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Presentation

Revista de Educación is a scientific journal published by the Ministerio de Educación y Formación Profesional español. Founded in 1940, and since 1952 called *Revista de Educación*, it has been a privileged witness of the development of education in the last decades, and an acknowledged means for the dissemination of education research and innovation, both from a national and international perspectives. It is currently assigned to the Instituto Nacional de Evaluación Educativa within the Dirección General de Evaluación y Cooperación Territorial and it is published by the Subdirección General de Atención al Ciudadano, Documentación y Publicaciones of the Ministerio de Educación y Formación Profesional.

Each year we publish four issues. Starting next issue (No. 361), the magazine will have three sections: Research, Essays and Education Experiences, all of them submitted to referees. In the first issue of the year there is also an index of bibliography, and in the second number a report with statistic information about the journal process of this period and the impact factors, as well as a list of our external advisors.

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Research

Researchs

Academic determinants and motivations according to the gender of vocational training students

Determinantes académicos y motivacionales en función del género del alumnado de Formación Profesional

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Abstract

The diversity of elements that can influence the evolution of the academic and professional process in students at the adolescent stage, together with the large number of training itineraries students can opt for, increase the difficulty of decision-making when choosing a career. At the same time, the gender differences that are inherent in the processes of socialisation shape the behaviour and expectations of both sexes in the different phases of life. Thus,

academic decision-making in youth seems to be shaped by gender stereotypes in our society. This study analyses the academic and motivational determinants for choosing an educational and professional itinerary as a function of the gender variable. For this purpose, a survey-type methodology with a quantitative approach has been employed. Participants were selected by means of purposive sampling from among first-year students in intermediate and higher vocational training at three secondary schools in the Region of Murcia (Spain), and the sample consisted of 192 students. The data obtained were subjected to descriptive and inferential statistical tests through the use of the SPSS V26 data analysis programme. The results show the influence of gender in the choice of Vocational Family and Training Cycle, with women opting mainly for itineraries that involve helping other people and with less social prestige, and men opting for technical professions that are better paid and more socially valued. There are also differences according to the access grades of the different type of studies. In addition, women have higher means in the motivational determinants, with the exception of the *Employability* dimension. We can therefore conclude that the gender variable influences both the academic and motivational determinants of decision-making in Vocational Training students.

Keywords: Gender, Vocational Training, Vocational Families, Academic Motivation

Resumen

La pluralidad de elementos que pueden ejercer influencia en la evolución del proceso académico y profesional en los estudiantes en la etapa de la adolescencia, unido a la extensa cantidad de itinerarios de formación por los que pueden optar, increméntala dificultad para la elección de la carrera. Simultáneamente, las diferencias de género que se desarrollan en los procesos de socialización configuran el comportamiento y las expectativas de ambos sexos en todas las fases de la vida. Así pues, la toma de decisiones académicas en la juventud parece estar supeditada por los estereotipos de género existentes en nuestra sociedad. En el presente estudio se analizan los determinantes académicos y motivacionales para escoger un itinerario formativo y profesional en función de la variable sexo. Para ello, hemos empleado una metodología tipo encuesta, con enfoque cuantitativo. La selección de los participantes se ha realizado mediante un muestreo intencional, entre los estudiantes de primer curso de Formación Profesional de Grado Medio y Superior, de tres institutos Región de Murcia (España), quedando compuesta por 192 estudiantes. Con los datos obtenidos se han realizado pruebas estadísticas descriptivas e inferenciales utilizando el programa de análisis de datos SPSS V26. Los resultados muestran la influencia del sexo en la elección de la Familia Profesional y del Ciclo Formativo, donde ellas se decantan principalmente por itinerarios que implican la ayuda

a otras personas y con menor prestigio social, y ellos por profesiones técnicas mejor remuneradas y más valoradas socialmente También existen diferencias según calificaciones de acceso a la modalidad de estudios. Además, las chicas presentan medias más altas en los determinantes motivacionales a excepción de la dimensión *Empleabilidad*. Con todo ello podemos concluir que la variable sexo influye tanto en los determinantes académicos como motivacionales, del alumnado de Formación Profesional, para la toma de decisiones.

Palabras Clave: Género, Formación Profesional, Ciclos Formativos, Familias Profesionales, Motivación Académica.

Introduction

Choosing a career pathway is one of the most important decisions that young people and their families have to take after compulsory schooling (Merino et al., 2020). This decision may affect their professional future. At this stage, guidance intervention becomes a fundamental element in responding to the issues related to this choice. This guidance intervention can be carried out through an accompaniment process to develop the Professional Life Project (PLP) of the students. Thus, we can understand the PLP as a continuous process where the person learns to actively manage the changes that occur in themselves and in their environment, in order to build their own personal and professional project and facilitating the adaptation to the constant changes that occur in society. This process allows to strengthen their autonomy and responsibility in decision-making for their personal, academic and professional life (González & González, 2015).

In recent years, the process of globalisation, the persistent situation of the economic crisis and the pandemic generated by COVID 19 have increased the difficulties regarding the labour market insertion of Spanish youth. As Queiruga et al., (2022) point out, 'the link between professional and productive reality is a highly determining factor when deciding on training needs' (p. 92). In this constantly evolving and highly competitive scenario, companies have been forced to adopt a more flexible production model, leading to a situation in which the different types of Vocational

Education and Training (VET) seem to be the most appropriate alternative to respond to the new needs and demands of the labour market. Thus, enrolment rates in Intermediate and Higher Level Training Cycles have increased and as a consequence, there are a larger diversity of students in terms of gender, social origin, primary socialisation contexts, and also regarding the expectations and motivations of the student body (Masjuan, 2005).

In this context, it is important for schools to know the profile of incoming students, as well as the reasons that determine their choice of one or another professional activity, in order to establish appropriate guidance mechanisms to promote self-knowledge and decision-making of each student in the construction of their LPL. In the same way, it is essential to adjust its functioning to the educational needs of the students, as well as to the possible difficulties they may encounter, as well as to promote their academic and professional integration. After reviewing the research on the career choice process, it can be said that "this process is of vital significance for the correct academic and professional development of the students" (Martínez-Martínez et al., 2015, p. 19).

According to Vidal and Merino (2020), in order to understand young people's choices from a sociological perspective, it is necessary to take into account that they are the result of a combination of the *opportunities* offered by the educational system and the socio-economic and cultural resources of the family, and the *preferences* linked to social norms, aspirations and emotions of the student body. Furthermore, it is necessary to take into account different perspectives, for example from the *human capital perspective,* which aims to maximise student interest in terms of costs and expected benefit expectations, and from the *perspective of methodological individualism,* which refers to the results of socialisation, grouped into primary effects (academic results) and/or secondary effects (resources and strategies of young people and their families according to school performance and mobility). In this sense, young people who opt for VET studies are a minority with respect to those who choose to study for the post-compulsory education and are characterised by having achieved lower school performance, coming from families with low socio-cultural levels and lower expectations regarding the success and educational trajectory of their sons and daughters (Merino et al., 2020).

This interaction between the various determining factors in the decision-making process leading to the choice of a training pathway

can be complex and multidisciplinary. Among the elements that influence career choice family characteristics, locality of residence, social class, economic level, socio-cultural and academic aspects or sexual differentiation, among others, can be highlighted (García-Cavazos, 2003). These elements are called *contextual factors* (Cepero, 2009; Rivas, 1998). The decision to make this choice involves a search and selection process in which students can combine simultaneously different intrinsic and extrinsic motivations (Cepero, 1997; González et al. 2011; Rivas, 1998; Sánchez-Martín & Contreras, 2018). As intrinsic motivation, associated with activities that aim to achieve personal growth or the ones that represent a reward for themselves, include some such as the desire to learn or the achievement of personal and professional development through studies (García et al., 2018). Regarding the extrinsic motivations, the search for social prestige, family influence or obtaining a well-paid job and financial solvency, among others can be highlighted (Gámez et al., 2015; García et al., 2018).

However, research in VET "is scarce, discontinuous and dispersed temporally and geographically, with insignificant sources of funding and little involvement in its development by universities and related entities" (Echeverría and Martínez-Clares, 2021, p. 234). The number of studies published in this field is limited and they are mainly focused on the topics of dropout (Celdrà-Navarro et al., 2020; Salvá-Mut, et al., 2020), tutoring (Cáscales-Martínez and Gomáriz, 2021), research (Echeverría and Martínez-Clares (2021), employment (Queiruga et al., 2022) and gender and sexism (Fernández-Rotaeche et al., 2021; Moreno-Marques, 2021); and, to a greater but insufficient extent, on those factors related to academic motivation (Martínez-Martínez et al., 2016; Merino et al., 2020; Mosteiro and Porto, 2017; Sánchez-Martín, 2020; Sánchez-Martín et al., 2017).

The results of various studies on motivations for career choice at the university level show that gender is one of the determinants with the greatest impact on this decision (Cepero, 2009; Rivas, 1998). It has been identified that, in general, women are more academically motivated (Herrera et al., 1999), get better grades (Martínez et al., 2015), devote more time and effort than men to study (Comas and Granado, 2002) and choose their degree mainly for more altruistic or intrinsic reasons, opting to a greater extent for humanities and social studies (Santana et al., 2012) and health sciences (Cepero, 2009; Fonseca and Corospum,

2004; García et al., 2018; Vázquez and Manassero, 2009). In contrast, men show preferences for more scientific, mathematical or technical studies and career paths (Rodríguez et al., 2016).

The distinction between sex and gender leads us to distinguish between the biological and social origin of people (Fargas, 2020). Specifically, the term gender refers to the social meaning of sex (Torres, 2018). Unlike sex, gender is developed in the processes of socialisation (Subirats & Brullet, 1988), shaping the behaviour and expectations of both sexes in all phases of life. Thus, most of the differentiating features of both genders are cultural constructions, products of society and not necessarily derived from nature. Gender is constituted as the result of a process of historical, social and cultural construction through which the expectations and values that each society attributes to men and women are symbolically assigned. The process of construction of the person does not take place without the determination of gender and, therefore, femininity and masculinity are a construction, a consequence of making a sexed person a woman or a man (Mayobre, 2006). As a result of this process of socialisation and cultural learning, both men and women display the values, attributes, roles, identities and representations that have been assigned to them under the label of gender. Although there have been changes in gender roles with the increasing level of education attained by women and their incorporation into the labour market, this change does not imply the disappearance of gender stereotypes.

Numerous studies suggest that the academic decisions and vocations of young people seem to be subject to existing gender stereotypes in our society, the result of social and cultural construction learned through socialisation processes (Alemany-Arrebola et al., 2019; Martínez-Martínez et al., 2016). The study by Vázquez and Blanco-Blanco (2019) confirms that, in the academic and professional decision-making process, being male or female still seems to be a determining factor. Therefore, it is considered that the choice of studies is largely influenced by existing gender stereotypes in our society (Martínez-Martínez et al., 2015). Thus, the vocational aspect is essential when it comes to choosing studies (Cepero, 2009; Martínez & Carmona, 2010), being gender one of the indicators that has the greatest impact on the preferences and vocational choice of students. Therefore, the aim of this study focuses on analysing the differences in the academic and motivational determinants for the choice of vocational training as a function of the gender variable.

Methodology

Design

Given the scarcity of studies on VET, we have chosen to carry out an exploratory descriptive study, based on a survey-type methodology, with a quantitative approach.

Participants

The participants in this research were selected through a non-probabilistic purposive sampling, in which all first year students of the VET Cycles of three Secondary Education Schools of the Region of Murcia were invited to participate. The students were studying the following Vocational Training Cycles: Early Childhood Education, Communicative Mediation, Social Integration and Care for People in a Situation of Dependence; Administration and Finance; Design and Management of Digital Production, Digital Pre-printing; and Catering Services, Cooking and Gastronomy, Tourist Accommodation Services, Kitchen Management, coming from four different Professional Families: Sociocultural and Community Services (SSC), Administration (A), Graphic Arts (GA) and Catering and Tourism (CT).

The sample consisted of 192 participants with a mean age of 20 years (SD=5.5), of whom 72 were male (37.5%) and 120 female (62.5%). Table I shows the breakdown of the participants by sex, age, the Vocational Training Cycle they are studying and the Vocational Family to which they belong.

TABLE I. Distribution of students in Vocational Families and Training Cycles according to gender and age

	N=192	Men %	Women %	Age Average (D.T.)
Graphic Arts	9	83.3	16.7	23.8 (6.8)
Digital Production Design and Management	4	85.7	14.3	22.1 (1.9)
Digital Prepress	5	81.8	18.2	24.9 (8.6)
Administration	14	39.3	60.7	18.6 (1.7)
Administrative Management	13	34.6	65.4	18.5 (1.7)
Administration and Finance	1	100	0	20.5 (0.7)
Catering and Tourism	27	55.8	44.2	22.08 (7.5)
Catering Services	4	40.0	60.0	19.0 (2.7)
Cooking and Gastronomy	11	69.6	30.4	21.5 (8.4)
Tourist Accommodation Services	6	38.5	61.5	24.3 (9.2)
Kitchen Management	3	66.7	33.3	24.3 (3.6)
Sociocultural and Community Services	48	18.1	81.9	21.2 (4.3)
Early Childhood Education	14	7.1	92.9	20.2 (1.8)
Communicative Mediation	10	30.0	70.0	26.1 (6.6)
Social Integration	11	36.4	63.6	21.4 (2.2)
Care for people in a dependency situation	12	4.2	95.8	18.2 (1.4)

Measuring instruments

The instrument used in the data collection was the *Cuestionario sobre los Determinantes para el Elección del Ciclo de Formación Profesional* or CDECFP (in English Questionnaire on the Determinants for the Choice of Vocational Training Cycle) by Sánchez-Martín & Contreras (2018). Although the original instrument consists of three subscales, only the items of the subscales of academic determinants and motivational determinants for the choice of studies were used. In the latter, the authors obtained a satisfactory scale reliability (α=.703). In this study, a slightly higher level of reliability was achieved (α=.726). The scale consists of five factors:

■ The first of these refer to personal determinants: "In my career it is important to get long-term promotions", "it is important to develop my personal skills in my profession", "it is important to feel at ease with myself at work", "it is important to achieve certain goals" and "I think it is important to explore different activities to find the kind of work I can do best".

■ The second focuses on determinants related to employability: "I think that when I finish the Vocational Training Cycle, I will get a job for sure" and "I think that this Vocational Training Cycle has good prospects for professional opportunities".

■ The third factor refers to economic determinants and security: "it is important for me to earn a lot of money when I finish my studies", "I think that working as an employee gives me more security" and "I find it interesting to start my own business".

■ The fourth factor refers to determinants related to specialisation and stability: "in my opinion, it is important to receive recognition for the knowledge in which I have specialised", "in my profession it is essential to specialise in a specific area" and "I consider it important to have long-term job stability".

■ And the last factor focuses on social determinants: "I think that the Training Cycle I have chosen is fashionable" and "I think that the Training Cycle I have chosen will provide me professional prestige".

Procedure

In order to carry out the fieldwork, the appropriate permissions and informed consent were requested, guaranteeing the confidentiality and anonymity of the participants. After which we proceeded to collect the data. The data were collected in person in the second quarter of the course, at two points in time:

■ In the 2015/2016 academic year, in eight training cycles: Catering Services, Cooking and Gastronomy, Tourist Accommodation Services, Catering, Hotel and Tourism Management); Administrative Management, Administration and Finance (from the Administration

Professional Family); and Design and Management of Digital Production, Digital Pre-printing (from the Graphic Arts Professional Family).

■ During the 2018/2019 academic year, in four training cycles: Early Childhood Education, Communicative Mediation, Social Integration and Care for Dependent Persons, of the Professional Family Sociocultural and Community Services.

Data analysis

For descriptive analysis of the data, we initially analysed the normality of the data distribution using the Kolmogorov-Smirnov test. In the absence of normality, the non-parametric Mann-Whitney U test was used for several samples with sex as the grouping variable. The accepted level of significance, p-value, was ≤.05. Analyses were performed with the SPSS v.26 statistical package (IBM Corp., 2017).

Analysis and results

On analysing the differences according to gender in the academic determinants for the choice of Training Cycle, it is found that gender influences the choice of the Professional Family (p=.004) and of the Training Cycle (p= .000) with higher average ranges for women in Care for People in a Situation of Dependence (128.50), Early Childhood Education (125.39), Communicative Mediation (103.70) and Social Integration (97.59) from the Vocational Family Sociocultural and Community Services; and to a lesser extent Digital Pre-printing (53.95) and Design and Management of Digital Production (60.50) from the Vocational Family Graphic Arts.

With regard to gender suitability, there are no significant differences between students' beliefs, although, as can be seen in table II, there are still 12.5% of males and 13.4% of females who continue believing that there are degrees that are more suitable for men and others for women

TABLE II. Beliefs about gender appropriateness of Vocational Training according to sex

	Men (N=72)	Women (N=120)	*Chi Square*	
			p	
Yes	12.5	13.4	.035	.851
No	87.5	86.6		

The access mode to Vocational Training (table III) also shows significant differences according to gender (*p*=.006), with female students (50.74) ranking higher than male students (32.82), who mainly access through Post-Compulsory Education (76.5%) and female students through Compulsory Secondary Education (51.9%), followed by Post-Compulsory Education (44.2%).

TABLE III. Access mode to Vocational Training according to gender

	Men (N=72)	**Women (N=120)**	*U*	*p*
Post-Compulsory Education	76.5	44.2	405.000	.006
Medium-level qualification (diploma)	11.8	2.6		
Compulsory Secondary Education	11.8	51.9		

With regard to the access grades to *Vocational Training* (table IV), there are again statistically significant differences according to gender (*p*=.002), with higher average ranges for females (49.25) than for males (39.56).

TABLE IV. Access Grades to Vocational Training according to gender

	Men (N=72)	**Women (N=120)**	*U*	*p*
Pass	5.9	3.9		
Good	29.4	16.9		
Merit	58.8	62.3	519.000	.002
Distinction	5.9	16.9		

The average grade obtained in the first and second four-month periods do not show significant differences according to gender, although as can be seen in table V, women obtain a lower performance than men, with the exception of the "Distinction" grades in which women obtain a higher percentage (15.6%).

TABLE V. Grades obtained in Vocational Training according to gender

	Men (N=72)	**Women (N=120)**	U	*p*
Fail	0	7.8		
Pass	0	6.5		
Good	5.9	6.5	519.000	.127
Merit	88.2	63.6		
Distinction	5.9	15.6		

The results presented in table VI show that *the order of the different options in which the students choose the degree they wish to study* is not a variable influenced by gender (*p*=.900), despite the fact that women are on average (87%) more likely than men (70%) to be studying the degree chosen as their first option.

TABLE VI. Order of the options for the choice of training cycle according to gender

	Men (N=72)	**Women (N=120)**	*U*	*p*
First	70	87.0		
Second	17.6	9.1	544.500	.090
Third	11.8	3.9		

As for the degree of satisfaction, table VII show that men, in general, are more satisfied than women with the choice they make. Although 37.7% of women are very satisfied with the Vocational Training Course they are studying, 19.4% say they are not satisfied enough and 2.6% are not satisfied at all. However, gender has no influence on the level of satisfaction with the vocational training degree chosen (*p*=.983).

TABLE VII. Satisfaction with the choice of Vocational Training according to gender

	Men (N=72)	Women (N=120)	U	p
Nothing	0	2.6		
Regular	11.8	19.4	652.500	.983
Quite	88.2	40.3		
A lot	0	37.7		

Similarly, as it can be seen in table VIII, gender does not show statistically significant differences regarding the future plans (*p*=.439), men show a greater intention to complete the Vocational Training Cycle they are studying (88.2%) than women (81.8%).

TABLE VIII. Future plans according to gender

	Men (N=72)	Women (N=120)	U	p
Completing your studies	88.2	81.8		
Changing studies	5.9	0	603.000	.439
Work	5.9	11.7		
Other	0	6.5		

Table IX shows the results of the second objective "to analyse the differences in the motivational determinants for the choice of vocational training according to gender".

TABLE IX. Motivational determinants according to gender

Determinants	Men (N=72)		Women (N=120)			
	M	DT	M	DT	U	p
Personal						
Promotions	3.53	.96	3.81	.91	3723.500	.091
Personal capacities	4.40	.72	4.53	.66	3901.500	.199
Personal realisation	4.76	.51	4.79	.51	4218.500	.794
Achieving employment goals	4.33	.65	4.58	.644	3396.000	.005
Exploring activities	4.10	.75	4.23	.87	3784.000	.120
Employability						
Secure employment	3.24	1.06	3.16	1.05	4092.000	.522
Career opportunities	3.92	.83	3.80	1.03	4132.000	.596
Economic and Security						
Money	3.34	.99	3.36	1.07	4116.000	.757
Employment	3.13	1.08	3.08	1.04	4174.500	.682
Own business	3.07	1.27	3.17	1.24	4084.500	.517
Specialisation and Stability						
Professional recognition	3.79	.82	4.06	.81	3516.500	.030
Job specialisation	3.33	1.08	3.24	.98	4050.500	.448
Job stability	4.40	.76	4.62	.71	3599.00	.021
Social						
Fashion	2.92	1.36	2.88	1.24	4265.500	.881
Professional prestige	3.51	.91	3.69	1.01	3818.000	.157

Women obtain higher mean scores than men in all items of the "Personal Determinants" dimension, they give more importance to *obtaining long-term promotions* (M=3.8; SD=.91), *developing their personal skills in their chosen profession* (M=4.5; SD=.66), they feel at ease with themselves at work (M=4.7; SD=.51), as well as *exploring different activities to find the type of work they can do best* (M=4.2; SD=.87), although the only item that shows statistically significant differences is *achieving goals* (*p*=.00; M=4.5; SD=.64), with a higher average rank for women (104.20) than for men (83.67).

However, men have slightly higher mean scores on the items of the "Employability determinants" dimension than women, although these

differences are not statistically significant (*p*>.05). Men have chosen the Vocational Training Cycle they are studying because they think that *they will get a secure job* (M=3.2; SD=1.0) and that *they have good prospects for professional opportunities* (M=3.9; SD= .83).

With regard to the Dimension "Economic and Security Determinants", although none of the items show statistically significant differences, the mean scores are slightly higher among female students, specifically *they find it more interesting to start their own business* (M=3.1; SD=1.24) and to *earn a lot of money* at the end of their studies (M=3.3; SD=1.0), whereas male students value *to work for others* to a greater extent as it provides them with greater security (M=3.1; SD=1.0).

In the "Specialisation and Stability Determinants", with the exception of the item *in my profession it is essential to be specialised in a specific area* (M=3.3; SD=1.0) which does not present statistically significant differences according to gender, women present higher mean scores in the rest of the items of this dimension, in which gender does have an influence: it is important to receive recognition for the knowledge in which they have specialised (p=.03; M=4.0; SD=.81), with higher mean ranges for females (102.20) than for males (85.53); and they consider it more important to have long-term job stability (p=.02; M=4.6; SD=.71), with higher mean ranges for women (102.51) than for men (86.49).

Regarding the "Social Determinants", male students obtain slightly higher mean scores than female students in the influence of fashion (M=2.9; SD=1.3) and female students obtain slightly higher mean scores in the variable professional prestige (M=3.6; SD=1.0), although none of these variables show significant differences according to gender.

Discussion and conclusions

This study presents the differences between men and women in relation to the determinants that influence the access to VET cycles. As Mosteiro and Porto (2017) point out, the choice of professional career according to gender has been studied more from the perspective of access to university studies than from the perspective of access to vocational training.

Gender influences the choice of Vocational Family and Training Cycle. Women choose to a greater extent Vocational Cycles of the Vocational Family Sociocultural and Community Services (Care for People in a

Situation of Dependence, Early Childhood Education, Communicative Mediation and Social Integration); and to a lesser extent those of the Vocational Family Graphic Arts (Digital Pre-printing and Design and Management of Digital Production). These data coincide with the previous study carried out by Moreno-Marques (2021), which highlights the existing gender-based gap in the configuration of professional vocations, with a clear horizontal segregation. This author points out that there are highly feminised vocational training specialisations and a much larger number of highly masculinised specialisations, and this implies a reduction in women's chances of finding employment. According to her data, out of half of the specific job offers, only 15.69% are linked to feminised professional families.

However, "both in the case of medium and superior level of VET studies, the number of unemployed women is higher than unemployed men" (Moreno-Marques, 2021, p.98). Considering the data related to unemployed young people according to the economic activity (Observatorio de las Ocupaciones, 2019), the major issue is that women will work in the service sector (63.4% of unemployed young people) while men will work in the industrial sector (5.56% of unemployed young people).

Although important changes in gender stereotypes are observed, "certain stereotypical behaviours that perpetuate gender inequalities are still maintained" (Mosteiro and Porto, 2017, 155). Society transmits gender stereotypes that mark students' preferences. In this case, the influence of gender socialisation on the choice of vocational training studies is evident, with discriminatory effects for female students who see their chances of finding employment reduced as they are linked to feminised professional families (Moreno-Márquez, 2021).

Even though, it seems that there are no significant gender differences in the beliefs that there are studies and professions that are more suitable for men and women, still a high percentage of students hold these beliefs in their youth (Aguaded, 2017; Esteban and Fernández, 2017). Therefore, it would be necessary to continue raising awareness in educational institutions "in terms of equality in order to achieve a fairer and more egalitarian society" (Mosteiro and Porto, 2017, p. 151) with interventions aimed at teachers, students and families. Likewise, gender also influences the mode and grades access to Vocational Training Cycles. Female students enter Vocational Training Cycles with better grades than male students,

therefore, they can choose their first option and their main access is through the Compulsory and Post-Compulsory Education routes. On the other hand, gender does not seem to influence: the number of options in which students choose the degree they are studying (determined by the average grade), the degree of satisfaction obtained in the first year and their plans for the future. Although the majority of women are taking their first-choice degree, in general, they have lower academic performance in the first year, lower levels of satisfaction and higher drop-out intentions than men.

These results differ from those obtained in other studies which indicate that female students present better levels of academic motivation in general, especially in the stages prior to university entrance, being more motivated to maintain study behaviour (Fuente de la and Justicia, 2001; Herrera et al., 1999). A more recent study by Salva-Mut et al. (2020) suggests that women have a lower drop-out rate in VET studies than men for Spain as a whole, with Murcia being the region with the lowest drop-out rate.

