No se conocen o no hemos hallado instrumentos específicos en castellano que analicen la disposición docente hacia esta pedagogía. Se ha utilizado una metodología de corte cuantitativo por medio de un método de encuestas administradas a profesores de diferentes niveles educativos y regiones de España (N = 538). El análisis factorial confirmatorio reveló un ajuste óptimo para una estructura de tres factores: praxis educativa, comunidad y justicia social, tras eliminar dos ítems originales. Los resultados del análisis de fiabilidad indican una consistencia interna adecuada, con índices de Alfa de Cronbach (α = .942) y Omega de McDonald (ω = .943) satisfactorios. Además, se encontraron diferencias estadísticamente significativas respecto a las disposiciones hacia la ECR según el sexo, nivel educativo y especialidad del profesorado, lo que sugiere la relevancia de considerar estas variables al evaluar la disposición docente hacia la ECR en diferentes contextos educativos. En conclusión, el estudio proporciona una primera herramienta válida y fiable para conocer la disposición del profesorado hacia la ECR, contribuyendo así a la mejora de una educación más inclusiva y equitativa.

Palabras clave: educación culturalmente receptiva, evaluación del docente, formación docente, educación multicultural, validación

INTRODUCTION

Cultural and linguistic incongruencies between teachers and the identities of their students are evident in recent scientific literature, which affects student learning and emotional states (Abacioglu *et al*., 2022; Adam & Byrne, 2023; Comstock *et al*., 2023). In Spain, it implies a lower probability of achieving the basic academic level and a lower sense of belonging among students of diverse cultural backgrounds compared to their Spanish counterparts (OECD, 2018; Bayona *et al*., 2020). In the 2022-23 academic year, foreign students enrolled in general education in Spain represented 11.4% of the total, the highest figure recorded to date (Ministerio de Educación y Formación Profesional, 2023). The trend suggests that it will continue increasing over coming years, for which reason the role of teachers is crucial for preventing certain educational dynamics of violence and social, cognitive, and epistemological injustice that impose unique and ethnocentric knowledge and learning. Teaching capabilities and dispositions are identified in some studies as necessary for the professional development of inter/multicultural education (Tualaulelei & Halse, 2021) that promotes student development and learning through culturally adapted pedagogies (Abacioglu *et al*., 2022) striving to prevent such violence and injustice.

There are Spanish scales that are used to analyze teachers' beliefs and attitudes towards cultural diversity (Llorent & Álamo, 2016; Llorent & Álamo, 2019; Cabrera-Vázquez *et al*., 2022) and there are others on the attitudes of future teachers towards multiculturalism in schools and immigration (Arques & Navas, 2010). However, there are no instruments in Spanish, to the best of our knowledge, that can be used to identify teachers' dispositions towards pedagogies such as culturally relevant, responsive, and sustainable education (Ladson-Billings, 1995; Gay, 2010; Paris & Alim, 2017). Measurement instruments that might help to reduce the cultural and linguistic incongruencies between teachers and students. Llorente Villasante *et al*. (2024) observed how those sorts of pedagogies engage students' cultural resources by considering knowledge banks and identity in the classroom, for which continuous teacher reflection is necessary to develop a favorable attitude towards those pedagogies. In this paper, the translation and linguistic and cultural validation of the Dispositions for Culturally Responsive Pedagogy Scale (DCRPS) (Whitaker & Valtierra, 2018a) are presented, providing a first valid and reliable instrument in Spanish with which to analyse the beliefs and attitudes of teachers towards CRE. Some studies on scales like the DCRPS have been presented in the literature in different disciplines (Kruger, 2019; Chuang *et al*., 2020). However, the disposition of teachers towards CRE can be analyzed with the DCRPS through political and critical aspects of multicultural education and CRE, incorporating reflections on teacher identity and institutionalized racism (Chang & Cochran-Smith, 2022). Additionally,

the overall structure of this scale leaves room for observations on appropriate management of cultural diversity by combining cognitive theory with educational practice.

CULTURALLY RESPONSIVE EDUCATION (CRE) AND ITS TERMINOLOGICAL VARIATIONS

Culture, as much as the terms derived from it, should be understood in their fluid and unfinished nature. It does not imply erroneous original ideas, but it rather necessitates reflections and adaptations tied to the evolution of societies to construct new understandings and theories. There are terminological variations (Ladson-Billings, 1995; Gay, 2010; Paris & Alim, 2017) within CRE, yet a structural educational change with a critical perspective is generally pursued through meaningful relationships between teachers, students, and the community.

Since the 1990s, there has been a growing interest in CRE in the United States, due to increased cultural diversity within classrooms and concerns over low performance levels among culturally diverse students. Ladson-Billings (1995) noted that until that time, the responsibility for that low performance was focused exclusively on the students, without any reference to the commitment of educational systems. Therefore, a paradigmatic shift was necessary to ensure that educational environments and teachers adapted to culturally diverse students. It was a question of teacher responsibility for improving student performance and supporting their learning and a social and ethical commitment of teachers towards those students.

CRE praxis emerged as a holistic method to improve the educational outcomes of students (Ladson-Billings, 1995; Gay, 2010) by considering their diverse cultural backgrounds, promoting meaningful learning, greater competence in cultural aspects, and critical awareness of social inequalities. Aspects such as participation, cultural identity, personal relationships between teachers and students, and all characteristics of the students must be addressed for their learning (Stembridge, 2020).

TEACHER DISPOSITIONS AND PRACTICES RELATED TO CULTURALLY RESPONSIVE EDUCATION

There is a substantial body of research on teacher dispositions (Diez, 2007; Sockett, 2009), which can be described as «professional virtues, the qualities, and the mental and behavioural habits that teachers possess and develop based on their knowledge, understanding, values, and commitments» (Sockett, 2009, p. 301). In most studies, dispositions are shaped by the relationship between teachers' beliefs

and practices. In that sense, attitude that is characterized by belief significantly influences teacher disposition. Stephens (2019) reviewed a multitude of studies that identified disposition as closely linked to teaching attitude.

Although certain teacher actions may appear involuntary, they are somehow governed by mental schemas rooted in their attitudes and beliefs, which determine their teaching dispositions. This culturally responsive teaching disposition is adapted to students when teachers adopt classroom behaviours that create supportive and reflective learning environments that promote autonomous learning for all students (Vavrus, 2008). More recent studies, such as those of both Warren (2018) and Truscott & Stenhouse (2022), showed how teacher disposition towards CRE is influenced by attitudes and prior knowledge, and it has been demonstrated that many teachers feel that they lack confidence when implementing CRE in the classroom (Adam & Byrne, 2023), requiring and demanding more training (Abacioglu *et al*., 2022; Adam & Byrne, 2023). However, before such training, it is necessary to examine teachers' beliefs and attitudes because «whether positive, negative, or ambivalent, beliefs and attitudes always precede and shape behaviours» (Gay, 2013, p. 4). It also fosters greater confidence in managing culturally diverse classrooms by analysing and questioning inherent perspectives that affect each teacher's self-efficacy (Comstock *et al*., 2023).

At times, teachers may not have too much experience of interacting with different cultures, perhaps because they have had no opportunities to share and to engage in educational experiences where different cultures converge within their immediate context (Gay, 2013). It can mean that there is no questioning of their own teaching identity or attitudes, which might otherwise mean that they not only recognize the values of each student regardless of social or cultural background, but also learn from those students, which is necessary for implementing CRE in the classroom (Villegas & Lucas, 2002; Vavrus, 2008). It is important to analyse teachers' belief systems regarding the cultural diversity of their students, to enhance their self-efficacy and teaching disposition towards working in culturally diverse settings. Practicing and trainee teachers should have spaces and opportunities that challenge their attitudes and beliefs toward culturally diverse students and reflect on how those beliefs influence their educational practices. In doing so, they can learn from their students, adopt a constructivist view of learning, and become agents of change, using the classroom and school as a place for social transformation (Villegas & Lucas, 2002). Steps that will enable teachers to develop sensitivity towards the cultural diversity of students, valuing their cultural influences and incorporating them into their pedagogical approaches.

Numerous studies have shown how a culturally responsive pedagogy, which values cultural resources and integrates them into the teaching-learning processes, manages to improve academic outcomes and classroom participation for culturally

diverse students (Fallon *et al*., 2021; Anyichie *et al*., 2023). It also has a significant impact on students' autonomous learning and emotional behavior (Anyichie *et al*., 2023; Power *et al*., 2024). However, for those sorts of educational improvement processes to occur, the culturally diverse spaces and contexts surrounding the students must especially be considered, and teachers must ensure collaborative work with families and the community to achieve optimal results of that sort (Fallon *et al*., 2021; Anyichie *et al*., 2023).

SELECTED INSTRUMENT AND STUDY APPROACH

The Dispositions for Culturally Responsive Pedagogy Scale (DCRPS) is proposed as a valid and reliable instrument. The validation and development of the original scale followed a six-phase process: item development based on literature related to CRE, item review by a panel of experts, Exploratory Factor Analysis (EFA), factor interpretation, Confirmatory Factor Analysis (CFA), and analysis of convergent and discriminant validity. The result was a 19-item scale ($\alpha = 0.92$) with three dimensions.

The educational praxis dimension (6 items, $\alpha = 0.85$) is aimed at exploring teaching practice by considering thoughts, experiences, ideas, identity, and objectives when teaching, reflecting upon the world surrounding educational contexts to transform them (Freire, 1970; Ladson-Billings, 1995). Under the community dimension (9 items, $\alpha = 0.87$), teachers' views on collaborating with students to build community in the classroom, to understand the world and the surrounding environment (Freire, 1970; Gay, 2010), and to consider their importance in the teaching-learning process are evaluated. The extent to which schools are seen as places that either challenge or perpetuate social inequalities is investigated under the social justice dimension (4 items, $\alpha = 0.68$), fostering greater critical thinking and socio-political awareness (Freire, 1979; Ladson-Billings, 1995) of the structures and institutions surrounding educational settings.

In this study, our proposed hypothesis is that the factorial structure and reliability indices of the original English version of the DCRPS will be similar in Spanish. To that end, the DCRPS will be administered to Spanish teachers, and the levels of teacher disposition towards CRE among Spanish educators will be investigated. The research objectives were:

1. To adapt and to examine the psychometric properties of the Spanish version of the DCRPS for its validation.
2. To explore teacher disposition towards CRE among Spanish teachers.
3. To determine whether there are differences in teacher disposition towards CRE among Spanish teachers based on gender, educational level, and teaching specialty.

METHOD

Design

An instrumental-type study (Ato *et al*., 2013), it includes research analysing the psychometric properties of self-reported scales, whether newly created or translations and adaptations of existing instruments. The sampling methods were non-probabilistic snowball and discretionary.

Sample

The appropriate sample size was determined by following the common cut-off criterion of at least 200 responses and a minimum ratio of 10 participants *per* item; that is, each item should have at least 10 responses (Kline, 2014; Lloret-Segura *et al*., 2014). The original questionnaire contained 19 items, thereby requiring a minimum of 190 responses to meet the criterion of 10 responses *per* item. A total of 538 teachers from various educational levels and different provinces in Spain voluntarily and anonymously responded to the online questionnaire designed to validate the scale. The study adhered to the guidelines of the Declaration of Helsinki (Declaration of the World Medical Association), ensuring ethical-philosophical commitment and unwavering respect for human dignity, privacy, physical and moral integrity, and guaranteeing the protection of personal data throughout the research. The research project had also received a favourable report from the Bioethics Committee of the relevant university (RI 1105/2023).

The sociodemographic data (Table 1) on gender, age, educational level at the teacher's place of employment, and teaching specialty were the dependent variables. Regarding the educational level, a distinction was made between Compulsory Secondary Education (ESO) and Baccalaureate (pre-university studies), both within Secondary Education, as we believed there might be differences that could add value to the analysis. Although the online questionnaire also inquired into province, country of birth, and family origin, the analysis of those variables could not be pursued, due to sample size limitations and some very unequal distributions between each of those variables, which limited the statistical power of the analyses. For example, in the case of the province, 186 participants indicated that they were from Madrid, 69 from Burgos, and 25 from Segovia, with responses from 40 different provinces. Regarding the country of birth, 96% of the teachers who answered the questionnaire indicated that they were born in Spain, and finally, for family origin, the same happened with 95% of the sample indicating a Spanish family origin. Those variables were therefore neither analysed

nor considered in the final analysis, due to the significant differences within the sample for each one.

Table 1
Sociodemographic data of the sample

Teacher's Sample	n	%
Gender		
Women	402	74.7
Man	136	25.3
Age		
From 22 to 31	83	15.4
From 32 to 41	133	24.7
From 42 to 51	145	27.0
52 or more	177	32.9
Educational Level		
Kindergarten	96	17.8
Primary Education	189	35.1
Secondary Education (ESO)	183	34.0
Baccalaureate (Pre-university studies)	70	13.0
Teaching specialty		
Special Education	52	9.7
Experimental Sciences	80	14.9
Social Sciences and Humanities	176	32.7
Physical Education	39	7.2
Generalist Primary Education (GPE)	170	31.6
Other	21	3.9
TOTAL	538	100

Instruments

Dispositions for Culturally Responsive Pedagogy Scale (DCRPS)

The initial version of the scale validated by Whitaker and Valtierra (2018) was used, which is a 19-item self-report type scale. The distribution of the items on the scale was as follows:

a) Educational Praxis: P1, P2, P3, P4, P5, P6.
b) Community: C7, C8, C9, C10, C11, C12, C13, C14, C15.
c) Social Justice: J16, J17, J18, J19.

In the Confirmatory Factor Analysis (CFA) of the original scale, the authors reported the following fit indices (NFI = 0.88; IFI = 0.92; CFI = 0.92; TLI = 0.91; SRMR = 0.061; RMSEA = 0.051; $\alpha = 0.88$).

Multicultural Education Attitude Scale (EAEM)

Additionally, the online survey included the Multicultural Education Attitude Scale (Rodríguez *et al*., 1997) to assess the concurrent validity of the DCRPS scale. This instrument has an acceptable Cronbach's alpha ($\alpha = 0.88$). It is noteworthy that some items were modified to adapt them to the current context while maintaining their original meaning, as has previously occurred (Ledezma Vargas & Hernández Vigorena, 2023).

Procedure

The survey was sent *via* email to various educational institutions for distribution among teachers of different educational levels and provinces. In addition, it was shared among the researchers' closest contacts, which may account for the overrepresentation of certain types of teachers.

The two stages of Translation, Cultural Adaptation, and Validation, recommended by Ramada-Rodilla *et al*. (2013), were followed:

a) Cultural adaptation, considering idiomatic expressions, cultural context, and the educational system
b) Validation in Spanish, to assess the degree to which the psychometric properties of the scale in English were maintained.

Five steps were followed: 1. Direct Translation: Three bilingual translators, whose native language was Spanish, performed a conceptual translation of the instrument. 2. Synthesis of Translations: A meeting was held online with the translators to discuss discrepancies until a consensus was reached, which was reflected in a

report. 3. Reverse Translation: Two bilingual translators, with no prior knowledge of the subject matter and whose native language was English, performed the reverse translation. 4. Consolidation by an Expert Committee: An online meeting was held with a committee of experts. The original authors of the questionnaire were consulted to resolve doubts about items that could lead to different interpretations. 5. Pre-testing: To evaluate the applicability and feasibility of the questionnaire, a pre-test was conducted with volunteer teachers (n=25) from various levels, who provided feedback on questions that were difficult to understand or confusing instructions. The feedback was compiled into a report and considered for the final questionnaire.

This process concluded with the need to modify two items from the original scale to adapt them to the Spanish context, as Seisdedos (2000) noted, «some instruments are more sensitive than others when they are moved from one culture to another» (p. 42). The expert committee—comprising a methodology expert, a linguist specializing in both English and Spanish, and an expert in multicultural and intercultural education—determined that two items from the original scale needed modification to fit the Spanish context. Those issues might be more familiar to American teachers but may not be as common in the Spanish context and could lead to different interpretations.

Item 6, «I am willing to be vulnerable», was modified to its final version: «I am willing to review my teaching practices from the perspective of social justice». After consulting with the original authors of the scale, their interpretation of that item was clearly a process of unlearning that leads to an awareness of existing inequalities within educational settings, thereby facilitating education based on social justice and critical dialogue. A preliminary version of the same item presented to the expert panel was «I show vulnerability by applying social justice in the classroom», which was later revised to «I am willing to apply notions of social justice in the classroom», resulting in the final version.

Item 16, «I believe it is important to acknowledge how issues of power are enacted through schools,» was modified to: «I consider it important to recognize how different systems of power (such as racism, sexism, classism, *etc*.) are reproduced in schools.» In this case, in addition to the expert committee's need to adapt it to the Spanish context, there was disagreement between the translators. After consulting with the authors, they indicated that the item referred to recognizing how systems of power affect situations in the classroom, such as power dynamics, through the socialization of students or teaching practices. The modification was agreed upon by the translators and approved by the expert committee.

DATA ANALYSIS

Structural validity

It was first checked whether the data followed a normal distribution by applying the Kolmogorov-Smirnov test (N > 50) to each dimension of the scale, to assess the homogeneity of variance. The significance value was found to be $p < 0.05$, indicating that the distribution of the scores was not normal. Subsequently, both the skewness and the kurtosis of each item was tested, yielding values that were not within ± 2. Having conducted those tests, it was concluded that there was sufficient evidence to reject the null hypothesis. Non-parametric techniques were used for the analysis of the variables under consideration, and biserial rank correlation (r_{rb}) was employed to determine the effect size for observing differences between two independent groups, while eta squared (ε_R^2) was used to analyse differences between more than two independent groups.

Although there was a theoretical proposition regarding the hypothetical factorial structure of the model and its underlying dimensions (Whitaker & Valtierra, 2018), construct validity was examined, due to the modification of two items from the original scale. An Exploratory Factor Analysis (EFA) was conducted to replicate the original model. The Kaiser-Meyer-Olkin (KMO) indices, with values of .88, .92, and .71 for the different dimensions, and the statistically significant results of Bartlett's test of sphericity ($p < .001$), supported the feasibility of that analysis. It was applied to a random 50% sample (n=269) of the study sample, resulting in two equivalent halves to ensure sample representativeness. Each half was used for both EFA and Confirmatory Factor Analysis (CFA).

The IBM SPSS Statistics 28 software package was used for the EFA, employing the unweighted least squares method and promax rotation, with parallel analysis through 500 bootstrap iterations based on polychoric correlations, to determine the number of factors to retain, following one of the appropriate recommendations (Lloret-Segura *et al*., 2014). CFA was conducted to test whether the hypothesized model validated in English matched our EFA and fitted adequately. The Amos v. 26 software package was used, applying goodness-of-fit indices with the values recommended by Hu and Bentler (1999), including: chi-square value (χ^2) and its statistical significance ($p > .05$); CFI ≥ .90; TLI ≥ .90; RMSEA ≤ .08.

Following these indices and aiming to develop a practical instrument for the construct to be measured, items with lower factorial loadings were removed, considering a minimum factorial loading between 0.32 and 0.40 (Tabachnick & Fidell, 2001), with no cross-loadings between factors lower than 0.32.

Convergent and discriminant validity

Values greater than .32 in the matrix of standardized coefficients indicate convergent validity between the dimensions (Kline, 2014), while values equal to or less than .85 in the matrix of construct correlations provide evidence of discriminant validity for each dimension (Garson, 2002).

Concurrent validity

The concurrent validity of the factorial model with the best fit was examined through a correlational analysis, using Spearman's rank correlation tests for non-parametric data, as the Kolmogorov-Smirnov test suggested a violation of normal distribution ($p < 0.05$). Responses from teachers to the DCRPS and EAEM were analysed, expecting a positive correlation between the two constructs, as outlined in the theoretical section. Both scales were designed to measure teachers' beliefs and attitudes towards CRE and multicultural education.

Reliability

Cronbach's alpha ($\alpha \geq .70$) and McDonald's omega ($\omega \geq .70$) were used to determine the reliability of the factorial model resulting from the CFA. McDonald's omega is considered a better indicator for multidimensional scales that employ Likert-type items (Watkins, 2017).

RESULTS

Structural validity

Exploratory Factor Analysis (EFA) was first conducted to analyse the structural validity of the scale. It was observed that Item 15 of the Spanish version of the scale was in a different dimension compared to the original model. The results of the EFA (Table 2) revealed a structure consisting of 3 dimensions. It was noted that the Spanish version of the instrument was not aligned with the original scale, as Item 15 appeared in the Social Justice dimension rather than in the Community dimension. Subsequently, following the EFA results, which were well aligned with the original authors' model except for Item 15, a Confirmatory Factor Analysis (CFA) was performed to confirm this model. After conducting the CFA, the fit indices were: $\chi^2 = 624.65$, $p < .01$; CFI = .922; TLI = .910; IFI = .922; RMSEA = .077; AIC = 706.653.

However, it was observed that Items 15 and 17 had low loadings of 0.49 and 0.36, respectively. So, it was decided to remove those items after the CFA, because their loadings were below 0.5.

Table 2
EFA results for the Spanish version of DCRPS

ITEMS FACTOR			
	1	2	3
P1 (PD)	.651 (.594)		
P2 (OC)	.769 (.600)		
P3 (DP)	.659 (.696)		
P4 (FB)	.689 (.755)		
P5 (PI)	.677 (.711)		
P6 (JS)	.599 (.695)		
C7 (VA)		.669 (.636)	
C8 (CF)		.701 (.686)	
C9 (CC)		.713 (.737)	
C10 (AC)		.748 (.707)	
C11 (AARA)		.730 (.678)	
C12 (DVA)		.740 (.761)	
C13 (DEE)		.595 (.603)	
C14 (MCA)		.581 (.599)	
JS15 (CPEA)			.445
JS16 (EDSP)			.506 (.613)
JS17 (EDS)			.578
JS18 (ATP)			.561 (.722)
JS19 (EI)			.438 (.387)

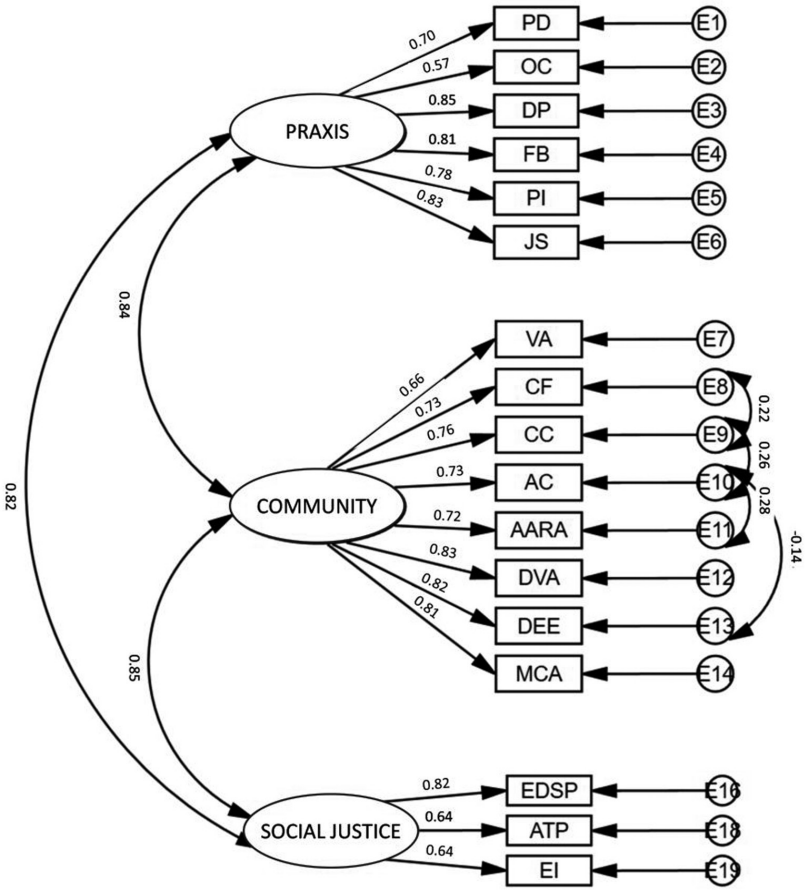
Note. The loadings of each item (between parentheses) are calculated after the removal of Items 15 and 17.

In a third step, an EFA was conducted again after removing Items 15 and 17. This new structure revealed that the instrument was aligned with the original version, except for Item 19, which showed a low loading (Table 2). Finally, a CFA was performed again without Items 15 and 17, adding correlations between four pairs of measured variables (C8 and C9; C9 and C10; C10 and C11; C10 and C13) based on statistical and methodological effects, as the items had similar wordings (Brown,

2015). It was noteworthy that Item 19 was not removed, due to the requirement, for validity-related reasons, to have at least 3 items per dimension of the questionnaire (Lambert & Newman, 2023). A decision that was supported by the fit indices: χ^2 = 422.61, p < .01; CFI = .947; TLI = .935; IFI = .947; RMSEA = .072; AIC = 504.617. Additionally, Figure 1 reveals that in the final CFA, all items, including Item 19, have loadings above the minimum recommended index of 0.5. In conclusion, the removal of Items 15 and 17 did not compromise the conceptual integrity of the scale and improved the model fit.

Figure 1

Standardized coefficients of the final Spanish version of the DCRPS model



* Values represent standardized coefficients (β).

The CFA confirmed a three-dimensional structure, replicating the original model while removing the two aforementioned items to achieve a better fit and to ensure convergent and discriminant validity between the three dimensions. The results provided evidence of structural validity for the Spanish adaptation of the DCRPS and suggested that Educational Praxis, Community, and Social Justice were three distinct unidimensional constructs necessary for considering teachers' dispositions towards Culturally Responsive Education (CRE).

Convergent and discriminant validity

The values of the standardized coefficients resulting from the 17-item model, within the CFA range between .57 and .85 (M = .74), provided evidence of convergent validity for each dimension. The correlation factors between the three dimensions were as follows: Educational Praxis – Community .84; Educational Praxis – Social Justice .82; Community – Social Justice .85. Therefore, the dimensions showed discriminant validity and were consistent with the theoretical assumptions underpinning the model.

Concurrent Validity

The correlation obtained in the analysis between the EAEM and DCRPS scales showed that the scale and its three dimensions were positively correlated at a moderate level. DCRPS (rho = .479; $p < .001$); Educational Praxis (rho = .410; $p < .001$); Community (rho = .412; $p < .001$); Social Justice (rho = .394; $p < .001$).

The correlation between the DCRPS and the subdimensions of the EAEM scale was also positive at a moderate level in almost all dimensions. There was a moderate and positive correlation between the subdimensions of effects on children (rho = .398; $p < .001$), effects on classroom work (rho = .392; $p < .001$), and the role of the school (rho = .545; $p < .001$). However, the correlation was low in the subdimension of effects on the teacher (rho = .291; $p < .001$).

Reliability results

The DCRPS variable achieved a Cronbach's alpha coefficient of .942. The coefficients obtained for the latent variables were $\alpha = .891$ (Educational Praxis); $\alpha = .915$ (Community); $\alpha = .736$ (Social Justice). The McDonald's omega coefficients were .943 for DCRPS; $\omega = .895$ (Educational Praxis); $\omega = .916$ (Community); $\omega = .738$ (Social Justice). Those values indicated adequate reliability in so far as they

were aligned with the recommended values of the psychometric literature, thereby confirming the internal consistency of the scale and its dimensions.

TEACHERS' DISPOSITIONS TOWARDS CULTURALLY RESPONSIVE EDUCATION WITH RESPECT TO GENDER, EDUCATIONAL LEVEL TAUGHT, AND TEACHING SPECIALTY

Before analysing each variable, information on the item values of the scale and its dimensions is presented to provide a general overview of the results. Considering a minimum score of 1 and a maximum of 6, the items with the highest mean scores were: «I consider it important to collaborate with colleagues» (5.75); «I consider it important to use dialogue as a way to understand students' lives outside the classroom» (5.61). The items with the lowest scores were: «I consider it important to take students' contributions into account when setting classroom rules» (5.25); «I am willing to analyse my own identities (cultural, professional, religious, gender, etc.)» (5.30). Among the dimensions, the highest score was obtained by Community (5.50) and the lowest by Social Justice (5.37). Regarding the variables considered, Table 3 shows each one in relation to the dimensions together with their mean, median, and standard deviation.

The Mann-Whitney U test showed statistically significant differences for the DCRPS variable and each of its dimensions according to gender, U = 34,170.0, z = 4.36, $p < .001$, reflecting a small effect size, $r_{rb} = .18$. In view of the median scores (Table 3) for dispositions towards Culturally Responsive Education (CRE) by gender, women scored higher than men when practicing that pedagogy.

Regarding differences by educational level, the Kruskal-Wallis H test, H (3) = 25.19, $p < .001$, demonstrated statistically significant differences for the DCRPS variable, with a small effect size, $\varepsilon_R^2 = 0.04$. The *post hoc* test with Bonferroni correction showed that those differences were between GPE and Baccalaureate (Pre-University studies), GPE and Compulsory Secondary Education (CSO), and Kindergarten and Baccalaureate. In that case, the median scores for Primary and Kindergarten were higher than those for CSO and Baccalaureate (Table 3), indicating a greater disposition towards Culturally Responsive Education (CRE) at those levels. The test results for the dimensions revealed no statistically significant differences for the dimension of Educational Praxis, but significant differences for the two other dimensions: Community and Social Justice. Differences were found between Primary Education and Baccalaureate or pre-University studies, Primary Education and CSO, Kindergarten and Baccalaureate, and Kindergarten and CSO for the Community dimension, H (3) = 53.237, $p < .001$, with a moderate effect size, $\varepsilon_R^2 = 0.09$. Statistically significant differences were found between GPE and Baccalaureate for the Social Justice dimension, H (3) = 8.527, $p = .036$, with a small

Table 3

Descriptive statistics of the scale variables and subdimensions

Sociodemographic variables	DCRPS		Educational praxis		Community		Social Justice	
	M (SD)	Mdn	M (SD)	Mdn	M (SD)	Mdn	M (SD)	Mdn
Gender								
Women	5.5 (.60)	5.6	5.5 (.71)	5.6	5.5 (.61)	5.7	5.4 (.73)	5.6
Man	5.2 (.75)	5.4	5.2 (.85)	5.5	5.3 (.76)	5.4	5.1 (.99)	5.3
Level of Education								
Kindergarten	5.5 (.56)	5.7	5.4 (.71)	5.6	5.6 (.55)	5.7	5.4 (.75)	5.6
Primary Education	5.5 (.56)	5.7	5.5 (.64)	5.6	5.6 (.56)	5.7	5.4 (.75)	5.6
Secondary Education (CSE)	5.3 (.68)	5.5	5.43(.85)	5.6	5.4 (.67)	5.6	5.3 (.84)	5.6
Baccalaureate (Pre-Uni. studies)	5.2 (.80)	5.3	5.2 (.84)	5.5	5.1 (.83)	5.3	5.1 (.92)	5.3
Teaching specialty								
Special Education (SE)	5.5 (.69)	5.7	5.3 (.84)	5.8	5.6 (.66)	5.7	5.4 (.91)	5.6
Experimental Sciences (ES)	5.1 (.84)	5.3	5.1 (.99)	5.5	5.1 (.82)	5.3	5.1 (.82)	5.5
Humanities and Social Sciences (H&SS)	5.4 (.56)	5.5	5.4 (.69)	5.5	5.4 (.56)	5.6	5.4 (.56)	5.6
Physical Education	5.4 (1.0)	5.5	5.3 (.99)	5.6	5.3 (1.0)	5.6	5.2 (1.1)	5.6
General Primary Education (GPE)	5.6 (.46)	5.7	5.5 (.60)	5.8	5.6 (.45)	5.7	5.4 (.61)	5.6
Other	5.4 (.53)	5.5	5.5 (.48)	5.6	5.4 (.59)	5.7	5.2 (.67)	5.3

Note. M=mean, *SD*=Standard Deviation, *Mdn=median.*

effect size, $\varepsilon_R^2 = 0.01$. The median data for GPE and Kindergarten (Table 3) indicated that the greatest disposition towards CRE was found at those educational levels.

The responses were regrouped to form groups with greater statistical power, to analyse the specialty. The specialties of Music Education, Spanish Language and Literature, Philosophy, Foreign Languages, Arts, Geography and History, Economics, and Business were grouped under Social Sciences, Arts, and Humanities (n = 176). Mathematics, Physics and Chemistry, Technology, Biology, and Geology were grouped under Experimental Sciences (ES) (n = 80). Speech and Language, Therapeutic Pedagogy, Educational Guidance, and Socio-Community Intervention in Special Education were grouped together (n = 52). Physical Education had a sample of (n = 39), and the General Primary Education (GPE) category (n = 170) constituted another group, along with the category Other (n = 21).

The Kruskal-Wallis test with Bonferroni *post hoc* analysis H (5) =37.321, p< .001 revealed statistically significant differences between specialties Humanities and Social Sciences (H&SS)-GPE; Experimental Sciences y General Primary Education ES-GPE, and ES-Special Education (SE) in the DCRPS variable, with a moderate effect size $\varepsilon_R^2 = 0.06$, where the median was highest for GPE (5.76). Regarding the dimensions, Educational praxis H (5) = 15.694, p=.008 and Community H (5) = 61.683, p<.001 showed statistically significant differences, with a low effect size $\varepsilon_R^2 = 0.02$ and a high effect size $\varepsilon_R^2 = 0.1$, respectively. The Bonferroni-corrected *post hoc* test revealed those differences between the specialties of ES, SE, and GPE in the Educational praxis dimension, and between ES, H&SS, SE, and GPE in the Community dimension. Results that pointed to a higher disposition towards ECR within the fields of SE and GPE, both in the Educational praxis and the Community dimensions, as shown by the median, range, and mean data (Table 4).

Table 4

Descriptive statistics by teaching specialty and scale subdimensions

	Educational praxis				Community				Social Justice			
	M (SD)	Range	Mdn	p	M (SD)	Range	Mdn	p	M (SD)	Range	Mdn	p
Special Education (SE)	5.53 (.84)	4.67	5.83	*ES	5.66 (.66)	4.75	5.75	*ES, H&SS	5.46 (.91)	5.00	5.66	-
Experimental Sciences (ES)	5.17 (.99)	4.67	5.00	*SE, CPE	5.18 (.82)	4.88	5.37	*SE, CPE	5.12 (1.13)	5.50	5.50	-
Humanities and Social Sciences (H&SS)	5.43 (.69)	5.00	5.00	-	5.45 (.56)	4.75	5.62	*SE, CPE	5.40 (.68)	5.00	5.66	-
Physical Education	5.35 (.99)	5.00	5.66	-	5.37 (1.06)	5.00	5.62	-	5.23 (1.12)	5.00	5.66	-
General Primary Education (GPE)	5.54 (.60)	5.00	5.83	*ES	5.69 (.45)	5.00	5.75	*ES, H&SS	5.48 (.61)	3.67	5.66	-
Other	5.57 (.48)	1.67	5.66	-	5.41 (.59)	1.88	5.75	*H&SS	5.25 (.67)	2.00	5.33	-

Note. *M*=mean, *SD*= Standard Deviation, *Mdn=median, p* = significance, * = significance level ≤ .05.

DISCUSSION AND CONCLUSIONS

A reliable initial instrument for assessing the dispositions of Spanish-speaking teachers towards Culturally Responsive Teaching (CRT) is offered in this paper through a meticulous methodological process. Concerning the first research objective, the results of the Confirmatory Factor Analysis (CFA) demonstrated a three-factor model in Spanish like the theoretical model upon which it was based (Whitaker & Valtierra, 2018a), with adequate evidence of structural, convergent, and discriminant validity, thus confirming the research hypothesis. Among all the goodness-of-fit indices evaluated, only one showed statistical significance, the Chi-square (χ^2) value, presenting values that were not recommended in the literature. However, that analysis was highly sensitive to sample size (Gatignon, 2013), and the χ^2 indicator alone was no indication of a poorly fitting model, especially as the remaining fit indices reached adequate levels. The results also indicated that each dimension correlated at both a high and a medium level with the EAEM, demonstrating the concurrent validity of the instrument. Additionally, the reliability results imply the appropriate use of the instrument among teachers and likewise uphold its validity. Regarding the structure of the items and the subdimensions of the scale, the values of the standardized coefficients of each item and the relationship of each construct with the theoretical foundations of CRT, measuring differentiated aspects, provided evidence of adequate convergent and discriminant validity.

Regarding the second and third objectives, the results showed statistically significant differences in gender, educational level taught, and some disciplines. However, the effect size of those variables indicated that the differences should be considered relevant between educational level and the community dimension, between teaching specialty and the DCRPS variable, with clear differences between teaching specialty and the community dimension. Regarding the GPE specialty, the results were aligned with the differences concerning educational level, Primary Education being where CRT is most actively pursued. From the perspective of SE, one possible explanation could be a heightened sensitivity to diversity. However, it is necessary to investigate whether that sensitivity is also focused on cultural diversity, given the overrepresentation of students from cultural and ethnic minorities in special education classrooms, which leads to greater school segregation. That segregation, through monocultural inclusion policies, perpetuates a paternalistic racism that fragments classrooms and society (Delbury, 2020).

The results are consistent with other studies where the community dimension of the DCRPS is predominant, and when addressed through mixed methods, qualitative references to that dimension are notable (Whitaker & Valtierra, 2018b; Valtierra & Whitaker, 2021). Overall, this research represents one of the first efforts aimed at developing an instrument based on the DCRPS model for use in any Spanish-speaking

country. Current research (Warren, 2018; Whitaker & Valtierra, 2018a; Valtierra & Whitaker, 2021; Comstock *et al*., 2023) is enlarged through this study on teachers' dispositions and beliefs regarding the implementation of CRT in the classroom. The DCRPS instrument can be used to analyse those beliefs and attitudes of Spanish-speaking teachers towards CRT, which will determine their future dispositions towards practicing this type of pedagogy, thereby avoiding the folklorization of different classroom cultures. The linguistic and cultural adaptation of the DCRPS instrument enables an understanding of new educational settings to achieve greater educational and social equity. This study therefore has implications both at the theoretical level of CRT and in relation to its methodological operationalization. The educational praxis dimension combines cognitive theory with educational practice, and after modifying Item 6 in the Spanish version, our belief is that this scale could be used with both in-service and pre-service teachers, representing an advance in current related research. All the more so, taking into account that the authors had previously administered this scale for a comparative analysis of the dispositions of in-service teachers both in urban and in rural contexts (Valtierra & Whitaker, 2021). The results regarding educational praxis illustrate the need for reflection among teachers to transform educational practice (Freire, 1970). In a similar way to the work of Whitaker & Valtierra (2018b), educational praxis together with community plays a significant role for teachers when implementing CRT.

This brief and simple instrument holds significant value for conducting educational research related to cultural diversity in schools. The results contribute to the emerging literature on CRT and, with only 17 items, reduce the burden of data collection. Although the social justice dimension has the fewest items, Lambert & Newman (2023) noted that it contained the minimum number of items necessary to reflect a dimension when validating a scale, aligning with other works in the literature (Casebeer, 2016; Wronowski *et al*., 2023). The findings were consistent with those of Wronowski *et al*. (2023), who indicated in their study that women participants were more likely than men to pursue greater social justice in the classroom, which is essential for implementing CRT.