With regard to motivational aspects, with the exception of the "Employability" dimension, women have higher mean scores than men in all dimensions. Male students have slightly higher mean scores in the items of the "Employability" dimension, as they claim to have chosen the Vocational Training Cycle they are studying due to the job opportunities and the chances of getting a secure job. These results coincide with numerous studies that present the determining factors for young people's choice of studies which based on intrinsic and extrinsic motivation. While for men the search for financial stability is important, for women the choice is mainly based on personal interest in a particular academic degree (Merino et al., 2020; Vidal and Merino, 2000). Although in the results of this study gender does not influence the variables included in the dimension "Economic and Security Determinants", women obtain slightly higher mean scores on their interest to start their own business and earning a lot of money at the end of their studies. In contrast, men prefer an employed job that gives them more security. The influence of gender on the "Social Determinants" variables was also not found, although students report choosing, on average, the studies they have chosen due to the influence of "fashion", mainly among students enrolled in different cookery specialisations. Female students, however, make their

choices according to professional prestige reasons influenced, as it has been mentioned above, by gender stereotypes (Mosteiro & Porto, 2017).

In the "Personal Determinants", an influence of gender on the goal attainment variable has been found. This association seems to be related to the fact that women continue to opt for studies related to professions that involve helping other people (professions considered typically female) and with less social prestige. Whereas men tend to choose technical professions which, in turn, are better paid and socially valued and have greater employment opportunities (Moreno-Márquez, 2021). In the dimension "Specialisation and Stability Determinants", the influence of gender is found in the variables "recognition for the knowledge in which they have specialised" and "long-term job stability". This is not the case for the variable "specialisation", where the differences are not statistically significant. These conclusions, in general, are in line with the study carried out by Merino et al. (2020) whose objective was to find out the motivations of 4th of Compulsory Education students when they choose the academic labour market pathway in VET. Their conclusions suggest that young people who choose the VET pathway have high sociocultural motivations, understood as "a cultural identification associated with a specific professional conception. For example, from a gender perspective, women feel more identified with care occupations and men with manual occupations" (p. 263); and high functional motivations, understood as "a reasonable expectation of accessing the labour market in better conditions than without having done the training" (p. 263).

These results are also congruent with the results of the work of Vidal and Merino (2020), in which, on analysing gender inequalities according to school motivations, they verify the persistence of gender inequalities in VET. Their results corroborate the validity of expressive motivations with a gender variant and the strong presence of instrumental motivations in both women and men. The findings of this study have a series of implications for educational policies, administration, teachers, guidance teams and families with respect to VET. Since the establishment of the General Education Act of 1970, educational reforms have been aimed at eliminating social prejudices towards this educational pathway among young people and their families, as well as attracting and promoting VET as a quality vocational academic pathway adapted to the demands and needs of workers and the labour market (Queiruga et al., 2022). However, at present, this option continues to be a clear minority and chosen mainly

by young people with low grades or coming from families with a basic education level (Merino et al., 2020). Moreno-Márquez (2021) stresses that the I Strategic Plan for Vocational Training in the Education System 2019-2020 (PEFP) highlights the importance of:

> Reducing the existing gender gap in access to certain professional profiles is a responsibility shared by all citizens, but which specifically affects the administrations and the social partners, highlighting as a measure the quality professional information and the guidance on professional sectors and occupations (p. 100).

However, it is worth noting that the main issue is not the low recruitment of women, but the choice of studies. This highlights the importance of acting beforehand in all educational stages from early childhood and the need to involve the family, as the main agent of socialisation, from the centres in activities that address equality between men and women. As the scientific literature has shown, if action is taken only at the time of career choice or access to the labour market, these measures will have little success due to the persistence of gender stereotypes.

Despite the social importance of gender equality, it is not a priority line of action in education. There is even a perceived resistance to change, both institutional and individual, which undermines the importance of equality policies (Lombardo and Mergaert, 2013). Sexism persists in young people, in a vital stage in which social restructuring and identity consolidation take place (Aguaded, 2017; Esteban & Fernández, 2017), especially vulnerable to the development of sexist beliefs and attitudes (Fernández-Rotaeche et al., 2021), educational guidance teams play an extremely important role in raising awareness of equality among students, teachers and families. Other studies focusing on the dropout rate in Vocational Training (CEDEFOP, 2016; Cerdà-Navarro, 2019; Klotz et al., 2014), suggest improving the guidance processes for students prior to the choice of professions, highlighting the emotional and/or instrumental link between students and the profession (Cerdà-Navarro et al., 2020), without including gender stereotypes in this choice. To this end, the proposal by Cáscales-Martínez and Gomáriz-Vicente (2021) should be adapted in order to establish a teaching timetable that allows for collective tutoring throughout the academic year and a better integration of Tutorial Action (TA) in the classroom, in which gender equality in career guidance is worked on.

Regarding the limitations of the present study, they are mainly related to the sample selected and the study period analysed. Firstly, we should stress that the data analysed have been generated regarding the determinants for the choice of VET cycle, offered to the students enrolled in the master's degree in Teacher Training. The data collection has been carried out during the internship period of these students in Secondary Education centres and, as a result of the pandemic caused by COVID-19, the fieldwork was suspended during the academic years 2019-2020 and 2020-2021. Secondly, the study is limited to the Region of Murcia, thus the results may not be generalised to other regions.

To conclude with a suggestion for future lines of research, it can be said that it would be necessary to carry out new studies in other regions and including other Professional Families. It would also be very enriching to incorporate qualitative data collection instruments, in order to understand in depth, from the perspective of the participants, the causes of these differences. After the return to normality, these limitations lead us to continue this exploratory line of research by means of a mixed research design, including other data collection techniques that would allow for a deeper understanding of the object of study.

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CLIL lesson planning in Education student teachers: a case study

La programación de lecciones AICLE en estudiantes de grado de Educación: un estudio de caso

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Abstract

The content and language integrated learning (CLIL) approach, introduced by the European Union to promote the teaching of foreign languages and second languages, requires adequate training of future CLIL teachers. This pretest-posttest study analyzes the competence to plan CLIL lessons of a sample of students in pre-primary and primary education degrees before (N=56) and after (N=50) taking a CLIL course that is part of their studies. The objective is to analyze the effectiveness of the course by studying the differences between both groups with the CIPMA questionnaire (*Cuestionario de Integración de los Principios Metodológicos AICLE*), a questionnaire, already validated, that specifically measures teachers' competence to plan CLIL lessons. These quantitative results were completed with an analysis of the CLIL lesson plans that both groups designed as part of the course. From the quantitative analysis carried out, it can be deduced that both groups of students acquire the competence to plan their CLIL lessons and that, despite some differences found in some of the areas of their lesson plannings, the CLIL course provides them with the strategies

to adapt the methodological principles of the approach to the idiosyncrasies of their respective educational stages. Despite the limitations of the study, it is concluded that the integration of methodological training in CLIL, together with linguistic training, in both pre-primary and primary education degrees, is effective and necessary for the acquisition of the basic knowledge to plan lessons under this approach.

Keywords: pre-primary education, primary education, CLIL, lesson planning, higher education, training.

Resumen

El aprendizaje integrado de contenido y lengua (AICLE), introducido por la Unión Europea para el fomento de la enseñanza de lenguas extranjeras y segundas lenguas, exige una adecuada formación de los futuros maestros AICLE. Este estudio pretest-posttest analiza la competencia para programar lecciones de AICLE de una muestra de estudiantes de educación infantil y primaria antes (N=56) y después (N=50) de cursar una asignatura de AICLE que forma parte de sus estudios de grado. El objetivo es analizar la eficacia del curso mediante el estudio de las diferencias entre ambos grupos con el CIPMA (Cuestionario de Integración de los Principios Metodológicos AICLE), cuestionario ya validado que mide específicamente la competencia para programar lecciones AICLE de los docentes. Estos resultados cuantitativos se completaron con un análisis de las programaciones de AICLE que ambos grupos diseñaron como parte del curso. De los análisis cuantitativos realizados se desprende que tanto el grupo de infantil como el de primaria adquieren la competencia para programar AICLE y que, a pesar de algunas diferencias encontradas en algunas de las áreas de sus programaciones, el curso AICLE les dota de las estrategias para adaptar los principios metodológicos del enfoque a la idiosincrasia de sus respectivas etapas educativas. Pese a las limitaciones del estudio, se concluye que la integración de la formación metodológica en AICLE, junto con la lingüística, en los grados de educación, tanto de infantil como de primaria, es eficaz y necesaria para la adquisición de los conocimientos básicos para programar lecciones bajo este enfoque.

Palabras clave: educación infantil, educación primaria, AICLE, programación, educación superior, formación.

Introduction

Content and language integrated learning approach (CLIL) has been promoted by the European Union (EU) since the beginning of this century (European Commission, 1995) for the teaching of foreign languages, second languages and third languages. Hence, this educational approach is present in the Spanish regulations and curricula of compulsory educational stages (Guillén Díaz & Sanz Trigueros, 2019). In addition, the recent curriculum for pre-primary education, which is not compulsory, also makes explicit reference to the "use of methodologies for integrated learning of content and foreign languages" (Royal Decree 95/2022, Second Additional Provision, p. 14567).

The educational approach implicit in this regulation is aimed at avoiding compartments and offering a framework for the production of globalized, open and flexible teaching materials likely to be adapted to the realities of students at different stages. Therefore, although there are many agents involved in curriculum development, as stated by Beacco et al. (2016), it is ultimately the teachers who are responsible for choosing and implementing the learning experiences and activities that are meaningful for the students, allowing them to achieve the learning goals.

This curricular framework is, therefore, potentially ideal for the development of CLIL programs at all educational stages from the perspective of multilingual and multicultural competences development, which are promoted by the policy for language learning in the EU, as described in the Common European Framework of Reference for Languages (CEFR) (Council of Europe, 2001). These competences are of special interest in the development of CLIL proposals and have been specified in the Companion Volume (Council of Europe, 2020), which introduces descriptors of the mediation processes and of both linguistic and non-linguistic resources to evaluate those competences, among others. As Piccardo et al. (2019) explain, the CEFR sees students as social agents who mobilize all their skills, the general ones (that is, personal, not linguistic), as well as strategies for the fulfillment of specific tasks, which results in a proportional improvement of those skills and strategies.

In relation to teacher education for the implementation of CLIL methodologies, there are several frameworks of reference that describe the competencies and areas of training for CLIL teachers. Among them, there are those elaborated by Marsh et al. (2010) and Bertaux et al. (2010),

published within the development of the EU language policy. Likewise, there are works by Spanish authors that describe the competencies of the CLIL teacher (Pavón & Ellison, 2013; Madrid & Madrid, 2014; Pérez-Cañado, 2015). All of them include the competence to plan lessons as a necessary skill for the CLIL teacher. However, in addition to these skills, CLIL lesson planning in pre-primary and primary education, in the current context, requires the promotion of the aforementioned multilingual and multicultural skills and, therefore, demands for specific training of the teachers responsible for its design (Torres Zúñiga & Carrasco Flores, 2020). Beacco et al. (2016) summarize this training as follows: knowledge about plurilingualism, repertoire and the corresponding acquisition processes; knowledge about the linguistic dimensions of all learning processes; the ability to activate transfer strategies from one language, one skill or one subject to another; reflexivity in the learning process, in particular, the learning of grammar; a differentiated approach to language rules; mediation and openness to the other and to mobility; other concepts of evaluation (in particular, plurilingual and intercultural transversal competences).

This professional profile of the CLIL teachers, capable of designing their own curricular programs from a transversal, plurilingual and pluricultural perspective, makes it necessary from an academic point of view, as stated by Delicado and Pavón (2015), Palacios et al. (2018) and Estrada (2021), among others, that bilingual teacher training initiatives in higher education focus not only on language skills (Torres Zúñiga & Carrasco Flores, 2020), but also on the methodological competence of future CLIL teachers. In the words of Palacios et al. (2018), the specific methodological treatment required by bilingual teaching implies, therefore, a specific training for teachers (p. 147). Specifically, there is a fundamental competence that this cross-curricular approach demands from CLIL teachers: the understanding of the role played by the linguistic dimension in its synergies with the different areas or subjects with which it is integrated (Beacco et al., 2015; Morton, 2016). The work of Guillén Díaz and Sanz Trigueros (2019) is a clear example of the difficulty for CLIL teachers to implement curricula in practice from the perspective of bilingual education. Specifically, their studies point out the difficulties to determine and formulate the objectives of bilingual education.

Although there are specializations in bilingual teaching in some education degrees of both state and private universities, for example,

Andalusia (Zayas and Romero, 2017) and Madrid (López-Hernández, 2021), initial training in CLIL is far from being widespread in education degrees (Custodio-Espinar, 2019a, Jover et al., 2016; Palacios et al., 2018), despite the complexity involved in this teaching approach. The study by Cortina-Pérez and Pino Rodríguez (2021), on the level of competence as a CLIL teacher perceived by pre-primary education students at their university, suggests that future teachers do not yet feel prepared to become CLIL teachers in the pre-primary classroom. In addition, the authors highlight that the level of communication skills about CLIL is a predictor of their knowledge about the approach.

In short, the duality between language and content that CLIL demands from both learners and teachers requires universities to address, from the point of view of teacher training, both foreign language learning (Palacios et al., 2018) and training in the challenge of integrating the foreign language with the content (Morton, 2016). Regarding the linguistic competence, Sierra Macarrón and López Hernández (2015) claim that initial training of these teachers must meet the academic requirements derived from their university status, but, in addition, teacher educators must be able to model their teaching based on what the professional profile of bilingual teachers demands (p. 18). In line with this requirement, Torres Zúñiga and Carrasco Flores (2020) claim the need to adapt the teaching of the foreign language to the professional needs of the target context through a language approach (mainly English) for specific purposes (ESP). In relation to pedagogical competence, Bolarín Martínez et al. (2019) summarize the methodological needs of the bilingual classroom as follows: active methodologies, cooperative classroom management, emphasis on all types of linguistic and non-linguistic communication, lesson planning, coordination, evaluation and knowledge about language acquisition.

This work focuses on one of these methodological requirements, the competence to plan CLIL lessons. This competence implies the management of a series of methodological principles, described in Custodio-Espinar (2019b), which demand both linguistic and methodological skills. Specifically, the study analyzes the competence in the following fundamental areas of CLIL programming: language treatment, content and language integration, methodological strategies, attention to diversity, resources and evaluation. These areas correspond to the dimensions and subdimensions of the CIPMA (*Cuestionario de*

Integración de los Principios Metodológicos AICLE) (Custodio-Espinar & García Ramos, 2020), used in this study to measure the competence to integrate CLIL methodological principles in the lesson plans of a sample of pre-primary and primary education students. Likewise, the study aims to analyze some specific aspects of these areas that are present in the CLIL lesson plannings of these students.

Method

Research method, objectives and variables

This study, which uses a mixed methodology, is a pretest-posttest study to measure the impact that a CLIL course has on the level of competence to plan CLIL lessons of future pre-primary and primary education teachers.

The lesson plannings that both groups designed as part of the CLIL course they take in the fourth year of the degree were analyzed to triangulate these quantitative results. The subject consists of six modules: M1 Bilingual education and bilingual schools, M2 Theories behind CLIL, M3 A CLIL lesson plan, M4 Scaffolding learning in CLIL, M 5 Assessment and Evaluation, M6 Skills and resources for the CLIL classroom. The analysis carried out was of qualitative content to verify the presence and frequency of the curricular areas of each stage, the textual genres linked to the final production tasks designed by the students and the learning standards of the official curricula of both educational stages, included in their lesson plannings, and their meaning within the context of CLIL programming.

The objectives of the research are:

- ■ To analyze the effectiveness of a CLIL course for the training of future CLIL teachers of pre-primary and primary education.

- ■ To compare the competence to plan CLIL lessons of CLIL students of pre-primary and primary education degrees.

- ■ To know what characterizes the CLIL lesson planning of pre-primary education students compared to their peers in primary education.

■ To define the training needs of future CLIL teachers in relation to the competence to plan CLIL lessons.

The variables of the quantitative study are:

■ The dependent variables (DV) are five:
   • Global: Total score in the CIPMA.
   • Specific: Score in each of the four dimensions of the CIPMA: D1 CLIL core elements, D2 Methodology, D3 Resources and D4 Evaluation.

■ The main independent variables (IV) are two:
   • Pretest-posttest: pre and post measurement in the two groups in the five DV.
   • Stage of education: pre-primary and primary.

Other secondary independent variables analyzed are perceived level of English (B1/B2/C1/C2), perceived academic performance in subjects taught in English (low/medium/high), perceived level of CLIL training (not at all/little/sufficient/ quite a lot/a lot), desire to receive training (EFL training/ CLIL training/ training in both/ no training), interest in being a CLIL teacher (yes/no/maybe) and type of school placement during the internships (bilingual/non-bilingual). It should be noted that, although the variable English level is perceived, the students know their actual level because they take placement exams at the beginning of the year to confirm their assignment to the different level groups, from A2 to C2. All the subjects of the degree studied in English, as part of the English language major, are divided in level groups in years 1 and 2 of both degrees. Subsequently, in the third and fourth years, these subjects are grouped into two levels that go from B1 to B2.1 and from B2.2 to C2 depending on the number of students in the different levels.

With respect to the qualitative analysis, the variables analyzed are the areas of the curriculum, the textual genres linked to the curricular content and the learning standards organized in lower order and higher order cognitive skills to compare the cognitive demand in the CLIL lesson plannings of both stages. These variables have been selected because they allow assessing the integration of content and language in CLIL programming.

Research hypotheses

The main hypothesis of the research is the following: the study of a CLIL course, in the degrees of pre-primary and primary education, allows improving the competence to plan CLIL lessons of these potential bilingual teachers.

The specific hypotheses that derive from the previous one are eight and revolve around the following main axes.

- ■ *Axis 1: CLIL lesson planning.*
  - H1 The CLIL course improves the competence to plan CLIL lessons of the students of the education degrees.
  - H2 No statistically significant differences are expected in the competence to plan CLIL lessons between undergraduate students of pre-primary education and undergraduate students of primary education who have taken the CLIL course.

- ■ *Axis 2: Communicative competence in English and CLIL.*
  - H3 The higher level of perceived English improves the level of competence to plan CLIL lessons.
  - H4 The higher level of perceived academic performance, in the subjects taught in English, improves the level of competence to plan CLIL lessons.
  - H5 The higher level of perceived CLIL training improves the level of competence to plan CLIL lessons.

- ■ *Axis 3: Motivation of students towards the CLIL approach.*
  - H6 Greater interest in receiving training improves the level of competence to plan CLIL lessons.
  - H7 Greater interest in being a CLIL teacher improves the level of competence to plan CLIL lessons.
  - H8 Doing the internship in a bilingual school improves the level of competence to plan CLIL lessons.

With the aim of delving into the differences in the level of integration of CLIL methodological principles between the CLIL lesson plannings designed by students of both degrees, once the analyses to contrast the previous hypotheses were carried out, the qualitative analysis was performed to identify and clarify the differences and/or similarities between the CLIL lesson plannings of both groups.

Participants

The population of this study consists of the students of the pre-primary and primary education degrees designed from the Bologna process that involved the adaptation of these degrees to the European Higher Education Area (MECD, 2003). The sample is made up of CLIL students of pre-primary and primary education in the fourth year of the 2020-2021 academic year at Comillas Pontifical University. The sample was distributed in 56 students in the pretest and 50 in the posttest. Of them, in the pretest, 25 are from pre-primary and 31 from Primary, while in the posttest, 20 are from pre-primary and 30 from Primary. Therefore, it is a non-probability sampling, specifically a convenience sampling for a case study.

All students in both degrees study the specialization in English language, which consists of five subjects with the following credit load: English for Education I (12 ECTS), English for Education II (6 ECTS), Teaching English as a Foreign Language I (6 ECTS), Teaching English as a Foreign Language II (6 ECTS) and Content and Language Integrated Learning (5 ECTS).

In the posttest, 92% of the sample were women and their English level according to the CEFR (Council of Europe, 2001, 2020) was medium-high: level B1=8%, B2 =50% and C1=42%. These data correlate with the perceived level of the sample in relation to their performance in the subjects studied in English, with a cumulative percentage of 80% who perceived their performance as medium or high, between *notable-sobresaliente* 60% and *sobresaliente* 20%. With regard to the perceived level of CLIL training in the sample, once the subject was completed, the majority considered that it was sufficient (44%) or quite a lot (52%). In addition, 26% only wanted training in English, 20% only in CLIL, 48% in both, and 6% in none of them. Finally, a large majority of the sample carried out their internships in school placements that have implemented a bilingual education program (82%) and most expressed their interest in being a CLIL teacher in the future (60%) or considered this possibility (30%), while only 10% stated that they are not interested in being a CLIL teacher.

Instruments

The instrument used to collect the information in the quantitative study is the questionnaire called CIPMA (Appendix A), already validated in Custodio-Espinar and García Ramos (2020). The main data of the psychometric study are shown in Appendix B. In the qualitative study, the CLIL lesson plan template revised in Custodio-Espinar (2019b) (Appendix C) has been used. Table I shows the most relevant information about the questionnaire.

TABLE I. Description of the CIPMA

Dimensions	Subdimensions	N of items
Dimension 1 CLIL core elements	D1.1 Language treatment	5
	D1.2 4Cs integration	5
Dimension 2 Methodology	D2.1 Attention to diversity	4
	D2.2 Methodological strategies	5
Dimension 3 Resources		2
Dimension 4 Evaluation		2
Total of item-variables		23
Criterion-items		3

These 23 item-variables are measured on a 1-6 Likert scale, where 1 means never and 6 always. The questionnaire includes three criterion-items (CI) to measure criterial validity.

Regarding the template used to plan the CLIL lessons, its structure coincides with the four dimensions of the CIPMA and, therefore, allows triangulating the data obtained in both analyses. For an exhaustive description of the template and its relationship with the CIPMA, see Custodio-Espinar (2019b). Both instruments are directly related to the content of the CLIL course taken by the sample.

Data collection and analysis

The data for the quantitative analysis were collected at the beginning of the CLIL course, in February 2021, and at the end, in May-June of the

same year. In both cases, the students responded to the same online version of the CIPMA. The data collected was analyzed with IBM SPSS 26 application. These analyses are descriptive and differential. The means and their standard deviation were used as descriptive statistics, and to measure the significance of the differences in the means, the Student's t-test was used for independent samples and simple ANOVA with Tukey for the posterior contrasts of the groups. The significance level was set at 5%. For both statistics, the effect size (ES) was calculated, which was interpreted according to Cohen's (1988) criteria.

The degree of reliability to check the global internal consistency of the instrument was measured by calculating Cronbach's alpha. Finally, an analysis of the convergent validity of the instrument and its dimensions (Pearson-type correlations) was also carried out.

The CLIL lesson plannings were analyzed with NVivo application. They were completed as a task included in the final evaluation of the course, with a value of 30% in the final grade of the subject. The task consists of selecting curricular content from non-linguistic areas of their respective stages and designing CLIL lesson plannings in the template provided (Appendix C). The evaluation criteria for the task are included in Appendix D. Qualitative content analysis was chosen because it is intended to draw inferences and identify certain specific characteristics within the lesson plannings systematically and objectively. This analysis was carried out by one of the authors who is part of the four members of the teaching team of the subject and was chosen because it allows comparing the CLIL lesson plannings of both groups to identify and define their specific characteristics.

Results

Reliability and validity of the CIPMA in the sample

The reliability of the CIPMA in the sample was measured by calculating Cronbach's alpha in the total scale, the 23 items, and in each of its four dimensions. In the pretest sample (N=56) the value of α is 0.983, very close to 1, which shows excellent reliability. In the posttest (N=50), this value is slightly lower, but still excellent, 0.939. In the dimensions, the result of this analysis is also very good in the pretest: D1: N=10; α is

equal to 0.965; D2: N=9; α is equal to 0.970; D3: N=2; α is equal to 0.899; and D4: N=2; α is equal to 0.820. In the posttest sample, the alpha value is slightly lower in D1 (0.878) and in D2 (0.881), much lower in D3 (0.401), and in D4 it is also significantly lower than in the pretest (0.601).

Table II shows the Pearson-type correlations of the scale and its dimensions with the three criterion-items (CI) in the total responses before (N=56) and after (N=50) the CLIL course.

TABLE II. Pre-posttest criterion validity of the CIPMA

Questionnaire/ Dimensions	Corr. CI1 Pretest	Corr. CI2 Pretest	Corr. CI3 Pretest	Corr. CI1 Posttest	Corr. CI2 Posttest	Corr. CI3 Posttest
Scale	0.645**	0.251	0.557**	0.458**	0.328*	0.579**
Dimension 1	0.602**	0.254	0.487**	0.415**	0.315*	0.575**
Dimension 2	0.618**	0.217	0.555**	0.440**	0.284*	0.527**
Dimension 3	0.713**	0.337*	0.580**	0.368**	0.382**	0.421**
Dimension 4	0.588**	0.159	0.619**	0.344*	0.196	0.509**

** The correlation is significant at 0.01 level (bilateral)
 * The correlation is significant at 0.05 level (bilateral)

These results show that there is a statistically significant linear correlation between the total score in the questionnaire and the 3 CI, since the significance has a p value ≤ 0.01 in all the correlations, except in CI2, which is not significant in the pretest, although it is at 5% in the posttest. Likewise, the correlations between the dimensions and IC1 and IC3 are significant at 1%, except for the IC1 of the posttest in D4, which is significant at 5%. The correlations with CI2 are not significant in the pretest, except in D3, nor in D4 of the posttest. In the posttest, however, D1 and D2 are significant at 5% and D3 at 1%.

Descriptive analysis

The result of the descriptive analysis of the dependent variables in pretest and posttest is shown in Table III.

TABLE III. Descriptive analysis of the dependent variables in the IV Pretest-posttest

Variables	IV Pretest			IV Posttest		
DV	N	Mean	SD	N	Mean	SD
Scale	56	71.98	32.296	50	104.74	14.090
D1	56	32.13	14.550	50	46.32	6.478
D2	56	27.07	12.954	50	40.09	6.283
D3	56	7.17	3.369	50	9.84	1.521
D4	56	5.66	2.843	50	8.49	1.616

All the posttest means are higher and the standard deviation in the posttest responses is notably lower than that of the pretest. This is clearly seen in Graph I, which shows the distribution of the main dependent variable, the full scale (23 items), in the sample at both times of the study.

GRAPH I. Distribution of the main dependent variable in the sample in the pretest and the posttest
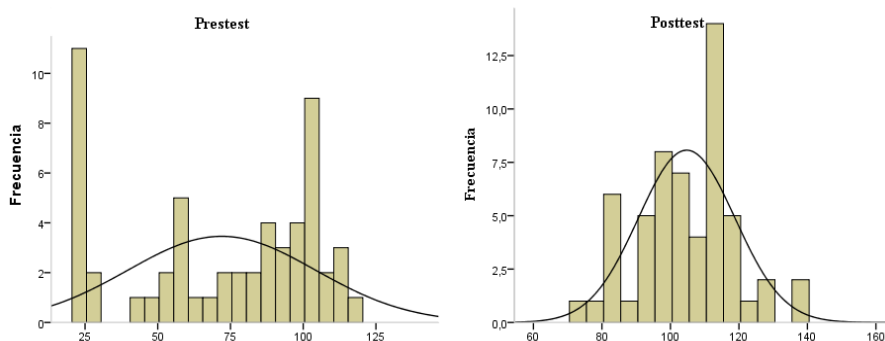
Source: compiled by author

The results of the descriptive analyzes of the IV Stage of education are shown in Table IV.