LIMITATIONS OF THE STUDY AND FUTURE DIRECTIONS

Some limitations of this study must be noted. First, as Whitaker & Valtierra (2018) pointed out, it is challenging to capture all necessary aspects to understand teachers' dispositions towards CRT with this scale alone. In fact, during the original validation in English, although items related to the dimension of co-construction of knowledge between teachers and students based on diverse cultural influences within the classroom were initially included, they could in the end not be added, due to insufficient reliability. In future research, the school curriculum could be analysed

while administering the DCRPS or quantitative data could be complemented with other qualitative data that do indeed address that co-construction of knowledge in the classroom.

Although some authors, such as Herrero (2010), suggested that the correlation of certain errors could enhance the model's capability to reflect real data, a potential limitation of this study could be the correlation of errors within the same dimension of the scale. A possible theoretical explanation is that either the items are worded similarly or respondents interpret them in a similar manner. Future research could review items with similar wording (Items 8 and 9) or those measuring very similar aspects (Items 10 and 11) to reduce the number of items in the scale or to modify some of them to measure constructs more directly.

Another limitation of the study relates to the characteristics of the sample. There is a higher number of responses from women compared to men, and the teachers' experiences are not characterized by cultural diversity, as most respondents reported Spanish family backgrounds and birthplaces. There is also some imbalance between different provinces, with a predominance of responses from Madrid, and Burgos and Segovia in Castile and Leon. It is important to note that the purpose of this study was to analyse the psychometric properties of the DCRPS instrument and to provide initial data on teachers' dispositions towards CRT in relation to such variables as gender, educational level, and specialty. The groundwork is therefore laid for future research on this highly relevant topic.

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Analysis of the conditions and didactic strategies for evaluating ethical learning: A systematic review

Análisis de las condiciones y estrategias didácticas de evaluación de los aprendizajes éticos. Una revisión sistemática

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ABSTRACT

Ethical learning for human development is recognized as a fundamental right that has been receiving renewed interest in models, approaches, and research centers in recent years. At the same time, there has also been increased concern over how ethical learning should be assessed, although little if any research provides any scientific evidence from the most widespread practices in quality publications. The purpose of this study is therefore to analyze the didactic strategies and conditions used to assess ethical learning in the international scientific literature. The systematic revision method was used following the PRISMA protocol, which was applied to scientific journal articles published in Scopus from 2018 to 2022, yielding a sample of 69 studies. The variables analyzed cover aspects regarding the method of evaluation, the design of the study, the socio-demographic characteristics of the sample,

and elements regarding the content. The most significant results clearly show that individual assessment is the main technique used (91%), self-assessment is chosen most often (65%), the most commonly used tool is the questionnaire (51%), and that quantitative, qualitative, and mixed methods are often combined, along with widespread use of various different assessment instruments in each study (62%). Most of the research studies (66%) do not make use of any pretesting/post-testing or control groups (85%) and evaluate programs that last less than a year (81%). The samples are generally lower than 500 individuals (67%) and are primarily adults (59%). Lastly, most studies assess cognitive aspects (65%) on a wide range of topics associated with ethical learning, chief among which is character learning. Thus, the complexity of assessing ethical learning implies major demands that are not yet met and requires that significant progress be made to address an essential challenge in education.

Keywords: educational strategies, educational evaluation, moral education, ethics, systematic review

RESUMEN

El valor de los aprendizajes éticos para el desarrollo humano se reconoce como un derecho fundamental, que ha experimentado un interés renovado en modelos, enfoques y centros de investigación en los últimos años. Sin embargo, se observa también una preocupación por las posibilidades y estrategias necesarias para su evaluación, no encontrándose investigaciones que proporcionen evidencias científicas sobre las prácticas más extendidas en publicaciones de calidad. El objetivo de este estudio es analizar las condiciones y estrategias didácticas utilizadas para la evaluación de los aprendizajes éticos en la literatura científica internacional. El método utilizado es la revisión sistemática según el protocolo PRISMA, mediante el cual se han revisado los artículos científicos publicados en Scopus de 2018 a 2022, obteniendo una muestra de 69 estudios. Las variables analizadas abarcan aspectos relacionados con la metodología de evaluación, el diseño del estudio, características sociodemográficas de la muestra y elementos relativos al contenido. Los resultados más significativos ponen de manifiesto que la modalidad de evaluación mayoritaria es individual (91%), se opta preferiblemente por la autoevaluación (65%), el tipo de herramienta más empleado es el cuestionario (51%) y se combinan métodos cuantitativos, cualitativos y mixtos, con un uso extendido de varios instrumentos de evaluación en cada estudio (62%). La mayoría de las investigaciones (66%) no aplica pretest/postest, ni grupo de control (85%) y evalúa programas de duración inferior a un año (81%). Las muestras son generalmente inferiores a 500 individuos (67%), con primacía de personas adultas (59%). Por último, gran parte de los estudios evalúan aspectos cognitivos (65%), sobre una diversidad de temáticas asociadas al aprendizaje ético, entre las que destaca la educación del carácter. Así pues, la complejidad de la evaluación del aprendizaje ético implica importantes exigencias que no se encuentran aún satisfechas y que requieren avances significativos para responder a un reto educativo esencial.

Palabras clave: estrategias educativas, evaluación de la educación, educación moral, ética, revisión sistemática

INTRODUCTION

Current trends in moral education

Seventy-five years after the Universal Declaration of Human Rights was passed by the General Assembly of the United Nations in Resolution 217 A (III) of 10 December 1948, it is well worth re-visiting a text that constitutes an undeniable point of reference for Western societies and a beacon for the present and future of our cultures. Specifically, Article 26.2 defines the purpose of education as:

> the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. It shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

Beyond a doubt, at the heart of these great words lies a deep ethical component that emanates from the idea of full development of the personality, which encompasses the full range of dimensions of the person (Ibáñez-Martín, 2017), as well as the educational duty to promote values with a high moral charge in individuals and groups of people as a way to maintain peaceful coexistence, a high level good so strongly sought in our times (Alderdice, 2021).

Recent years have witnessed a renewed pedagogical interest in the ethical dimension of education, as seen in the increasing number of publications on this subject and the appearance of different interdisciplinary models, approaches, and methodologies that provide new insights to interpreting and developing ethical learning (Conroy, 2021; Ruiz-Corbella & García-Gutiérrez, 2023). Current trends include the perspective of gender and educational inclusion (Lee, 2022), new ways and proposals for teacher training (Higgins, 2011), questions about political polarization in the early 21st century and its threat to the quality of democracies and the exercise of citizenship (Cortina, 2022), the role played by digital technologies in civics (D'Olimpio, 2017), the contributions of neurology to education (Narvaez, 2019), and pressing concerns about social justice and sustainability (Schinkel, 2023), among others.

Specifically, the emergence of different approaches that advocate that «educating the whole person is more than a rhetorical growth» (Higgins, 2022, p. 87) seems steeped in the very heart of the word 'education'. This conception covers the first levels of the education system with approaches such as Whole Child Development (WCD), defined as:

> a holistic development approach with the goal to educate the whole child, physically, socially, emotionally, and academically, with the active engagement and support of the community. The WCD approach recognises that all children, particularly those

> facing extreme adversity, require a range of knowledge, skills, experiences, and core values that will enable them to engage as productive and ethical citizens (Tarricone et al., 2020, p. 7).

It has gained notable relevance in some conceptions of higher education that place ethics on the main lines of what it means to *be a university student* (Esteban Bara & Caro Samada, 2023), fostered by sharp critics such as the former dean of Harvard College, Harry R. Lewis, in his book on university education titled *Excellence without a Soul* (2007). According to Lewis, a professor of computer science, the university should be understood as a distinctive opportunity for students to grow, one that balances intellectual and moral development for the purpose of seeking out vital horizons of meaningfulness, with a civic, engaged view to the society they inhabit (Lewis, 2007).

Likewise noteworthy is the emergence of an Aristotelian conception of character education (Walker et al., 2015) motivated by a renewed interest in the ethics of virtue that began in the mid-20th century, the repercussions of which are still being felt today (Curren, 2010). Its development is evident in recent work done by large-scale international research such as the *Human Flourishing Program* at Harvard's Institute for Quantitative Social Science, the *Oxford Character Project* at the University of Oxford, the *Center for Character and Citizenship* at the University of Missouri-St. Louis (USA), the *Aretai Center on Virtues* at the Università degli Studi di Genoa (Italy), and the *Jubilee Centre for Character and Virtues* at the University of Birmingham (UK). Over the last decade, the Jubilee Centre has gained notable relevance, fostering collaboration among teachers, school administrators, and leaders from teachers' unions (namely, the National Association of Head Teachers (NAHT) and the Association of School and College Leaders (ASCL), each with around 50,000 and 21,000 members, respectively), families, social organizations, young people, etc. to draw up a *Character Education Framework Guidance (*2019), promoted by the British Government's Department of Education. Its aim consisted in providing guidelines and recommendations to help English schools self-assess their current and future actions for character education, understood as the educational action to promote the «spiritual, moral, social, and cultural (SMSC) development of pupils and prepare them for the opportunities, responsibilities and experiences of later life» (Department of Education, 2019, p. 4).

One factor explaining the widespread acceptance of these pedagogical proposals with a major ethical component is their consistency with Article 26.2 of the aforementioned United Nations Declaration, considering that full development of the human personality must contemplate the person's different dimensions, where ethical learning is located, although neither exclusively nor in isolation from the rest. For example, the Jubilee Centre (2022), in Aristotelian terms, identifies four sweeping domains or types of virtues in character development. These

domains encompass the intellectual virtues (focused on discerning correct action and knowledge and understanding of reality), virtues that are specifically moral (that allow us to act on an idea of the good in situations that require an ethical response), civic virtues (necessary for exercising responsible citizenship committed to the common good), and instrumental or performative virtues, which lack any ethical value in and of themselves but are nevertheless essential for acquiring the rest of the virtues. In this Aristotelian view, character is not conceived as something monolithic, nor exclusively or even mainly cognitive or intellectual, as so commonly occurred with Kohlberg-based approaches in the late 20th century. Rather, it incorporates the affective or emotional component as a mainstay of development, linked to the behavioral and the rational, the ethical weight of which in human development must be justified (Kristjánsson, 2018). In addition, the second noteworthy factor in the emergence of character education is its interdisciplinary origin and development, which starts off from philosophy but is not limited to it. Instead, it welcomes contributions from contemporary psychology, especially positive and humanistic psychology (Kristjánsson, 2015). To overcome a dichotomy that separated and confronted them, these disciplines have looked to current proposals such as neo-Aristotelian character education and like-minded conceptions such as Self Determination Theory (Ryan et al., 2013) for a common space of confluence and collaboration in which they obtain a mutual benefit that directly affects education.

Assessment of ethical learning

One of the most important challenges and at the same time one of the most complex, faced by all the different proposals and models of education that consider ethical learning to be essential, is how to assess it. Indeed, assessing the achievement of the objectives of any educational activity or project in order to identify success factors or apply corrective actions constitutes of them basic pillars of education. Thus, the traditionally more empirical approach of psychology (Kristjánsson, 2015) requires pedagogy to have a way of validating its methodologies based largely (though not exclusively) on the results obtained, thereby providing the most objective evidence possible of its effectiveness. However, aspirations to objective assessment in education entail a number of different problems that need considering. First and foremost, as López-Gómez (2016) states, assessment is not only measuring or scoring, since not everything that is assessable can be considered measurable. In other words, not everything that needs to be assessed can be measured by strictly objective means and quantified into numbers: «the richness of teaching and learning is hard to measure and synthesize in a number» (López-Gómez, 2016, p. 199). And if this first problem can be extended to learning in

general, the scientific literature and the teaching practice find it particularly difficult to apply to one of its dimensions: ethical learning.

Different authors note that the complexity of ethical learning demands similarly complex methods and instruments of evaluation, ones not limited to any single quantitative or qualitative approach. Rather, a multifaceted approach to a multidimensional phenomenon, be it cognitive, behavioral, emotional, etc., requires mixing methods and even having different evaluators that can triangulate different perspectives from a variety of different contexts (García-Gutiérrez et al., 2018; Harrison et al., 2016; Reyero, 2014). And yet, in practice we find an overabundance of self-assessment questionnaires that consist only of self-observation, which itself brings in its own set of associated problems. For one, the individual turns into both the judge and object of the evaluation, with his/her own interests in obtaining certain results. Moreover, even if we accept a subject's supposed neutrality and objectivity in evaluating him/herself, there is no guarantee his/her evaluation is accurate: the learner may overestimate or underestimate his/her ethical skills in connection with low self-esteem or a personal bias for self-confirmation (Kristjánsson, 2015).

Another noteworthy aspect concerns the difficulty of isolating the object of evaluation, since it does not appear in the person independently from his/her traits, behaviors, emotions, etc. Rather, they are all integrated and in continuous interaction, making it difficult to accurately point out the internal or external causes motivating them (Alexander, 2016; Wright et al., 2020). For example, to determine how ethically desirable a given behavior is, it would not suffice to observe it in a learner; rather, it is necessary to find out if it is motivated by other ethically justified reasons than merely by chance, or even worse, by spurious interests (Miller, 2018). In that sense, the influence of context also constitutes a key factor in ethical learning, so much so that some authors claim that character is completely dependent upon environmental characteristics, which has come to be known as *situationalism* (Merrit et al., 2010).

This is what makes the evaluation of ethical learning one of the main challenges on which there is little or no agreement in the scientific literature (Arthur et al., 2017). It requires a painstaking degree of rigor and high levels of systematization and experimentality by means of pre-testing and post-testing and control groups (Kristjánsson, 2015), which has led some authors such as Curren and Kotzee (2014) to wonder whether this type of measuring is even possible. In this regard, any achievement of the goals for full development of personality as laid out in the Universal Declaration of Human Rights may be cobbled by our not yet having an evidence-based understanding of the most effective methods for assessing ethical learning. And yet, there is still no extensive research on the methods used to assess ethical learning that gives a broad perspective of the current situation and provides reliable knowledge of the conditions in which this type of assessment is

being carried out (the methods and instruments used, the procedures, the degree of experimentality, the most habitual recipients and their socio-demographic characteristics, the contexts and settings in which the assessment is done, etc.).

Consequently, the general aim of this article is to analyze the didactic conditions and strategies used to assess ethical learning by means of scientific evidence from the international professional literature in recent years. The specific aims are the following:

- To identify the assessment methods and agents used most often in current research on ethical learning.
- To detect the main approaches to assessing ethic learning used in current scientific research.
- To categorize the preferred assessment instruments by number and type of tool.
- To examine the degree of experimentality of the research on ethical learning.
- To determine the main countries where studies are carried out on the assessment of ethical learning today.
- To describe the sociodemographic characteristics of the subjects comprising the samples of participants in research on the assessment of ethical learning.
- To determine the fundamental elements of ethics that are assessed in current research carried out on this topic.

METHOD

The method used to address the above aims was the systematic review in accordance with the guidelines in the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) declaration in order to ensure the rigor and quality required in educational research projects such as this (Sánchez-Serrano et al., 2022).

Defining the criteria

The selection criteria followed integrates the scientific articles published between 2018 and 2022 in the Scopus database. Once a sufficient sample was obtained, the scope of the research is not widened to other databases nor is any other time period considered.

Table 1 below lists the criteria adopted in greater detail:

Table 1.
Search criteria determined for selecting articles

Selection criteria	Definition of search criteria
Typology	Scientific article published (not forthcoming) indexed in the SCOPUS database
Date range	2018 to 2022
Object of study	The search descriptors used were the following: «character education» or «educación del carácter» and «evaluation» or «evaluación».
Languages	Spanish and English

Data extraction process

The articles were selected in four stages, on the basis of the previously defined criteria. The first stage set the equation to search for articles in the SCOPUS database published between 2018 and 2022 that contained the descriptors «character education» or «educación del carácter» and «evaluation» or «evaluación».

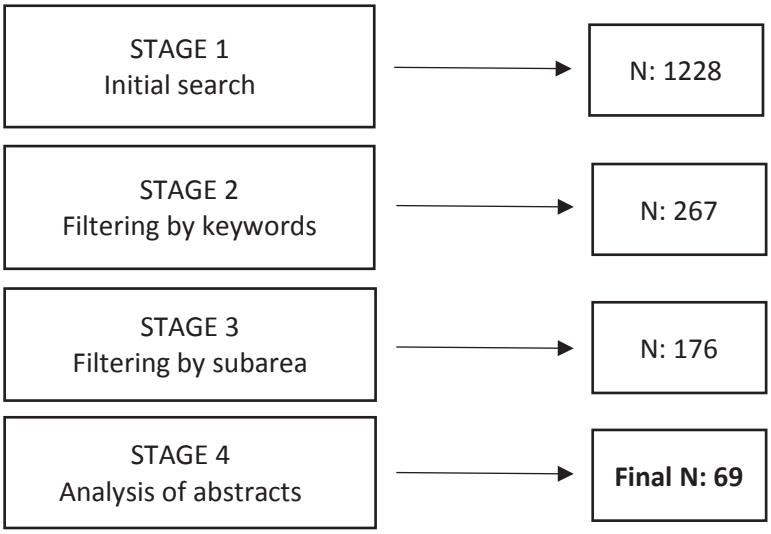
In the second stage the results from the first stage were filtered to only include the following keywords: «morality»; «moral education»; «ethics»; «virtue»; «morals»; «evaluation»; «character building»; «values»; «moral development»; «values education»; «civic education»; «program evaluation»; «virtues»; «character strengths»; «moral character»; «citizenship education»; «meta-analysis» and «student character».

In the third stage, only articles belonging to the sub-area of «Social Sciences» were selected.

The last stage of the data extraction process consisted of analyzing the content of the abstract of each article. The ones selected contained procedures, programs, and systems for assessing ethical behavior, character education, and/or moral education.

Figure 1 below features a diagram of the process followed for obtaining the final sample:

Figure 1
Stages for article selection



Once the final sample was obtained (n=69), a database was created using Microsoft Excel as an analysis instrument. From that database, the content of the articles was analyzed attending to the previously determined variables. The bibliographic references of the sample are provided in Appendix 1.

Variables of analysis

The variables in Table 2 below were used to analyze the content of the articles from the final sample.

Table 2
Classification of variables used in the extraction of data

Methodologies	Evaluation modality (individual/group)	
	Evaluation agent (self-assessment/hetero-assessment/ co-assessment)	
	Type of assessment (quantitative /qualitative/ mixed)	
	Evaluation instruments:	Number of instruments used
		Tool type (questionnaire/ interview/other)
Study design	Degree of experimentality:	Pretest and post-test (yes/no)
		Control group (yes/no)
	Number of evaluations	
	Length of the intervention program	
	Country of research	
Sociodemographic variables of the sample	Category of participants (students/teachers/others)	
	Total number of participants	
	Number of participants per sample group	
	Age	
	Level of education	
Variables regarding content	Elements evaluated	
	Thematic areas	

RESULTS

The results obtained in each variable are presented below.

About the research method

First, regarding the modality of evaluation, 91% of the research articles analyzed were found to follow an individual method, 6% were done in group mode, and 3% apply a mixed method of both individual and group. Regarding agents of evaluation, 65% use self-assessment whereas 25% make use of hetero-assessment and 19%

use co-assessment. In terms of the type of evaluation, 63 studies specify the type, with the following results: 35% use a quantitative methodology, 30% work with a qualitative methodology, and 35% use a mixed methodology. Six studies do not specify the type of methodology used.

To analyze the evaluation instruments used, the number of tools was differentiated from the tool type. Thus, 25 research articles (37%) use a single instrument, another 25 (37%) apply two instruments, and 17 (25%) make use of three or more instruments. The tool used most often is the questionnaire, which makes up 51% of all instruments, in contrast to interviews (17%) and observation (12%). The remaining 20% use other instruments, which include focus groups, case studies, descriptive analyses, moral dilemmas, pictures, traditional games, etc. Of the research that uses the interview, 14 specify which type: seven use semi-structured interviews, five use in-depth interviews, one uses the open-ended interview and one uses two types of interviews: semi-structured and in-depth.

About the design of the study

The results regarding the design of the study specify the degree of experimentality, the number of number of evaluations carried out in each research article, and the length of the intervention programs.

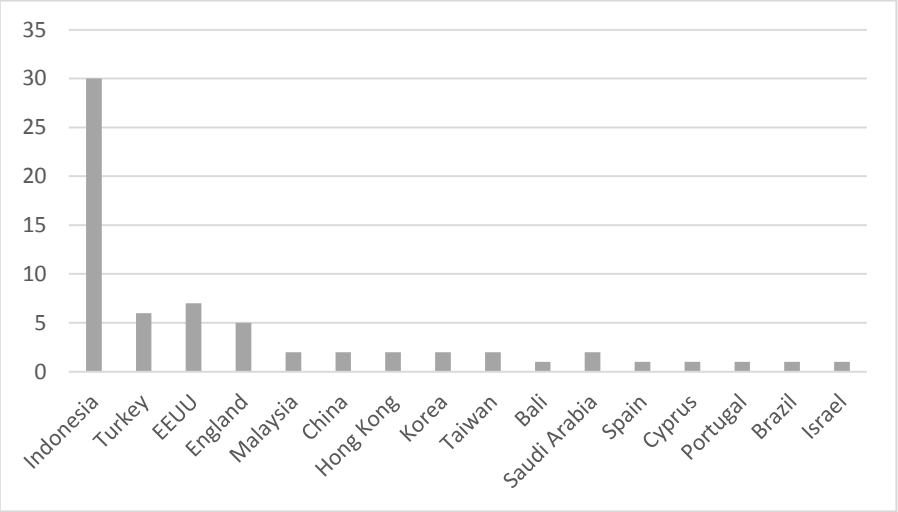
Regarding the degree of experimentality, 23 of the research articles analyzed (34%) applied pretesting and post-testing, whereas 44 (66%) did not. Furthermore, only 10 used a control group (15%) whereas 57 (85%) do not.

Regarding the number of evaluations carried out in the research, 25 studies (36%) performed two evaluations, 17 (25%) applied one single evaluation, 12 studies (17%) make reference to three evaluations, two studies (3%) performed five evaluations, two (3%) carried out four evaluations, and one (1%) study applied six evaluations.

The data on the length of the intervention programs are as follows: of the 69 research articles, 27 (39%) carried out intervention programs of a specific length. Specifically, three (11%) featured a length of less than one month, six interventions (22%) lasted between one and three months, eight (30%) of the research articles were done on programs lasting between three and six months, eight (30%) had a length ranging from six to twelve months, and one research article (4%) was based on an intervention program lasting between 12 months and six years. In contrast, 42 research articles (61%) do not specify the length of the intervention programs or do not evaluate the effects of a particular program.

Lastly, Figure 2 below lists the countries where the research articles in the sample were carried out, when specified:

Figure 2
Countries in which the research was carried out



Results from the sample

Regarding the categories of the participants of the research, the findings are as follows: in a clear majority of the studies analyzed, 49 (74%) evaluate one single type of participant. Of all the participants, 53% are students, 23% are faculty, and 24% belong to other population groups (management teams, people employed at higher education institutions, alumni, education experts, educational administrators, inspection personnel, women, professional guidance counselors, and family).

As to the number of participants, the median of all the samples is 215 subjects. Of the 83 samples, 51 (61%) were found to number fewer than 100 individuals, 22 (27%) had between 100 and 500 individuals, six samples (7%) had 500 to 1000 individuals, and four (5%) had a sample size of 1000 to 3023. The ages of the participants in the samples range from three to 66 years old; regarding level of education, most (39%) are adults (without specifying their level of education), postgraduate students (20%), primary school pupils (19%), secondary education students (16%), children in early childhood education (4%), and students in primary and secondary together (1%).

Of the 69 research articles, 11 used two samples, four had three samples, and one had four different samples.

On the content of the assessments

Regarding the elements that the studies aimed to assess, 66 research articles (97%) clearly stated them, in contrast to two (3%) that avoided specifying them. The elements most often evaluated are perceptions, which appear 27 times in different studies and make up 25% of the elements evaluated by all the research. Skills appear 25 times (24%), cognitive thinking appears on 24 occasions (23%), beliefs are evaluated 18 times (17%), attitudes appear on nine occasions (8%), disposition at two moments (2%), and motivations appear only once (1%). In addition, 30 studies (45%) were found to evaluate one single element of the ones noted above, 32 research articles covered two dimensions (48%), and four articles (6%) took three elements into account.

Lastly, in the 69 total research articles, a total of 136 thematic areas of evaluation were found. Of them, 30 (14%) assess character education; all the rest relate to ethical learning in a wide variety of thematic areas.

DISCUSSION AND CONCLUSIONS

The scientific evidence found in the recent publications on ethical learning from the last several years provides relevant conclusions in terms of the didactic strategies and conditions that characterize the evaluation process. One significant fact is that in nearly all the cases studied, an individual method of evaluation was chosen; group assessment of ethical learning was an option used only rarely, practically exceptionally. In other words, evaluation focuses fundamentally on the students rather than on the institutions of groups they belong to. This is consistent with the personalized nature of student-centered education, without disregarding its social dimension or the link between individual learning and the school ethos in ethical terms (García-Gutiérrez, 2020; Ibáñez-Martín, 2017; Montero-Carretero & Cervelló-Gimeno, 2019), which mainly requires finding out how much each student has learned. Therefore, it is based on putting into practice the concerns voiced by Fuentes and Sánchez-Pérez (2023) on the limitations some measure have in education that are commonly used in other social sciences to offset the effects of bias caused by social desirability, such as anonymity. Although this may work in other types of social sciences, education needs to be personalized, which draws on the students' knowledge and individualization of the assessment.

Furthermore, the analysis of recent empirical research confirms the findings in theoretical studies that warn about the overuse of self-assessment and self-reporting (Arthur et al., 2017; Kristjánsson, 2015). This point should be taken into account given the errors and biases compromising this type of assessments.

However, it is also relevant to see a significant amount of research that includes complementary forms of assessment of ethical learning –more than 40%– with co-assessment (peer assessment) and hetero-assessment (assessment by other agents: teachers, families, and other people) strategies that incorporate new perspectives, generate a more holistic view of learning (López-Gómez, 2016) and make it possible to develop enriching processes of triangulation (Jubilee Centre, 2022; Pike et al., 2015).

Findings also show a notable balance regarding the use of quantitative and qualitative methods for assessing ethical learning, in similar proportions, with neither outweighing the other to any great extent. For example, more than one third of the studies entailed mixed methodologies that combine both approaches to assessment, and six out of every ten articles analyzed use more than one assessment instrument. However, these results contrast with the findings in other studies carried out on specific methodologies with a relevant ethical dimension, such as Service Learning (Redondo-Corcobado & Fuentes, 2020). Because of the deliberative nature of ethical learning and the centrality of the processes alongside the results (Alexander, 2016), those studies mainly use qualitative type assessments based on observations, field diaries, or individual or group interviews due to their potential to encourage reflections linked to action and their dialog-based nature that incorporates intellectual and emotional elements and «facilitates processes of conscience-creating, of pitting different stances against each other, and of building a narrative that adds meaning to the experience» (García-Romero et al., 2019, p. 167). However, even though they are still in the minority, some of the research articles analyzed here make use of mixed methods and a variety of different assessment instruments to one extent or another. Such is the case in Harrison et al. (2016) and Wright et al. (2020), which thereby overcome the constraints of quantitative assessment instruments applied to both students and teachers (Reyero, 2014).

Less encouraging are the results found regarding the degree of experimentality: only one third of the research on the assessment of ethical learning applies pre-testing and post-testing, and even fewer (14%) use control group. In contrast, more positive results can be found regarding the length of the programs, which in 81% of the cases ranges between one month and one year. Specifically, six out of 10 programs that assess the effects on the students' ethical learning have a duration of between three and 12 months, which lends a degree of consistency to the assessments carried out. Still, despite the need for further progress on making assessment methods more rigorous and scientific (Kristjánsson, 2015; Current & Kotzee, 2014), two points need to be made regarding how these measurements apply to the assessment of ethical learning: one of a realistic nature and the other of an ethical one. The former realistically entails acknowledging that the

sophistication of assessment measurements with experimental aspirations requires a level of exigency for both social sciences and education that cannot always be applied at schools, where resources are generally in short supply, and especially at pre-university levels, where teachers and administrators do not always have the research skills needed or access to external researchers. As a result, this situations underscores the need for closer inter-institutional collaboration to bring about mutually enriching exchanges regarding research and assessment. As to the second point, although measures such as control groups make it easier to access evidence on attributing the responsibility of learning to the programs or interventions performed on the experimental group rather than to the natural process of the students' own ethical maturity, a number of specifically ethical questions arise on the decision to exclude the control group from learning about ethics, given that the student, for morally dubious reasons, are unlikely to benefit from whatever findings the research intervention may subsequently bring (Hirsch & Navia, 2018). This may actually go against the principle of *Beneficence*, that, along with *Autonomy* and *Justice* as defined in the *National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research* (1979), requires not only protecting the subjects participating in research from harm, but also by making efforts to secure their maximum well-being. Thus, it becomes difficult to justify that researchers should be allowed to decide that one group of students, chosen at random but with the same characteristics as another group, is not to receive equal treatment in benefiting from such a relevant matter in their development as ethical learning.

Also worth noting are a few relevant questions regarding the characteristics of the sample of participants in the research analyzed. As might be expected, nearly all the samples were made up of a single type of participant: students. Nevertheless, a significant percentage (23%) focuses on teacher evaluation, which implies acknowledging the role of the teacher in the students' ethical learning, especially in how that learning becomes internalized in their own person. This places us in one of the classic yet controversial strategies of moral education, in which teachers, much like the characters in a novel or film, cannot be expected to teach what they themselves do not understand (Carr, 2006), and it is impossible to understand fully that which is not experienced and practiced. Indeed, this has given rise to a number of different theories and approaches, such as today's *Exemplarist Moral Theory* (Zagzebski, 2017).

Another drawback is that the size of the samples is generally not very large, with most (67%) having fewer than 500 individual participants in the studies analyzed. This points to only moderately sized studies that only rarely feature a broad scope. This seems consistent with the nature of the research articles studied, which are mostly concerned with assessing the results from intervention programs in which the degree of connection with the specific needs of a particular context is quite

high (Berkowitz, 2011). This contrasts sharply with international assessments of learning on contents, such as science, mathematics, and language arts, that are considered essential for evaluating the quality of the education systems but with which, a reductionist interpretation may lead to an impoverished interpretation of the idea of education (Jover et al., 2024).

Similarly, the participating subjects were found to belong to a wide range of ages, from three to 66 years old, segmented into different age groups, which raises two interrelated questions. On one hand is the conception of ethical learning as an aspect inherent to the human condition that cannot be restricted to any single stage of life or only to infancy and early childhood. Rather, it is a possibility that remains open throughout our entire existence. On the other hand, and without necessarily contradicting the above, segmentation hints at different life cycles in which ethical learning takes place in a different way, and thus ought to be assessed by means of different strategies. Furthermore, it seems significant that more than half the participants were adults, which may not be because of any theoretical preference toward studying ethical learning at this life stage (although this may true in some cases). Rather, it is more likely to be a more pragmatic consequence of having easier access to research samples, since practically all the studies of this kind were done at the university level with the presence of groups of young adults predominating this context, as other similar research has likewise concluded (Redondo-Corcobado & Fuentes, 2020).

Finally, as regards the contents of assessment, a considerable imbalance was found in the dimensions of ethical learning. Few (10%) assessed the volitional or emotional dimension (attitudes and dispositions) compared to ones of a behavioral (24%) nature (skills), and both were well below the cognitive dimensions of perceptions, thoughts, and beliefs (65%). In studies that analyze a second element, the gap between the two percentages actually widens. There may be two interpretations of these data. From an operational point of view, it may certainly be easier to assess the cognitive dimension, i.e., the knowledge, concepts, and ideas about ethics, than those of an emotional or behavioral nature. However, it is difficult to accept the idea that ethical learning can be assessed solely by looking at only one of its dimensions, as the vast majority of authors cited have pointed out (Jubilee Centre, 2022; Miller, 2018). The second interpretation that can be made is more about historical background, attending to an eminently cognitive, rationalist model such as can be found in the works of Kohlberg, which dominated the world of moral education for decades in the 20th century and to a certain extent still does. Although it no longer exists in the so-called neo-Kohlbergian theoretical underpinnings and adapted approaches (Arthur et al., 2017), it does linger on in the practice of the assessment of ethical learning in recent research (Gozálvez & Jover, 2016).

The other issue analyzed in this last category of variables brings to light three phenomena to be taken into account. First, there is a wide variety of topics on ethical learning being discussed in recent research, which reveals a field of knowledge rich in perspectives that encourage myriad approaches to a phenomenon as complex as the ethical dimension of human beings and open a wide range of possibilities for future research. Second, despite the above, that same wealth of approaches is sometimes mistaken for an excessive linguistic heterogeneity in which different terms are used to refer to the same concepts. This can actually hinder the advance of knowledge, so it would be advisable to aspire to having a common vocabulary that is both extensive enough to convey all the shades of meaning in each concept while also sufficiently recognizable for valid academic, scientific dialog. Lastly, among the many different topics on ethical learning, one that stands above the rest is the notion of character education, a logical consequence this approach has generated around the world in recent years, as well as empirical proof of the impact in research on ethical learning in general and on what has become one of its most complex but necessary dimensions: its assessment.

Indeed, this article contributes to the research on the moral dimension of educational action by analyzing the didactic strategies of assessing ethical learning currently being used. However, a few methodological limitations need to be mentioned in order to consider how to appraise the results obtained as well as what new lines of research may be worth pursuing. In first place, regarding the procedure, the study has been limited to the time period of 2018 to 2022 because of space constraints. However, it would be interesting to complement the findings of this article with the results in time periods immediately before and immediately after the one chosen. This would make it possible to compare and contrast them to see how this area of knowledge is evolving and progressing, as well as to gain a more accurate understanding of the impact of the assessment methods that pedagogic research identifies as being the most effective and suitable ones for the object of study. In addition, it should be noted that the research here focuses on the results from the Scopus database. While this provides some assurance as to scope and quality, it also features the constraints of using one single database. It would therefore be worthwhile to carry out complementary analyses that comprise other sources, such as the *Web of Science*, the *Education Resources Information Center*, and others. Lastly, another limitation worth noting is the uneven use of terminology in the vocabulary on ethical learning and moral education. Even though the growing attention to character education has significantly contributed to the use of a common language, this area of knowledge still has many concepts that are not unequivocal. Rather, the terms are laden with nuances, cultural influences, and social and historical conditions of education systems, all of which must be taken into account, especially when drawing comparisons between them. That said, their

shared centrality in education in so many different societies and cultures lends them a commonality that begs the rigorous attention of researchers and educators alike.

Among the future lines of research that the results of this study open up are ones that delve into the conditions that enable more experience-based assessment of ethical learning. In other words, it is important to determine which aspects can help make the research carried out have higher levels of quality, rigor, systematization and control, which also entails keeping a detailed account of the characteristics of the research in the scientific literature to help the scientific community replicate or refute them. In addition, it seems reasonable to pay more attention to the age group of adolescence, since this is the time period when some of the most important processes of maturity take place, including moral development. Third, some consideration should be given to the reasons behind a kind of «zoning» of educational research in recent years on ethical learning, with a predominance of some Asian countries posing questions of a different nature, especially because of their distance from Western countries with a significant tradition in this area. And lastly, responsible educational research should not keep focusing its methods of assessing ethical learning on something as limited as self-assessment reports. Instead, more holistic tools and approaches need to be developed, ones that can encompass the entire range of the complexity we recognize today in ethical learning.

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APPENDIX 1

List of Articles Comprising the Systematic Review

Agrawal, R., Williams, K., & Miller, B. J. (2020). An Assessment of Student Moral Development at the National Defense University: Implications for Ethics Education and Moral Development for Senior Government and Military Leaders. *Journal of Military Ethics, 19*(4), 312-330. https://doi.org/10.1080/15027570.2021.1881217

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Impact of gamified rubrics in teacher training

Impacto de las rúbricas gamificadas en la formación docente

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ABSTRACT

Formative assessment of learning requires methodological strategies that favor intrinsic student motivation. Gamification achieves a more active participation in the assessment of learning; however, there is controversy about the relevance of the competitive use, or not, of gamification in the classroom; therefore, nothing better than to train teachers in service with those methodologies that we want to introduce in class, especially with tools such as gamified rubrics. The research developed has a quasi-experimental design and analyzes the impact on learning when using gamified digital rubrics with «competitive badges» (competing with the group) vs. «non-competitive badges» (competing with oneself). The sample consists of 70 in-service teachers from a postgraduate degree program. To assess the effect of including gaming elements in assessment, the study compares tasks performed, rewards obtained and final grades between two groups. A validated survey was used to

measure participants satisfaction with the teaching and assessment method. The results indicate that teachers are very satisfied and that final grades depend mainly on the number of rewards received during the course. There is an impact of the gamified rubrics on the final grade, being conditioned by the number of badges. It is concluded that we are facing a methodological strategy that needs to be analyzed beyond the results obtained in order to improve the change in teachers' perception of gamification and other teaching innovations.

Keywords: formative evaluation, training of active teachers, educational technology, pedagogical innovation, teacher competencies

RESUMEN

La evaluación formativa de los aprendizajes necesita plantear estrategias metodológicas que favorezcan la motivación intrínseca del estudiante. La gamificación consigue una participación más activa en la evaluación de los aprendizajes; sin embargo, existe una controversia sobre la pertinencia del uso competitivo, o no, de la gamificación en el aula; por lo que, nada mejor que formar a los docentes en servicio con aquellas metodologías que deseamos introducir en clase, especialmente con herramientas como las rúbricas gamificadas. La investigación desarrollada tiene un diseño cuasiexperimental y analiza el impacto en los aprendizajes cuando se utilizan rúbricas digitales gamificadas con «insignias competitivas» (compite con el grupo) vs. «insignias no competitivas» (compite con uno mismo). La muestra está constituida por 70 docentes en formación permanente de una titulación de postgrado. Para evaluar el efecto de incluir elementos de juego en la evaluación, el estudio compara las tareas realizadas, las recompensas obtenidas y las notas finales entre dos grupos. Se utilizó una encuesta validada para medir la satisfacción de los participantes con el método de enseñanza y evaluación. Los resultados indican que los docentes están muy satisfechos y que las calificaciones finales dependen principalmente del número de recompensas recibidas durante el curso. Hay un impacto de las rúbricas gamificadas en la nota final, estando condicionadas por el número de insignias. Se concluye que estamos ante una estrategia metodológica que requiere analizar más allá de los resultados obtenidos para mejorar el cambio de percepción en los docentes sobre la gamificación y otras innovaciones docentes.

Palabras clave: evaluación formativa, formación de docentes en activo, tecnología educativa, innovación pedagógica, competencias del docente

INTRODUCTION

Competency-based assessment is a field that still requires considerable focus in in-service teacher training, not only in Spain, but also in other countries. Digital rubrics, in this sense, present significant benefits by serving as instruments to support teachers in this competence-based learning assessment process (Raposo-Rivas & Cebrián-de-la-Serna, 2019); however, they can also mean a methodological process by specifying and analysing assessment indicators and evidence with greater objectivity in a shared analysis among teachers. In this way, digital rubrics, which are currently widely used, can also be a relevant part of teacher training methodology, maintaining their polysemic nature as a technique, an instrument and a technology for formative assessment (Pérez-Torregrosa et al., 2022a; Cebrián de la Serna & Bergman, 2014). They are not exempt from emerging technologies, such as Big Data analysis and the use of artificial intelligence, among others, which promise both new opportunities and risks in their use in the future. Therefore, continuous training is required to effectively master the use of these technologies, techniques and tools by teachers.