TABLE IV. Descriptive analysis of the dependent variables according to the IV Stage of education

Variable	IV Stage of education Pretest					IV Stage of education Posttest				
DV	N	Mean Pre-pr.	Mean Prim.	SD Pre-pr.	SD Prim.	N	Mean Pre-pr.	Mean Prim.	SD Pre-pr.	SD Prim.
Scale	PP=25 P=31	74.80	69.71	29.20	34.90	PP=20 P=30	102.80	105.00	17.10	13.04
D1	PP=25 P=31	33.20	31.26	13.22	15.70	PP=20 P=30	44.70	46.83	7.94	5.48
D2	PP=25 P=31	28.20	26.16	12.68	13.31	PP=20 P=30	39.90	39.83	7.03	6.04
D3	PP=25 P=31	7.40	6.90	3.04	3.65	PP=20 P=30	9.60	9.80	1.50	1.52
D4	PP=25 P=31	6.00	5.39	2.78	2.91	PP=20 P=30	8.60	8.53	1.70	1.89

It is noteworthy that all the means of the pre-primary education group are higher in the pretest and have a smaller standard deviation in the scores. However, in the posttest, the primary education group increases its means and outperforms the pre-primary group on the global scale (the sum of the four dimensions) and Dimension 1 CLIL core elements and significantly reduces the standard deviation in all variables.

Differential studies on the competence to plan CLIL lessons

The result of comparing the means of the sample in the CIPMA before and after studying the CLIL course is shown in Table V.

TABLE V. Differences in the level of competence to plan CLIL lessons according to the IV Pretest-posttest by groups

Hypothesis	Pre-primary group					Primary group				
	Student t	Sig.	Mean diff.	Standard error	ES**	Student t	Sig.	Mean diff.	Standard error	ES**
H1 Scale	-3.79*	0.001	-28.00	7.379	-1.138	-5.20*	0.001	-35.29	6.790	-1.33
H1.1 D1	-3.42*	0.001	-11.50	3.360	-1.027	-5.14*	0.001	-15.58	3.032	-1.32

H1.2 D2	-3.69*	0.001	-11.70	3.168	-1.108	-5.14*	0.001	-13.67	2.662	-1.32
H1.3 D3	-2.96*	0.005	-2.20	0.744	-0.887	-4.03*	0.001	-2.90	0.719	-1.03
H1.4 D4	-3.66*	0.001	-2.60	0.710	-1.099	-5.00*	0.001	-3.15	0.630	-1.28

 * Levene's test is significant ($p < 0.05$), equal variances is not assumed
** Values to interpret the effect size (ES) (Cohen, 1988): $d \geq 0.20$ small; $d \geq 0.50$ median; $d \geq 0.80$ large

The result of this analysis shows that the CLIL course improves both the global competence to plan CLIL lessons, as well as the competence in each of its dimensions, in the sample of pre-primary and primary education students. A large magnitude of the ES is appreciated in all the differences, greater than 0.80 for this statistic.

The result of the differential analyzes of the IV Educational stage are shown in Table VI.

TABLE VI. Significance of differences in the level of competence to plan CLIL lessons according to the IV Educational stage (Pre-primary/Primary), pre-posttest

Hypotheses DV	Levene (homog. of var.)	Pretest PP Mean	Pretest P Mean	Sig. of t	Levene (homog. of var.)	Posttest PP Mean	Posttest P Mean	Sig. of t
H2 Scale	Yes	74.80	69.71	0.562	No	102.80	105.00	0.628
H2.1 D1	Yes	33.20	31.26	0.624	No	44.70	46.83	0.303
H2.2 D2	Yes	28.20	26.16	0.563	Yes	39.90	39.83	0.972
H2.3 D3	Yes	7.40	6.90	0.588	Yes	9.60	9.80	0.649
H2.4 D4	Yes	6.00	5.39	0.428	Yes	8.60	8.53	0.899

These results show that there are no statistically significant differences in the competence to plan CLIL lessons between the pre-primary and primary groups, neither before nor after studying the CLIL subject.

The results of the analyses to contrast the secondary hypotheses of the study are summarized below (Table VII).

TABLE VII. Significance of the differences in the level of competence to plan CLIL lessons according to the secondary IV

Hypothesis/ Variable	Test	Sig. Scale	Sig. D1	Sig. D2	Sig. D3	Sig. D4
H3 IV English level	One way ANOVA	0.094	0.032*	0.360	0.503	0.093
H4 IV Perceived academic achievement	One way ANOVA	0.139	0.070	0.248	0.498	0.355
H5 IV Perceived CLIL training level	One way ANOVA	0.081	0.089	0.197	0.047*	0.166
H6 IV Interest in further training	One way ANOVA	0.740	0.588	0.826	0.633	0.655
H7 IV Interest in being a CLIL teacher	One way ANOVA	0.181	0.372	0.055	0.573	0.762
H8 IV Type of school placement	*Student t*	0.102	0.514	0.038*	0.001*	0.348

* Mean difference is significant at 0.05 level

The table shows statistically significant differences in D1 CLIL core elements in H3 that studies the effect of the IV English level with a value of $\eta^2=0.14$. This result indicates a large magnitude for this statistic (F). The *post hoc* tests show that the differences are between English levels B2 and C1, in favor of level C1 with a value of p=0.06 (Tukey). The significant differences in D3 Resources (H5), which measures the differences in the perceived level of CLIL training, have a value of $\eta^2=0.12$. This SE result is also large according to Cohen (1988). These differences are between the groups that perceive "quite a lot" and "sufficient" CLIL training, in favor of the "quite a lot" group, with a value of p=0.04 (Tukey). Finally, the statistically significant differences in dimensions 2 Methodology and 3 Resources found in H8, which reflects the influence of the IV Type of school placement (bilingual/non-bilingual), are in favor of students who have done the internships in a bilingual school. Cohen's *d* values of 0.79 and 1.24 respectively (D2 and D3) are equal or exceed the threshold of 0.80 indicating large magnitudes of the ES.

Results of qualitative content analysis of CLIL lesson plannings

Graph II allows to compare the word clouds generated from the areas and contents selected by the pre-primary education group and the primary education group in their lesson plannings, respectively.

GRAPH II. Word frequency clouds for the code "Areas of Pre-primary Education" (above) and "Areas of Primary Education" (below), with the criteria: all words, with derived words, minimum length three characters

Source: compiled by author

In the cloud of pre-primary students, the occurrence of terms related to the areas of "Knowledge of the environment" and "Knowledge of oneself and personal autonomy" in the foreground is notable. In the background, the presence of the area of "Languages" can also be seen in the references "Body language" and "Musical language". Likewise, in the cloud resulting from the primary lesson plannings in this code, the areas of "Natural Sciences", "Social Sciences" and "Artistic Education" stand out in the foreground. At this stage, in the background, the division of the "Artistic education" area into "Arts & Crafts" and "Music" can be seen equally highlighted together with the subject "Religion", which is part of the curriculum of both degrees. The third level of occurrence clearly shows a preference in both stages for programming content from the area of "Natural Sciences", called "Knowledge of the environment" in the pre-primary education curriculum.

With regard to the preferred textual genres in the CLIL lesson plannings analyzed, Graph III shows the comparison between the 25 lesson plannings designed by pre-primary students and the 34 by primary students with a total of 29 and 46 references, respectively.

GRAPH III. Textual genres chosen for the CLIL lesson plannings by pre-primary (top) and primary (bottom) students

Source: compiled by author

In this case, there is discrepancy between both groups. In pre-primary, genres that allow working the language from simple units such as adjectives and names, in the descriptions, or verbs in the imperative mode in instructions, are preferred. On the other hand, the CLIL lesson plannings of the primary group show a preference for presentations that imply the handling of textual genres simultaneously such as explanations and descriptions at the same time. In the third and fourth plane of the analysis, the richness and variety of genres worked on in the primary lesson plannings with respect to those of pre-primary is evident, with examples such as debate, recount, report, discussion, letter, script and questions.

Finally, the frequency analysis of the learning standards designed, which are organized in lower and higher order cognitive skills, shows the cognitive demand of the CLIL lesson plannings of each stage. Table VIII summarizes the percentages by category in the lesson plannings of the pre-primary stage.

TABLE VIII. Frequency analysis of learning standards in the pre-primary CLIL lesson plannings by cognitive categories

Lower order cognitive skill	Counting	Weighted percentage	Higher order cognitive skill	Counting	Weighted percentage
Classify	17	19.10	Create	19	46.34
Identify	15	16.85	Asses	7	17.07
Name	11	12.36	Compare	3	7.32
Compare	9	10.11	Appraise	2	4.88
List	7	7.87	Formulate	2	4.88
Recognize/se	6	6.74	Hypothesize	2	4.88
Describe	4	4.49	Adapt	1	2.44
Label	3	3.37	Articulate	1	2.44
Relate	2	2.25	Defend	1	2.44
Remember	2	2.22	Design	1	2.44
Understand	2	2.22	Distinguish	1	2.44
Use	2	2.22	Reflect	1	2.44
Act	1	1.12			
Apply	1	1.12			

Connect	1	1.12			
Create	1	1.12			
Distinguish	1	1.12			
Explain	1	1.12			
Locate	1	1.12			
Model	1	1.12			
Roleplay	1	1.12			

Table IX shows the same results corresponding to the CLIL lesson plannings designed by the primary group.

TABLE IX. Frequency analysis of learning standards in the primary CLIL lesson plannings by cognitive categories

Lower order cognitive skill	Counting	Weighted percentage	Higher order cognitive skill	Counting	Weighted percentage
Identify	18	15.25	Asses	11	16.18
Recognise/ze	14	11.86	Compare	7	10.29
Classify	12	10.17	Design	6	8.82
Create	9	7.63	Examine	5	7.35
List	9	7.63	Reflect	5	7.35
Locate	6	5.08	Analyse/ze	5	7.35
Name	6	5.08	Create	4	5.88
Remember	6	5.08	Select	4	5.88
Describe	4	3.39	Appraise	3	4.41
Explain	4	3.39	Formulate	3	4.41
Match	4	3.39	Classify	2	2.94
Compare	3	2.54	Hypothesize	2	2.94
Organize	3	2.54	Test	2	2.94
Relate	3	2.54	Choose	1	1.47
Associate	2	1.69	Decide	1	1.47
Define	2	1.69	Defend	1	1.47
Understand	2	1.69	Differentiate	1	1.47
Use	2	1.69	Discuss	1	1.47
Apply	1	0.85	Distinguish	1	1.47

Design	1	0.85	Experiment	1	1.47
Extract	1	0.85	Judge	1	1.47
Infer	1	0.85	Value	1	1.47
Interpret	1	0.85			
Label	1	0.85			
Model	1	0.85			
Plan	1	0.85			
Point	1	0.85			

Once again, there is greater diversity in the learning standards designed by the primary students, although it is clear that in both stages the lesson plannings are designed following a cognitive progression from low order thinking skills, the majority in both stages, particularly in pre-primary, to high order thinking skills.

Discussion and conclusions

The results of testing the hypotheses in the first axis on CLIL lesson planning reveal that both primary and pre-primary students improve their skills in this competence once the CLIL course is completed (H1). In addition, there are no significant differences between the two groups neither before nor after having completed the CLIL course (H2). This result supports the ability of teachers to implement the curricula under the CLIL approach, thus overcoming the difficulties pointed out by Guillén Díaz and Sanz Trigueros (2019), and satisfies the claim of Delicado and Pavón (2015), Palacios et al. (2018) and Estrada (2021) to balance linguistic and methodological training for the bilingual teaching of future teachers. It also satisfies the demand contemplated in the list of quality factors for bilingual education at university drawn up by Madrid and Julius (2017), who point out that training in L2 and didactic preparation in CLIL are two of the most valued aspects by teachers and students. Likewise, this result supports the studies by Palacios et al. (2018) and Torres Zúñiga and Carrasco Flores (2020) who highlight the need for guidelines from the administration and the institutions themselves to urge all higher education centers to offer bilingual education in the education degrees. This offer can stop the proliferation of specialized postgraduate studies

in bilingual education and CLIL (Palacios et al., 2018; López-Hernández, 2021) and compensate for the lack of access to this training by all potential CLIL teachers, because, As López-Hernández (2021) points out, this indeterminacy opens a gap in the initial training of teachers between public and private universities.

With regard to the hypotheses of the second axis on communicative competence in English and CLIL (H3-H5), the fact that the level of English (H3) generates significant differences in dimension 1 on the fundamental principles of the approach emphasizes the importance of the integration of content and language both in the training of CLIL teachers and in their competence to plan lessons under this approach, as pointed out by Beacco et al. (2015) and Morton (2016). Studies such as the one by Pérez-Cañado (2016), about in-service CLIL teachers, also point to this direct relationship between teacher's level of competence in the CLIL foreign language and their knowledge of the methodological principles of the approach. This result in H3 and the differences found in dimension 3 Resources, in the IV Perceived level of training in CLIL (H5), are in line with the demand of various authors to improve academic plans and attend not only to the improvement in the linguistic competence of the students, but jointly also to the improvement of their competence in the methodology of bilingual education (Delicado & Pavón, 2015; Estrada, 2021; Morton, 2016; Palacios et al., 2018).

On the other hand, the motivation factor of students towards CLIL, axis 3 (H6-H7), has not generated statistically significant differences in the competence to plan CLIL. Only the students who do their internships in bilingual schools (H8) significantly improve their competence in the dimensions of methodology and resources. This highlights the interest of linking academic learning with what really happens in the bilingual classroom, as a source of training in the bilingual classroom methodology described by Bolarín Martínez et al. (2019). In this sense, proposals such as that of Pérez Murillo and Steele (2017), which promote a collaboration model between the classrooms of bilingual schools and university classrooms of future teachers, would allow all potential CLIL teachers to learn about the reality of these bilingual schools from their in-service teachers, regardless of the type of school placement in which they do their internship.

The results of the qualitative content analysis of the CLIL lesson plannings of both groups show an adequate integration of the

methodological principles of the approach, thereby endorsing the results of H2. From the point of view of the selection of curricular areas, both groups tend to select content from the areas of science, which is in line with the guidelines of the curricular regulations that suggest them as the more convenient areas for the teaching of CLIL due to their load in the timetable (Community of Madrid, 2020). Likewise, both groups show adequate competence when designing learning standards following a progression of cognitive demand from the lower to the higher order skills. However, the differences in the selection of textual genres between both groups are due to the limitations in the language of pre-primary students (basically receptive skills) and the need to link these genres to specific adequate tasks for this stage, as suggested by Piccardo et al. (2019). This shows that the CLIL course provides students with the necessary strategies to adapt the methodological principles of the approach to the idiosyncrasies of their respective stages.

Despite the limitations pointed out in this case study, it can be concluded that initial CLIL training such as the one described in this paper favors the development of some of the most important competencies described in CLIL teacher training frameworks (Marsh et al., 2010; Bertaux et al., 2010; Pavón & Ellison, 2013; Madrid & Madrid, 2014; Pérez-Cañado, 2015): the competencies to design teaching materials and lesson plannings based on the contents of the official curriculum in a foreign language (Objective 1). As claimed by Torres Zúñiga and Carrasco Flores (2020), the students of both groups have shown that they are able to design CLIL lesson plannings to promote the development of multilingual and multicultural skills through the integration of final tasks linked to textual genres adequate to the curricular areas (Objective 2). In addition, the lesson plannings of both groups follow an adequate cognitive progression. All this favors a language learning model such as the one promoted in the CEFR (Council of Europe, 2001; 2020) and guarantees that all potential CLIL teachers, regardless of the educational stage, have a certain degree of competence in the CLIL approach (Objectives 3 and 4).

As a prospective of this study, it is proposed to analyze the competence to plan CLIL in Education degrees with and without the specialization in English and/or specific CLIL subjects in order to confirm these results. It is also possible to go deeper in the analysis of students' CLIL lesson plannings so as to gain an in-depth understanding of the treatment of text types and improve their reliability by including at least one more

researcher in the qualitative analysis. Other alternatives to improve the training of CLIL teachers, such as the one proposed by Banegas and del Pozo Beamud (2020), suggest "encouraging CLIL teacher educators to investigate their practices in different settings through (auto)ethnography to present detailed descriptions and honest accounts of the challenges, successes and failures in CLIL research" (p. 11). This critical view of teacher training is key to improving the academic programs that are at the basis for developing the key competences of the future CLIL teacher.

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APPENDICES

Questionnaire to measure the integration of CLIL methodological principles (Custodio-Espinar & García Ramos, 2020, pp. 15-16)

DIMENSION 1 CLIL CORE ELEMENTS						
SUBDIMENSION 1.1 The language of CLIL						
1. Do you regularly program activities to reinforce the grammatical structures required by the contents?	*1	2	3	4	5	6
2. Do you include English language assessment activities in your CLIL lessons?	1	2	3	4	5	6
3. Do you usually give your students oral and written comprehension activities of the texts in that order?	1	2	3	4	5	6
4. To what extent do you develop strategies for learning content-related vocabulary?	1	2	3	4	5	6
5. Do you develop resources to support the linguistic demands of the content you teach?	1	2	3	4	5	6
SUBDIMENSION 1.2 Integration of the 4Cs						
6. Do you analyze the level of cognitive difficulty of the activities to adapt it, if necessary, to the level of competence of your students?	1	2	3	4	5	6
7. Do you adapt the oral and written texts to the level of linguistic knowledge of your students?	1	2	3	4	5	6
8. To what degree are your activities related to the curricular contents of the level / area you teach?	1	2	3	4	5	6
9. Do you use scaffolding strategies to encourage and guide interaction in the classroom?	1	2	3	4	5	6
10. Do you think that your activities are motivating and relevant for your students and allow them to create a final result that they can show and / or share?	1	2	3	4	5	6
DIMENSION 2 METHODOLOGY						
SUBDIMENSION 2.1 Attention to diversity						
11. Do you indicate in any way the relationship between activities and skills that students develop in your programming?	1	2	3	4	5	6
12. Do you carry out specific activities to know the learning styles of your students?	1	2	3	4	5	6

13.	Do you use any cognitive taxonomy to define the learning standards that you use to evaluate the learning goals of your lesson plans?	1	2	3	4	5	6
14.	Do you usually program different activities on the same content to adapt to the different levels of competence of your students?	1	2	3	4	5	6
SUBDIMENSION 2.2 Methodological strategies							
15.	To what degree do you include group or pair work strategies?	1	2	3	4	5	6
16.	To what extent do your lesson plans include problem-solving strategies, discovery / project learning, etc.?	1	2	3	4	5	6
17.	Do you include activities for self-assessment and co-assessment of students for the evaluation of the curricular contents?	1	2	3	4	5	6
18.	In addition to exams and tests, do you regularly use assessment tools such as observation sheets, checklists, rubrics or similar to assess your students?	1	2	3	4	5	6
19.	Do you provide strategies to clarify and help students reach conclusions on their own?	1	2	3	4	5	6
DIMENSION 3 RESOURCE							
20.	Do you include didactic materials that reproduce or are resources from real life when carrying out tasks?	1	2	3	4	5	6
21.	Do you use ICT as a resource to promote interaction and autonomous learning?	1	2	3	4	5	6
DIMENSION 4 EVALUATION							
22.	To what extent do you simplify and / or reduce the content of the curricular areas when teaching it in English?	1	2	3	4	5	6
23.	To what degree do you combine formative assessment strategies (to provide feedback and help students) and summative assessment (to mark them)?	1	2	3	4	5	6
GENERAL CONSIDERATIONS							
24.	Do you think you plan your teaching?	1	2	3	4	5	6
25.	Do you think that good teaching planning influences student learning?	1	2	3	4	5	6
26.	Do you think that your knowledge of the CLIL principles allows you to carry out lesson plans appropriate to the requirements of the CLIL approach?	1	2	3	4	5	6

* 1 Never 2 Rarely 3 Sometimes 4 Frequently 5 Almost always 6 Always

Summary of CIPMA's psychometric data (Custodio-Espinar & García Ramos, 2020, pp. 5-10)

Expert validation

Kendal's coefficient of concordance among the 15 judges, with respect to the three measured variables (logical order, number of items and content validity), shows a degree of agreement close to 0.5. In the analysis of the "doctors" and "non-doctors" variable, the degree of agreement is greater among the non-doctors (five judges) than among the doctors (ten judges) with a w value of 0.47 and 0.6, respectively.

After this analysis, the variables have been organized into five dimensions, each with two subdimensions (Table V).

TABLE V. Revised structure of the questionnaire after validation by experts

Dimension	Subdimension	N of items
D1 CLIL core elements	Integration of the 4Cs Language treatment	5 4
D2 Methodology	Methodological strategies Attention to diversity	5 3
D3 Activities and resources	Activities Resources	3 3
D4 Evaluation	Language and content evaluation Learning process evaluation	2 2
D5 Organization	Timetable Space	2 2
Total number of item-variables		31
Total number of demographic variables		14
Total number of criterion items		3
Total number of items		48

Factor validity

Four factor analyzes were performed, using a combination of Principal Components and Maximum Likelihood methods and Varimax and Oblimin rotation models. The fourth Factor Analysis of Principal Components and Oblimin rotation of the matrix of 27 original variable-items (once the items of dimension 5 were eliminated due to reliability problems, most likely due to the fact that this dimension measures aspects of the organization of schedules and classrooms that do not depend on the teacher) was the most adjusted in its structure (Table VI).

TABLE VI. Factor matrix of 27 variables rotated by direct Oblimin criterion. Kaiser normalization

Variables	Factors					
	I	2	3	4	5	6
D2/28. Relationship between activities and skills in programming	0.724					
D2/30. Activities to learn about learning styles	0.720					
D2/29. Use of a cognitive taxonomy to define evaluation criteria	0.709					
D2/31. Activities to suit different levels of proficiency	0.579					
D1/23. Reinforcement of grammatical structures of the content		-0.791				
D4/38. English language assessment activities in programming		-0.711				
D1/21. Oral and written comprehension activities		-0.671				
D1/22. Content vocabulary development		-0.501				
D3/35. Preparation of resources to support language development		-0.434				
D1/17. Analysis of cognitive demands			0.662			
D1/20. Adaptation of oral and written texts			0.596			
D3/32. Relationship between activities and curricular objectives			0.526			

D1/18. Strategies to foster interaction			0.516			
D3/33. Motivating activities, relevant to the final product			0.436			
D1/16. Simplification/reduction of content				0.701		
D4/40. Formative and summative assessment strategies				0.436		
D2/25. Group/pair work strategies					0.789	
D2/26. Development of learning by discovery					0.690	
D4/39. Programming of self-assessment and co-assessment activities					0.490	
D4/41. Use of formative assessment tools					0.489	
D2/27. Support them to come to conclusions on their own					0.480	
D3/37. Use of ICT as a resource for interaction and autonomous learning						0.793
D3/36. Use of real life resources						0.594

This fourth exploratory factor analysis presents a distribution of factor loads that adequately reflects the four main dimensions of the original questionnaire (Table VII).

TABLE VII. Latent structure of the 27 variables after the fourth factor analysis

Factor	Items	N of variables*
1. Methodology: Attention to diversity	28, 30, 29, 31	4
2. CLIL elements: Language treatment	23, 38, 21, 22, 35	5
3. CLIL elements: Integration of 4Cs	17, 20, 32, 18, 33	5
4. Evaluation	16, 40	2
5. Methodology: Methodological strategies	25, 26, 39, 41, 27	5
6. Resources	37, 36	2

* The excluded items showed non-significant loadings (15, 19, 24, 34).

Table VIII shows the revised structure of the questionnaire after the fourth Factor Analysis.

TABLE VIII. CIPMA dimensions y subdimensions.

Dimension	Subdimension	Items	N of items
D1 CLIL core elements	Language treatment	23, 38, 21, 22, 35	5
	Integration of 4Cs	17, 20, 32, 18, 33	5
D2 Methodology	Attention to diversity	28, 30, 29, 31	4
	Methodological strategies	25, 26, 39, 41, 27	5
D3 Resources	~~Materials and ICT resources~~	36, 37	2
D4 Evaluation	~~Content Assessment Evaluation Strategies~~	16, 40	2
Total number of item-variables			23
Total number of demographic variables			16
Total number of criterion items			3
Total number of items			42

Reliability analysis

Cronbach's α coefficient was used to determine the reliability as internal consistency of the questionnaire with the complete sample of 383 teachers. The reliability analysis of the latent structure, made up of 23 items distributed in six factors, which has resulted from the fourth Factor Analysis, shows a high and satisfactory degree of reliability of the total scale, with an α value equal to 0.86.

Criterial validity

The results are shown in Table IX (Pearson-type correlations).

TABLE IX. Convergent criterial validity of the six factors and the total sum of factors

Factor	Corr. CI1	Corr. CI2	Corr. CI3
1. Metodología: Atención a la diversidad	0.366**	0.133**	0.456**
2. Elementos AICLE: Tratamiento del lenguaje	0.235**	0.069	0.428**
3. Elementos AICLE: Integración de las 4 Ces	0.374**	0.142**	0.345**
4. Evaluación	0.224**	0.122*	0.206**
5. Metodología: Estrategias metodológicas	0.349**	0.096	0.414**
6. Recursos	0.320**	0.104*	0.293**
Suma de los seis factores	0.458**	0.156**	0.557**

*$p < 0.05$ y ** $p < 0.01$

The results show that there is a statistically significant linear correlation between the total score of the sum of the six factors and the three criterion-items, the correlations are higher with criterion-items 1 and 3. By factors, the correlations are also significant with criteria items 1 and 3, in all cases. With item-criterion 2, factors 2 and 5 do not show significant values.