Lifelong learning in digital competences is a necessity and a general agreement considering the changes and transformations that we are experiencing in all professions, and even more so with teachers, the main agents of change and those responsible for the training in digital competences of the citizens of the future. In this training we must aim to develop digital competences together with the creation of networks for the collaboration of professional knowledge (Ruiz-Rey et al., 2021).

Within the extensive literature on teacher training and professional development, we can distinguish attempts to introduce innovations in the use of technologies in general (Hennessy, et al., 2022) and methodologies in particular such as gamification (Zainuddin et al., 2020; Franco-Mariscal et al., 2021), at the same time as other more specific technologies such as the use of digital video (Basgall et al., 2023), Photo-elicitation (García-Vera et al., 2020), as well as current social networks for the exchange of teaching experiences in a non-formal training model (Marcelo & Marcelo, 2021). This use is either as an end or as a means, analyzing its imponderable advantages, among which is the change in the role of teachers (Chacón et al., 2015), for training and use of the new functionalities that technologies make possible, among others, to store, share and analyze experiences and good practices.

Gamification methodologies have been very effective in verifying the acquisition of competences by students and, in turn, for them to be engaged (Barna & Fodor, 2017; Bouchrika et al., 2019). These results encourage the use of this methodology in the ongoing training of teachers, so that they can live the experiences satisfactorily, and in their commitment to competent learning, they can more easily acquire

innovative models to introduce them in their classrooms. The training of education professionals in the use of technologies through gamification processes is an interesting initiative to bring active models and methodologies into play.

Moreover, gamification has been found to have positive effects on academic performance, student engagement and motivation (Manzano-León et al., 2021; Nair & Mathew, 2021; Murillo-Zamorano et al., 2021); as well as, most interestingly for our study, on initial and ongoing teacher training. Gamification facilitates trust in teachers to share and discuss in depth the use of different pedagogical strategies (Greaves & Vlachopoulos, 2023). Collaboration in the gamification process also brings interesting benefits through the interactivity between participants, and through the same peer-to-peer interaction that allows for formative evaluation (Marín & Pérez Garcias, 2016).

It will therefore be interesting to test the impact of this methodology to share problems and possible solutions to specific teaching issues, such as the assessment of learning and the role of technologies in this process. In initial teacher training it has been successfully implemented for the design of gamification exercises, with the results depending on the purpose of the learning objectives (Pozo-Sánchez et al., 2022). Another example of the creation of rubrics in initial teacher training is the work of Franco-Mariscal et al. (2021) to evaluate gamified teaching resources, where the impact of the reflections was analyzed through the analysis of the categories, finding notable changes during the design and preparation of the gamified resource and very small changes after implementation. The learning produced in the consensus sessions of the criteria, in the large group, favors a deeper reflection. As these studies are of interest in initial teacher training, it remains to be seen what possibilities they also offer for in-service training.

On the other hand, it has been shown that systems based on scores and badges attract participants' commitment and attention to the skills at stake, generating intrinsic motivation (Xu et al., 2021), although they can also generate demotivation in those who cannot follow the programs. Therefore, their success will depend a lot on the purposes and learning objectives, as well as on the design of the tasks by the teacher (Pozo-Sánchez et al., 2022), from which it follows that we should design programs where gamification is more attenuated with more collaborative work, such as teamwork, or with non-competitive badges such as competing with oneself and not with the group. This would lead us to tasks with differentiated gamification methodologies, and to consider a variable that has been little studied, such as whether it is an evaluation of the competition against oneself (ipsative evaluation) or against the evaluation indicators and results of the group, depending on where the focus of attention is placed on the competition.

Seeking higher quality and more effective feedback ensures the path to meaningful learning, while being the essence of formative assessment.

Understanding how digital tools promote gamification in this feedback can have a greater impact on academic performance. This has been shown in Maraza-Quispe's (2024) study, which concludes that gamification influences feedback, improving student learning and motivation through the support of technologies. However, it does not go into aspects of gamification that are perceived negatively, such as competitiveness among peers, a circumstance that should be considered and exposed to the analysis of the participants in a formative assessment methodology.

In summary, gamification is a promising methodology for teacher education, for collegial teacher competence development, and for collaborative work under playful activities. It can enhance collaboration among teachers and foster their professional development, as it promotes collaborative feedback and the exchange of ideas among colleagues. Furthermore, methodologies based on digital rubrics, which are a more objective procedure for competence assessment (Fernández Medina et al., 2021), emerge as an optimal methodology for the exchange of good practices, constructive dialogue and discussion around assessment criteria. This makes it possible to explore the possibilities offered by technologies for the assessment of learning (Cebrián-de-la-Serna, 2018a). At the same time, there is an ongoing debate in the field of education that raises questions and doubts about the benefits of gamification methodology. In order to overcome the possible reluctance that any innovation may generate, it is especially appropriate to propose continuous training that allows teachers to personally experiment and evaluate such innovations. Similarly, it is important to determine the level of satisfaction and assessment attributed by teachers to these methodologies when they are applied in training and professional contexts.

METHOD

The research had a convergent mixed design. Quantitatively, it would fall within a quasi-experimental design, as the participants are not randomly distributed, and it attempts to demonstrate the existence of a causal relationship between two or more variables. It also falls within the qualitative approach or, in this case, a 'quali-quantitative' perspective (Aguilar et al., 2022) by using textual statistics and Bayesian networks applied to discourse.

The sample was selected by convenience, as they are participants that coincide with the population of the entirety of a postgraduate course on Educational Technology that is taught in an Ecuadorian institution as a requirement for their professional development. This sampling, according to Tamayo (2001), is used to obtain information quickly in the exploratory stages of the research or as a basis for generating hypotheses.

This is a group of 70 teachers (43 women and 27 men) from different educational levels (pre-school, primary, secondary and university) and subject areas, from different educational centers throughout the country. This group was divided into two subgroups, one with a morning timetable (group A, with 37 teachers, 22 women and 15 men) and the other with an afternoon timetable (group B, with 33 teachers, 21 women and 12 men), which facilitated the research design.

The question this research aims to answer is to what extent does the formative assessment methodology with gamified rubric impact on final assignment grades?

To this end, the following objectives are set:

1. Identify if there are differences in the results of the tasks (grades) when using formative assessment with gamified rubric.
2. To analyze the relationship between the final grades and the tasks set or badges received.
3. To check the satisfaction of the participants in the use of an assessment methodology with gamified rubrics.

Therefore, the study variables were five:

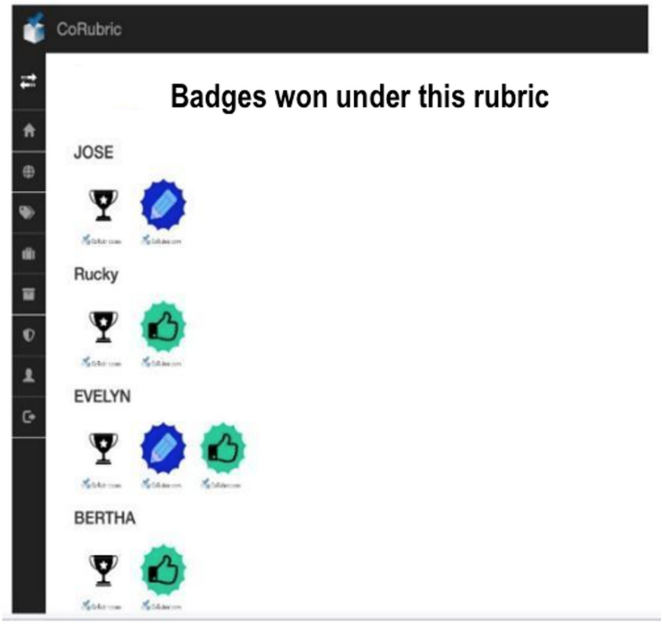
- The tasks set.
- The group: A (morning) or B (afternoon).
- The badges collected on the digital rubric platform Corubric.com.
- Satisfaction with the rubric.
- The final grade.

Instruments

a) Gamified rubric

The rubric platform used was Corubric.com, designed for the adoption of the m-learning modality through access by invitation with QR codes, and the interface of environments adapted for mobile devices (tablets and smartphones). In this way, users can easily carry out assessments with their mobile devices at the click of a button anywhere and at any time. From a pedagogical point of view, the design of the platform allows for different modalities of formative assessment (team and group assessment, peer assessment, self-assessment, ipsative assessment, etc.), adapting flexibly to its various levels of achievement, evidence and indicators (each evidence can have different degrees of achievement and specific weights). The platform also has a way of assigning gamified values and points (see Figure 1) by exporting your data into a spreadsheet.

Figure 1
Image of the results of the gamified rubric to one of the tasks



b) Satisfaction questionnarie

To measure satisfaction with the rubric, a Likert-type scale is used, consisting of eleven items that assess the possibilities and demands it offers for evaluation:

Corubric allows for more objective assessment.

Corubric forces teachers to clarify their assessment criteria.

Corubric makes it possible to make known what is expected.

Corubric provides feedback on the development of the work.

Corubric helps us to understand the qualities that the work must possess.

Corubric shows us how we will be evaluated.

Corubric allows us to evaluate ourselves.

Corubric informs us of the weighting of the components in relation to the total mark.

Corubric allows us to check the level of competence acquired.

Corubric allows all groups to be evaluated equally.

Corubric provides evidence of the work done.

These items are rated with four response options: strongly disagree, disagree, agree and strongly agree. It also includes an open-ended question. The reliability of

the scale, measured by Cronbach's Alpha, is 0.87. Its content validity is ascertained from the appropriateness of the answers given by the participants in relation to the construct to be assessed (Pedrosa et al., 2013) and by calculating the average score that the participants as a whole give to all the items (see Table 4).

c) Innovation with gamification

After the subject teacher's explanatory talk on the essential elements and indicators that an educational innovation project should have, and before working on the design of their educational innovation projects to be presented at the end of the course, the students were offered, by way of example, two articles published in indexed journals. These documents deal with reports of educational innovation projects for reading, assessment and discussion. To this end, two tasks were set, one for each article which, by reading and answering a knowledge questionnaire with closed questions, aimed to assess the identification, interpretation and understanding of the essential elements of any project of this nature. The two tasks were carried out at the same time, and after 30 minutes of reading individually or in teams, a questionnaire was answered on the article analyzed both individually and in teams.

The articles chosen may or may not show, in a clear or confusing way, some of the sections or elements that the educational innovation model taught in the course should have; therefore, they were not examples that would obtain the maximum score once the innovation project evaluation rubric had been applied.

The questionnaire reproduced the template explained on the essential elements and indicators in any educational innovation project. It was created on the course platform using closed questions with four answer options: one of them was correct, one was nonsense and two were closely related and possible. The results were immediately available through the system. The results were analyzed in a large class group, and the correct answers were given for each task, resolving doubts and generating a debate.

To motivate the completion of the exercises, a gamified rubric (Figure 1) was used according to the number of correct answers, individually or in teams, to the questionnaire in a given time. The wording of the two tasks was the same as below, except for a brief difference at the end regarding the receipt of badges:

> «This exercise is intended to help you understand the sections of the project we are asking for at the end of the course. You have a template to guide you with questions. To understand this template and sections before planning the requested project, we are going to carry out a training exercise applying these sections to an already completed and published project, which is compulsory reading. To check if you have understood the basics of the project, answer the questions below».

In the case of the application of competitive badges (competition between teams) the following was added at the end of the text: «The first five with the highest marks will be awarded a badge». In the case of the application of non-competitive badges (competition with oneself), the previous paragraph was completed by stating that «a badge will be awarded to all those who pass the questionnaire».

In summary, the sequence of application of the gamified rubric with competitive and non-competitive badges in each group and task is shown in Table 1 below:

Table 1
Distribution of tasks between the groups

	Group A	**Group B**
Task 1= article 1 (Cebrián-Robles et al., 2017)	**Teamwork** and competitive badges	**Individual work** and competitive badges
Task 2= article 2 (Cebrián-de-la-Serna 2018b)	**Individual work** and non-competitive badges	**Teamwork** and non-competitive badges

Data analysis

Correlational analysis was used to answer the research questions from a frequentist approach, using the statistical program IBM SPSS Statistics 26. To better understand the data, we used a type of advanced statistical analysis that helps to identify patterns and make decisions based on multiple factors simultaneously. Through the analysis of Bayesian networks, using the open source programme OpenMarkov (Arias et al., 2019), we obtained a decision tree that allows us to visualise the probabilities of occurrence of conditional events based on the automatic learning of the data obtained in the research. These networks are appropriate for modelling multivariate systems aimed at classification, diagnosis and decision-making in various fields (López-Puga, 2012).

Finally, textual statistics were used to analyze the open-ended responses to the satisfaction questionnaire by generating minimum units of analysis. For this purpose, we used the similarity analysis technique based on the concurrence tables (Benzécri, 1982) of the IRAMUTEQ program (R Interface for Multidimensional Analysis of Texts and Questionnaires), developed at the University of Toulouse (Ratinaud & Marchand, 2012) under GNU licence, and frequently used in the field of education (Aguilar et al., 2022).

RESULTS

When studying the relationship between variables, we found that there is no correlation between the final grade and the results of tasks 1 and 2 (Sig.=.982 and Sig.=.421 respectively), but there is a correlation between the scores of these tasks. Table 2 shows that there are significant differences between the scores for task 1 and task 2 with a 95% confidence interval for the difference.

Table 2
Paired samples test between task 1 and task 2 scores

Par 1	Individual test Task 1 Individual test Task 2	**Mean**	-1.735
		Desv.Desviation	3.393
		Avg.error	0.411
		Lower	-2.557
		Upper	-0.914
		T	-4.218
		Gl	67
		Sig. (bilateral)	0

Furthermore, although the T-test seems to indicate differences in final grades according to group (Table 3), when the power of the test is calculated, it is found to be low (61%) and the possibility of making a type II error is high (0.39).

To what extent are the variables studied related?

Given the inconclusive results obtained by means of frequentist statistics, the research team is presented with the option of resituating its approach towards more inductive positions and using all the information gathered to construct an artifice that allows, based on the empirical knowledge acquired, inferring well-founded explanations based on experience and the previous information available. All this is possible thanks to Bayesian statistics.

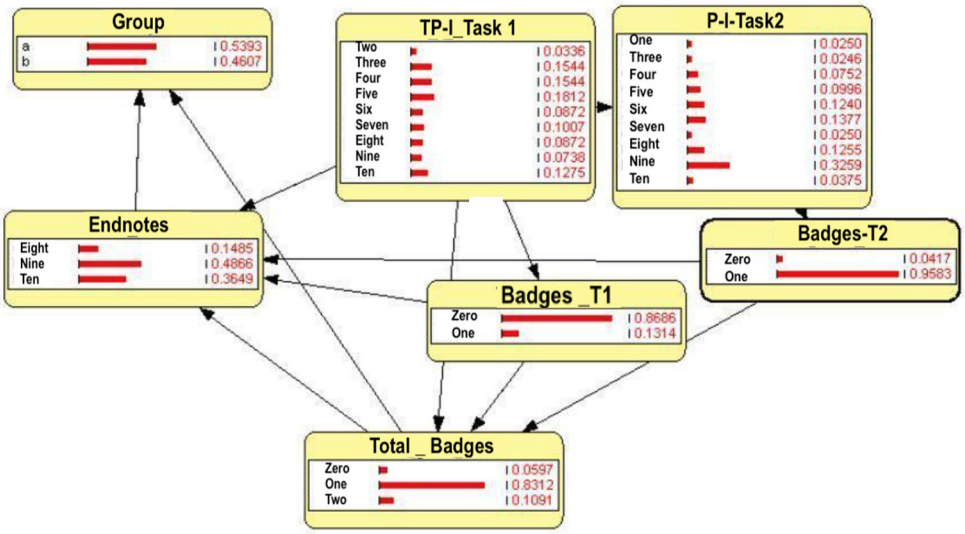
The algorithms implemented in the OpenMarkov tool (Arias et al., 2019) make it possible to create a Bayesian network (Figure 2) that visualizes with an arrow the relationships between the different variables under study (the tasks, the group, the badges and the grades). Its meaning indicates the conditioning of the probabilities. The algorithms used, Hill Climbing and K2, detect and make these relationships visible.

The Bayesian network constructed (Figure 2) shows that the probabilities of obtaining one or the other final mark are conditioned by the number of badges and, to a greater extent, by the mark for task number one, since it shows greater uniformity in the probabilities depending on the values than task number two.

Table 3
Results of the Levene's test and T-test

		Equal variances are summed	Individual test Task 1
Levene's test of equality of variances	F	16.962	
	.	0	
X	T	-2.36	-2.448
	Gl	68	52.767
	Sig. (bilateral)	0.021	0.018
	Difference in averages	-0.3264	-0.3264
	Standard error difference	0.13831	0.13335
95% confidence Interval of the difference	Lower	-0.6024	-0.59389
	Upper	-0.05041	-0.05892

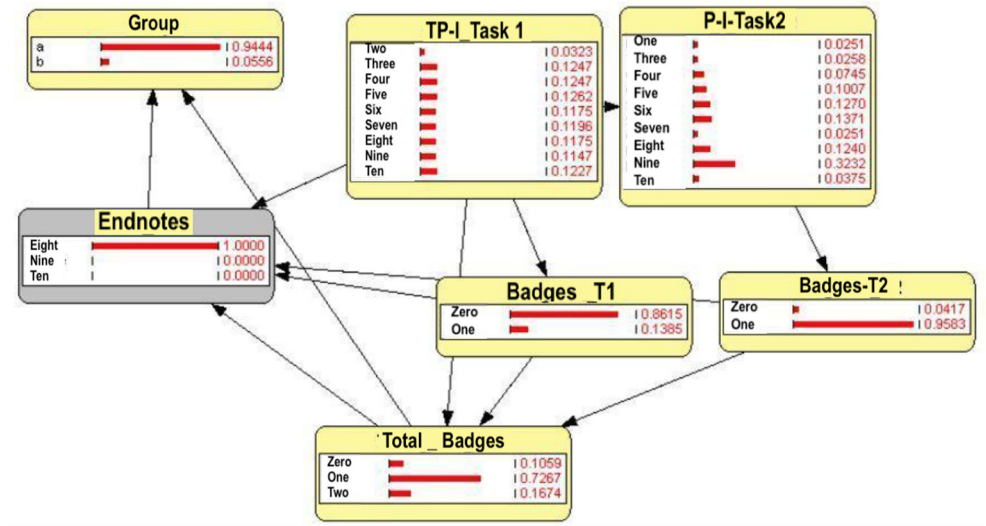
Figure 2
Bayesian network of total variables



One of the great advantages offered by this type of knowledge network, a priori, is the possibility of making queries and interpreting the results it offers. For example, if we set the final score at eight, which is the lowest score, we see what probabilistic values the rest of the variables take. With that score, the probability of belonging to group A is 94.4%, while being part of group B is only 5.5% (Figure 3). Also, 95.8% of the cases have obtained a badge in task 2, while 86.1% have no badges in task 1.

Figure 3

Bayesian network on the assumption «rating=8»



In addition, the assumptions can be expanded to obtain more detail, as shown in Figure 4, where the previous values (in red) are compared with those resulting from setting the final mark at ten (in blue), which allows differences to be noted. It can be seen that, with a ten in the final grade, the probability of belonging to one group or the other is quite similar, i.e. this score is obtained in both groups A and B with similar values. On the other hand, getting one or the other mark in task 2 does not influence the final grade, unlike task 1. The possibility of nuancing in the way it has been done is one of the great advantages of using Bayesian statistics, which is more inductive, over frequentist statistics, a predominantly deductive model. Differences that are not clearly visible in Table 3 above are shown in Figure 4.

Figure 4

Bayesian network under the assumption «rating=8» and «rating=10»

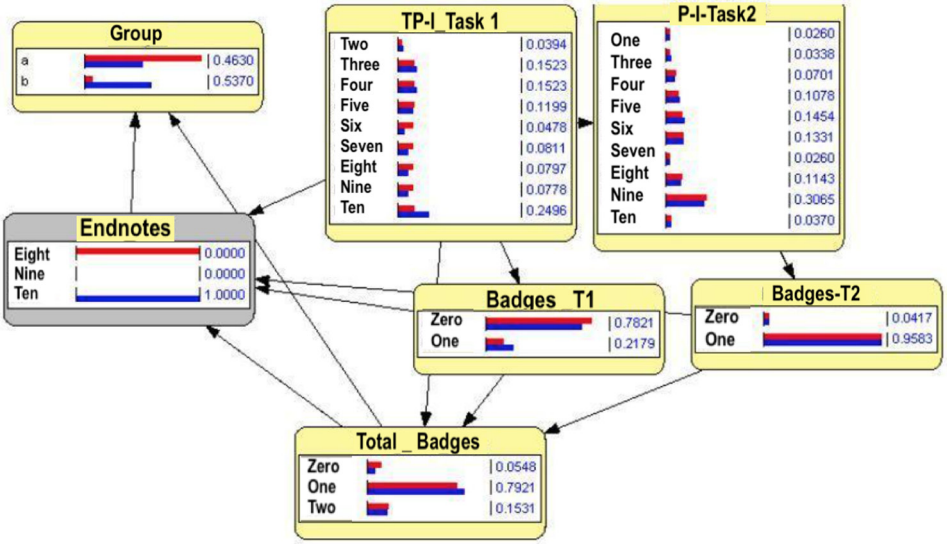
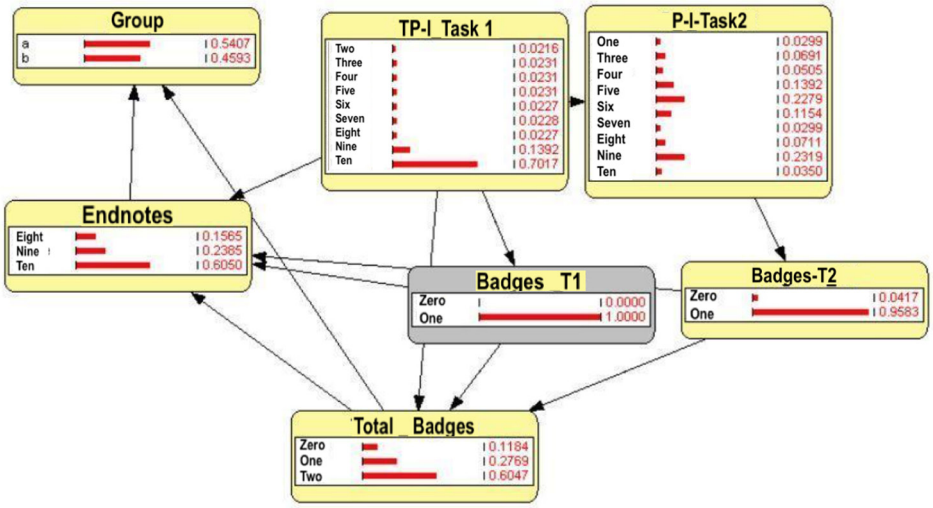


Figure 5

Bayesian network based on badges



As far as the badges are concerned, it can be seen (Figure 5) that it is the badge for task 1 that has the highest weight in the final grade. With a badge in this task, the probability of getting a final mark of ten is 60.5%.

How satisfied are users with the gamified rubric?

Satisfaction with the rubric is highly agreed upon by the participants (Table 4), given that the lowest average score is 3.36 out of 4 points for the item 'Corubric provides us with feedback on the development of the work'. In particular, the highest values highlight that the tool allows 'a more objective evaluation' (3.56) and 'makes known what is expected' (3.54), 'evidences the work done' (3.53) and 'helps to understand the qualities that the work should possess' (3.50).

Table 4

Descriptive statistics on satisfaction with the gamified rubric

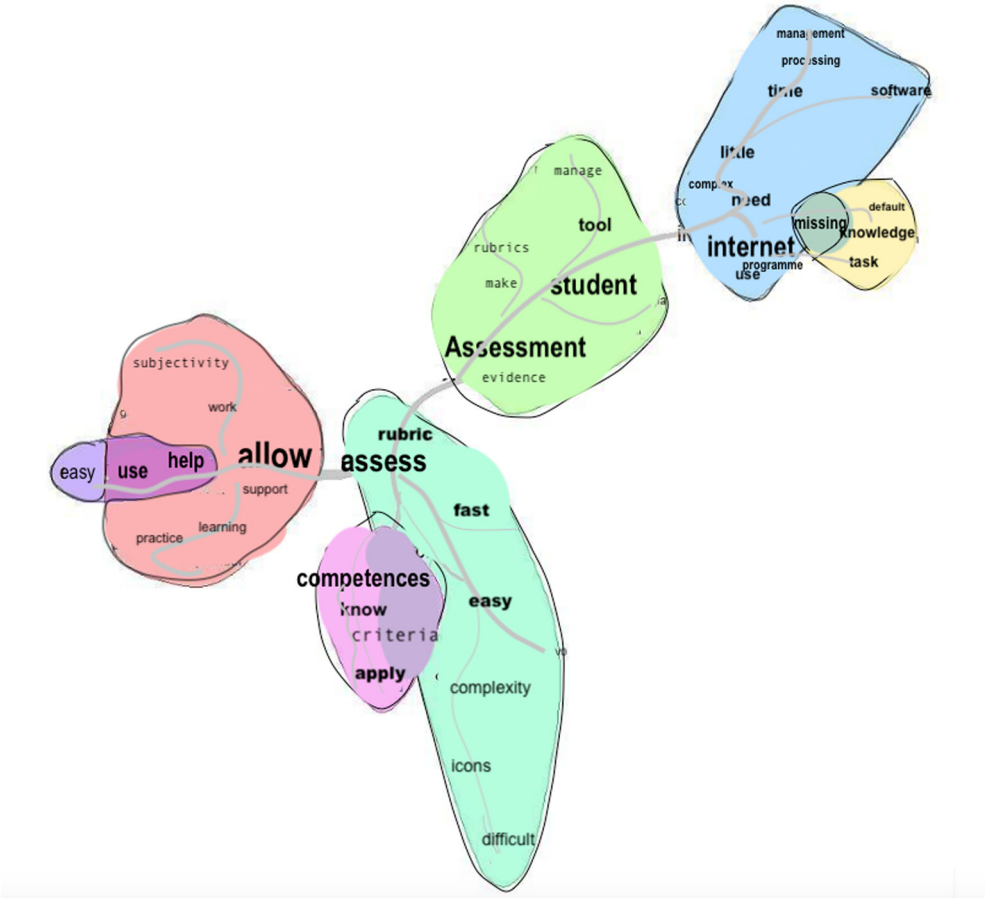
	N	Minimum	Maximum	Mean	Desv. Desviation
Corubric allows for a more objective assessment	70	3	4	3.56	.500
Corubric forces teachers to clarify their assessment criteria	70	1	4	3.41	.691
Corubric makes it possible to make known what is expected	70	3	4	3.54	.502
Corubric provides us with feedback on the development of the work	70	2	4	3.36	.660
Corubric helps us to understand the qualities that the work must possess	70	2	4	3.50	.532
Corubric shows us how we will be evaluated	70	1	4	3.44	.629
Corubric allows self-assessment	70	2	4	3.47	.631
Corubric informs us of the weighting of the components in relation to the final grade	70	2	4	3.39	.572
Corubric enables the level of competence acquired to be ascertained	70	2	4	3.46	.530

	N	Minimum	Maximum	Mean	Desv. Desviation
Corubric allows all groups to be assessed equally	70	1	4	3.37	.705
Corubric evidences the work done	70	3	4	3.53	.503

When asked the open-ended question 'Do you recommend me to continue using Corubric?', the response was overwhelmingly positive (97.14%), with only 2 negative answers. Within the textual statistical analysis, the technique to which this response was subjected was the analysis of similarities based on the tables of concurrence (Benzécri, 1982). The graph resulting from this analysis (Figure 6), which considers the co-occurrence between words, their frequency and their proximity, shows this frequency through the size of the words and the degree of co-occurrence through the thickness of the lines joining them, while the grouping or proximity is indicated by a colored halo surrounding the group. In this case, four main clusters are visible. All of them pivot on the concept of assessing by rubric, what it facilitates and its difficulties. It stands out that:

- It allows a quick, clear and easy evaluation.
- It allows us to evaluate competencies, to know the objective and the criteria, as well as to improve the teaching performance.
- It is a digital assessment and student support tool.
- It requires the Internet and the use of a specific program.
- It is complex and time-consuming to develop
- Lack of knowledge and information.

Figure 6
Graphical representation of participants' opinions



DISCUSSION AND CONCLUSIONS

Given that competency-based assessment is still a complicated issue for teachers, and the introduction of innovation projects in classroom contexts is more than a necessary training, it is of interest to combine aspects and variables, such as collegial collaboration, comprehensive and shared assessment, practices to be improved, together with the analysis of indicators to assess these practices with digital rubrics. Thus, it is appropriate to train teachers in the use of methodologies that favor the exchange of good practices and their evaluation with more active

strategies, such as gamification, and a differentiated design of situations and tasks in training (with and without gamified badges in these rubrics). Such task designs may be oriented towards assessment on the average score of the group, and at other times on specific standards. However, it is interesting to design tasks whose ultimate purpose is a self-evaluation that allows learning from the evaluation process itself, as is the case of the variables in this study, which allow a better understanding of the limitations and scope, so as to stimulate intrinsic motivation for improvement and improvement of these practices, as well as the exchange and collegial analysis of them.

In some ways, this study goes a step further in the use of technologies in general, and more specifically of digital rubrics, to improve the objectivity of assessment and the immediacy of feedback (Maraza-Quispe, 2024; Bouchrika et al., 2019), analyzing how they can help in self-assessment and measure the effect of competitiveness in a more objective way for formative assessment.

Rubrics are valuable resources for this analysis of the practices themselves, as they are ideal for sharing evaluation criteria and their application under the understanding of indicators; which is also an appropriate methodology for the ongoing training of teachers, as well as other teacher competencies, as is the case in practices and decision-making in school management. For example, Tobon et al. (2020) found that with the use of the rubric, principals' practices achieved a more reliable self-assessment, with greater construct and content validity. According to Rodríguez-Gallego et al. (2019), for school leaders, work based on collective and collegiate action projects is the best approach for innovation and improvement, and the most valued evaluation methodology for change is for them the introduction of a more qualitative one through rubrics.

Repeated use of rubrics allows teachers to practice skills related to evaluative competence. However, in response to the first objective of the study, we have found that it is not so much the rubric as the content of the task that marks the differences between groups.

This study allows us to verify, in accordance with the second objective, that the gamified rubric assessment methodology presents different results among the tasks with final grades directly related to the badges received (Figure 2); therefore, it is a good methodology for debate and discussion among trainee teachers, as has been demonstrated in other studies (Franco-Mariscal et al., 2021), although with different objectives.

Gamification has made it possible to generate greater feedback on the evaluation topic, and its methodology using rubrics has obtained a high score on participant satisfaction, in response to the third objective of the study, as was obtained when this same instrument was applied in the use of rubrics in other studies (Cebrián-de-la-Serna, 2018a; Pérez-Torregrosa et al., 2022b). The general opinion of the

participants about the rubric is very positive and coincides, as all the items of the satisfaction questionnaire have a score higher than 3 on a 4-point scale.

The application of Bayesian statistics, which is inductive in nature, has made it possible to refine the results obtained with frequency analyses, which are fundamentally deductive. This methodology, as Sarmiento and Ocampo (2022) point out, enables a deeper understanding of the problem under study. Bayesian statistics, by incorporating uncertainty into the model through a priori distributions, offers a flexibility that allows for capturing finer details in the data. In addition, updating beliefs as new information becomes available, an inherent feature of the Bayesian approach, facilitates adaptation to changes and trends in the context of study. In summary, Bayesian statistics provides a robust and flexible framework for understanding and analyzing complex problems.

Once again, the valuable opportunity that technology provides for the assessment of learning has become evident. In this case, the digital rubric has been used as a resource on the Corubric platform, which has proven to be an effective tool for this purpose. As in other studies (Raposo-Rivas & Cebrián-de-la-Serna, 2019; Putz et al., 2020), it has been observed that the feedback has been more interactive and instantaneous, which facilitates more dynamic and participatory learning by teachers. In addition, activities have been perceived as more motivating, which may increase engagement and participation. Finally, the management of assessment data has been simpler and faster, which optimizes the teacher's time and allows for a more efficient monitoring of participants' progress. In summary, the integration of gamified digital rubric technology in learning assessment offers numerous advantages that can improve the quality of education.

The study offers a double innovative approach: on the one hand, the use of technologies such as the gamified digital rubric, which allows teachers to check how it affects collaboration or competition within the group in a quick and effective way thanks to digital feedback. On the other hand, their methodology addresses the relevant issue of how teachers should support each other or see each other as rivals, and to what extent, how to measure the effect and aspects of competitiveness in an objective way, especially in a profession like teaching where teachers should act collegially rather than as rivals; at the same time, they gain enough experience to be able to replicate such methodology with their students.

As in our study, research by Hill et al., (2022) found that more than half of the students found the badges useful and increased their recognition in the development of certain skills, as well as improved understanding of the purpose of the tasks, increased motivation and satisfaction.

Competitive and non-competitive badges are underpinned by the theory of intrinsic and extrinsic motivation, and can foster an active and dynamic learning environment by striving for badges that demonstrate mastery of certain skills or

knowledge. However, a balance must be struck between the necessary collaboration and collegiality in education to avoid creating an overly competitive environment that can be counterproductive. This challenge will always exist, hence, this study is presented by contrasting the two types of badges in an educational framework where deep reflection predominates, in a self-critical, positive and productive environment, which facilitates reflection on teaching.

Having reached these conclusions, we believe that we still need to establish more studies that will allow us to go further, as Moral-Santaella et al. (2021) point out:

If we really want the training period to be an effective period, and not merely a period of learning by observation, we must continue to deepen in the construction of (...) paths that guide reflection on teaching competences, which will ensure and guarantee the improvement of the quality of teacher training programs (p.41).

LIMITATIONS AND FUTURE DIRECTIONS

At the heart of initial and ongoing training on active methodologies is the promotion of a change of mentality in teachers with regard to gamification. For this reason, and we will consider this for another occasion, a pre and post on the attitude and assessment of gamification in teaching could be carried out. Not only before, during or at the end of the course, but also after a longer period of time, so that we can find out what real impact this training has on their classes.

One of the limitations detected by the participants was the difficulty in using the Corubric tool, probably due to its specialization. Therefore, in future work, a more user-friendly tool could be used, one that is more generalized and more familiar to users, such as Google Forms and Office.

In addition, the gamified rubric was only used in two tasks and allowed students to develop both individual and teamwork. A possible alternative is the analysis between these grouping modalities, controlling the variables 'individual work' and 'group work'. Similarly, the gamified rubric could be integrated into a fully gamified classroom dynamic, not only in the assessment.

Although the satisfaction instrument could be validated by groups of experts, this study confirmed its high reliability (Cronbach's Alpha = 0.87), which makes it possible to apply it to other contexts, and to extend the sample for generalization. Being a small sample, it has a significant distribution across different educational and professional levels of active teachers and postgraduate trainees, a population that is not very high in the study country for socio-economic reasons, and which represents different geographical areas. In any case, the convenience sample is a limitation to be considered for the generalizability of the results. Despite the high reliability achieved in one of the instruments, it is close to that obtained in other

studies where the number of the sample was more extensive as it was a MOOC format training program (Lemos et al., 2019), using the same instrument, but adapted to this context.

In conclusion, the study presented, based on knowledge situated in a specific context (assessment with a gamified electronic rubric in in-service teacher training) shows various questions and results that could be implemented in different realities.

ACKNOWLEDGEMENTS

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Adolescent students' perceptions on parental supervision: Profiles and influences of student gender

Percepciones de los estudiantes adolescentes sobre la supervisión parental: Perfiles e influencias del género de los estudiantes

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ABSTRACT

The relationship between adolescent students and their parents plays a crucial role in the former's development, yet there is a paucity of research exploring adolescents' perceptions of parental supervision, particularly in relation to gender influences. The aim of this study was to adapt and validate a scale examining students' perceptions of parental supervision, differentiating between paternal and maternal supervision. In addition, we aimed to identify different profiles of paternal and maternal supervision and to explore how these profiles are

influenced by the gender of the adolescents and the parents. A cohort of 869 adolescent students participated, providing data through the «Adolescent Perception Scale of Parental Supervision». The validity of the scale was analyzed using exploratory structural equation modelling, and the reliability of the data was tested with McDonald's Omega coefficient. After testing the validity and reliability of the scale, a latent profile analysis was conducted to categorize students into different supervision profiles based on their responses. Finally, the influence of students' gender on the likelihood of belonging to each parental supervision profile was examined for both the paternal and maternal versions of the scale. The analysis revealed three profiles of paternal supervision and four of maternal supervision, each exhibiting unique characteristics in terms of intensity and style. Adolescents' gender was found to significantly influence the likelihood of belonging to one or the other profile, both in paternal and maternal supervision. The findings underscore the need of adopting gender-specific approaches in parental supervision. This approach is crucial for supporting the developmental needs of adolescents. The study also opens avenues for further research and practical applications in educational and family contexts, emphasizing the importance of understanding the nuanced dynamics of parental supervision in relation to gender.

Keywords: parental supervision, adolescent students, gender, latent profile analysis

RESUMEN

La relación entre los estudiantes adolescentes y sus progenitores desempeña un papel crucial en el desarrollo de los primeros; sin embargo, son escasas las investigaciones que exploran las percepciones de los adolescentes sobre la supervisión parental, especialmente en relación con las influencias de género. El objetivo de este estudio fue adaptar y validar una escala que examinara las percepciones de los estudiantes adolescentes sobre la supervisión parental, diferenciando entre supervisión paterna y materna. Además, se buscó identificar diferentes perfiles de supervisión paterna y materna y explorar cómo estos perfiles son influenciados por el género de los estudiantes. Participó una cohorte de 869 estudiantes adolescentes, que proporcionaron datos a través de la «Escala de percepción adolescente de la supervisión parental». Se analizó la validez de la escala mediante un modelo de ecuaciones estructurales exploratorio y la fiabilidad de los datos utilizando el coeficiente Omega de McDonald. Tras comprobar la validez y fiabilidad de la escala, se realizó un análisis de perfiles latentes para categorizar a los estudiantes en distintos perfiles de supervisión en función de las respuestas. Finalmente, se examinó la influencia del género de los estudiantes en las probabilidades de pertenecer a cada perfil de supervisión parental, tanto en la versión paterna como en la materna de la escala. El análisis reveló tres perfiles de supervisión paterna y cuatro de supervisión materna, cada uno con características únicas en términos de intensidad y estilo. Se observó que el género de los adolescentes influía significativamente en la probabilidad de pertenecer a uno u otro perfil, tanto en la supervisión paterna como en la materna. Los resultados subrayan la necesidad de adoptar enfoques específicos de género en la supervisión parental. Este enfoque es crucial para apoyar las necesidades de desarrollo de los adolescentes. El estudio también abre vías para futuras investigaciones y

aplicaciones prácticas en contextos educativos y familiares, destacando la importancia de comprender la dinámica de la supervisión parental en relación con el género.