CLIL lesson plan template (Custodio-Espinar, 2019b, pp. 493-495)

LESSON PLAN: title
CONTENT AREA: **Level:** **Timing:** **Description (aim):** **Final product:**

CONTENT	
Content (subject content from the official curriculum). Include language content too! • CONTENT (curricular content) • LANGUAGE CONTENT (genre)	**Contribution to key competences** Learning strategies

COGNITION	
Learning goals 1. Declarative knowledge 2. Procedural knowledge 3. Metacognition 4. Language	**Learning outcomes or standards** (cognitive skills that are put into practice from least to greatest demand)

CULTURE	
Learning goals (idem)	**Learning outcomes (standards)** (idem)

COMMUNICATION Coyle, Hood and Marsh (2010)		
Language of learning	**Language for learning**	**Language through learning**
CONTENT-OBLIGATORY LANGUAGE **Key language:** (language specific to content)	CONTENT-COMPATIBLE LANGUAGE Speech acts related to content	New areas of meaning connected to the knowledge
Language content (the genre): e.g., genre/recount = time connectors 'when, later, after...' or time expressions to recount 'used to'.	The language necessary to develop the activities you are planning to learn the content	
Academic language: (linkers)	Classroom language	

PROCEDURE		
Timing	**Activities (T/ S role)**	**Grouping/ spaces**
SESSIONS/Time planned for each activity, in minutes RECEPTION (INPUT) TRANSFORMATION (INPUT) PRODUCTION SCAFFOLDING (OUTPUT)	What the teacher (T), language assistant (LA) and students (Ss) are expected to do.	How you expect Ss to interact? What are the criteria for choosing groups? Examples: Whole class, pairs, groups of 3, etc.

Materials: (Materials that will be used by teacher and students, including SCAFFOLDING, ICT tools, arts materials, dictionaries, etc., e.g., worksheets, links to videos, audios or websites, printout of MS Ppt slides, sample posters or visual aids, etc.)
- ■
- ■

Evaluation criteria (from the official curriculum)
• To...

Assessment tools: (Assessment tools that will be used to assess students. Include formative and summative assessment tools to be used by the teacher, the students and/or both).

• **Of language:** (for interaction, for self/peer-assessment, ...)

• **Of content:** (rubric, checklist, tests, ...)

Others: a checklist for active observation/teacher's self-evaluation, etc.

ATTENTION TO DIVERSITY
(Use a taxonomy to plan some of the activities at lower and higher order cognitive level)

LOTS

HOTS

Evaluation criteria of the CLIL lesson plan task (Custodio-Espinar, 2018)

STUDENT			
TASK	**A CLIL LESSON PLAN**		
ASSESSMENT	Criteria	MAXIMUM SCORE	STUDENT SCORE
CONTENT	The student knows how to integrate content and language in a CLIL lesson. • Content (form the curriculum) • Cognition (cognitive demand) • Communication (language demands analysis including language content) • Culture	3 points	
	The student is able to plan and develop an integrated assessment strategy including formative assessment tools (checklists and rubrics). • Connection with learning goals and outcomes (cognitive demand) • Formative/Summative assessment tools	3 points	
PROCESS	The student is able to illustrate understanding of the CLIL approach through the analysis of different resources and materials to teach curricular content in different subjects to primary students. • Activities • Scaffolding • ICT resources	3 points	
	The student is able to develop team teaching awareness and competence to improve the teaching/learning process in the bilingual classroom. (FROM TEAM TEACHING RUBRIC)	1 point	
LANGUAGE	-0.05 points /grammar or spelling mistake -0.10 points/sense mistake	- 0,0	
FINAL MARK		10 points	
COMMENTS: Group work planning: Individual planning:			

Sexual orientation, self-esteem, and academic achievement during adolescence[1]

Orientación sexual, autoestima y rendimiento académico en la adolescencia

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Abstract

Despite the social changes of recent years, the evidence shows that belonging to a sexual orientation minority group is associated with inequality, discrimination and a stigma that places individuals in a situation of vulnerability. This psychosocial vulnerability can have a particularly negative impact on adolescents. Specifically, scientific evidence has shown a clear relationship between non-heterosexual orientation and the presence of mental health issues. In association with this, some studies have also shown the impact of sexual minority status on academic performance. However, research in this area is still lacking, especially with regard to adolescence, when academic development is crucial. The aim of the present study was to examine, in a representative sample of adolescents, whether belonging to a minority sexual orientation group (homosexual, bisexual, or questioning) was associated with poorer academic achievement. In addition, due to the importance of self-esteem in academic achievement, we analyzed whether an adequate level of self-esteem might moderate the relationship between the two variables. The study was conducted with a sample of 1,777 adolescents (M=15.70 years; SD=1.26) selected by stratified random cluster sampling. Sexual orientation was assessed as one's experience of attraction toward others. Grade point average from the previous school year and the number of failed subjects in the previous grading period were used as indicators of academic achievement. The results showed no significant main effect of sexual orientation or its interaction with self-esteem on these indicators of academic achievement. These results disagree with those obtained in earlier studies and indicate that belonging to sexual orientation minorities is not associated with academic difficulties.

Keywords: sexual orientation, academic achievement, self-esteem, adolescence, educational context

Resumen

A pesar de los cambios sociales producidos en los últimos años, la evidencia pone de manifiesto que la pertenencia a colectivos de minorías sexuales

se asocia a desigualdades, discriminaciones y a un estigma que ubica a las personas en situación de vulnerabilidad. Esta vulnerabilidad psicosocial puede tener un impacto especialmente negativo en la adolescencia. En concreto, la evidencia científica ha mostrado una clara relación entre la orientación sexual no heterosexual y la presencia de dificultades en el ámbito de la salud mental. Asociado a este hecho, algunos estudios han indicado también el impacto de la pertenencia a minorías sexuales sobre el rendimiento académico. Sin embargo, los estudios realizados hasta la fecha son escasos, especialmente en la etapa adolescente, donde el ámbito académico es crucial. El objetivo del presente estudio fue examinar, en una muestra representativa de adolescentes, si la pertenencia a un grupo minoritario de orientación sexual (homosexuales, bisexuales o *questioning*) estaba asociada con un peor rendimiento académico. Además, debido a la importancia de la autoestima sobre el rendimiento académico, se pretendía analizar si un adecuado nivel de autoestima podría moderar la relación entre ambas variables. El estudio se condujo con una muestra de 1.777 adolescentes (*M*=15,70 años; *SD*=1,26) seleccionados mediante un muestreo aleatorio estratificado por conglomerados. La orientación sexual fue evaluada por la atracción experimentada hacia otras personas. Como indicadores de rendimiento académico se usaron la nota media del curso anterior y el número de asignaturas suspensas en la evaluación anterior. Los resultados no mostraron un efecto principal significativo de la orientación sexual ni de su interacción con la autoestima sobre los indicadores de rendimiento académico utilizados. Los resultados contrastan con los obtenidos en estudios previos e indican que la pertenencia a minorías sexuales por orientación sexual no está asociado a dificultades a nivel académico.

Palabras clave: orientación sexual, rendimiento académico, autoestima, adolescencia, educación

Introduction

Adolescence is a key period for the development of identity; though tentative, the identity formed at this stage becomes the basis for later reformulations during the adult years (Topolewska & Cieciuch, 2017; Schwartz, 2007). Every adolescent establishes how they identify with a number of categories, notably the professional, religious, political, gender and sexual.

With regard to gender and sexuality, despite the legal and social advances that have been achieved, the evidence shows that belonging to

sexual minority groups is associated with inequalities and with a stigma that places individuals in a situation of vulnerability, where they must face multiple obstacles (Oswalt & Wyatt, 2011; Pachankis, & Bränström, 2018).

We must stress, however, that in referring to greater psychosocial vulnerability, there is no intention of ascribing a pathological nature to the LGTBIQ+ experience (lesbian, gay, transexual, bisexual, intersexual, queer). On the contrary, the intent is to highlight the impact of the existing social prejudice and discrimination toward this population, which can be especially impactful in the stage of adolescence (Espada et al., 2012; Rodríguez-Castro et al., 2013). Following Meyer's model (2003), it is the stress caused by an expectation of social rejection and discrimination that explains this greater vulnerability. Research indicates that youth who belong to sexual minorities are in fact confronted with psychological and physical aggression more often and more sharply (Garchitorena, 2009; Kosciw, 2009), in different contexts such as the family (Baiocco et al., 2015; Castillo, 2010), couple relationships (Edwards, 2015; Longobardi Badenes-Ribera, 2017) and education (Birkett et al., 2009; Garaigordobil & Larrain, 2020; Generelo & Pichardo, 2005; Patchin & Hinduja, 2017).

International research shows greater prevalence of depressive symptoms (Bostwick et al., 2014; Spittlehouse et al., 2020), anxiety (Bostwick et al., 2014; Hatzenbuehler et al., 2009), and suicidal behavior (Bostwick et al., 2014; Duncan & Hatzenbuehler, 2014; Hatzenbuehler et al., 2014; Plöderl et al., 2010; Raifman et al., 2020; Salway et al., 2019) in adolescents belonging to sexual minorities.

The impact that discrimination has on sexual minorities also extends to the educational sphere, and requires in-depth analysis (Poteat et al., 2014). Students who belong to groups that suffer discrimination may respond by not getting involved in a context that stigmatizes them, and this can have consequences for their educational process. Following the Johnson et al. (2001) explanatory hypothesis on the educational difficulties of ethnic minority students, Pearson et al. (2007) propose that an undeveloped sense of belonging or the expectation of rejection leads students in sexual orientation minorities to lose motivation for learning, and they may engage in different risk behaviors such as not paying attention in class, not doing homework, or even skipping class altogether.

In line with this hypothesis, certain studies have suggested that sexual minority status may be associated with academic difficulties. In a

university population, Rankin (2003) and Rankin et al. (2010) underscored that female and male non-heterosexual students had low participation in academic activities and events, and stressful experiences may have had a inhibiting role in their academic potential. Oswalt and Wyatt (2011) and Klein and Dudley (2014) observed that students belonging to sexual orientation minorities indicated a greater frequency of experiencing stressful life events and mental health problems. They also perceived that these problems had an academic impact more often than their heterosexual peers. The bisexual group reported a poorer situation than the other minority groups in both of these studies. Unfortunately, these studies did not evaluate academic achievement.

Studies that address this question in the adolescent population are few, but the existing studies tend to show that male and female adolescents belonging to sexual orientation minorities present poorer academic achievement than their heterosexual peers (Aragon et al, 2014; Birkett et al., 2014; Díaz et al., 2005; Pearson et al., 2007; Poteat et al., 2011; Rostosky et al., 2003; Russell et al., 2001) and greater presence of risk behaviors such as school absenteeism, negative attitudes toward education, lower expectations, and less participation in out-of-school activities to improve scholastic performance (Aragon et al., 2014; Birkett et al., 2014; Massachusetts Department of Education, 2020; Poteat et al., 2011; Robinson & Espelage, 2011; Russell et al., 2001).

Regarding academic achievement, several studies have observed statistically significant differences in self-reported grades when comparing heterosexual and non-heterosexual groups (Aragon et al., 2014; Birkett et al., 2014; Díaz et al, 2005; Poteat et al., 2011; Rostosky et al., 2003; Russell et al., 2001). Many of these studies did not analyze the achievement of the different sexual orientation groups (Aragon et al., 2014; Díaz et al., 2005; Poteat et al., 2011; Rostosky et al., 2003). Birkett et al. (2014) observed significantly lower grades in the homosexual and bisexual groups of both sexes, as compared to the heterosexuals, although the results did not indicate differences for the questioning group. Russell et al. (2001) indicated differences between the heterosexual and bisexual groups but did not find achievement to be significantly lower in the homosexual group.

Pearson et al. (2007) observed indicators of poorer academic achievement between adolescents (significantly lower grade point average, higher likelihood of repeating a school year, and a lower number and

range of additional preparatory courses for university). For the girls, the differences disappeared when controlling for background, namely, when taking into account ethnic characteristics, family characteristics (parents' educational level and family structure), and cognitive capacity; only the non-heterosexual males showed indicators of poorer achievement. This study did not differentiate between subgroups of sexual minorities.

As one can observe, the research in this area associates affective-sexual diversity with lower academic achievement. But it is essential to also consider the factors that contribute to resilience in these groups (Poteat et al., 2014) and allow for healthful development despite stigma, discrimination, victimization, and other health risks that are observed in these groups (Kosciw et al., 2015; Poteat et al., 2014, 2021; Saewyc, 2011). In fact, the evidence shows that many sexual minority youths show a great capacity for countering the effects of stigma and rejection (Fernández-Rodríguez & Calle, 2013; Savin-Williams, 2005).

It is therefore worthwhile to ask what factors are associated with resilience. Authors like Perpiñà et al. (2022) show the importance of students' social-emotional competencies in their attainment of optimal academic and personal potential. From our viewpoint, this is an especially relevant concern in vulnerable students. According to Herrman et al. (2011), personal factors include aspects such as self-esteem, intellectual functioning, cognitive flexibility, and emotional regulation. In this regard, Espada et al. (2012) concur in pointing out that adequate self-esteem can be a moderating variable in many effects that stem from a situation of vulnerability. Self-esteem has been noted as an important indicator in understanding student behavior (Gutiérrez & Goncalves, 2013), and has been positively associated with academic achievement (Cid-Sillereo et al., 2020). It would then be interesting to analyze the possible moderating role of self-esteem between sexual minority status and academic achievement.

In conclusion, there are few studies that analyze the hypothesis that male and female adolescents belonging to sexual minorities present poorer academic achievement. Moreover, most available studies did not differentiate sexual minority subgroups (i.e., homosexuals, bisexuals) and did not include the "questioning" students (unsure of their sexual attraction). Finally, it is important to also analyze possible gender differences, given that some studies have shown differences in this regard (Molborn & Everett, 2015).

In the foregoing research context, the aim of the present study was to examine whether there was a relationship between sexual orientation and academic achievement in a representative sample of adolescents. In addition, we analyzed whether sexual orientation and academic achievement might be moderated by self-esteem in male and female youths. Finally, possible gender differences were analyzed, given that previous studies have pointed in this direction.

Taking into account the prior evidence, the initial study hypothesis is that belonging to sexual orientation minority groups will be associated with poorer academic achievement. It is also expected that self-esteem will prove to be a moderating factor in this relationship, acting as a protective factor.

Method

Sample

The sample was obtained by stratified random cluster sampling from a population of approximately 15,000 students. A total of 1,972 students from 98 classrooms at 30 schools in the autonomous region of La Rioja were involved in the study. Participants belonged to public (45.2%) and charter schools (54.8%). The schools offered secondary education and vocational training in areas with different socioeconomic levels. The variables used to stratify were geographic area and educational level.

Participants with more than two points (n=146) on the Oviedo Response Infrequency Scale-Revised (Fonseca-Pedrero et al., 2019) and those age 19 and older (n=36) were eliminated. Of the 1,790 students, 816 were boys (45.6%), 961 were girls (53.7%). Thirteen participants presented sex-gender diversity (0.7%) and could not be included in the analyses due to limited sample size, leaving the final sample at a total of 1,777 participants.

The mean age was 15.70 years (SD = 1.26) and ages ranged from 14 to 18 years. Age distribution of the participants was: 14 years (n=338; 19.1%), 15 years (n=534; 30.1%), 16 years (n=409; 23.1%), 17 years (n=297; 16.7%), and 18 years (n=196; 11.0%). Distribution by sexual orientation (attraction) was: heterosexual (n=1640; 92.3%), homosexual (n=46; 2.6%), bisexual (n=49; 2.8%), and questioning or unsure (n=42; 2.5%).

Instruments

Sexual orientation scale

A modified version of the Kinsey scale (Kinsey et al., 1948) was used to examine sexual orientation. This scale is a widely used index that designates a sexual continuum from attraction to the opposite sex to exclusively same-sex attraction, with degrees of non-exclusivity between these two poles. Participants were presented with the phrase "Normally, you feel physical and romantic attraction for ...", and asked to complete it with one of the following options: *1) boys, always; 2) most often boys, and sometimes girls; 3) boys and girls, similarly; 4) most often girls, and sometimes boys; 5) girls, always; 6) not sure*. Although some researchers (e.g., Haslam, 1997; Savin-Williams, 2014) affirm that sexual orientation is best represented by a continuum, for methodological reasons (too many categories could have a limiting effect on sample size in each category), for our analyses the sexual orientation variable was defined along four patterns of sexual attraction: heterosexual (options 1 and 2 for girls, 4 and 5 for boys), homosexual (1 and 2 for boys, 4 and 5 for girls), bisexual (option 3 for both genders) and questioning (6 in both genders).

Rosenberg self-esteem scale (Rosenberg, 1965)

Contains 10 items on a four-point Likert scale (1 = *strongly disagree*; 4 = *strongly agree*). The Spanish version of the scale (Oliva et al., 2011) has shown adequate psychometric properties (Vázquez et al., 2004) and was used in the present study. McDonald's ω for the total score was 0.89 in this study.

Academic achievement

Students' academic achievement was measured using two self-reported indicators. First, as in several previous studies in this area of research, participants were asked to report their grade point average from the previous school year (e.g., Aragon et al, 2014; Birkett et al., 2014; Poteat et al., 2011). Second, given that some authors (e.g., Pearson et al., 2007) analyze indicators of poor performance (i.e., grade repetition or failures), participants were asked to report their number of failed subjects in the previous grading period.

Oviedo Response Infrequency Scale-Revised (INF-OV-R) (Fonseca-Pedrero et al., 2009; Fonseca-Pedrero et al., 2019).

The scale was administered to participants to detect random, pseudorandom, or dishonest respondents. The INF-OV-R instrument is a self-report composed of 10 items on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Students with two or more incorrect responses on the INF-OV-R scale were eliminated from the sample.

Procedure

The research was approved by the General Directorate of Education of La Rioja region, and the Clinical Research Ethics Committee of La Rioja (CEICLAR). The school administration team at each randomly selected school received a visit where the research project was explained. The instrument administration process was standardized by means of a protocol for all the research staff. The questionnaires were administered collectively during school hours, by computer, during a 50-minute session, in a classroom specially prepared for this purpose. Informed consent was requested from the families for participants under 18 years of age, and the confidentiality and voluntary nature of the study were guaranteed.

Data analyses

First, descriptive statistics were calculated for academic achievement indicators according to the subgroups of sexual orientation, gender and level of self-esteem.

Second, a Multivariate Analysis of Variance (MANOVA) was carried out to determine the impact of participants' sexual orientation, gender and self-esteem on their academic achievement indicators. Wilks's Lambda value (Wilks λ) was used to observe whether there were significant main effects and interactions between the variables of sexual orientation, gender and self-esteem. The partial eta squared statistic (*partial* η^2: small =.01; medium=.06; large=.14) was used as an index of effect size. Next, ANOVAs were conducted to analyze the individual effects on the two

academic performance indicators. All analyses were conducted using SPSS software (version 26).

Results

First, descriptive statistics (means and standard deviations) were calculated for the academic achievement indicators (grade point and number of fails) as a function of participants' sexual orientation, gender and self-esteem (see Tables I and II).

TABLE I. Mean (Standard Deviation) of male and female participants' grade point average from the previous school year, as a function of sexual orientation, gender and (low-medium-high) level of self-esteem

	Gender (n)	Self-esteem			
		Low M (DT)	**Medium** M (DT)	**High** M (DT)	**Total** M (DT)
Heterosexual	Boys (*n*=776)	5,61 (1,21)	6,08 (1,12)	6,39 (1,47)	6,28 (1,42)
	Girls (*n*=864)	6,09 (1,37)	6,59 (1,30)	6,92 (1,66)	6,67 (1,55)
	Total (*n*=1640)	5,97 (1,35)	6,41 (1,26)	6,62 (1,58)	6,48 (1,50)
Homosexual	Boys (*n*=24)	6,17 (0,98)	6,50 (0,71)	7,21 (1,72)	6,86 (1,52)
	Girls (*n*=22)	5,80 (1,23)	6,13 (1,25)	7,83 (1,72)	6,42 (1,56)
	Total (*n*=46)	5,94 (1,12)	6,20 (1,14)	7,40 (1,70)	6,63 (1,54)
Bisexual	Boys (*n*=8)	5,00 (0)	5,33 (0,58)	6,00 (1,73)	5,50 (1,07)
	Girls (*n*=41)	6,13 (0,96)	5,83 (1,03)	6,00 (1,29)	6,00 (1,07)
	Total (*n*=49)	6,00 (0,97)	5,73 (0,96)	6,00 (1,32)	5,92 (1,08)
Questioning	Boys (n=10)	--	5,67 (1,53)	5,57 (1,27)	5,60 (1,26)
	Girls (*n*=32)	6,63 (1,77)	6,40 (0,89)	6,95 (1,61)	6,78 (1,54)
	Total (*n*=42)	6,63 (1,77)	6,13 (1,13)	6,58 (1,63)	6,50 (1,55)
Total	Boys (*n*=816)	5,64 (1,18)	6,06 (1,11)	6,39 (1,48)	6,28 (1,43)
	Girls (*n*=961)	6,10 (1,35)	6,54 (1,29)	6,91 (1,65)	6,63 (1,54)
	Total (*N*=1777)	5,99 (1,33)	6,37 (1,25)	6,62 (1,58)	6,47 (1,50)

TABLE II. Mean (Standard Deviation) of the number of subjects failed in the last grading period, according to participants' sexual orientation, gender and (low-medium-high) level of self-esteem

	Gender (n)	Self-esteem			
		Low M (DT)	Medium M (DT)	High M (DT)	Total M (DT)
Heterosexual	Boys (*n*=776)	2,66 (2,06)	2,18 (2,21)	1,66 (1,91)	1,81 (2.00)
	Girls (*n*=864)	2,01 (2,08)	1,40 (1,77)	1,21 (1,62)	1,42 (1,79)
	Total (*n*=1640)	2,17 (2,09)	1,67 (1,97)	1,46 (1,80)	1,61 (1,90)
Homosexual	Boys (*n*=24)	2,50 (2,43)	0 (0)	1,07 (2,06)	1,36 (2,15)
	Girls (*n*=22)	2,50 (1,65)	1,75 (2,12)	1,17 (1,17)	1,92 (1,74)
	Total (*n*=46)	2,50 (1,90)	1,40 (2,01)	1,10 (1,80)	1,65 (1,95)
Bisexual	Boys (*n*=8)	5,50 (2,12)	3,33 (3,51)	1,67 (2,89)	3,25 (3,01)
	Girls (*n*=41)	1,87 (2,06)	2,00 (2,76)	0,85 (1,68)	1,59 (2,19)
	Total (*n*=49)	2,28 (2,32)	2,27 (2,84)	1,00 (1,86)	1,86 (2,39)
Questioning	Boys (n=10)	--	1,33 (1,53)	2,43 (3,95)	2,10 (3,35)
	Girls (*n*=32)	1,00 (1,78)	1,00 (1,00)	0,84 (1,74)	0,91 (1,61)
	Total (*n*=42)	1,00 (1,77)	1,13 (1,13)	1,27 (2,54)	1,19 (2,17)
Total	Boys (*n*=816)	2,72 (2,11)	2,15 (2,22)	1,65 (1,95)	1,82 (2,03)
	Girls (*n*=961)	1,98 (2,05)	1,65 (1,95)	1,18 (1,62)	1,42 (1,80)
	Total (*N*=1777)	2,16 (2,09)	1,82 (2,03)	1,44 (1,82)	1,60 (1,92)

Second, to determine whether there were any statistically significant differences, a Multivariate Analysis of Variance (MANOVA) was conducted with academic achievement indicators as dependent variables and participants' sexual orientation, gender and self-esteem as fixed factors. The MANOVA revealed significant main effects for the gender variable [Wilks's λ= 0.99, $F_{(2, 1753)}$ =3.58; *p*<.05; *partial* η² =.004], and for self-esteem [Wilks's λ=0.99, $F_{(4, 3506)}$ =4.00; *p*<.05; *partial* η² =.003]. However, contrary to expectations, the main effect of sexual orientation was not significant [Wilks's λ=0.99, $F_{(6,3506)}$ = 1.35; *p*>.05; *partial* η² =.002].

No significant interaction was found between sexual orientation and gender, between sexual orientation and self-esteem, or in the three-fold interaction among these variables [Wilks's λ=0.99, $F_{(6.3506)}$ =1.35; *p*>.05; *partial* η²=.002], [Wilks's λ=0.99, $F_{(12.3506)}$ =0.96; *p*>.05; *partial* η² =0.003], and [Wilks's λ=0.99, $F_{(10.3506)}$ =0.55; *p*>05; *partial* η² =.002], respectively.

The individual ANOVAs yielded statistically significant gender differences for both grade point average [F (1,1754)=4.17, p<.05] and number of fails [F (1,1754)=6.02, p<.05]. Specifically, the gender results indicated that the girls scored significantly higher in grade point average from the previous school year and significantly lower in the number of fails from the last grading period.

The individual ANOVAs also yielded statistically significant differences according to level of self-esteem, both for grade point average [F (2,1754) =4.18, p<.05] and for number of fails [F (2,1754)=6.19, p<.05]. Bonferroni *post-hoc* analyses revealed statistically significant differences according to level of self-esteem. Regarding grade point average from the previous school year, participants with high self-esteem showed significantly higher achievement than participants with a medium level of self-esteem, who in turn exhibited significantly higher achievement than participants with a low level of self-esteem (p<.05). Regarding number of subjects failed, results from the post-hoc analysis revealed that participants with high and medium self-esteem showed a significantly lower number than those with low self-esteem.

Conclusions

The aim of the present study was to examine, in a representative sample of adolescents, whether sexual orientation and academic achievement were related, and whether this relationship was moderated by self-esteem.

Regarding the former, the obtained results show that belonging to a minority sexual orientation group was not associated with poorer academic achievement. These results contradict findings from previous studies with adolescents (Aragon et al, 2014; Birkett et al., 2014; Díaz et al., 2005; Pearson et al., 2007; Poteat et al., 2011; Rostosky et al., 2003; Russell et al., 2001) where academic achievement was shown to be poorer in sexual minority groups than in heterosexual groups. Despite the absence of statistically significant differences, the analysis of grade point averages revealed that bisexual and questioning adolescents tended to present poorer achievement. The small sample size of these two groups may have limited the statistical power to exhibit differences that, in any case, appear to be associated with very low effect sizes.

However, previous research with undergraduate students, though not assessing academic achievement per se (Klein & Dudley, 2014; Oswalt & Wyatt; 2011), evidenced that sexual minority participants, especially the bisexual group, claimed to have experienced more difficulties in relation to mental health and academics. Along these lines, previous research has often indicated poorer mental health indicators in the bisexual group (Denny et al., 2014; Hatzenbuehler, 2011; Hatzenbuehler et al., 2014; Marshal et al., 2013) and in sexual-minority males (e.g., Moya & Moya-Garófano, 2020; Semlyen et al., 2016).

It must be noted that, despite an absence of statistically significant differences, the homosexual boys tended to present the highest-grade point averages and the lowest level of fails. These results might follow in the line of the *Best little boy in the world* hypothesis, posed by Pachankis and Hatzenbuehler (2013), whereby they explain the high achievement in sexual minority males that is observed in certain studies. These authors suggest that this group, in an attempt to boost their self-esteem, seeks to excel in academics.