Palabras clave: supervisión parental, estudiantes adolescentes, género, análisis de perfiles latentes

INTRODUCTION

The transition from childhood to adulthood is a crucial period marked by significant changes and the need to balance adolescent independence with parental control (González-Cámara et al., 2019). During this stage, elements such as trust, oversight, and emotional support from parents are fundamental to young people's well-being (Keijsers et al., 2012; Melton & Deutsch, 2022). Parental supervision, defined as parents' awareness of their children's activities (Ponce-Gómez et al., 2023), plays an essential role in this context. Although autonomy increases in the adolescence, supervision remains vital but must be perceived as an act of care, not control, to foster a positive development (Dou et al., 2020; Harris-McKoy & Cui, 2013; Whitlock, 2006). If executed properly, this practice can be key in preventing risky behaviors in adolescents and enhancing family education.

The influence of the family environment on academic performance, particularly through parental education and supervision, has been a focal interest for the research community for decades (Coleman, 1995; Masud et al., 2015). Research has shown that there are significant differences in supervision styles between fathers and mothers, which have implications in areas such as gender stereotypes and lifestyles (Alemany-Arrebola et al., 2019; Amador & Monreal-Gimeno, 2010; Cantón et al., 2016). However, understanding how adolescents differentially perceive paternal and maternal supervision remains limited.

Our study aims to address this gap, focusing on how adolescent students perceive both paternal and maternal supervision. Specifically, we intend to create profiles based on adolescents' perception of both parental supervision and analyze the influence of the students' gender on these profiles. In doing so, our goal is not only to fill a gap in the literature but also to provide a more detailed view of the role of adolescents' gender in family education dynamics.

PARENTAL SUPERVISION STYLES AND INFLUENCE IN ADOLESCENCE

Parents' awareness of their children's activities is a key factor during adolescence. This supervision acts as a protective shield against risky behaviors such as impulsivity, delinquency, substance use, gambling problems, negative peer influence, and disobedience, as well as contributing to the prevention of emotional issues and

cyber aggression (Elboj-Saso, 2023; Emond et al., 2022; Li et al., 2019; Keogh-Clark et al., 2021; Ruiz-Hernández et al., 2019; Yang et al., 2022). In the educational context, parental supervision positively influences academic performance, learning strategy use, social competence, and reduction of school absenteeism (Brajša-Žganec et al., 2019; Seidu et al., 2022; Top et al., 2017). Furthermore, it contributes to the reduction of stress, anxiety, depression, and improves life satisfaction, self-esteem, and overall development of adolescents (Gentina et al., 2018; Melton & Deutsch, 2022; Villacencio-Aguilar, 2020; Yap et al., 2014). However, the various components of supervision carry varying weight and can lead to different styles of parental supervision with differentiated effects on adolescent development.

A critical aspect of parental supervision involves the control parents exert, which is often divided into behavioural and psychological dimensions (Barber et al., 2005; Shek & Law, 2015; Zhu & Shek, 2021). Behavioral control involves monitoring and regulating children's behavior through rules and standards, essential for internalizing social norms and knowing the daily routines of adolescents (Grolnick & Pomerantz, 2009). This type of control has been associated with positive developmental outcomes, such as improved school performance, individual competence, self-discipline, psychological well-being, and healthy internet use (Martins et al., 2020; Walters, 2018). However, it should be coupled with emotional support to promote healthy development (Baumrind, 1968, 1971). In contrast, psychological control is characterized by intrusive parenting that seeks to manipulate children's thoughts and emotions. This ultimately inhibits their autonomy and leads to negative outcomes such as low self-concept, emotional and behavioral problems (Barber & Harmon, 2002; Costa et al., 2015).

Beyond parental control, another key dimension for parental supervision is the knowledge parents have about their children's activities, which can come from both supervision and adolescents' self-revelation (Stattin & Kerr, 2000). During adolescence, growing needs for autonomy and privacy lead young people to decide what information to share with their parents, setting boundaries around their activities, friendships, and whereabouts (Baudat et al., 2022; Smetana, 2010). Adolescent self-revelation, which includes sharing details about their daily life and free time, is strongly influenced by the quality of the relationship with their parents. Adolescents are more likely to share information in an environment of trust, understanding, and good communication (Álvarez-García et al., 2016; Kerr & Stattin, 2010). Conversely, the perception of controlling or unresponsive parents can reduce the willingness to share information (Soenens et al., 2006; Tokić Milaković et al., 2018). This open communication from adolescents is a key predictor of parental knowledge, surpassing practices such as information solicitation or direct control (Liu et al., 2020) and is also a crucial factor in adolescent development (Darling & Tilton-Weaver, 2019; Estlein, 2021; Maccoby, 1992; Maccoby & Martin, 1983; Romera et al., 2021).

These findings highlight the importance of parental supervision styles in understanding how adolescents manage information (Baudat et al., 2022). However, more recent research has shown that gender also plays a role in how parents exercise this supervision.

Gender influence in parental supervision

Research on the influence of gender on parental supervision, differentiating between father's or mother's supervision and its impact on sons or daughters, has shown mixed results. Some studies indicate that maternal supervision has a stronger effect on sons (Xu et al., 2014). However, other studies suggest that the influence is similar between both parents (Oliva et al., 2008; Parra Jiménez & Oliva, 2006) or that, in certain contexts, paternal influence is greater (Davidov & Grusec, 2006; Hunter et al., 2015; Lansford et al., 2014). In addition, some research indicates that mothers tend to adopt a more affectionate approach, while fathers tend to be more authoritative (McKinney & Renk, 2008; Simons & Conger, 2007). Despite this greater maternal warmth, mothers have also been found to exert greater psychological control compared to fathers (Barber & Xia, 2013; Lansford et al., 2014).

These gender-based differences in parental supervision are not limited to the parents, as the gender of the adolescent has also been observed to influence the response to parental practices (Mastrotheodoros et al., 2019; Wu & Li, 2023). Boys might be more susceptible to negative practices such as punishment and excessive control, possibly due to social expectations of independence. On the other hand, girls, socialized towards more caring and family-oriented roles, might be more receptive to kind practices. This is reflected in reports indicating that boys are more likely to perceive unfavorable parental characteristics (Dou et al., 2020; He et al., 2019). However, Lansford et al. (2014) found that parental control affects girls' externalizing behaviors more. Adolescents' perceptions are also affected, as maternal supervision practices are often perceived as more positive than those of fathers (Bersabé et al., 2001; García et al., 2011). Nevertheless, here again, opposing results are found, as other studies show that children perceive their fathers as more indulgent and positive than mothers (Capano et al., 2016).

The studies presented in this section show that there is no clear consensus on the effect of gender differences on parental supervision practices and perceptions of adolescents. These findings underscore the need for a deeper understanding of how students' gender influences the likelihood of experiencing different types of parental supervision, and how this varies depending on whether the supervision comes from the father or the mother. This need is particularly relevant in the educational context, where the influence of parental supervision is crucial for academic performance and the comprehensive development of adolescents (Hong

et al., 2015; Masud et al., 2015). Consequently, our study will seek to address these complexities, exploring how students' gender impacts on their perceptions of parental supervision of both fathers and mothers.

The present study

This study focuses on understanding how adolescent students perceive parental supervision. In addition, it aims to understand the role of students' gender in their differential perception of paternal and maternal supervision. To achieve this, we will adapt the scale from Stattin and Kerr (2000) to create the «Adolescent Perception Scale of Parental Supervision». After validating the scale, we will conduct a latent profile analysis of students based on their perception of paternal and maternal supervision. Finally, we will analyze the probability of students' belonging to each profile according to their gender, which will allow for the identification of possible patterns in the perception of parental supervision among boys and girls. This work will provide a deeper understanding of how students' gender might influence the perception of both paternal and maternal supervision. Additionally, the study will offer valuable insights for parents, educators, and mental health professionals, thereby supporting the healthy development of adolescent students. Accordingly, the following objectives are established: 1) Validate the «Adolescent Perception Scale of Parental Supervision» for both paternal and maternal supervision versions; 2) Conduct a latent profile analysis to identify different patterns of parental supervision in both versions of the scale; and 3) Investigate the influence of students' gender on their probability of belonging to different paternal and maternal supervision profiles.

METHOD

This section details the participants, procedure, and instrument used in this quantitative and cross-sectional study, which follows an ex-post-facto comparative-causal design. Additionally, it provides a description of the data analysis methods employed.

Participants

The study involved 869 students, aged between 12 and 21 years, with an average age of 14.99 years (standard deviation = 1.85). The gender distribution was balanced, with 50.2% boys and 49.8% girls. These students were enrolled in five secondary

education institutions across Spain, encompassing public, private, and semi-private schools. As for their educational level, the participants ranged from the first year of Compulsory Secondary Education to the last year of High School, including students from Intermediate Vocational Training education (ESO, Bachillerato, and Ciclo de Grado Medio in Spain, respectively). Other sociodemographic variables of interest can be found in Table 1.

Table 1
Sociodemographic variables of the sample

Variable	Category	Percentage
Studies	Grade 7 /1º ESO	21.4
	Grade 8/ 2º ESO	15.1
	Grade 9 / 3º ESO	18.4
	Grade 10/ 4º ESO	14.8
	Grade 11 / 1º Bachillerato	20.0
	Grade 12/ 2º Bachillerato	5.3
	Vocational Training / Ciclo de Grado Medio	5.0
Mothers' studies	No formal education - Primary School	22.5
	Secondary School	32.1
	Vocational Training – High School	26.5
	University Degree	18.9
Fathers' studies	No formal education - Primary School	26.1
	Secondary School	27.6
	Vocational Training – High School	29.7
	University Degree	16.6
Mothers' employment	Employed	55.5
	Unemployed	44.5
Fathers' employment	Employed	69.8
	Unemployed	30.2
Type of family	Two-parent family	73.4
	Single-parent family	21.0
	Blended family	5.6

Procedure

The contact with educational centers was initiated through emails, phone calls, and in-person visits. The objectives and requirements of the study were clearly explained to the management of the institutions. Initially, we contacted 162 urban and rural centers from various regions of Spain. Of these contacts, many did not respond, and others declined to participate, ultimately resulting in the involvement of only five centers. Classes were then randomly selected to ensure a representative sample of all the ages studied. Parents of the participating students were informed about the questionnaire by the schools, and their written consent was requested. A specific day and time were arranged for administering the questionnaire in each center. The students completed the questionnaire anonymously and individually. The process was conducted on paper, under the supervision of a researcher, without allowing students to take the questionnaire home. No significant incidents were reported throughout the process. After data collection, the information was processed in line with university guidelines for academic research, ensuring confidentiality and ethical handling.

Instrument

We developed the «Adolescent Perception Scale of Parental Supervision» (Appendix A) as an adaptation of the work of Stattin and Kerr (2000) to evaluate both parental and maternal supervision in the Spanish context. The original scale evaluated child revelation, along with parental solicitation and control, together with other factors. In our adaptation, we retained these three core dimensions but refined some of the items to reduce potential redundancy (e.g., items assessing parental control tended to be repetitive in asking about parents' knowledge of the adolescent's outings and activities).

To ensure cultural relevance and clarity, the original items of the scale were translated and backtranslated by bilingual experts. This process was followed by a cultural review by the main researchers where the wording of the items was revised to ensure that they were easily understandable for the Spanish adolescent population.

Therefore, in line with the findings of Stattin and Kerr (2000), the adapted scale was designed to measure both the active role of parents in supervision and the adolescent's willingness to share information using a Likert-type scale ranging from 1 (strongly disagree) to 6 (strongly agree). The factors evaluated were:

- Behavioral control: This factor assesses the degree of daily supervision parents exercise over adolescents' activities. The related items address aspects such

as curfew, places of socialization, and supervision of free time and money usage. High scores on this factor indicate higher levels of supervision.

- Psychological control: This factor measures the intrusive and manipulative control parents have over adolescents' thoughts and feelings. It includes items that reflect behaviors such as cold and distant treatment, guilt induction, and constant sanctioning of adolescents' ways of being and thinking. High scores indicate greater use of control and manipulation tactics.
- Revelation: This factor relates to the extent to which adolescents communicate aspects of their daily life to their parents. Items address topics such as sharing information about daily activities, friends, and school experiences. A high score reflects a greater tendency to share information.

All this resulted in an adapted scale comprising 20 items in two parallel versions, one addressing paternal supervision and the other maternal supervision, thus allowing the assessment of adolescents' perceptions of supervision by both parents.

Data analysis

We conducted two distinct phases of analysis. The first focused on validating both versions of the Adolescent Perception Scale of Parental Supervision. In the second stage, we aimed to identify different profiles of parental supervision based on student responses. In addition, this second phase also examined the influence of the student's gender on the probability of belonging to the identified profiles in both the paternal and maternal versions of the scale. All data analysis was performed using MPlus 8.8 (Muthén & Muthén, 2024). To handle missing data, we employed the full information maximum likelihood (FIML) technique, ensuring that all non-missing data were utilized to estimate model parameters (Graham, 2012).

First, we validated the parental supervision scale using exploratory structural equation modelling (ESEM; Asparouhov & Muthén, 2009) for both fathers' and mothers' versions. This model was chosen for its ability to evaluate a broader range of less restrictive alternative models compared to confirmatory factor analysis. We evaluated solutions from two to five factors, and we checked the suitability of each model in both versions to determine the optimal number of factors. The fit of the models was determined by comparing the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Root Mean Square Error of Approximation (RMSEA), following the recommendations of Milton et al. (2018). We used the threshold values recommended by Hu and Bentler (1999): CFI and TLI values were considered adequate if above .90 and excellent if exceeding .95, while RMSEA values were deemed acceptable if below .08 and excellent if below .06.

Additionally, we assessed the internal reliability of each factor in both scale versions using McDonald's Omega. This method was preferred over Cronbach's Alpha due to its greater accuracy (McNeish, 2018). Values above .75 indicated good reliability, and values above .90, excellent reliability.

After analyzing the structure of the parental supervision scale for both fathers and mothers and verifying the internal reliability of the three subscales (behavioral control, psychological control, and revelation), we conducted a latent profile analysis (LPA). This analysis seeks to explain the variability within the sample using the fewest possible number of latent profiles (Korpipää et al., 2020). Like previous studies (Morin & Marsh, 2015; Stanley et al., 2017), the LPA allowed for determining the number of profiles based on fit indices such as the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC), and the Likelihood Ratio Test (LRT). Lower AIC and BIC values indicate a better fit, while the LRT determines if a model with k latent profiles fits better than one with k-1 profiles. A low p-value suggests that a model with k groups provides a better fit than a model with k-1 groups (Lo et al., 2001).

We examined the solutions ranging from one to five profiles for each scale version, and we established the optimum number of profiles by observing significant changes in AIC and BIC values (Morin et al., 2016). Additionally, we used standardized scores of the factors to minimize the impact of measurement errors (Justice et al., 2011).

Lastly, we analyzed the students' gender influence in the probability of belonging to both the paternal and maternal supervision profiles using the Bolck-Croon-Hagenaars (BCH) method (Asparouhov & Muthén, 2014b; Bolck et al., 2004). Unlike traditional ANOVA, this approach considers the probability of each individual belonging to each profile, rather than assuming everyone exclusively belongs to one profile (Asparouhov & Muthén, 2014a). Employing this technique, it is possible to determine whether there are different patterns depending on the student's gender, indicating differences in the perception of supervision exercised by both fathers and mothers.

RESULTS

Out of all participants, 800 responded to the paternal version of the scale, and 843 to the maternal version. This difference in responses occurred because some students only responded to one version of the scale. This could be caused by the fact that these students had only one parent or because they chose not to answer one version, as it was not required to complete both versions of the scale. However, as the discrepancy between the versions was not large, this issue was by using the FIML technique.

The following sections present the results of the validation and reliability analysis for both versions of the «Adolescent Perception Scale of Parental Supervision». Following this, the results related to the latent profile analysis and the influence of students' gender in the likelihood of belonging to each profile are also presented.

Validation and reliability of the «Adolescent Perception Scale of Parental Supervision»

To achieve the objectives of this study we adapted Statin and Kerr's (2000) scale to develop two versions of the Adolescent Perception Scale of Parental Supervision, one focusing on paternal supervision and the other on maternal supervision. Both versions consisted of a total of 20 analogous items, assessing three subscales. The results of the ESEM models used to test the factorial structure of the scale are presented below (Table 2).

Table 2
Fit indices of the different ESEM

Version	Number of factors	X^2	df	CFI	TLI	RMSEA
Fathers	2	1405.960*	151	.934	.917	.102
	3	587.503*	133	.976	.966	.065
	4	267.993*	116	.992	.987	.040
	5	206.449*	100	.994	.989	.036
Mothers	2	1719.893*	151	.904	.880	.111
	3	583.439*	133	.973	.961	.063
	4	280.357*	116	.990	.984	.041
	5	186.649*	100	.995	.990	.032

Note. df = degrees of freedom, CFI = Comparative fit index; TLI = Tucker-Lewis index; RMSEA = Root mean square error of approximation; * = $p < .01$.

Table 3
Standardized factor loadings of the three-factor ESEM model

	Fathers' version			Mothers' version		
Item	**Factor 1**	**Factor 2**	**Factor 3**	**Factor 1**	**Factor 2**	**Factor 3**
Factor 1: Behavioural control						
Item 1	.744	-.016	.091	.709	-.03	.058
Item 2	.916	-.027	-.021	.894	-.016	-.043
Item 3	.854	-.042	.025	.800	-.094	.015
Item 4	.482	.106	.314	.537	.147	.177
Item 5	.743	.040	.027	.733	.016	-.050
Item 6	.559	.105	.162	.547	.115	.119
Factor 2: Psychological control						
Item 7	.288	.619	-.11	.162	.633	-.096
Item 8	.143	.768	.006	.030	.836	.062
Item 9	-.035	.867	.036	-.031	.879	-.013
Item 10	.213	.675	-.038	.136	.637	-.028
Item 11	.001	.698	.082	-.066	.698	.002
Item 12	-.100	.646	.061	-.167	.675	.137
Factor 3: Revelation						
Item 13	-.021	-.003	.851	.086	-.001	.809
Item 14	.001	.041	.888	.135	.019	.811
Item 15	.046	.082	.871	.143	.06	.813
Item 16	.016	-.059	.771	.001	-.032	.764
Item 17	.166	-.064	.575	.198	-.094	.545
Item 18	.037	-.056	.776	.009	-.08	.746
Item 19	-.096	.010	.842	-.030	-.078	.784
Item 20	-.039	-.076	.860	-.034	-.073	.820

The fit indices indicate that two-factor solutions are inadequate in both cases. On the other hand, solutions of three to five factors were found satisfactory, with fit indices ranging from good to excellent. Following the recommendations of Worthington and Whittaker (2006), we retained the three-factor solution as it aligns most closely with our theoretical interpretation. The standardized factorial loadings for each item are presented in Table 3.

The factor loadings were consistent with each factor in most cases. Some items (4 and 6) showed cross-loadings between factors, but as the values of these cross-loadings were not high, it can be stated that the ESEM supported the proposed three-factor structure.

After confirming the factorial structure of both versions of the parental supervision scale, we evaluated the internal reliability of each of the three identified factors: behavioral control, psychological control, and revelation. The results indicated reliability levels ranging from good to excellent for all factors in both versions of the scale. Specifically, the McDonald's Omega values in the behavioral and psychological control factors were above .75, considered indicators of good reliability, and above .90 in the revelation factor, reflecting excellent reliability. These findings confirm the reliability of the scale for both paternal and maternal supervision perception.

Latent profile analysis of parental supervision

After confirming the factorial structure and internal reliability of the scale, we conducted an LPA, testing solutions from one to five profiles (Table 4).

Table 4
Fit indices of the latent profile analysis models

Version	Number of profiles	AIC	BIC	LTR p	% SG
Fathers	1	6822.905	6851.013	-	100
	2	6259.855	6306.701	.000	24.00
	3	6079.751	6145.335	.000	21.40
	4	5999.591	6083.914	.000	10.76
	5	5920.136	6023.198	.000	5.60
Mothers	1	7188.991	7217.413	-	100
	2	6790.273	6837.642	.000	15.70
	3	6622.798	6689.115	.000	14.70
	4	6508.15	6593.416	.000	8.30
	5	6458.377	6562.59	.000	1.50

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion; LRT p = p value of the likelihood ratio test; % SG = Percentage of subjects in the smallest group.