In any case, unlike other studies (Klein & Dudley, 2014; Oswalt & Wyatt, 2011), the present study did not show between-group differences that might indicate the mediation of other variables such as discrimination situations in the relationship between sexual orientation and difficulties in academic performance. Unfortunately, the present study did not analyze this variable, nor its possible mediating role. For example, Kosciw et al. (2012, 2014) indicated that students in sexual minorities differed in their grade point average as a function of their levels of victimization. Birkett et al. (2014) and Aragon et al. (2014) showed a direct effect from belonging to sexual minorities, but in both studies this relationship was also found to be mediated by the participants' experience of victimization situations. Along these lines, Edwards (2015) showed that students from all sexual minority groups were more likely to be victims of intimate partner violence than were their heterosexual peers, and that these situations entailed poorer academic outcomes.

Regarding the second study aim, that of analyzing whether self-esteem may moderate the relationship between sexual orientation and academic achievement, the results did not reveal the expected interactive effect, instead showing that levels of self-esteem were positively related to academic achievement independently of sexual orientation. These results are consistent with previous studies on the relationship between self-

esteem and academic achievement (Cid-Sillereo et al., 2020; Parra et al, 2004; Rodríguez et al, 2004), but do not provide information of interest regarding the academic achievement of participants belonging to sexual minorities. It is to be expected, and research so confirms, that students with adequate self-esteem --whether in the general population (Martín et al., 2012) or within sexual minority groups (Poteat et al., 2014) -- are confident in their abilities and hold high performance expectations, thus promoting their attainment of better outcomes.

In addition, the results of the present study showed gender differences in academic achievement. Specifically, girls reported significantly higher-grade point averages and significantly fewer fails. These results are consistent with previous studies in samples of secondary school students (e.g., Voyer & Voyer, 2014).

Despite all of the above, neither the interactive effect of sexual minority membership and self-esteem nor their interaction with gender were significant, producing no effects of interest for our present objectives.

Some limitations of the present study should be mentioned. First, although the research was carried out with a representative sample from a region of northern Spain, and international recommendations were followed for including different groups of sexual minorities in the analysis (Institute of Medicine, 2011; McDonald, 2018), including questioning students, the size of the sample sub-groups are significantly disproportionate.

Second, the definition of sexual orientation in the present study was limited to evaluating sexual attraction, without taking into account other components such as emotional, identity, or behavioral aspects (e.g., Russell & Consolacion, 2003; Saewyc, 2011). Even though including more indicators would have made it possible to explore the results from other perspectives, the definition of sexual minorities from one perspective does not necessarily correspond to another (Savin-Williams, 2001), and sexual attraction is the most adequate indicator in the stage of adolescence (Pearson et al., 2007).

Third, the indicators of academic achievement were self-reported, due to the inaccessibility of the participating students' academic records. This fact introduces a certain subjectivity, as well as limitations related to memory and social desirability. Future studies could include objective measures of academic achievement, as well as other pertinent indicators such as the existence of conflicts, school absenteeism, a sense of school

belonging, attitudes toward education or participation in out-of-school classes to improve grades (Birkett et al., 2014; Pearson et al., 2007; Rostosky et al., 2003; Russell et al., 2001; Watson & Russell, 2016).

Fourth, the present study did not collect information on possible measures that might be under way, such as the establishment of support groups at schools, or other protective factors such as membership in the so-called gay-straight alliance groups (GSA) (Goodenow et al., 2006; Kosciw et al., 2012; McCormick, 2015), so common in the US. Authors like McCormick et al. (2015) indicate the need for support groups in secondary- and university-level educational contexts and Poteat et al. (2021) underscore that support from educators has proven to have a protective effect against discrimination situations. Consequently, these variables may exercise a protective role in academic performance, buffering the exposure to stigma, and promoting healthful development among the youths. Future studies, therefore, should incorporate the moderating effect of these variables.

In any event, what the results seem to indicate is that belonging to sexual orientation minorities is not directly associated with academic difficulties. The link between sexual orientation and problems in health, social life, and academics is not new. It is therefore important to clearly understand that sexual orientation in itself does not increase the risk of difficulties, but rather the environmental responses and the effect of social stress factors are what increase the risk of such problems (Oswalt & Wyatt, 2011).

Consequently, it is crucial to take into account other variables, such as the discrimination experiences so prevalent in these groups (e.g., Garaigordobil & Larrain, 2020; Kosciw et al., 2009; Poteat et al., 2021), to explain the differences found in the literature. This is indicated in previous studies (Aragon et al., 2014; Birkett et al., 2014; Edwards, 2015; Kosciw et al., 2012; Poteat et al., 2011), which have observed the mediating effect of different victimization situations between sexual minority status and disparities in academic achievement. In addition to these situations of rejection, bullying and discrimination, future research should also take into account school-related variables such as school climate, students' motivation, and a sense of school belonging, which may mediate or moderate the relationship between achievement and membership in a sexual minority. Consequently, it is important that future studies not only include these variables, but also examine their possible mediating or

moderating role in the relationship between identification with a sexual minority and academic achievement.

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What Can the Teachings of the Taoist Classics Contribute to Western Education?[1]

¿Qué pueden aportar las enseñanzas de los clásicos del Tao a la educación occidental?

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Abstract

Educational Taoism, as taught by Tao masters, also called philosophical Taoism, *daojia* (written 道家, is an indispensable part of Chinese and universal culture. It has a little-known educational potential that has scarcely been transferred to globalized education systems, where it has not been taken into account or been included explicitly as part of Western education. The aim of this essay is to determine whether the teachings of the classical Taoist texts (*Tao Te Ching*, *Zhuang Zi* and *Lie Zi*) can be of use in informing and promoting education for

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a more conscious life. To this end, a hermeneutic analysis of the three texts was performed, based on the radical and inclusive approach to education created by the authors almost three decades ago. Four transferable radical pedagogical foundations were identified: *Tao, ziran, wuwei* and *Te*. The discussion and conclusions argue that globalized Western education, currently revolving around competencies, and the teachings of the Tao masters are complementarity. A combination of Western education, stemming from the Socratic tradition, with the Taoist classics, may contribute to founding a more complete education, better adapted to the complexity of the human being. Such a goal is far removed from the guidelines of international educational bodies: UNESCO, the World Bank and the OECD. These pedagogical affordances may be applied to any education system at any stage of formal education (from early childhood to university), as well as to non-formal and informal educational contexts.

Keywords: Education, Taoism, radical and inclusive approach to education, consciousness, pedagogy, didactics

Resumen

El taoísmo educativo, también llamado filosófico, *daojia*, escrito 道家, enseñado por los maestros del Tao, es una parte imprescindible de la cultura china y universal. Incluye un potencial educativo poco conocido y apenas transferido a los sistemas educativos globalizados, en los que no se ha tomado en cuenta, ni formado parte expresa de la educación occidental. El objetivo de este ensayo es comprender si las enseñanzas contenidas en los textos clásicos del taoísmo ("*Tao Te* Ching", "Zhuang Zi" y "Lie Zi") pueden ser útiles para fundamentar y favorecer una educación para una vida más consciente. Para ello, se realizan análisis hermenéuticos de estos textos, apoyados en el enfoque radical e inclusivo de la educación, creado por los autores desde hace casi tres décadas. Se identifican cuatro pilares pedagógicos radicales transferibles: *Tao*, *ziran*, *wuwei* y *Te*. La discusión y conclusiones apuntan a la complementariedad entre la educación occidental globalizada, que actualmente gravita en torno a las competencias, y las enseñanzas de los maestros del Tao. Una convergencia entre la tradición occidental, de tradición socrática, y basada en los clásicos del Tao, puede contribuir a fundamentar una educación más completa y ajustada a la complejidad del ser humano. Este anhelo queda lejos de las directrices educativas de los organismos supranacionales de educación: UNESCO, Banco Mundial y OECD. Las implicaciones pedagógicas son aplicables a cualquier sistema educativo, etapa de educación formal (desde la educación infantil hasta la etapa universitaria), así como a contextos de educación no formales e informales.

Palabras clave: Educación, taoísmo, enfoque radical e inclusivo de la educación, conciencia, Pedagogía, Didáctica

Introduction

The educationalist Maria Teresa Román (2006) once asked herself: "Is there a more selfish, tiresome and fruitless intellectual position than floating in the cloud of rejection of other ways of constructing reality?" (p.14). Current Western education essentially only recognizes what it sees as its own history, rather than other ways of understanding education. It responds almost exclusively to social demands, without considering that not all educational needs are explicitly required by society, especially if the need is a deep one (Herrán, 2014).

Recent directives from the international organisations that govern the course of world education (e.g. OECD, 2021; UNESO, 2021) continue to link education to social and economic development. Innovative, democratic, inclusive, socially just, high quality education is promoted, under pressure from the consumer society and technological scientism. The historical precedent stems from Socrates. Following the path laid down by the Athenian philosopher, education has been based on the learning-knowledge paradigm, with the result that Western education has been oriented more towards acquiring and disseminating knowledge that contributes to the profitability of human systems than towards the development of humanity based on consciousness (Herrán, 2018).

The radical and inclusive approach to education (Herrán, 2014) argues that educational development is markedly externally-oriented and superficial, and that our schooling pays scarce attention to the depth of the human being. Pedagogy excludes from its corpus and from institutionalised discourses key constructs such as egocentrism, consciousness, the human being's essential self-knowledge and the states and ways of consciousness, without which a truly in-depth education is not possible. The radical and inclusive approach, however, stresses that while a high level of education is accessible through acquiring knowledge and competences via relevant, meaningful learning, true education also requires opposite or differing processes: for example, loss, deconditioning, undoing attachments, letting go, downgrading certain priorities, forgetting, halting the flow of thoughts and partial deaths.

In short, the history of Western educational innovation, in the wake of Socrates, has up to now followed a path as fertile as it is currently limited and incomplete, if we wish it to be real education.

The educational teachings of the Eastern classics represent a set of models where we may find what we lack today. For example, in the yogic guidelines of ancient India, in the Chinese *chan* tradition or in Japanese Zen Buddhism, types of education were fostered that focused on working with the ego, consciousness, essential self-awareness and the states of and paths towards consciousness. For educationalists and education professionals in the West, however, these traditions are exotic and/or unknown, although some prestigious scholars have investigated them (e.g. Goleman, 1984). Due to this same Western-centredness, neither are the teachings and thought of the Eastern classical pedagogues sufficiently known, although they are especially deep and are oriented towards the development of education through consciousness. Amongst these, the most important are the teachings of Siddhartha Gautama, the first Buddha, and the Taoist classics.

The complementarity and potential combination of the two educational traditions, the Western and the classical Eastern (Herrán, 2018), has been conceived of as "a fuller education," suitable for developing people who are both conscious and competent (Herrán y Sabbi, 2021). Predominantly competence-based education has been associated with a pedagogical approach that is biased and open to criticism (Takayama, 2013). Between this methodology, internationally fomented by the national education systems, and a fuller education, the necessary bridge is a radical, deep transformation of the individual, although the scope of this may be both personal and social (Yang, 2019). Transformation requires not only education itself, but also an openness towards making a radical shift in the notion of what education and educational change are.

In this article we explore the teachings of those traditionally seen as the three classical masters of the Tao: Lao Zi (Lao Tse), Zhuang Zi (Zhuang Tse or Chuang Tse) and Lie Zi (Lie Tse), whose corpus is immense and varied, although scarcely studied in Western pedagogy and didactics. The objective of the study was therefore to determine whether the ideas found in the classical Taoist texts may be of use for grounding and fostering a form of education and teaching for a more conscious life.

Introduction to Taoism

Taoism is one of the most important educational philosophies in Chinese culture. According to Needham (1956), "Many of the most attractive elements of the Chinese character derive from Taoism. China without Taoism would be a tree some of whose deepest roots had perished" (p.164). Taoism has often been described as both a philosophy and a religion. In China, Taoism has two branches: the philosophical, educational and classical branch, *daojia,* written 道家 and taught by the masters of the Tao; and the religious branch, *daojiao*, 道教. The first, *daojia*, originates mainly in the three most important representatives of the Chinese classical age: Lao Zi (or Lao Tse), Zhuang Zi (or Chuang Tse) and Lie Zi (or Lie Tse), and in their three eponymous classics: the *Tao Te Ching* (Lao Zi, 2012; the version found in Mawangdui, China, in 1973), the *Zhuang Zi* (Zhuang Zi, 2015) and the *Lie Zi* (Lie Zi, 2016). The second, *daojiao,* refers to Chinese religion, which takes the Tao as the highest belief and seeks immortality, similarly to many other religions.

The relationship between *daojia* and *daojiao* is disputed. Some scholars believe that the two are completely opposed. However, others think that, although there are differences, there are also similarities. In this article we do not discuss this distinction; instead, we focus on *daojia* Taoism, the educational branch taught by the three classical masters. *Daojia* Taoism is based on four essential radical pedagogical foundations: the Tao, *ziran*, *wuwei* and *Te*.

The first radical pedagogical foundation: the Tao

The first foundation stone of Taoism is the Tao, written in Chinese as 道. All Taoist understanding derives from the Tao. It is difficult to find an equivalent concept to the Tao. Etymologically, it means "way" or "path." It has been interpreted as a "guide to behaviour" (Robinet, 1999, p.19). The written symbol for the Tao is composed of two ideograms: "walk" on the left and "head" on the right. Rather than a "guide to behaviour" it is a "leaving the road behind you" (Jung, 2009) or a "path of consciousness" (Herrán, 2006). Machado (1998) writes that "your footsteps are the path, nothing else [...] Walking, you trace the path; looking behind, you see the road you will never travel again" (p.152). In the West we like to walk

with guides and certainties. For the classics, on the other hand, the path is every step we take.

Other meanings attributed to the Tao are: principle, method, law, rule, doctrine and order (e.g. Elorduy, 1983; Preciado, 2012; Watts, 2003). In old Chinese, Tao also means "to speak, express oneself, say." Yet Lao Zi (2012) gives the word an ontological significance (Fung, 1952) in which its educational potential is rooted. This interpretation of the concept is important, since classical Taoism developed on the basis of Lao Zi's legacy (Lao Zi, 2012).

With Lao Zi (2012), the Tao became the highest, deepest and most unfathomable ontology in Chinese wisdom. Tao is the word that represents the central concepts of Chinese culture (Chen, 2016). Lao Zi (2012) raises it to the level of the origin or root of the universe, the first cause, although he also sees it as both totality and void, considering it the foundation and reality of the world (Elorduy, 1983; Robinet, 1999; Watts; 1976). Tao is the origin and supreme principle. According to Lao Zi (2012):

> The Tao begets the one,
> the one begets the two,
> the two begets the three,
> the three begets the ten thousand beings.
> The ten thousand beings embrace the yin and the yang,
> Whose vital energies (*qi*) blend into a harmonious whole (p. 227).

All beings are created by the Tao, which is the "mother of the ten thousand beings" and the "mysterious female." Zhuang Zi (2015) alludes to the Tao in Lao Zi (2012) as meaning the "root," also personalizing it as the creator or progenitor of the world. In this role, however, the Tao does not attempt to possess its creations:

> The Tao begets them and feeds them,
> it makes them grow and flourish,
> it brings them stability and rest,
> it nourishes and protects them.
> It begets them without possession,
> It benefits them without gratitude,
> It nurtures them but does not rule.
> This is its name: mysterious virtue. (Lao Zi, 2012, p. 245).

Neither is the Tao affected by the ten thousand beings: it creates them without being influenced by them (Robinet, 1999). As Zhuang Zi writes (2015):

The Tao makes things full or empty, though in it you will find neither fullness nor emptiness; it makes things weaken or diminish, though in it you will find neither weakening nor diminishing; [...] it makes things gather or disperse, though in it there is neither gathering nor dispersion (p. 240).

The Tao is objective and absolute existence. Zhuang Zi (2015) asks:

Were there things before Heaven and Earth existed? That which makes things exist is not itself a thing. Things could not have come out of what came before the Tao. From it there came things, and its begetting of things has never ceased (p. 243).

Moreover, the Tao depends neither on conditions nor on creation. The *Lie Zi* (2016) tells us that "what begets beings is not itself begotten and what transforms beings is not itself transformed" (p. 42). It also notes that the Tao is a timeless existence: it has no beginning, no end, no birth and no death. In contrast, the existence of perceivable beings is relative. They have beginnings and endings, births and deaths. The existence of the Tao is not comparable to either living or non-living beings. "The Tao has no end and no beginning; things, on the other hand, are born and die, and in temporary existence, cannot take root. Either empty or full, they lack permanent form" (Zhuang Zi, 2015, p. 184). Furthermore, the Tao has no name (*wu ming*), nor does it have form (*wu xing*). Lao Zi (2012) writes that:

The name that can be named
is not the eternal name.
That which has no name (*wu ming*)
is the origin of Heaven and Earth.
That which has a name (*you ming*)
Is the mother of all beings (p. 307).

The Tao, then, is believed to be timeless; and what can be named can never be timeless. Names have limits, but the Tao is limitless (Zhuang Zi, 2015). Even "the name 'Tao' is only a borrowed name" (Zhuang Zi, 2015, p. 285). "I do not know its name. They call it 'Tao'" (Lao Zi, 2012, p. 355). The Tao is not only anonymous, but also invisible and intangible.

> You look at it and you don't see it,
> its name is *wei*.
> You listen to it and you don't hear it,
> Its name is *xi*.
> You feel it and you don't touch it,
> Its name is *yi*.
> [...]
> You follow it and don't see its back,
> You face it and don't see its head (Lao Zi, 2012, p. 333).

Zhuang Zi (2015), similarly, explains: "The Tao cannot be seen or heard. So where is it? The Tao is everywhere in the universe, in all beings. It is in an ant, in a blade of grass, in a roof tile, even in dung and urine."

The Tao is the Great One, the Supreme One, the undifferentiated One. It is the "first simplicity," the "original purity" (Zhuang Zi, 2015, p. 141). There is no such thing as something superior to the One. From the Tao, there can only be losses. It is like light and darkness: they define each other and cannot exist separately; only in darkness can light be seen (Zhuang Zi, 2015).

The Tao is also emptiness. Although it is emptiness, its efficiency is never exhausted (Lao Zi, 2012). This emptiness is not "a lack of content, matter or essence" (*Real Academia Española*, 2021). It is the container of all content, of the heterogeneity and diversity of all beings: its emptiness is also fullness. In emptiness, there is only silence (Lie Zi, 2016). Silence can bring the Tao closer.

The second radical pedagogical foundation: *ziran*

The second radical educational foundation stone of Taoism is *ziran*, 自然, although this rarely appears in the classics. In the West it is translated as "nature" or "spontaneity." *Ziran*, however, has other interpretations

that can clarify its literal meaning. For Liu (2015), *ziran* cannot be represented by any particular word. In Mandarin, Taoist *ziran* refers to the natural world. Mou (2005) explains that:

> *Ziran* in Taoism is not the same as the nature of the natural world. Nor is it equivalent to Western "naturalism." "Naturalism" and "materialism" are similar. It is a kind of materialism referring to the natural world, studied by the natural sciences; and since the sciences always study physical phenomena, it refers by nature to the physical world (p. 71).

In Taoist culture, it has a different meaning. For Mou (2005), the *ziran* of the Taoists is a term referring to that which "cleaves to the spiritual life; that is, free and tranquil, like oneself, without leaning on anything" (p. 71). In the *Tao Te Ching*, *ziran* is said to be practiced by the sages, and appears five times (chapters 17, 23, 25, 51 and 64). The sage is the ideal model of the ruler (Liu, 2015), the recipient of these teachings. An ideal ruler neither commands nor imposes; he leads though the laws of the Tao. He lets the ten thousand beings express their original nature. However, in this classic, the meaning of *ziran* is neither unequivocal nor clear. Zhuang Zi (2015) also does not often mention it, but the following quotations may help us understand the term:

- "Continuously accommodate oneself to Heaven (*ziran*) and use no artifice to augment life" (p. 84).

- "Let things take their natural course (*ziran*), and do not entertain self-interested thoughts. Then the world can be well governed" (p. 100).

- "Conform to natural spontaneity (*ziran*)" (p. 160).

- "At that time, no one acted and everything followed its natural course" (*ziran*) (p. 175).

Furthermore, the classical Taoist masters speak of *ziran* from the perspective of *ben xing* 本性. *Ben xing* is a Chinese word that literally means "the particular nature that we have at birth" or "our particular virtue." Since ancient times, the Chinese have used the word *xing* 性 to refer to the "quality" or "essential characteristic of things" (Liu, 2015); for example, "The most beautiful beauty of things is their *ben xing*." The *ziran* of Taoism is its natural truth. This true state of things also relates

to *shiran* 使然. *Shiran* is, literally, "a state where truth is in bondage to vulgar uses." In this state there are external pressures. Taoism teaches the desirability of conforming to the natural spontaneity of beings and returning to the tendency of Heaven –in Chinese culture, the meaning of Heaven is the same as *ziran* (Liu, 2015).

Ziran can be understood as *tian ran* 天然, the antonym of *ren wei*, "man-made." It is an ancient Chinese way of life: "*tian ren he yi* 天人合一" (Liu, 2016), meaning that Heaven and man become one. "To see Heaven and man as one, is to agree with Heaven; to think that they are not so, is to agree with man. Heaven and man are not opposed to each other" (Zhuang Zi, 2015, p. 87).

The Taoist masters thought that the original nature of every being had its particular *raison d'être*, and that this *ziran* should be respected. All beings are as they are simply because they are as they are. Their *ziran* gives them their use. To respect *ziran* is to use things without abusing them, without violating them. It is compared to "using the eyes to see what the eye can see; using the ears to hear what the ear can hear; and using the mind to understand what the mind can understand" (Zhuang Zi, 2015, p. 271). The classics are against human deeds that violate the state of *ziran*. Human deeds that stray from *ziran* can lead towards death:

> A sea bird landed on the outskirts of the capital of Lu. The Marquis of Lu welcomed it at the Temple of the Ancestors, where he offered it the finest wines. He played music to please it, and a great sacrifice was held to feed it. But the bird, with a confused look and a sorrowful air, dared not eat a single morsel of meat, nor drink a sip of wine, and, after three days, died (Zhuang Zi, 2015, pp. 196-197).

The bird was not fed according to its nature. Self-centred human action violated its *ziran*. To respect a bird's *ziran* is "to let it perch deep in the forest, roam freely across the sandbanks, swim in the rivers and lakes, eat minnows and eels, join flocks of its own species and live in its own way" (Zhuang Zi, 2015, p. 197). *Ziran*, here, is a state of consciousness attuned to one's original nature. The same is true of the legs of animals: if they are long they should be long, if they are short, short. "Nothing can be added to what is long in itself; nothing can be taken away from what

is itself short" (Lie Zi, 2016, p. 131). The myth of Procrustes, for example, illustrates the antithesis of these teachings.

According to the *Zhuang Zi* (2015) "Conscious men never help Heaven with human action and are in supreme joy." What is the difference between Heaven and man? Zhuang Zi (2015) explains, "Let the buffalo and horse have four legs, that is Heaven. Putting the bridle on a horse or piercing the nose of a buffalo, that is man" (p. 185). The classics oppose human restraints and are against the intentionally carved and artificially decorated. *Ziran* refers to a state of being that lacks human hypocrisy or intervention. Human action harms true nature.

Ziran is the state of the "newborn" or "the state of wood" (Lao Zi, 2012, p. 361). Because of its beauty, nothing in the world can compare to *ziran* (Zhuang Zi, 2015). It is equivalent to returning to the "woody" or original state (*fan pu gui zhen* 返朴归真 or *fu gui yu pu* 复归于朴). "The swan does not need to bathe every day to be white, nor the crow to stain itself every day to be black. White and black belong to original nature, and there is no need to discuss them" (Zhuang Zi, 2015, p. 166). The swan is white, but not because it bathes every day. The crow is black, but not because of the sun. Both are intrinsic, natural. In Taoism, *ziran* is "pure simplicity; and nothing in the world can compete with it in beauty" (Zhuang Zi, 2015, p. 148). In China, pure simplicity is termed *pu su* 朴素. *Pu* is uncarved wood, while *su* means a white or original colour. *Pu su* is therefore the primitive nature and state of things. To return to the internal state of *pu*, we must remove the artificial distortions that can damage original human nature. Human actions are characteristic of a civilized or corrupt society (Callahan, 1989). In contrast, we should practice *wuwei* 无为.

The third radical pedagogical foundation: *wuwei*

Wuwei, 无为, is the third foundation stone of Taoist teachings. It applies to society, daily life, the environment, governance, education, teaching, and so on. It translates, literally, as "not acting," "non-action (absence of action)" or "non-doing." It has also been translated as "not acting deliberately" or "acting naturally," to avoid being associated with passivity (Ames, 1986). In ancient Chinese, *wu* means "not," and can be read in two ways: as the negative or the imperative. Thus, *wuwei* has two meanings: "they did

nothing" and "do nothing." "They did nothing" refers to an existing state. It does not mean that there was no action, but rather that something occurred in its natural state, without external effort, or in an ideal state without resistance, thus eliminating inappropriate actions. "Do nothing," on the other hand, is intended to prevent certain behaviour. Yet it does not prohibit all behaviours; only those which go against nature. At the same time, it affirms behaviours that are in accordance with nature. In conclusion, *wuwei* is not the negation of all action (the complete negation of *wei* 为), but a dialectical view of behaviour, oriented towards action.

Wuwei can be understood from two perspectives: the behavioural and the cognitive (Slingerland, 2003). On the behavioural plane, the application of *wuwei* is *wei wuwei* 为无为 (practicing non-action). As Lao Zi (2012) advises us: "act without acting, busy yourself with not being busy, savour that which has no taste" (p. 161). This *wei wuwei* is not complete passivity: Loy (1985) calls it "the action of passivity" (p. 75), with a positive connotation. *Wuwei,* then, means acting as little as possible. It also means surrendering or retreating, rather than forcing, since force leads to exhaustion and loss. Both Watts (1976, 2003) and Loy (1985) give the same example: under the weight of a heavy snowfall, the branches of the pine tree break; but the willow sags and lets the snow fall without breaking, returning to its original position. This passivity forms part of the negative way of the Taoist classics. It is "negative" because it does not follow traditional or conventional concepts of action (Slingerland, 2000). The meaning of *wuwei* is not to attain a higher position; instead, the Taoist tradition cherishes the lower position and weakness and softness (*rou ruo* 柔弱) as the essences of a life-sustaining existence. Lao Zi (2012) writes:

> Man, at birth, is weak and soft,
> But at death becomes rigid and hard.
> Plants and trees are tender and fragile at birth,
> but become dry and stiff at death.
> Hence the saying:
> "Strength and hardness lead to death,
> weakness and softness lead to life."
> That is why strong weapons do not win,
> And the vigorous tree breaks.
> Hence that which is strong and great is below,
> and that which is weak and soft is above (p. 299).

Wuwei means conforming to *ziran*, flowing with nature. In Alan Watts' words: "going with the flow, [...] swimming with the current, setting sail with the wind, following the tide in its flow" (Watts, 1976, p. 111). The ten thousand beings are born through *wuwei*. They do not act but are still respected. Zhuang Zi (2015) tells us:

> Heaven does not act and hence its purity, Earth does not act and hence its stillness; if Heaven and Earth are in harmony in their non-action, the millions of beings are transformed. [...] the variety of beings is infinite, and all are born of non-action (p. 193).

Observing nature and the universe, we see that the natural world moves in a spontaneous, orderly and harmonious way: the mountains are high, the ocean is deep and wide, the moon and stars are bright, the changes of the four seasons, in which the ten thousand beings are begotten and grow, are natural and harmonious. Heaven and Earth do not act, but beget everything: *wu-wei-er-wu-bu-wei* 无为而无不为: "Since they do not act, nothing is left undone" (Lao Zi, 2012, p. 239). Therefore, the great masters of Taoism take *ziran* as the source of a consciousness-based education. *Ziran*, understood as "attunement to nature," is just as important to people's education and upbringing as is subject or transversal knowledge, especially in a consumer society that has fallen out of harmony with nature.

Acting on the basis of the human ego, the more we strive, the further we move away from our destinies. "He who acts, fails; he who clings to something, loses it" (Lao Zi, 2012, p. 271). That is why the Taoist masters steer education towards consciousness, grounding it in *wei-wu-wei*. Without acting, everyone follows their proper course.

The application of *wuwei* to behaviour depends on its cognitive application. To reach the state of *wu yi wei* 无以为 (non-estimation), we should act naturally. According to Laudo (2010), any fixed intention goes against the Tao, as it leads to unfulfilled desire and to conflict. In the classics, *wei* designates action directed towards achieving goals. Our actions stem from our desires (*yu*, 欲), and this signifies the destruction of *ziran*. Our desires drive us to pursue knowledge, longevity, happiness, well-being, power, wealth, fame, nobility, recognition, etc.; and these are like great spider webs binding human existence (Preciado, 2012). With

them, we can never achieve stillness (*jing* 静) and peace. Taoists, then, believe that we can only attain supreme happiness through *wuwei*.

On the cognitive level, *wuwei* means abandoning our intentions and desires, letting go, letting ourselves be. This is the "negative" way, the way of meditation, of deconditioning, of stopping the flow of thoughts, of not knowing; different from but complementary to the "learning-action-knowledge" triad of Western education (Herrán, 2014). *Wuwei* also involves the disappearance of selfish desires, attachments and personal tendencies. In other words it is *wuyu* 无欲 (without desires, which is also *zhi zu* 知足, or knowing how to be content); and also *wuqiu* 无求 (without obsessions, without neurosis), and *wuzheng* 无争 (without strife).

To reach the state of *wuwei*, knowledge must gradually dwindle until it becomes emptiness: "Through study [knowledge] is accumulated day by day. Through the Tao [knowledge] diminishes day by day" (Lao Zi, 2012, p. 27). The Taoist masters stress the importance of this emptiness, of non-being, of overcoming opposition and duality. Therefore, we should free ourselves from the values, categories and norms which condition the human mind. The spirit of the perfect man is empty. As it is empty, not knowing, it is spontaneously, automatically and effortlessly in tune with nature (Herrán, 2014).

Wuwei is found everywhere in Taoism. In the teachings of the Taoist masters, there are many terms derived from *wuwei*: *wuyong* 无用 (without utility) or *wuyan* 无言 (without words or speech), for example. These argue for "the usefulness of the useless": only trees without utility live a hundred years and complete their natural course, whereas trees that are prized for their wood or fruit do not complete their life cycle. On the basis of *wuyan*, teaching takes place without words: "Teaching without words, the benefit of not acting, little in the world can compare to these" (Lao Zi, 2012, p. 229). Rousseau (1987) also refers to the usefulness of "teaching by silence" and "doing nothing" (p. 127).

Fourth radical pedagogical foundation: Te.

In ancient times, *daojia* Taoism was also called *daode jia* 道德家, or at one period the Tao Te school. Both *Te* and Tao are central concepts of Taoism. However, in Western studies of Taoism, *Te* is given less

attention than Tao. In Western scholarship, *Te* has been translated as "virtue," although this is not appropriate. According to Chen (1973), "virtue" is moral perfection, the result of conscious education and the accomplishment of what is considered good and ethical (decent). Virtue develops as the triumph of good over evil. If we see *Te* as virtue, then, it necessarily involves a moral dualism, the distinction between good and evil. According to Waley (2005), however, "*Te* can be both bad and good. What is 'bad virtue'? Obviously, 'virtue' is not a satisfactory equivalent" (p. 31). According to Lao Zi (2012), when the Tao degenerates, the need for *Te* arises:

> [...] when the Tao is lost, virtue appears;
> when virtue is lost, benevolence appears;
> when benevolence is lost, righteousness appears;
> and when righteousness is lost, the rites appear.
> The rites, undermining loyalty and trust,
> are the origin of chaos (p. 219).

The Taoist classics distinguish between lower *Te* and higher *Te*. In the verses above, *Te* refers to lower *Te*. Benevolence, righteousness and the rites come under the aegis of lower *Te*, as they are the origin of disorder and chaos. They are harmful to personal and social evolution. Lower *Te* is a degradation of *Te*, and therefore it is not *Te*. These lower levels of *Te*, however, are the virtues exhorted by the Confucian school (1969) and in the West, where virtue becomes goodness and is displaced by a social reading of the concept (Camps, 1990) or by "values education." The terms "virtue" and "values" do not capture the substance of the higher *Te*, which is directed inwards, towards consciousness.

The Taoist classics refer to higher *Te* as "mysterious *Te*," "great *Te*" and "eternal *Te*," distinguishing it from conventional or lower *Te*. Zhuang Zi (2015) says: "the Maker (Tao) endows men, not as we experience them, but with their original nature" (pp. 340-341); and: "to accommodate oneself to things by bringing them into harmony, that is Virtue" (p. 238). Here, the meaning of *Te* is equivalent to *ziran* and *ben xing*. For Chen (1973), *Te* is more dynamic than *ben xing*: with *Te*, we see how things move and operate from within. *Te* is the original nature of being, distinct from learned virtue. Also, it is unconscious: "when one is conscious of

Te, it ceases to exist, for it has become an object" (Hansen, 1992). In this regard, Lao Zi (2012) tells us:

> The man of superior virtue is not virtuous,
> and therefore is in possession of virtue.
> The man of inferior virtue clings to virtue,
> and therefore lacks virtue.
> The man of superior virtue does not act,
> nor does he seek to achieve any end (p. 219).

Lie Zi (2016) states that he who has superior virtue "practices virtue without considering himself virtuous" (p. 71). Those who are in the higher states of *Te*, do not esteem their *Te*. They conform to *ziran*, they do not do things deliberately, they have no intentions or judgments. These two facets coincide with other ideas associated with *wuwei*: *wu yi wei* (not esteeming) and *wu-wei-er-wu-bu-wei* (since they do not act, nothing is left undone). The perfect *Te* of the Taoist masters appears imperfect, like the gnarled pines and rugged hills of Chinese paintings (Watts, 1976). Lao Zi (2012) tells us:

> The highest virtue looks like a valley floor,
> great whiteness seems unclean,
> all-embracing virtue appears lacking,
> firm virtue seems weak,
> The absolute truth seems false (p. 223).

Zhuang Zi (2015) describes people with physical disabilities (the mutilated, lame, etc.) or great ugliness as men with perfect *Te*, because a strange mind is more meaningful than a strange body (Watts, 1976). One symbol of *Te* is the "newborn":

> The man of great virtue
> is like a newborn baby.
> Wasps and scorpions do not sting him,
> poisonous snakes do not bite him,
> wild beasts and birds of prey do not attack him;
> his bones and sinews are weak,
> but his hand grasps firmly;

he does not know of the union of male and female,
but his male member rises,
for his vital energy is at its height;
he cries all day long and does not grow hoarse,
for his harmony is perfect (Lao Zi, 2012, p. 253).

The newborn baby symbolizes the fullness and wholeness of *Te*. Since it is in harmony with the beings in its environment, none of them harm it. It holds the highest vital power of *Te*, but does not waste its energy in distinguishing opposites, knowing that distinction is vain. The newborn baby thus symbolizes the original perfection of *ziran* (Chen, 1973).

The relationships between the four educational foundations

FIGURE I. The four educational foundations of Taoism.
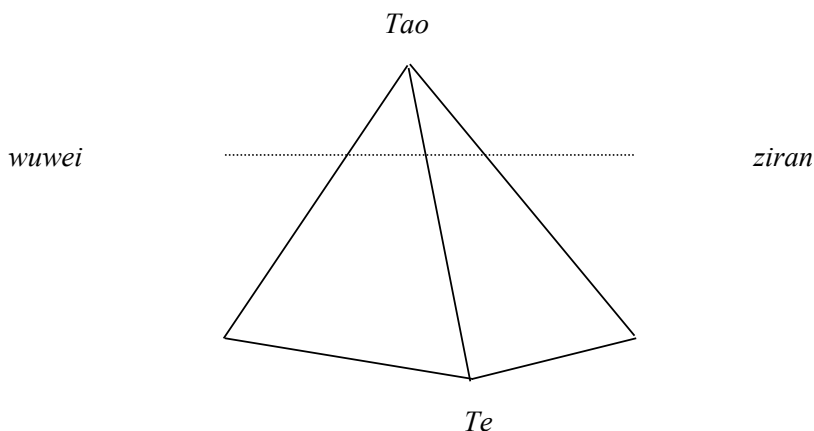
The relationships between the four foundations of Taoism (Figure I) can be summed up in the following outline. The Tao is the core of a radical Taoist understanding of education. *Te* is the multiplication of the Tao into the ten thousand beings. *Te* is manifested if one follows the way of Tao as *ziran*. The efficacy of *Te* comes through *wuwei*. Tao is

experienced by observing *ziran*. In *ziran* we can see the *wuwei* of the Tao. *Wuwei* is the manifestation of *ziran* and the Tao. The higher state of *Te* manifests itself in *wuwei*, which means holding to our own *ziran*, without destroying the *ziran* of others.

Discussion and conclusions

The *Diccionario de la Lengua Española* (2019) defines Taoism as "a religious and philosophical doctrine founded in China by Lao Tse in the 6th century BC." *Daojia,* or educational Taoism, however, is not a doctrine, nor is it religious, nor is it philosophical. The foundations of the Tao enable us to consider another way of understanding education and, perhaps, of redefining it through integrating into it constructs such as consciousness, egocentrism and self-knowledge (Herrán, 1995).

It is inappropriate and contradictory to call this a "doctrine," since doing so would contradict and destroy men's original simplicity. As Lao Tse (2012) tells us: "The Tao that can be spoken of is not the true Tao." Thus, it is more anti-doctrine than doctrine. According to tradition, the *Tao Te Ching* was composed unwillingly by Lao Tse (2012) in his old age, when a border guard demanded it as a condition for his passage. The Taoist masters, in the same way as Lao Tse (2012), did not set up norms, rules, opinions, systems of reason or schools. "The Taoist sage is not a preacher, nor a master who creates a school of devoted disciples. Even Lao Tse himself does not set himself up as a teacher" (Viñao, 2005, p. 243); just as Socrates did not consider himself wise (Plato, 2003).

According to Viñao (2005), "some authors qualify Taoism as a negative and negativist pedagogy, without venturing to speak directly of a Taoist pedagogy" (p. 242). If there exists a methodology that seeks to unlearn all methodology, this is Taoism.

Educational Taoism is *daojia*. Religious Taoism is *daojiao*. Therefore, it is incorrect to see educational Taoism as a religion. *Daojia* lacks creeds, rites, priests and followers. Religions condition people, create dependence and attachment, emphasize the vulnerability, misery and suffering of the follower. By seeking God's help, the person becomes religious (Osho, 2012).

The Tao harmonizes life and nature, the existential and the essential, and leads to awareness and calm. For Maillard (1995), Taoism is an inner path of "relinking" or reunion with the essential principle of being:

> Taoism is a pattern for and a path towards self-knowledge, a set of methodological guidelines that, beginning their action from the first, inner stages, pursue it through the different degrees of spiritual perfection until the highest clarity of understanding is achieved. It does not seek to teach –and therefore rejects both beliefs and conceptual teaching—but to open up higher levels of consciousness (p. 7).

It is also incorrect to describe *daojia* Taoism as a philosophy. Despite this, Viñao (2005) considers it an "ecologist," "anarchist" and "anti-pedagogical" philosophy. Watts (2003) also calls Taoism a "philosophy of nature." However, as Maillard (1995) says, philosophy is based on logical discourse: it is knowledge coming from knowledge for the sake of knowledge. It connects with education from the standpoint of the will to know (Espinosa, 2019), responds to prior philosophical currents and gives rise to new doctrines. In contrast, the Taoist masters experimented in their own lives and conveyed their knowledge in the form of observations and experiences, not in order to know more or understand better, but to "know how to live" (Maillard, 1995) and to live more consciously. For these masters, what is essential is not only assimilating knowledge, but also eliminating it, renouncing it, halting the flow of thought, deconditioning ourselves, disidentifying with things and ideas, not knowing, experiencing the essential emptiness. They offer no final answers. Taoism, then, is not the same as philosophy. The teachings of the Taoist masters concur with Socrates (Plato, 2003) and particularly with his disciples Antisthenes and Diogenes of Sinope (Laertius, 2008). For Herrán (2012), Lao Tse, in addition to Siddhartha Gautama, Socrates, Zhuang Zi, Lie Zi, Antisthenes and Diogenes of Sinope, were not philosophers: their aim was not to know, nor to attain wisdom, but to enquire into life and educate themselves for their essential awakening and to live more consciously; to that extent, it made sense to gather an audience, to teach others as they had taught themselves. Their grounding and orientation were profound and radical. Therefore, they can be seen as radical pedagogues:

What has been translated as [Taoist] "philosophy" is really pedagogy, since its purpose and guidelines lead to an education centred on consciousness. It is oriented towards personal growth, towards the development of social relations and the search for wisdom (Herrán, 2012, p. 313).

In the teachings of the Taoist masters, just as in Comenius (1984), metaphors are included in profound writings that are lessons for a more lucid life. Nevertheless, they are not simply assimilable to the modern "education for life," advocated by scholars and organisations from Pestalozzi (1923) to UNESCO (2021). Instead, this life is closer to the "good life" (Plato, 2003) described by Socrates and Diogenes of Sinope (Laertius, 2008), although the latter is at a lower, more ethical level.

The radical Taoist pedagogical foundations can be applied as educational principles in the theory and practice of empowering and renovating forms of pedagogy. (1) The Tao can only be intuited through "higher states of consciousness," which have everything to do with high levels of education (Herrán, 2006; Herrán y Sabbi, 2021). (2) Teaching based on the Tao helps us move away from the superfluous and from indoctrination, desires and fears; it helps us to live in harmony with the universe (Viñao, 2005). It favours the awakening of consciousness and the inner evolution of human beings. (3) From the perspective of *ziran*, nature is taken as a teacher or educational resource (Herrán, 2012), experienced close at hand and by observation. (4) Practising *wuwei* helps make up for egocentric actions that harm nature. The idea of "non-doing" has also been developed by Western pedagogues and educators such as Rousseau, Montessori, Rogers and Neill.

Herrán (2012) has advanced the hypothesis that Rousseau (1987) was familiar with the Taoist tradition, and specifically with *wuwei* and *ziran*. *Wuwei*, as "doing nothing" or "letting things happen," was part of Rousseau's "negative education," motivated by the "educational" barbarities of his time that he denounces in *Emile*. *Ziran*, because he understood, in a compatible way, that human action harms true nature. If this hypothesis is true, then *daojian* Taoism is at the heart of Western education:

The first education must therefore be purely negative. It consists in teaching neither virtue nor truth, but in defending the heart from vice

and the spirit of error. If you could do nothing and not let him do anything [...], very soon in your hands he would become the wisest of men; and, by beginning with doing nothing, you would have created a prodigy of education (Rousseau, 1987, p. 101).

(5) *Te*, as a quality of the very young and even the prenatal child (Herrán, 2015a, 2015b), enables us to develop renewed foundations of education and teaching. (6). The inclusion of the foundations of the Tao in training for teachers and other educators, such as families, would enable its transfer to formal education at all stages, from early education to university, and, in non-formal and informal contexts, from prenatal to gerontological. (7) The teachings of the Tao and its classics complements the current competency approach, from the standpoint of an education based on awareness. (8) An education based on the higher meaning of *Te* transcends education in values, virtues and ethics, through a meditative, natural and unconscious depth approach that would be susceptible to conventional research. (9) A way of teaching based on the Tao can support a silent, more respectful, more humanistic form of educational guidance, based on *wuyan* 无言 (without words or speaking) and *wuwei*. Rousseau (1987) agrees with this: "Few in the world come to understand the usefulness of teaching by silence and by doing nothing" (p. 127). (10) We can derive from Taoism a meditative approach to research and enquiry (also research and enquiry into ourselves), without ego, expectations, action, desires or goals of knowledge, without obsessions or debates, without duality or opposites, without publication or recognition, without knowing or not knowing, starting from and leading towards emptiness.

What could *daojia* Taoism mean for universal education? A clear definition of Taoism would be difficult to achieve and would pervert its meaning. The suffix *-ism,* in fact, corrupts its beauty: "Under *isms* ideas are transformed into ideologies and around them followers gather [...] Followers and affiliates: those who follow and those who form lines. Schools are tendentious" (Maillard, 2021, p. 12). *Isms* are creations of the collective ego (Herrán, 2008). That is why education is incompatible with conditioning, and takes place beyond it. A analogue of Taoism is the constantly flowing water of streams, the oceans, the mountains, the air, and so on. Its flow reflects the movement of the Tao. Water does not fight, nor does it act; it flows downward. Everything depends on water, which is at relative rest.

The most important thing in education is to understand its deep meaning for each being, linked to inner human evolution. This is a matter of judiciously setting the compass point of our own education, before we move outwards to the circle we have drawn. Just as Cebes (1995), a disciple of Socrates, critically and consciously refuted the pseudo-education of his time, today's pedagogy and didactics need to stress complementary theoretical alternatives to competency-based education, which is biased towards the existential and the external. The teachings of the three Taoist classics give form to an education of consciousness based on the uniqueness of our being and its harmonious relationship with nature. By including much of what we are missing, this has enormous potential for the radical development of pedagogy and Western education.

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The teaching profession in European Union education policy[1]

El perfil competencial docente en la política educativa de la Unión Europea

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Abstract

The teaching profession is constantly changing, and teachers require new competences to carry out their work in a dynamic and complex context. Moreover, the role of the European Union is becoming increasingly decisive in influencing education policies in each member state. For this reason, the aim of this research is to identify and analyze the most relevant regulations for teachers, in order to examine the teacher competence profile from a supranational perspective. To achieve this objective, we have carried out a qualitative content analysis of the documentation generated (communications, recommendations, exchanges of good practice, and working reports) from 2000 to 2021. The study has been organized around the three strategic programmes of the EU: Education and Training (ET) 2010, 2020, and 2030. The results highlight the growing interest in the topic of teaching in the European context and the progressive incorporation

of tools and guides for designing teaching careers. The main conclusions point to the importance of competence frameworks as a crosscutting instrument for articulating teacher policies. These findings may have practical implications, since educational policymakers can use them for guidance and reflection.

Resumen

La profesión docente está en constante cambio y el profesorado requiere de nuevas competencias para desempeñar su trabajo en un contexto dinámico y complejo. Por otra parte, el papel que desempeña la Unión Europea (UE) está siendo cada vez más decisivo a la hora de influir en las políticas educativas de cada país. Por ello, esta investigación tiene como finalidad identificar la normativa más relevante sobre profesorado y analizarla para profundizar en el perfil competencial docente desde una perspectiva supranacional. Para alcanzar este objetivo se ha empleado un análisis de contenido cualitativo de la documentación generada por este organismo (comunicaciones, recomendaciones, intercambios de buenas prácticas e informes de trabajo) desde los años 2000 hasta el 2021. El estudio se ha organizado en torno a los tres programas estratégicos de Educación y Formación de la UE: ET2010, ET2020 y ET2030. Los resultados ponen de manifiesto el creciente interés sobre el perfil competencial docente en el contexto europeo y la progresiva incorporación de herramientas y guías para el diseño de la carrera profesional. Las principales conclusiones señalan la importancia que adquieren los marcos de competencias como instrumento transversal para articular las políticas de profesorado. Estos hallazgos pueden tener implicaciones en la práctica, pues pueden servir a los responsables en materia de política educativa como medio para la orientación y reflexión en torno a la carrera docente.

Introduction

If we ask the question: what characteristics should define a (good) teacher? the answers will undoubtedly be influenced by the political and cultural heritage of each country or region, as well as the perspective

of each person. However, regardless of the positions taken, we believe that all would subscribe to the view that teacher qualities are key to achieving educational goals (Castro, 2021; Day, 2019). As a result, we are witnessing a renewed interest by international organizations and education systems around the world in the design of models, known as competence frameworks, which respond to the question raised above.

Thus, various international organizations report the need for education systems to design and implement these frameworks because they can serve as a tool for defining the teaching profile and the policies associated with the profession (Halász, 2019). As a supranational body, the European Union (EU) has also become more prominent as its proposals on education are accepted and implemented by the member states, even though this area is not yet the subject of a common European policy. Specifically, in recent years, the EU has been making interesting contributions to the generation of educational policies on teachers and their competences (Manso et al., 2019; Valle & Álvarez-López, 2020).

The definition of teaching competences and competence frameworks we adopt here is as follows: the first implies understanding teaching performance based on the dynamic integration of cognitive and metacognitive skills, to enable teachers to respond appropriately to complex educational demands in a given context (Halász, 2019). Likewise, we refer to competences within the classroom and the act of teaching, but we also incorporate a broader vision of the profession, which refers to performance in multiple contexts. The second term, competence frameworks, refers to a structure of descriptors about what "a teacher should know, understand and be able to do" (Eurydice, 2018, p. 78).

The importance of the role of the teaching profession in Europe began to emerge with the establishment of the Single European Act in 1986 (European Parliament, 1986). In 1987, a meeting of European education ministers discussed new challenges for teachers and teacher education, at which recommendations were made to promote a better self-image of teachers and their importance in society (Starida, 1993).

It should be noted that initial teacher education policies at that time were of a very specific and residual nature compared to other programmes. By way of example, we can mention the Arion, Erasmus, and Socrates programmes, created between the 1980s and 1990s. These modest actions were not targeted directly at teachers, but rather were a means to achieve broader objectives (Egido, 1996). Nevertheless, they

paved the way for what was to come later, as the number of documents referring to their profile, and in particular to teaching competences, has multiplied in recent years. The turning point was the so-called Lisbon Strategy (European Council, 2000), when the way was opened for a real education policy and interest in the teaching issue (García Aretio et al., 2009; Manso & Valle, 2013; Tiana, 2013). Since then, three education programmes have outlined the ten-year strategic objectives of the EU and its member countries in the field of education. Each of them makes specific contributions to teacher competences, but, despite their importance, they have yet to be sufficiently addressed in educational research.

Previous research mentions some of the main EU documents on the subject and situates the EU as an influential actor in teacher policy debates. For example, Stégel (2014) provides an overview of the main European concepts in this area (such as teacher competences, the continuous professional development process, and support for teacher educators), and convergence towards the Europeanization of the different member states is considered beneficial. Caena (2014) highlights the role of competence frameworks as a cohesive instrument for teacher policy, which makes the EU a catalyst for change by providing European education systems with the opportunity to carry out national reforms in the teaching profession through these frameworks and their various recommendations. Sánchez-Tarazaga (2016) summarizes some of the EU contributions to the design and implementation of teacher competence frameworks and compiles some of these frameworks with a list of the main desirable competences for teachers.

In the case of Spain, it is worrying that the need for in-depth reflection on professional teaching competences was not perceived until just under a decade ago. The Spanish Ministry's initiative on the proposed reform of the teaching profession (Ministry of Education and Vocational Training, 2022), for example, points to the importance of addressing this issue.

Therefore, to shed light on this question, our work has three objectives:

- ■ To identify the regulation of the teaching profession in EU education policy from 2000 to 2021 (Objective 1).
- ■ To review and analyze European documentation on the teaching profession (Objective 2).
- ■ To further the European perspective on the teacher competence profile and the EU's approach to professional competence frameworks (Objective 3).

The search for and location of documents produced by EU institutions on the teacher competence profile will provide a document base, from which to carry out analyses to discover the number of documents issued by year and type, and to study their content in greater depth. This will lead to a deeper understanding of the relevance and focus of competence frameworks within European education policy and a better understanding of EU guidelines on the teaching profession and its competence development.

Method

The research methodology is qualitative and descriptive. More specifically, qualitative content analysis (Saldaña, 2013) was used as a strategy within document analysis (López Noguero, 2002), allowing the content of the communications to be made explicit and systematized, in order for to logical deductions to be reached and the effects of the messages interpreted (Krippendorff, 2018). The phases followed are those proposed by Massot et al. (2012, p. 351):

- Tracing and listing of existing documents.
- Classification of identified documents.
- Selection of the most relevant documents for the purposes of the research.
- In-depth reading of the content of the selected documents, to extract elements for analysis and identify patterns, trends, and convergences that are being revealed.
- Cross-reading and comparative reading of the documents in question, to construct a comprehensive synthesis of the social reality analyzed.

The documentary sources used to carry out the study were primary and secondary EU sources. Following Matarranz's work (2017), we searched all the documents located on the corresponding official websites and digital libraries. Prior to analysis, the search and inclusion criteria were defined: 1) documents published in Spanish or English in official EU journals and by the Publications Office of the European Union; 2) documents issued in 2000–2021 (both years inclusive); 3) documents explicitly addressing the topics of teaching competences, teaching profile, and teaching staff.

After 587 documents were initially identified, 26 were chosen and those that did not meet the established criteria were excluded.

Results

European documentation on teachers and teacher competences

Once collected and reviewed, the documentation was classified into four groups: (1)[2] binding guidelines, (2)[3] guidelines and/or recommendations, (3)[4] exchange of data and/or good practices, (4)[5] reports or working documents (Table I).