The analysis revealed that the five-profile results in both versions of the scales were not satisfactory. This was due to the profile with the fewest subjects containing a very low percentage in both cases, and solutions with a very small number of participants in a profile may not be representative of a unique latent profile (Marsh et al., 2009). To decide between the remaining solutions, we relied on a visual comparison of the AIC and BIC indices, as all showed a low p-value in the likelihood ratio test. Upon plotting these indices, we opted for a three-profile model in the case of the paternal supervision version and a four-profile model for the maternal supervision version. These models marked the point where the elbow plot's slope (Figure 1) began to level off, indicating an optimal solution.

Figure 1
Elbow plot

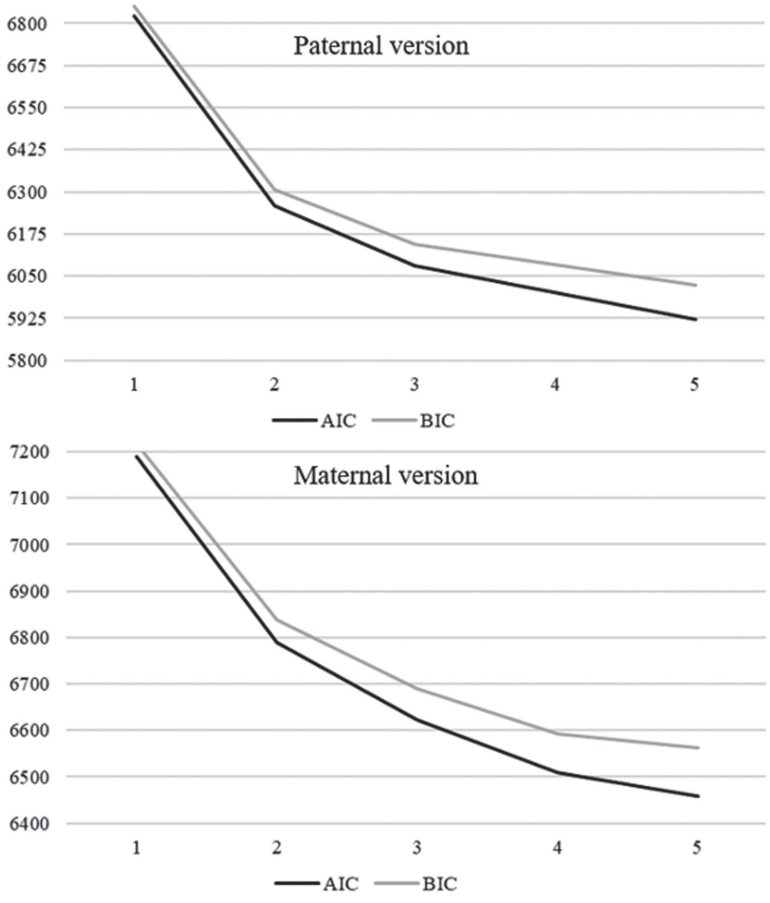
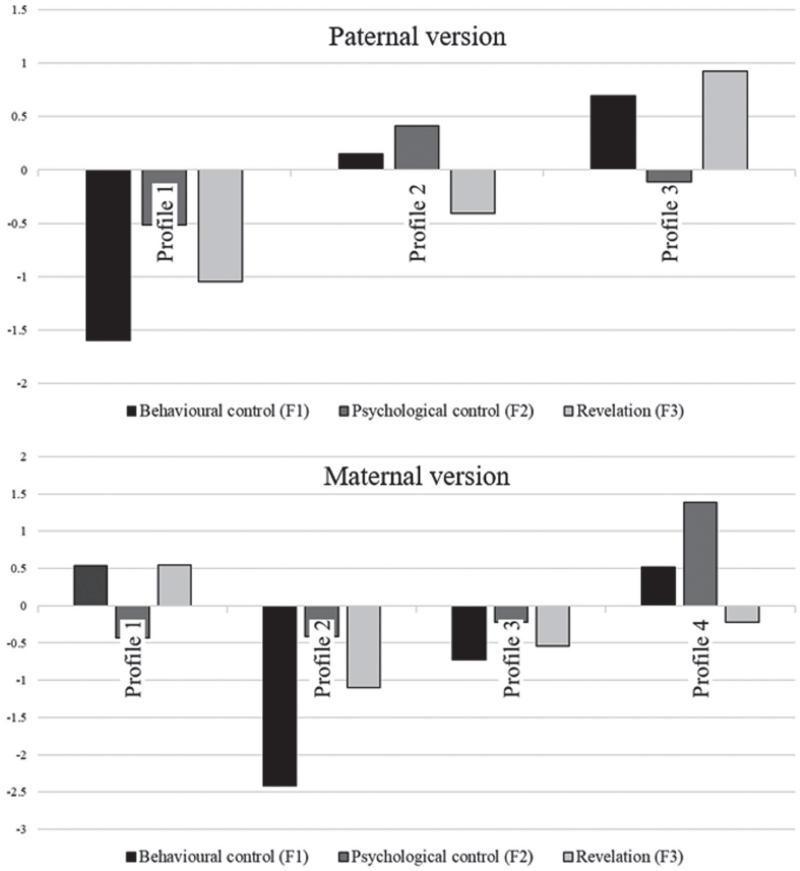


Figure 2

Means of each factor for each profile identified in latent profile analysis



Regarding differences between the profiles (Figure 2), in the paternal supervision scale version, Profile 1 grouped 21.40% of the students. This profile was characterized by students who perceived less behavioral and psychological control compared to the average, but these students also showed a lesser tendency for revelation towards their parents. In contrast, Profile 2, which included 38.50% of the sample, was distinguished by perceptions of higher behavioral and psychological control compared to the average and a reduced tendency for revelation. Finally, Profile 3, comprising 40.10% of the sample, was formed by students who perceived high behavioral control, low psychological control, and a high tendency for revelation.

In the maternal supervision scale version, the profile trends were similar, except for an additional profile. Profile 1, which grouped 48.60% of the sample, turned out to be analogous to Profile 3 of the paternal version. That is, in this group, students perceived high behavioral control and low psychological control, and were prone to reveal information. Meanwhile, Profiles 2 (8.30%) and 3 (22.70%) were analogous to Profile 1 found in the paternal supervision version, finding students with low levels of perception in all factors. However, it can be observed that, in the case of maternal supervision, students are distributed in a profile where this perception is more pronounced (Profile 2) and another where the negative perception of these factors is more moderate (Profile 3). Lastly, Profile 4 (21.20%) stood out for including students with high values in the factors of behavioral and psychological control, and low values in the revelation factor, similar to Profile 2 found in the case of paternal supervision.

Student gender influence in perceived parental supervision

Finally, we tested whether the students' gender influenced their likelihood of belonging to both the paternal and maternal supervision profiles (Table 5).

Table 5 shows that, for the paternal supervision version, the influence of students' gender on the probability of belonging to one profile or another was statistically significant in all cases. Conversely, in the maternal supervision version, gender did not significantly influence the likelihood of belonging to a particular profile when comparing Profiles 1 and 4, as well as Profiles 2 and 3, but it did influence the probability of belonging in the rest of the cases.

Table 5

Results of the analysis of gender differences in profile belonging

Profile	Student gender	Probability of belonging to the profile
	Fathers' version	
1	Boy	.668
1	Girl	.332
2	Boy	.523
2	Girl	.477
3	Boy	.402
3	Girl	.598
Overall test: X^2 = 30.038*, df = 2		
profile 1 vs. profile 2: X^2 =7.047*, df = 1		
profile 1 vs. profile 3: X^2 = 29.994*, df = 1		
profile 2 vs. profile 3: X^2 = 5.717*, df = 1		
	Mothers' version	
1	Boy	.425
1	Girl	.575
2	Boy	.784
2	Girl	.216
3	Boy	.640
3	Girl	.360
4	Boy	.413
4	Girl	.587
Overall test: X^2 = 43.953*, df = 3		
profile 1 vs. profile 2: X^2 = 35.203*, df = 1		
profile 1 vs. profile 3: X^2 = 10.262*, df = 1		
profile 1 vs. profile 4: X^2 = 0.050, df = 1		
profile 2 vs. profile 3: X^2 = 3.590, df = 1		
profile 2 vs. profile 4: X^2 = 28.960*, df = 1		
profile 3 vs. profile 4: X^2 = 9.821*, df = 1		

Note. df = degrees of freedom, * = $p < .05$.

DISCUSSION AND CONCLUSIONS

The main aim of this research was to understand how adolescent students perceive parental supervision. For this, we established the following three specific objectives: 1) Validate the «Adolescent Perception Scale of Parental Supervision» for both paternal and maternal supervision; 2) Conduct a latent profile analysis to identify different patterns of parental supervision in both versions of the scale; and 3) Investigate the influence of students' gender on their probability of belonging to different paternal and maternal supervision profiles.

Regarding the first specific objective, our results confirm both the validity and reliability of the scale. The ESEM models showed that the three-factor solution was the most suitable and coherent with the theoretical interpretation. In addition, McDonald's Omega analysis revealed values above .75 in behavioral and psychological control values, and above .90 in the revelation factor, showing the reliability to the instrument.

To address the second objective, we performed a latent profile analysis, resulting in three profiles for paternal supervision and four profiles in the case of the maternal supervision. As for the profiles of the paternal version, we can say there are two profiles of «poor paternal supervision». Profile 1 is characterized by low behavioral control and low psychological control; while Profile 2 is characterised by some behavioral control, but mainly by psychological control, with both profiles coinciding in low revelation. On the contrary, Profile 3 is characterized by high behavioral control, low psychological control, and high revelation, so we could say that it represents a profile of «good paternal supervision».

Regarding the profiles for maternal supervision, we identified Profile 1 as exhibiting «good maternal supervision», characterized by behavioral control and revelation, with low psychological control. However, the remaining three profiles reflect «poor maternal supervision». Profile 2 is characterized by low levels of behavioral control, psychological control, and revelation; Profile 3 also has this tendency, but to a lesser degree in all three factors; and Profile 4 has high psychological control and some behavioral control, but low revelation.

Comparing the profiles between the maternal and paternal versions, we find that Profile 2 and Profile 3 of the maternal version coincide with Profile 1 of the paternal version; and Profile 4 of the maternal version coincides with Profile 2 of the paternal version. All these profiles, with their varying tendencies, can fall under the category of «poor supervision». Conversely, Profile 1 of the maternal version coincides with Profile 3 of the paternal version, and they would be classified under the category of «good supervision».

The «good parental supervision» profiles from both paternal and maternal supervision provide promising results, as most students were classified in these

profiles. This is a positive sign as prior work indicate that parental behavioral control is positively associated with the well-being, self-discipline, and individual competence (Martins et al., 2020; Walters, 2018) of adolescents, in such a way that it makes the adolescent feel well enough for disclosure to occur.

However, the results also reveal an alarming finding, as almost half of the students were classified within the «poor parental supervision» profiles. These profiles, characterized by either low behavioral control and low revelation, or by a dominance of psychological control coupled with low revelation, present serious concerns. Students in these profiles might feel an inhibition of their autonomy, which can lead to detrimental outcomes such as low self-concept, emotional and behavioral problems (Barber & Harmon, 2002; Costa et al., 2015). Furthermore, these profiles might be associated with minimal communication and supervision, factors that have been linked to an increased risk of school dropout (Afia et al., 2019). Given the high proportion of students in these profiles, this issue demands urgent attention due to its potential long-term implications on the well-being and development of adolescents. As Stattin and Kerr (2000) suggest, improving the parent-child relationship, particularly by fostering open communication and trust, could lead to more positive parental supervision.

Another interesting result supported by the literature is that profiles with higher means on revelation also have higher scores on behavioral control and lower scores on psychological control. This assertion aligns with the research of Barber and his colleagues (Barber & Harmon, 2002; Barber & Xia, 2013; Barber et al., 2005), which found that both styles of control had opposite effects. Notably, our results also coincide with the observation that mothers, despite being warmer in their communication, tend to exercise more psychological control (Barber & Xia, 2013), as seen in Profile 4 of the maternal supervision version. In contrast, none of the paternal profiles show high values in this factor. Furthermore, Soenens and colleagues (2006) demonstrate that high psychological control impacts school and academic functioning and social relationships, making adolescents more vulnerable to externalization problems. Following these findings and Baudat et al.'s (2022) results, we emphasize that parents can best foster revelation from adolescent students by initiating conversations with them, but not by adopting intrusive behaviors.

Lastly, regarding the third objective, we analyzed the impact of students' gender in the probability of belonging to the profiles of parental supervision and found significant differences in both versions. For paternal supervision, results indicate that boys are more likely to belong to Profile 1 (66.8%) and Profile 2 (52.3%), both of which are characterized by «poor supervision». In contrast, girls are more likely to belong to Profile 3 (59.8%), which represents «good supervision». Additionally,

significant differences were observed across all profile combinations when analyzed individually.

In the maternal supervision version, findings suggest that boys are more likely to belong to Profiles 2 (78.4%) and 3 (64.0%), which are both categorized as «poor supervision». Girls, on the other hand, are more likely to belong to Profile 1 (57.5%), which is the «good supervision» profile for the maternal supervision, but also to profile 4 (58.7%), another «poor supervision» profile. Significant differences were also found when comparing the likelihood of belonging to Profiles 1 and 2, Profiles 1 and 3, Profile 2 and 4, and Profile 3 and 4. However, no significant differences emerged when comparing the likelihood of belonging to Profiles 1 and 4 or Profiles 2 and 3, indicating that gender is not a distinguishing variable in these cases.

The existing literature on parental supervision and gender differences, particularly during adolescence, indicates that girls often experience greater restriction and supervision compared to boys (Álvarez-García et al., 2018; Svensson, 2003). These findings align with our research, where Profile 3 in the paternal version and Profile 1 in the maternal version—both associated with «good parental supervision»—are more likely to include female students. Additionally, Profile 4 in the maternal version, characterized by high psychological control, also shows a high likelihood of girls' belonging, suggesting a tendency for mothers to exert more psychological control over daughters.

The significant role of students' gender in their likelihood of belonging to different profiles of both paternal and maternal supervision suggest that supervision strategies may be influenced by gender stereotypes, where boys are often granted more autonomy and less stringent oversight (Endendijk et al., 2016). This differential treatment could be influenced by societal beliefs that view boys as needing to develop independence, while girls are seen as requiring protection and guidance (Endendijk et al., 2017; Ramaci et al., 2017). However, the lack of significant differences when comparing Profiles 1 and 4 or Profiles 2 and 3 in the maternal supervision version indicates that while gender does play a role, it is not the sole factor determining the type of supervision perceived. This suggest that other factors, such as the adolescent's behavior, personality, and family dynamics, may also significantly influence supervision styles (Crick, 2003; Devore & Ginsburg, 2005; Rueger & Malecki, 2011).

These findings underscore the importance of considering gender-sensitive approaches in parenting interventions aimed at modifying the supervision style. It is crucial to recognize that while protective behaviors may have good intentions, they can also lead to overcontrol, potentially limiting the development of autonomy and self-regulation in children.

In conclusion, this research contributes to a better understanding of adolescents' perception of paternal and maternal supervision styles and the impact of students'

gender on this perception. The most notable findings were the identification of several «poor parental supervision» profiles for both fathers and mothers, and two «good parental supervision» profiles, one for each parent. In addition, it is worth noting the influence of students' gender found when examining the likelihood of belonging to each profile. This finding is key, as it highlights the potential for gender-sensitive approaches to changing the supervision style of parent. Furthermore, the delineation of «good» and «poor» supervision profiles based on behavioral control, psychological control and revelation provides a clear framework for researchers, parents and educators to better understand and address the needs of adolescents.

LIMITATIONS

In this research, we encountered several limitations that limit the generalizability of our results. Firstly, the information was collected from students aged 12 to 21 years, but only their perception of parental supervision was gathered, without contrasting it with other sources such as the parents of these students. This reliance on self-reporting as the only data collection strategy is vulnerable to biases such as social desirability. Gathering data from different sources could improve the reliability of the findings (Thurmond, 2001).

Secondly, while there is evidence from longitudinal studies suggesting that parenting practices remain stable throughout adolescence (Parra Jiménez & Oliva, 2006; Van Heel et al., 2019), other research indicates potential variations with age (Spera, 2005; Wang et al., 2011). We acknowledge that these differences may influence the outcomes of our research and recommend that future studies consider a differentiated analysis by age groups to explore these variations in greater detail.

Thirdly, only relevant variables from the questionnaire (behavioural control, psychological control, and revelation) and the gender were studied, leaving out other potential covariables that could directly or indirectly affect the results. For instance, family status could be an interesting variable to study, as adolescents' family type has been shown to influence their well-being and their perceptions of parenting practices (Mupinga et al., 2002; Nahkur & Kutsar, 2022). Additionally, other important factors such as the country context, the type of educational institution, the educational level of the parents, and the type of family were not analysed. These variables can significantly influence parental supervision practices and the adolescents' perceptions of the types of supervision exercised by their mothers and fathers (Devore & Ginsburg, 2005; McFarlane et al., 1995; Rueger & Malecki, 2011). It is crucial for future research to incorporate these variables to gain a more comprehensive understanding of the dynamics of parental supervision.

Lastly, longitudinal research would allow for a more nuanced understanding of how parenting practices and adolescents' perceptions of these practices may change

over time, providing deeper insights into the dynamics of parental supervision across different developmental stages.

FUTURE DIRECTIONS

The results of this study suggest the need for further research to develop intervention programs aimed at improving parental supervision of adolescent students. Such programs should aim to improve and promote revelation, reduce psychological control, and enhance aspects of behavioral control in daily practices. This approach would foster bidirectional communication where, in any case, if the adolescent faces difficulties in any aspect of their life, they can spontaneously reveal it to their parents. Consequently, parents can assist in resolving issues that cause worry or discomfort to their children.

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APPENDICES

Appendix A

Adolescent Perception Scale of Parental Supervision (Spanish version)

Number	Item	Factor
1	Intenta saber a dónde voy cuando salgo.	Behavioural control
2	Si vuelvo tarde a casa me pregunta por qué y con quién estuve.	Behavioural control
3	Cuando salgo un sábado noche debo decirle antes dónde voy y cuando volveré.	Behavioural control
4	Intenta saber qué hago en mi tiempo libre.	Behavioural control
5	Pone límites a la hora que debo volver a casa.	Behavioural control
6	Me pregunta en qué gasto el dinero.	Behavioural control
7	Es menos amable conmigo cuando no hago las cosas a su manera.	Behavioural control
8	Me hace sentir culpable cuando no hago lo que quiere.	Behavioural control
9	Me trata de forma fría y distante si hago algo que no le gusta.	Psychological control
10	Me dice que él/ella tiene razón y no debo llevarle la contraria.	Psychological control
11	Me castiga y sanciona continuamente mi forma de ser y pensar.	Psychological control
12	Deja de hablarme cuando se enfada conmigo.	Psychological control
13	Le cuento lo que hago en mi tiempo libre.	Revelation
14	Le cuento lo que hago cuando salgo.	Revelation
15	Le cuento dónde estoy en mi tiempo libre.	Revelation
16	Le hablo sobre los problemas que tengo con mis amigos y amigas.	Revelation
17	Conoce quiénes son mis amigos/as.	Revelation
18	Cuando llego de las clases le cuento cómo me ha ido el día.	Revelation
19	Aunque no me pregunte, le cuento cómo me va en las diferentes asignaturas.	Revelation
20	Te gusta contarle lo que haces y dónde vas a él/ella.	Revelation

Note. Both versions have the same items, but the formulation changes to refer to paternal or maternal supervision

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