TABLE I. Documentation included in the analysis

Institution	Year	Document	1	2	3	4
European Commission	2001	Report from the Commission - The concrete future objectives of education systems		X		
European Commission	2005	Common European Principles for Teacher Competences and Qualifications			X	
European Council	2006	Recommendation of the European Parliament and of the Council on key competences for lifelong learning		X		
European Commission	2007	Communication from the Commission to the Council and the European Parliament - Improving the Quality of Teacher Education				X
European Council	2009a	Council conclusions of 26 November 2009 on the professional development of teachers and school leaders		X		
European Council	2009b	Council conclusions of 12 May 2009 on a strategic framework for European cooperation in education and training (ET 2020)		X		
European Commission	2011a	Literature review Teachers' core competences: requirements and development			X	
European Commission	2011b	Policy approaches to defining and describing teacher competences				X
European Commission	2012a	Rethinking Education: Investing in skills for better socio-economic outcomes				X

2 Regulations, directives, and decisions.
3 Recommendations, opinions, resolutions, statements, and concluding documents.
4 Publications and notifications of an educational and informative nature.
5 Reflective reports and communications.

Institution	Year	Title				
European Commission	2012b	Supporting the Teaching Professions for Better Learning Outcomes			X	
European Commission	2013	Supporting teacher competence development for better learning outcomes				X
European Parliament and European Council	2013	Regulation of the European Parliament and of the Council establishing 'Erasmus+': the Union programme for education, training, youth and sport (...)	X			
European Council	2014	Council conclusions of 20 May 2014 on effective teacher education	X			
European Council and European Commission	2015	Joint Report of the Council and the Commission on the implementation of the strategic framework for European cooperation in education and training (ET 2020)			X	
European Commission	2017	Strengthening European Identity through Education and Culture				X
European Commission	2018	Boosting teacher quality: Pathways to effective policies				X
European Council	2018a	Council conclusions on moving towards a vision of a European Education Area	X			
European Council	2018b	Council recommendation on key competences for lifelong learning	X			
European Commission	2019	Teaching Careers in Europe: Access, Progression and Support				X
European Commission	2020a	Supporting teacher and school leader careers				X
European Commission	2020b	On achieving the European Education Area by 2025				X
European Council	2020a	Council conclusions on European teachers and trainers for the future	X			
European Council	2020b	Council conclusions on countering the COVID-19 crisis in education and training	X			
European Council	2020c	Council recommendation on vocational education and training (VET) for sustainable competitiveness, social fairness and resilience	X			
European Council	2021	Council Resolution on a strategic framework for European cooperation in education and training towards the European Education Area and beyond (2021-2030)	X			
European Parliament and European Council	2021	Regulation of the European Parliament and of the Council establishing Erasmus+: the Union Programme for education and training, youth and sport (...)	X			

Source: compiled by author

For the period 2000–2021, we found a total of 26 texts that address issues related to teachers and their competences. Figure I also shows a clear and progressive increase in the number of documents dealing with these issues.

FIGURE I. Documents issued by the EU referring to teaching staff and teaching competences over time (2000–2021)
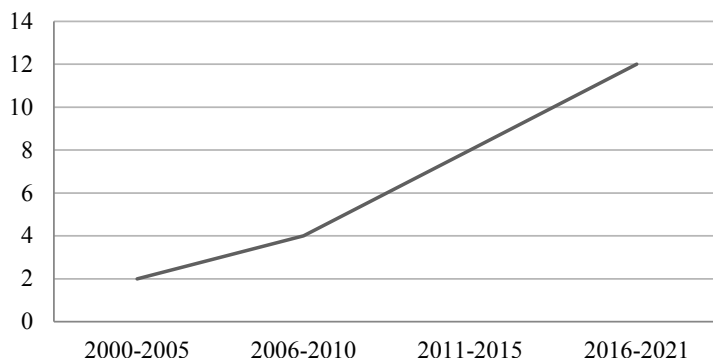
Source: compiled by author

We also note that most documents issued by the EU in this area are grouped around type (2) (guidelines and/or recommendations) and type (4) (reports or working documents) documents (Figure II).

FIGURE II. Documents issued by the EU concerning teaching staff and teaching competences according to typology (2000–2021)
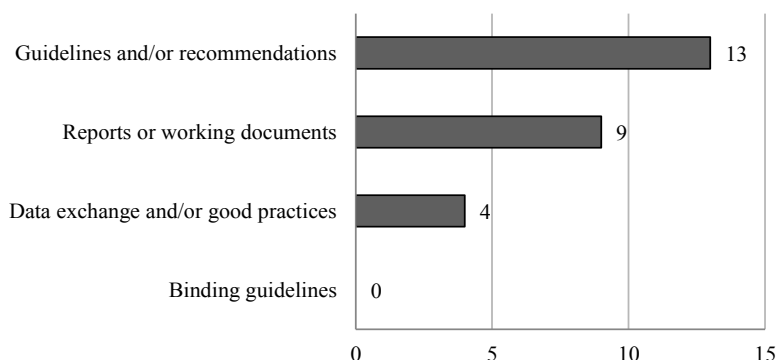
Source: compiled by author

The teacher competence profile from the European perspective

ET 2010 programme and the teaching profession

The Working Strategies for 2000–2010 (hereafter, ET 2010) set out three general objectives for education systems, which are broken down into thirteen associated objectives (European Commission, 2001). The first to improve the quality and effectiveness of education and training systems in the EU describes as one of its specific aims to improve the education and training of teachers and educators. The text considers the need to strengthen the teaching profession by improving and adapting knowledge and skills to the new social context. Thus, according to ET 2010, the role of teachers is crucial to ensure that students acquire the skills required by society and the world of work.

As a result of this work, there appears to be a growing evolution of education policies, including teacher training (Manso & Valle, 2013). In 2002, a working group of experts was set up within the framework of the Barcelona European Council (European Council, 2002), to work on improving teacher education, with representatives from the countries participating in ET 2010.

In this context, and a few years later, the report *Common European Principles for Teacher Competences and Qualifications* (European Commission, 2005) was published. As its name suggests, the report outlines the principles that should guide teacher competences and profiles. It is one of the most significant contributions in this field and in the context of European guidelines. These principles should serve to leverage policies to improve the efficiency and quality of education in the EU and to achieve a teaching profession in Europe based on: (1) high qualifications, which involve broad knowledge and competence development, (2) lifelong learning, continuing training throughout professional development, (3) mobility, through participation in European projects, and (4) collaborative work with other agents in the educational community. Alongside these common principles, the EU proposes three areas in which teachers in the member states should be able to evolve: (a) working with others, (b) working with knowledge, technology, and information, and (c) working with and in society (European Commission, 2005).

From these principles, we can deduce that not all the necessary competences can be expected to be achieved during the period of initial teacher training education. However, as suggested by European experts, they will need to be developed during the induction stage and in-service training.

In addition to guiding the broadening of competences in continuing professional development, the EU encourages teachers to have a reflective and active attitude towards their own learning and to adopt greater responsibility in their training and the development of competences required for their work. Within the framework of this group of European experts, we highlight the communication entitled *Improving the quality of teacher education* (European Commission, 2007), in which teaching and teacher education are seen as key elements in guaranteeing teaching quality and improving young people's achievements in school. It also shows that changes in society and education place fluctuating demands on teachers: imparting basic knowledge, helping young people to acquire key competences, developing collaborative and constructive approaches to learning, acting as classroom managers, educating in heterogeneous classrooms, taking advantage of the opportunities offered by new technologies, or assuming tasks related to internal school management. These changes require teachers to acquire competences in their initial and continuing education:

> To equip the teaching body with skills and competences for its new roles, it is necessary to have both high-quality initial teacher education and a coherent process of continuous professional development keeping teachers up to date with the skills required in the knowledge based society (European Commission, 2007, p. 5).

The European Commission also expresses its concern about training systems, stating that they are not conducive to developing the competences needed in 21st century society. In this respect, and on the basis of the Common European Principles set out above (European Commission, 2005), the Commission suggests a series of policy orientations and measures to improve the quality of teacher preparation in the EU aligned around six areas: (1) lifelong learning, (2) the development of pedagogical attitudes and skills, (3) the implementation of policies requiring higher level qualifications for entry into the profession, (4) reflective teaching

practice and research interest, (5) improvement of teacher educator qualifications, and (6) the need for teachers to cater for and embrace the cultural diversity in which we live.

The ET 2020 programme and "Rethinking education"

The Council meeting of 12 May 2009 established the continuity of the ET 2010 programme by means of the Working Strategies 2010–2020 (hereinafter, ET 2020), which would therefore mark the entire EU education policy strategy for the decade (Valle, 2012; Matarranz, 2017). This new framework updates some of the objectives defined in the previous stage and incorporates new ones. The second of these states that the main challenge should be to ensure that all individuals achieve key competences. It also makes the following reference to teachers: "there is a need to ensure high quality teaching, to provide adequate initial teacher education, continuous professional development for teachers and trainers, and to make teaching an attractive career-choice" (Council of Europe, 2009b, p. 3).

To ensure the proper implementation of ET 2020, the EU again relied on working groups made up of experts from the different member states. A specific group was set up to deal with the teaching profession. This group studied aspects such as the development of teachers' competences, their professional development, or the policies that regulate their work. Of particular interest is the document issued by this committee entitled *Policy approaches to defining and describing teacher competences* (European Commission, 2011b), which is responsible for studying approaches to defining teacher competences in all EU countries. Its purpose was to draw comparisons between member states' policies and offer recommendations to help them expand their education policies regarding a possible competence framework for teachers—quite a novelty.

It was in this context that the European Commission decided to launch, at the end of 2012, *Rethinking Education* (European Commission, 2012a), with the aim of ensuring that by 2020 new teaching and learning methods would be introduced in education systems to equip students with appropriate qualifications for employment. The proposal was to reform education systems across the EU in ways that responded to the

growing demand for higher skill levels and to reduce unemployment. In this sense, the reforms were aimed at optimizing basic skills levels, boosting training, enhancing entrepreneurial skills, and improving language competences. The document identified a limited set of strategic priorities to be addressed by member states, together with a series of recommendations, including one for European teachers:

> Teachers now face unprecedented challenges (...): the increasing requirements of education, the massive retirement of teachers from the baby-boom generation and severe staff shortages in some subject areas will result in an increased demand for qualified educators at all levels and call for comprehensive actions to boost the attractiveness of the profession. These should include both financial and non-financial incentives (p. 10).

This question demands new competences of the teaching profession. Member states are therefore called upon to define a competence framework or professional profile for teachers. The report considered it essential to review and consolidate the professional profile of all teaching professions through the following actions:

> (...) revise and strengthen the professional profile of all teaching professions (teachers at all levels, school leaders, teacher educators). Key actions are reviewing the effectiveness as well as the academic and pedagogical quality of Initial Teacher Education, introducing coherent and adequately resourced systems for recruitment, selection, induction and professional development of teaching staff based on clearly defined competences needed at each stage of a teaching career, and increasing teacher digital competence (European Commission, 2012a, p. 15).

It also urges decisive action to support new approaches to teaching and learning, with a stronger focus on the work environment, in partnership with other organisations. The above-mentioned communication (European Commission, 2012a) is accompanied by five other working documents providing evidence of initiatives and good practice, one of which is *Supporting the Teaching Professions for Better Learning Outcomes* (European Commission, 2012b). This report devotes a section

to teaching competences. It states that teachers should have several specific competences, including key competences. Furthermore, the report insists on the idea that teachers should not only help students to develop the skills that are easier to assess but should also foster higher order cognitive skills (problem-solving, critical thinking, decision-making, etc.). In the last chapter, it pinpoints some keys to support the teaching profession (European Commission, 2012b) of which we highlight the following:

- Define the competences and qualities required of teachers.
- Redesign recruitment systems to select the best teachers.
- Ensure an induction period for new teachers.
- Provide feedback to teachers on their performance for professional development and improvement.

A subsequent study entitled *Supporting teacher competence development for better learning outcomes* (European Commission, 2013) deals in depth and exclusively with the topic of teacher competence, with the aim of identifying the key features of successful teacher competence policies and providing practical examples. Areas covered include the meaning of teaching competences, the benefits of competence frameworks, examples of policies used by some European countries, guidelines for developing and assessing teaching competences, and guidelines for encouraging teachers to develop these competences further.

We also highlight the contribution entitled *Boosting teaching quality: Pathways to effective policies* (European Commission, 2018). Focusing on student learning, this study provides evidence of effective and efficient teacher policies. The focus on these two variables is important in the current context, given the increasing demands on teaching functions, as well as budgetary constraints on education spending. The major contribution of this report is the proposal of a tool, in the form of a four-stage policy matrix (Figure III), to assist policymakers in designing, analyzing, and implementing long-term teacher-related strategies.

FIGURE III. Four-stage policy matrix

Source: compiled by author based on European Commission (2018)

The report analyses and develops eight policy measures that constitute the pillars on which teacher education policies should be based, to achieve higher quality teaching. These measures form a policy mix for the teaching profession. Those that have an impact on teaching quality, and ultimately on student outcomes have been selected, although measuring these variables empirically has been acknowledged as a real challenge. These measures are divided into two areas, as shown in Table II.

**TABLE II.** Policy measures to support teacher quality

Transversal measures
The definition and use of professional competence frameworks
The use of (monetary and non-monetary) incentives
Targeted measures
The use of tools for recruitment and deployment of high quality teachers
The provision of teacher education, induction support, and professional development
Support for schools as learning organizations, teacher leadership, and teacher networks
The use of teacher evaluation and other human resource management tools
The provision of tools, guidelines, and research to support teaching quality
Measures to improve the social status, prestige, and attractiveness of the teaching professional

Source: European Commission (2018)

More recently, the European Commission (2020a) published a new policy-oriented paper entitled *Supporting teacher and school leader careers*, which focuses on the career progression of teachers and school leaders. The document addresses how competence frameworks can support teachers in their career progression (Figure IV). This is

an interesting contribution since, as Snoek et al. (2019) note, many competence frameworks in Europe are limited by their static view.

FIGURE IV. Framework to design teacher careers.
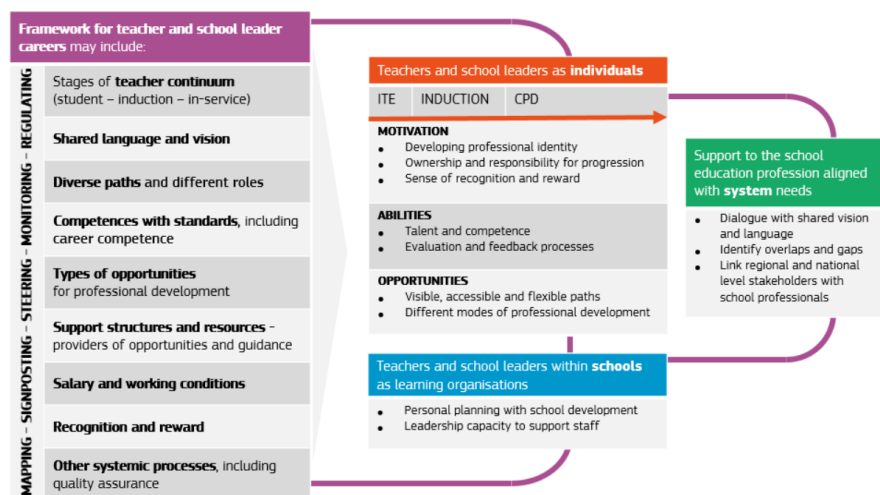
Source: European Commission (2020a)

According to this publication, some of the most outstanding aspects for creating teaching competence frameworks are as follows:

- provide conditions of support for teachers at individual, school, and education system level,
- pay attention to all phases of teacher professional development (initial training, entry into the profession, and continuing professional development),
- promote motivation to develop competence through recognition and reward criteria,
- incorporate clear guidance and opportunities for career progression,
- provide professional development opportunities,
- ensure visibility of the different career paths available to teachers, and
- progressively abandon traditional approaches that view careers as flat or hierarchical.

In this effort to recognize different possibilities for professional development in teaching, different paths are proposed that entail a change in role, including assuming responsibility in the management team, specializing in a teaching area, coordinating school projects, changing schools or stages, collaborating in designing the curriculum with the administration, or working in educational research. All this should be reflected in competence frameworks and higher salaries.

ET 2030 Programme and the European Education Area

In 2020, the second strategic programme came to an end, but the EU continued to work on education. A new strategic document marked the start of the decade, providing a guide towards the achievement of a European Education Area by 2030 (European Council, 2021). Like its predecessors, the new ET 2030 strategic framework establishes priorities that will set the direction for the decade. Strategic priority 3 aims to improve competences and motivation in the educating profession:

> Explore the possibility of developing policy tools in a form of teacher competence frameworks to increase relevance of initial teacher education programmes as well as development of continuous professional development opportunities and to provide guidance for teachers in their career progression (European Council, 2021, p. 19).

This strategic priority underlines the need to pay attention to teacher well-being, to increase the attractiveness of the teaching profession, and to reassess the role of educational leadership. In addition, twelve specific actions are proposed to improve teachers' competences and motivation (Table III).

TABLE III. Specific actions for priority area 3, ET 2030

	Increase the attractiveness of the teaching profession
	Revalorize teaching profession (economic and social)
	Create competence frameworks
	Develop digital competences
PRIORITY AREA NO.3	Create European Teacher Academies
	Support the promotion of excellence in teaching at all levels
TEACHERS AND TEACHER EDUCATORS	Support linguistic and cultural diversity
	Promote teachers' mobility
	Improve teachers' working conditions
	Reduce gender imbalances in education and training-related professions
	Promote competency-based teacher training programmes

Source: compiled by author

In addition, a novel initiative was launched: European Teachers Academies, to be implemented through the Erasmus+ programme (2021, L98, 1) and aimed at facilitating networking, knowledge sharing, and mobility between institutions, providing Europe-wide learning opportunities at all stages of professional teaching life, exchange of best practice, and innovative pedagogies.

Discussion and Conclusions

Teacher competence frameworks are a tool for teacher professional development (Amor & Serrano, 2019) and are therefore essential in the educational context of any European institution. Moreover, the role played by the EU as a supranational body is increasingly decisive in influencing the policies of each country (Egido et al., 2018). Therefore, the purpose of this research was to identify EU documentation on teacher profiles and competences and to analyze its content to understand the EU guidelines on the teaching profession and competence development. In this section, we will report the main findings of the study and will

follow with a final discussion on the use of competence frameworks as a tool for designing teaching careers.

Since the ET 2010 programme was established, the EU has wanted to ensure that education systems have well-trained and appropriately skilled teachers. This research has indicated that interest in teaching has increased in recent years and the EU continues to establish itself as a key player in the public agenda, as previous studies have shown (Caena, 2014; Stégel, 2014).

But in addition to its importance, we also report another indicator: attention to detail. We are witnessing a progressive effort by the EU to outline the configuration of the teaching profile, not so much in terms of content (i.e. with a specific list of features and functions of the profession), as recounted in a previous work (Sánchez-Tarazaga, 2016), but in terms of developing tools to facilitate implementation, such as the four-step matrix (European Commission, 2018), or the guide to professional career design (European Commission, 2020a). The question that would then arise is why the EU has decided to opt for this more instrumental vision rather than agree on the basic contents of that competence framework. We believe there are two main reasons that could answer this question and will address them below.

The first reason may be due to the complexity of implementing teacher policies. In this regard, we would highlight the potential of designing a tool as a crosscutting measure to coherently integrate other teacher policies (Halász, 2019). Indeed, in both the matrix presented (European Commission, 2018) and the most recent guide (European Commission, 2020a), teacher competence frameworks are fully functional and can connect each area of policies aimed at improving teacher quality (recruitment, training, teacher evaluation) to guide teachers' careers. This approach can clarify the expectations and responsibilities of the teaching profession, as well as support processes of self-reflection and dialogue on career development (European Commission, 2020a).

The second reason for this more instrumental approach has to do with the diverse nature of this profession. While competence frameworks make it possible to identify the features common to teaching, competences must be developed according to the specific context in which the educational act takes place. Under this approach, there is no single best way, or type, of working as a teacher. Rather, there are different effective pedagogical approaches, depending on the profile and preferences of the teacher, the

teaching context (the school's value system, leadership style, teamwork culture, etc.) and the type of learners (European Commission, 2018). Therefore, we need to recognize their contextual nature and understand each school as a local unit when designing and implementing teacher-related policies, including the use of teacher competence frameworks (European Commission, 2013). Thus, in our opinion, we can agree that the starting point should be 'glocal' designs of competence frameworks, according to the motto *think globally, act locally*. That is, by respecting the singularities of each educational centre, which will be required to take on the task of specifying and monitoring them.

Furthermore, professional competence frameworks should not only be based on an analysis of teachers' work, but also on a social dialogue about their roles, in a way that clearly states what is expected of each teacher and reflects future expectations (European Commission, 2020a). It is therefore desirable that this process involve teaching teams and other stakeholders in the education community to ensure that a wide range of views are represented, thereby strengthening definitions and acceptance of the resulting framework (Snoek et al., 2019). We also find the EU's participatory approach interesting in that it urges countries to allow specialized professionals to develop specific frameworks so as to ensure that users can fully adapt and understand them.

Despite the emphasis on the contextualized nature of professional frameworks, the trends of teaching competences that require greater attention in order to respond to the challenges posed at any given time should not be ignored. For example, in some of its communications, the Council of Europe recommends that governments seek to promote competences that are particularly relevant today, such as working in multilingual and multicultural environments, working with learners from disadvantaged backgrounds and with special needs, sustainable development, and digital pedagogies (Council of Europe, 2020a, b).

Finally, it is important to acknowledge some limitations of the study. Other noteworthy contributions from the EU, such as the Eurydice reports or the monographs devoted to the professional profile and competences of teacher educators, have not been addressed here. We invite you to incorporate this limitation in future research, as its detailed study will enrich and complete the conclusions of this work. Likewise, the volume of documentation on the subject and limitations of length have resulted in this review focusing on a descriptive qualitative approach, albeit from

a reflective perspective, especially in the final section of the discussion and conclusions.

In the light of these considerations, this work may constitute pioneering exploratory research whose main contribution is the systematic compilation of documentation and identification of the most relevant EU proposals on the teaching profile and professional competence frameworks. However, now that the discourse on their presence and importance in European education policy has been communicated, it is time to put them in practice. Experience shows that designing and implementing competence frameworks are tools that have already been used to influence education policy (Halász, 2019). We therefore hope that the issues raised here can stimulate reflection on the importance of competence frameworks, especially by policymakers at national, regional, and institutional level.

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Transitioning to adulthood from a gender perspective: young care leavers after 25 years of age[1]

La transición a la vida adulta en perspectiva de género: jóvenes extutelados después de los 25 años

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Abstract

Youngsters who leave the Child Protection System (CPS) have to deal with an accelerating process transitioning to the adult life, without the support that other youngsters have. The studies that explore this topic in Spain, and which are focused on the first years of this transition –mainly between 18 and 24 years old- highlight that it is a group of people with a lack of training, and this makes it difficult to be included in the working life. However, there are no studies that analyse their situation with a perspective over the time. An online ad hoc

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questionnaire was designed for care leavers between 25 and 35 years of age. Using the snowball technique, a total of 81 questionnaires were collected. The main findings are signifying that care leavers who are of this age are in a better situation academically and working wise, compared to those who just left the CPS. Moreover, these care leavers have a higher satisfaction with their years at in the CPS compared to the support that they received when they left the CPS, and they explained that they suffered psychosocial complex adversities. Some gender differences were found. Girls seem to go for the maternity option and for building a family project instead of a professional one, and they mention being less satisfied with their life compared to the boys. To conclude, the situation of the care leavers improves over time, but they also had to deal with some adversities that place them in vulnerable situations with regards to social inclusion. It is necessary to place more attention on those care leavers to help them face at least their emancipation process with a guarantee of success. Moreover, it is important to do this within a gender perspective, because of the fact that lots of those girls live this process through the maternity.

Keywords: child protection, care leavers, transitioning to the adult life, social working integration, gender, satisfaction.

Resumen

Los jóvenes que abandonan el Sistema de Protección Infantil (SPI) deben enfrentarse a un proceso de transición a la vida adulta acelerado y sin los apoyos de los que disponen los jóvenes de la población general. Los estudios que abordan este tema en España, y que se centran en los primeros años -mayoritariamente entre los 18 y los 24 años- señalan que se trata de un colectivo con carencias formativas que dificultan su integración sociolaboral. No obstante, no existen estudios que analicen su situación con una mayor perspectiva temporal. En este estudio se elaboró un cuestionario ad hoc online destinado a jóvenes extutelados que se encontraran en la franja de edad de 25-35 años. Utilizando la técnica de muestreo de la bola de nieve se recogieron 81 cuestionarios. Los principales resultados parecen indicar que a nivel formativo y laboral se encuentran en mejor situación que los que acaban de abandonar el SPI, que manifiestan una mayor satisfacción con su estancia en el SPI que con el apoyo recibido a su salida, y que sufrieron adversidades psicosociales complejas. Se encontraron diferencias de género relevantes. Así, las chicas parecen optar mayoritariamente por la maternidad y por un proyecto familiar en detrimento de uno profesional, manifestándose menos satisfechas con su vida actual que los chicos. Se concluye que la situación de los jóvenes extutelados mejora con el paso del tiempo, pero también que se han tenido que enfrentar a unas adversidades que ponen seriamente en riesgo su inclusión social. Es necesario redoblar esfuerzos en la atención que se le presta a estos jóvenes para que puedan afrontar su proceso de

emancipación con unas mínimas garantías de éxito. Además, debe hacerse con un enfoque de género, ya que muchas de las chicas viven este proceso marcado por la maternidad.

Palabras clave: protección infantil, extutelados, transición a la vida adulta, integración sociolaboral, género, satisfacción

Introduction

In Spain, as in most countries, the public administration has subsidiary responsibility for the care of children when the family does not cover their most basic needs, relying on the Child Protection System (CPS). When the child's situation puts their development at serious risk, a state of neglect may be declared, whereby the public administration assumes guardianship by adopting a measure of protection and placing the child either in foster care (with either extended family or an outside family) or in a shelter or residential centre. These measures of protection are of a provisional nature, and during their execution an attempt is made to work with the families with a view to a possible reunification if the reasons that gave rise to the declaration of abandonment are overcome. In cases where reunification with the family of origin is not possible and the young person reaches legal adulthood, they are prepared for emancipation when they leave the CPS at the age of 18. According to the latest official statistics released by the Spanish Childhood Observatory (Observatorio de la Infancia, 2021), there were a total of 49,171 children and adolescents in Spain with some form of measure of protection at the end of 2020, of whom 47% were in residential care and 53% in foster care. Although for years Spain has been committed to promoting foster care, the fact is that the number of young people in residential care is still considerable. This is due, among other things, to the arrival of unaccompanied foreign adolescents, who are mostly placed in protection centres. Also according to official data, one out of every three young people in care reaches legal adulthood while in care, as it has not been possible to adopt a family alternative (reunification with their family of origin or foster care in another family) beforehand. Act 26/2015, *on the modification of the child*

and adolescent protection system, mentions for the first time the need to support these young people after reaching legal adulthood, although the implementation of support services is very uneven throughout the county, because, among other things, the responsibilities for this area are devolved to the autonomous communities, and the pace at which they have been adapting their regional legislation and implementing actions has varied. This, along with the lack of coverage in national legislation of a child protection data collection system (UNICEF and Eurochild, 2021) also creates difficulties in the collection and publication of official data. This makes it impossible to have reliable statistics on such relevant variables as the age at which children leave the protection system (CPS), or where they go to live afterwards, among others.

In recent decades, an increasing number of studies have focused on the population of young CPS care leavers, who are forced to make, in most cases, an accelerated, abrupt and often unprepared and unsupported transition to adulthood (Stein & Ward, 2020). The consequences of this uneven process can result in incomplete educational pathways, high rates of unemployment or precarious employment (Montserrat, Casas, Malo & Bertrán, 2011), housing problems, mental health problems (Mann-Feder & Goyette, 2019) and low subjective well-being (Martín, González-Navasa, Chirino & Castro, 2020), among other problems (Trull-Oliva, Janer-Hidalgo, Corbella-Molina, Soler-Masó & González-Martínez, 2022).

This increased interest on the part of researchers is perhaps due to the fact that studies focusing on the population of care leavers are, in addition to deepening the knowledge of the difficulties in the transition to adulthood of a vulnerable population, able to provide data that can be used as indicators for the evaluation of the results of the CPS. In this sense, the results of these studies make it possible to challenge public policies for the implementation of improvements in the field of well-being, equal opportunities and social action in the complex transitions to adulthood of young people with reduced opportunities and support (Dixon, Ward & Blower, 2019). Thus, this growing interest in studies on young people in care has led to improvements in policy and practice in many countries, both through the inclusion in legislation of the need for care for these young people from the age of 18, and the emergence or consolidation of support services up to the age of 21, and in some cases beyond (23 or 25 years), albeit slowly and not without difficulties (McGhee, 2017; van Breda et al., 2020).

In any case, although the responses being implemented are still far from satisfactorily covering the needs of this group, there is a general consensus in recognizing that these young people need stable supportive environments (Mendes, 2022), both while they are in the CPS and when they leave it (Comasólivas, Sala-Roca & Marzo, 2018; Courtney et al., 2020). The role of education is key in all these processes, and progress must be made in the evaluation of socio-educational action programmes. Along these lines, Melendro, Rodríguez-Bravo, Rodrigo and Díaz (2022) highlight the success of socio-educational projects for transition to adult life in the training of young people, noting that this training is closely related to their perceived autonomy and psychological well-being. Furthermore, studies such as those by Courtney et al. (2020) highlight the capacity for recovery and resilience in these young people despite the trauma and challenges they have to overcome, noting that they often remain optimistic about their future, confident in their ability to achieve their goals, and report having people to confide in and receive support from.

However, most of this research focuses on the population in the process of emancipation from the CPS or during the first years after leaving it, i.e. between 18 and 21 years of age, up to the age of 25 at most. This article deals specifically with the study of young care leavers over the age of 25, an age bracket for which few studies have been carried out. Perhaps the most noteworthy is that carried out by Brännström, Forsmana, Vinnerljunga and Almquist (2017), which used longitudinal data to examine the outcomes from a cohort of more than 14,000 individuals in the CPS in Sweden, who were followed until they were around 60 years of age. They found that evident inequalities between adults who were and were not in care in relation to their social, economic and health trajectories. However, they also noted that, despite their vulnerability, they tended to cope well as adults. Similar results were found in one of the pioneering studies in Spain (Del Valle, Bravo, Álvarez & Fernanz, 2008), where it was found that the majority of those in foster care aged 24 or older were not immersed in processes of social exclusion.

In another part of the study dedicated to young care leavers over the age of 25 (Crous, Montserrat-Mir & Matás, 2021), 13 young people were interviewed with the aim of researching the factors that help young people in their emancipation process. Both personal factors, such as the

ability to overcome adversities or the perception of control and autonomy, and relational contextual factors, such as education and social support, were identified. In addition, the young people also felt that the passage of time helped them, in the sense that the label of care leaver faded away.

Another variable that is attracting increasing interest among CPS researchers is gender. In recent years, evidence has emerged that points to significant gender differences in the experience of being in public care. Although emotional and behavioural problems are prevalent among those in care (Martín, González-García, Del Valle & Bravo, 2018), research shows that young women and men experience these problems differently. Thus, internalized emotional problems are more frequent in young women, while externalized behavioural problems are more common in young men (Dowdy-Hazlett & Boel-Studt, 2021; Sonderman et al., 2021). In the case of the latter, the high prevalence of behavioural problems often produce antisocial behaviours that lead to problems with the justice system (Baidawi, 2020; Martín, González-Navasa & Domene-Quesada, 2021). In the case of young women, one peculiarity that has been observed among adolescent girls in care is the high number of pregnancies, which some studies attribute to the fact that these girls have a positive perception of adolescent motherhood and prioritize motherhood and finding a partner over occupational goals (Bermea, Rueda & González-Pons, 2021; Hlungwani & van Breda, 2020; Zárate, Arnau-Sabatés & Sala-Roca, 2017). Furthermore, studies analysing subjective well-being have detected lower scores among young women (Llosada-Gistau, Casas & Montserrat, 2017; González-García et al, 2022).

In the case of young care leavers, although studies from a gender perspective are scarce, results indicate that young women are generally worse off than men. Dinisman, Zeira, Sulimani-Aidan and Benbenishty (2013) identified lower subjective well-being among female care leavers compared to males. The review by Martín (2015) concluded that girls in residential care have greater difficulties in social and occupational processes, with unemployment rates much higher than those of their male counterparts. Hlungwani and van Breda (2020) described the psychosocial resilience processes that facilitate the transition of young female care leavers and identified similar processes to those of male care leavers on the one hand, while noting the presence of specific processes of resilience on the other, and in particular the acceptance of motherhood and assumption of responsibilities. Colbridge, Hassett and

Sisley (2017) analysed intersections between being a woman and a care leaver, where aspects such as sexual abuse, exploitation and high risk of pregnancy are realities they face when they leave the CPS, as well as more mental health problems than young men. These authors underlined that although many female care leavers achieve competitive academic results and employment pathways, this is not as common statistically, as emotional barriers interfere, such as the development of self-confidence and pressures to conform to gender roles that do not necessarily reflect their identity, which already complex on leaving the CPS. In addition, the few studies that have focused on gender-based violence in young care leavers have found a prevalence four times higher than in the general population, and that it also tends to increase with age, so that it would continue to be present after leaving the CPS, affecting young women in particular (Dosil, Jaureguizar & Bermaras, 2021; Oyarzún, Pereda & Guilera, 2021).

As we have seen, there are hardly any studies that analyse the reality of young care leavers beyond the first years after reaching legal adulthood, and there are even fewer studies that approach this situation from a gender perspective.

Objectives

The aim of this article is to shed light on the situation of young care leavers between 25 and 35 years of age, taking into account the gender perspective, thus contributing to augmenting the few studies that cover these two areas, with the ultimate aim of proposing lines of socio-educational action. More specifically, the goals are:

- To find out the level of education they have attained, and their current employment and living situations.
- To analyse the main psychosocial problems that have affected them after leaving the CPS.
- To find out how satisfied they are with their stay in the CPS, with the support they received on leaving it, and with their current life.

Method

The methodology used in this research is quantitative, descriptive and cross-sectional, using a questionnaire as a data collection instrument. However, this study also included a part of qualitative data collection through thirteen interviews with young care leavers (see Crous et al., 2021), the results of which are discussed with those of the quantitative part described here.

Sample

This study involved 81 young people who were taken into care by the public administration, residing in Catalonia, the Canary Islands and Cantabria. These three communities were chosen for convenience, as the research team had contact with organizations that worked with care leavers, and who offered to assist in locating young people between 25 and 35 years of age. At the time of completing the questionnaire, the young people were aged between 25 and 35 (M = 29.2; SD = 3.6). Fifty of them were female (61.7%). Of the total sample, 30 (37%) were born outside Spain. Of these, 12 (40%) had Spanish nationality, and just over a third had a residence permit (36.7%) and/or work permit (33.3%). The percentage of men born outside Spain (61.3%) was significantly higher than that of women (22%), (χ^2 (1) = 12.668, p < .001). The mean age of entry into the CPS was 11.8 years (SD = .97) and the mean age of exit was 17.5 (SD = 1.5).

Instrument

Due to difficulties in accessing the target population, the decision was made to develop an *ad hoc* questionnaire that could be disseminated online through social networks. This questionnaire, in addition to collecting reference data (gender, nationality, community of residence, legal status, age of entry and exit from the CPS), included questions on academic level achieved, current employment and housing situation, relevant problems they may have experienced after reaching the adulthood, as well as their level of satisfaction, both with their stay in the CPS and

with the support received on leaving, as well as with their current life in general. For the latter question, we used the single item of the *Overall Life Satisfaction Scale* (OLS), which has been previously included in research on subjective well-being in young people in residential care (Llosada-Gistau et al., 2017), as well as in young care leavers upon release from the CPS (Martín et al., 2020).

The questionnaire was developed by the research team, and subsequently validated by a group of young care leavers living in public housing. In the validation process, a group interview was conducted with three care leavers. At the interview, they were first presented with the questionnaire, were given time to fill it in individually and read all the questions, and then each question was discussed in the group one by one. They were asked for their opinion on whether the question was understood, whether it was coherent, whether it was relevant, and whether they had any other comments. All opinions and/or criticisms were noted down, and they were asked to propose a solution for each of them. From the data collected, the research team decided how to make the changes and how to implement the comments received. An example of an improved question is 'Who do you live with?' Participants asked for the addition of other options that had not been considered, such as living with a partner and the partner's family, living with a foster family, or living with biological family.

Procedure

Once the questionnaire had been drafted, contact was made with the heads of organizations that managed residential centres and resources for young care leavers, asking them to send it to care leavers aged between 25 and 35 with whom they were in contact, and to ask them both to fill it in and to forward it to their peers in the same age range, using the snowballing technique. The link to the questionnaire was also disseminated through social networks and websites of different organizations, e.g. organizations related to adult education, or to support, or programmes for young care leavers; associations of care leavers; or civic centres and youth centres in various big cities. This non-probability sampling technique is recommended when working with samples that are difficult to locate (Cubo, Martín & Ramos, 2011).

Data analysis

Bivariate analyses were performed to find out in which variables there were significant differences between young men and women. For categorical variables we used the χ statistic^2 and the corrected standardized residuals (CSR). The confidence interval used for the CSRs is .95, so that values above 1.95 and below -1.95 are considered significant. For continuous variables, Student's *t-statistic* was used. Effect size was calculated using Cohen's *d* for continuous variables and *odds ratios* (OR) for categorical variables. To describe the magnitude of the effect size, we followed the criteria proposed by Chen, Cohen and Chen (2010), which are, for Cohen's *d* and ORs respectively: < .20 and < 1.68: negligible; .20 - .49 and 1.68 - 3.47: small; .50 - .79 and 3.48 - 6.7: moderate; > .80 and > 6.7: large. All analyses were conducted using SPSS v24.

Ethical aspects

This research was approved by the Research Ethics and Biosafety Committee of the University of Girona (approval code: CEBRU0004-2019). An agreement was also signed with the child protection authorities specifying the treatment of the data by the Research Team in relation to access to information, data treatment at the team site, security measures and confidentiality.

Results

Figure 1 shows the level of education attained by the young care leavers. The differences between young men and women were statistically significant (χ^2 (8) = 12.315, p = .14). The results indicated that women tend to reach lower levels than men, with the difference between the two genders being particularly large in the percentages who reached only secondary education (CSR > 1.95). Thus, almost half (48%) of the women reached secondary education at most, including those who only completed primary education, a much higher percentage than the men (16.2%). Although the corrected standardized residuals were

not significant, they became more so in the percentages of those with university studies, especially in Master's/Postgraduate studies (CSR = 1.9).

FIGURE I. Level of education attained by women and men (%)
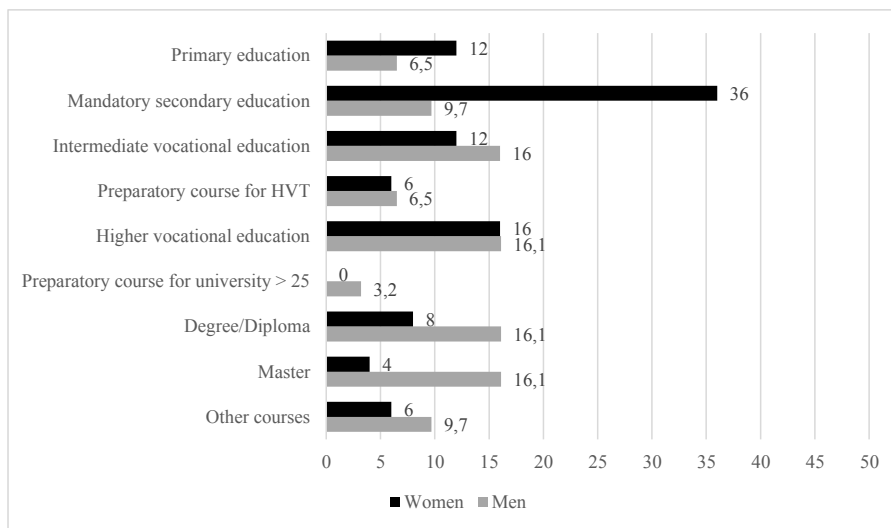
Employment status (see Figure 2) was also clearly better for young men than for women (χ^2 (3) = 8.244, $p < .05$). The corrected standardized residuals (CSR > 1.95) showed that the percentage of men working full-time was higher than that of women, while the percentage of women who were not working was higher than that of men. Of those who were employed, the percentage of men who were employed with a contract was significantly higher (90%) than that of women (71.8%), (χ^2 (1) = 3.475, $p < .05$), with a moderate effect size: OR = 3.536 [95%CI .888, 14.078]. The poorer employment situation of women was also reflected in the receiving of some kind of financial support. In this respect, 22% of women received some kind of allowance, while no men were recipients (χ^2 (1) = 7.892, $p < .01$), the effect size being small: OR = 1.795 [95%CI 1.457, 2.212].

FIGURE II. Current employment status of women and men (%)
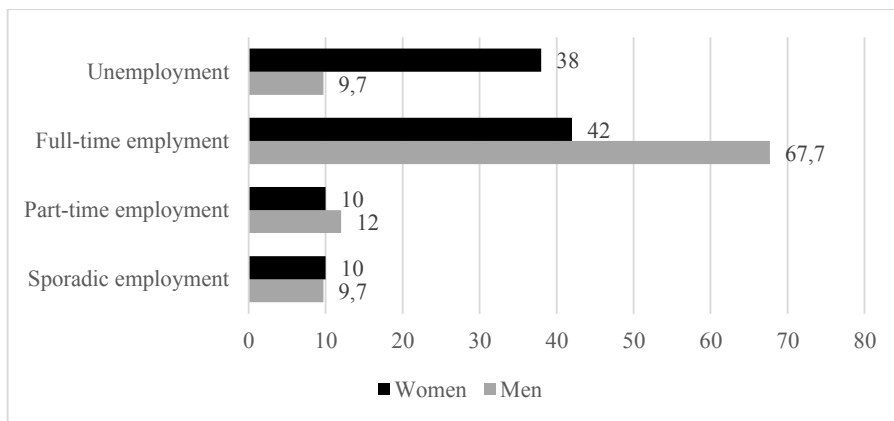
Regarding living situation (see Figure 3), significant differences were also found by gender (χ^2 (8) = 18.082, $p < .05$). The corrected standardized residuals showed that significant differences were found between those who shared a flat with other people, which was more common among men, and those who lived with a partner and children, or in other situations, which mostly referred to living alone with a child, which was more common among women. These differences are related to the fact that women reported having significantly more children ($M = .95$, $SD = 1.07$) than men ($M = .07$, $SD = .26$), $t(49.479) = -5.181$, $p < .001$, the effect size being large in this case: $d = .93$.

FIGURE III. Who women and men currently live with (%)
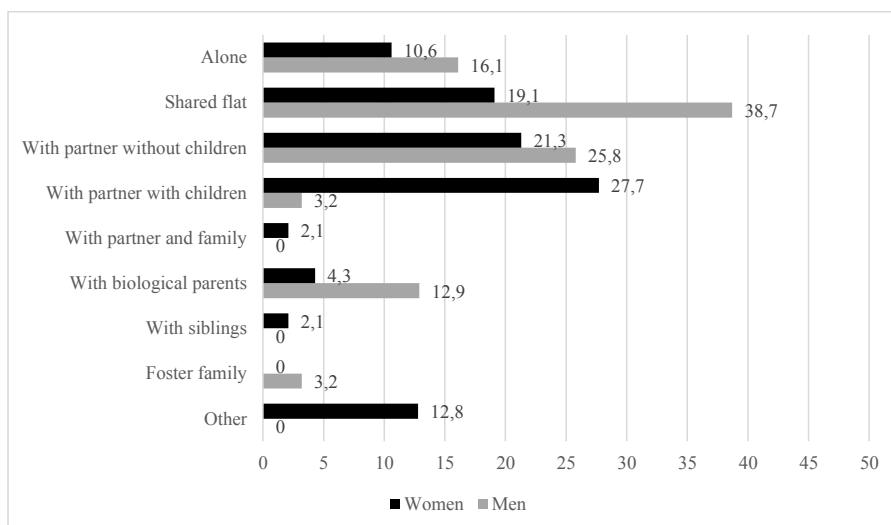
When analysing the most relevant problems they have had since leaving the CPS (see Table 1), significant differences were only found in relation to incarceration, which occurred in one out of ten men and in none of the women. However, the effect size was small. Although no significant differences were found between men and women, it should be noted that the percentage of care leavers who have been hospitalized due to health problems was high for such a young population. The percentages of those who have had addiction problems or who have lived on the street at some point were also high, reaching around 20% of young men.

TABLE I. Relevant problems for men and women (%)

	Men	Women	χ2(1)	OR [IC95%]
Physical health problems involving admission for more than 5 days	16.1	10.9	.453	1.577 [.416, 5.983]
Mental health problems that have involved admission for more than 5 days	3.2	4.3	.062	.733 [.064, 8.455]
Incarceration	10.3	0	4.953*	2.769 [2.037, 3.765]
Drug and/or alcohol abuse	16.7	14.6	.062	1.171 [.335, 4.092]
Homelessness	19.4	12.8	.623	1.640 [.476, 5.645]

*$P < .05$

Finally, when analysing satisfaction, significant differences were only found in satisfaction with life now (see Table 2), which was higher in men, although with a small effect size. Although not significant, the differences indicated that satisfaction with the experience in the CPS and with the support received on leaving the CPS was higher for men, with insignificant and small effect sizes, respectively.

TABLE II. Satisfaction with the stay in the protection system, with support on exit, and with current life

	Men M(DT)	Women M(DT)	t(gl)	Cohen's *d*
Satisfaction with the CPS experience	7.35(2.07)	7.17(2.68)	.332(77)	.007
Satisfaction with the support received when leaving the CPS	6.52(3.53)	5.59(3.78)	1.087(75)	.2523
Satisfaction with current life	7.87(1.95)	6.9(2.33)	1.936(78) *	.4368

*$p < .05$

Discussion and conclusions

The aim of this study was to provide information on the situation of young people who were taken into care by the public administration when they were children and are currently aged between 25 and 35, and to do so from a gender perspective. To this end, three objectives were established. The first was to determine the level of education attained, their current employment situation and their living situation. The findings indicate that, in general, the level of education attained is higher than that of adolescents care leavers, among whom there is a greater number who have not completed compulsory education (Martín et al., 2020; Montserrat et al., 2011). This could be due to the fact that many care leavers eventually return to school, which would imply that both the academic and general situation improves, in parallel to a process of maturation and awareness of the importance of education (Courtney et al., 2020; Del Valle et al., 2008; Melendro et al., 2022). In terms of gender, significant differences have been found, with the situation of young men being better than that of women. Studies that have analysed the academic situation of young people while in care (García-Molsosa, Collet-Sabaté & Montserrat, 2021; González-García, Lázaro, Santos, Del Valle & Bravo, 2017) have found opposite results, as the situation of girls tends to be better, as is the case in the general population. This change in trend is possibly due to the fact that young women tend to prioritize their family goals over their work goals when leaving the Child Protection System (Bermea et al., 2021; Hlungwani & van Breda, 2020; Zárate et al., 2017) or because young women tend to find it more difficult to integrate into society when they reach adulthood (Colbridge et al., 2017; Martín, 2015). This would also explain the differences found in employment status, which indicate that young men have more full-time jobs with a contract than women, a considerable percentage of whom do not work. The results found when analysing living situation are marked by the fact that young female care leavers have more children than their male counterparts, which would explain why they live with them, either with a partner or alone.

The second objective was to analyse the main psychosocial problems that had affected them after leaving the CPS. The results indicate that a considerable percentage have suffered major health problems that led to hospital admission, have had problems with drug and alcohol

consumption, and have even been forced into a situation of homelessness. In the latter case, an alarming result is that almost 20% of the young men have lived on the street at some point after leaving the CPS. These results corroborate the fact that the transition to adulthood for young care leavers is a complex process, fraught with risks and in many cases unfolding without the necessary support (Mann-Feder & Goyette, 2019; Martín et al., 2020; Moreno-Aponte, 2022; Stein & Ward, 2020; Trull-Oliva et al., 2022), although many young people are able to develop processes of resilience and overcome the many adversities they encounter along the way (Brännström et al., 2017; Courtney et al., 2020; Del Valle et al., 2008). The results of a qualitative study in which 13 of the young people who make up the sample of this work were interviewed (Crous et al., 2021) are along these lines, since the maturity that they achieve over time, as well as the fading of the stigma of being care leavers, are identified by the young people themselves as factors that foster their resilience.

Regarding psychosocial problems that young care leavers have to face, gender differences were found in incarceration, as all young offenders who had been sentenced to imprisonment were male. Specifically, one in ten young men in the sample had committed a jailable offence. This result is consistent with those of other studies, which point out that the population under the care of the public administration is over-represented among the population of adolescent offenders, and that it is a mostly male phenomenon (Baidawi, 2020; Martín et al., 2021), so it is logical to think that when leaving the CPS these problems with the justice system will continue, at least during the first few years.

The last objective was to find out how satisfied 25-35 year olds were with their stay in the CPS, with the support they received on leaving, and with their current life. A first relevant result is that satisfaction with the stay in the CPS is higher than with the support received on leaving, which may indicate that young people require more help in the process of transition to adult life (Comasólivas et al., 2018; Courtney et al., 2020). Overall, life satisfaction is similar to that of young people who are still in care (Llosada-Gistau et al., 2017), and higher than that of young care leavers in the first years after leaving the CPS (Martín et al., 2020), which may indicate that over time they develop processes of resilience that allow them to overcome many adversities (Brännström et al., 2017; Courtney et al., 2020; Del Valle et al., 2008), which undoubtedly leads to greater life satisfaction. However, it should also be noted that the young

people in the sample undertook their transition to adulthood before the need for support was legislatively recognized, so the resources that are now available did not exist, which would explain, at least in part, such low satisfaction with the support received when leaving the CPS. A final noteworthy result is that satisfaction with their current life is higher in young men than in women, which corroborates results found in other studies (Dinisman et al., 2013; González-García et al., 2022).

Two main conclusions can be drawn from this study. The first is that, as other authors have pointed out, many young care leavers end up developing processes of resilience that help them to move forward, but not without effort and having to face multiple adversities. This process is not immediate, however, and during the first years of the transition to adulthood many of them encounter situations that seriously jeopardize their socio-occupational integration process, such as problems with drugs and/or alcohol, problems with the justice system and even homelessness. The prevalence of these problems among young care leavers is a clear indicator that they need help once they leave the CPS, especially during the first few years. And while it seems that many of them manage to overcome these problems and become resilient individuals who even emerge stronger, there may be cases that do not overcome these adversities, and end up in situations of severe social exclusion.

The second conclusion of this study applies to gender differences. The process of transition to adulthood for young women is marked in many cases by the adoption of traditional gender roles, prioritizing the creation of a family project of their own, with a partner and children, which undoubtedly leads them to put aside their educational and employment goals. Furthermore, with the problem of gender violence also present in a considerable number of cases (Dosil et al., 2021; Oyarzún et al., 2021), it is clear that the process of transition for young women's lives is more complex and less satisfactory for them. In this sense, it seems necessary to adopt a gendered approach in the actions that are developed for young care leavers, in order to respond to the specific needs of girls.

This work reiterates the need for a system of data collection that allows for an evaluation of the results of the CPS, monitoring all young people who leave it in the short, medium and long term, in order to detect their needs and design actions to be implemented, always taking into account the opinion and experience of the young people themselves. In this sense, it should be remembered that the actions developed with the young

care leavers are voluntary, and require an involvement and commitment that not all young people are willing to assume, especially those with a more complex profile and emotional and behavioural problems, which undoubtedly represents a major challenge for professionals.

Before concluding, we must address the main limitations of this study, which concern the size of the sample, its representativeness and the extrapolation of its results. The population of care leavers in the 25-35 age group is difficult to locate, as they left the CPS at least seven years ago, which makes it very difficult to carry out studies with statistically representative samples, at least in countries such as ours, which do not have registers that allow for follow-ups to be carried out. Furthermore, it is likely to be less difficult to access those who are in a better situation, being practically impossible to access those who disconnected from the CPS from the beginning, or who have fallen into a situation of severe social exclusion. Moreover, the fact that responsibility for the area of child protection, and therefore in the care of foster children, are devolved to regional authorities means that in practice there are significant differences among the autonomous communities in the care provided to young people in and out of the system, so that having a sample of only three communities requires caution when generalizing the results.

But it is precisely the fact of carrying out a study with a population that is so difficult to access and with so many needs, which becomes its main strength, as it provides useful data for designing actions with a traditionally overlooked group, such as young people who leave the CPS and are forced to undertake a process of transition to adulthood without the necessary tools and support. Nevertheless, it is necessary to continue down this path, developing work with larger and more representative samples, and taking into account the gender perspective, since research has been accumulating evidence that shows that young men and women experience their emancipation with different conditioning factors, and this may mean that the attention given to care leavers should take into account the gender perspective.

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Dishonest conduct and corrective measures. Business university student perspective[1]

Comportamientos deshonestos y medidas correctoras. Perspectiva del estudiante universitario de negocios

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Abstract

University life should be governed by honesty, that is, by the academic integrity of all the agents involved. However, the literature shows the existence of dishonest academic conduct on the part of the students. The first objective of this paper is to identify which forms of conduct are considered dishonest by university students and how often they are observed. Subsequently, the second objective is to identify the measures that could prevent this type of conduct and would be most suitable and effective from the students' perspective. In order to achieve the proposed objectives, a quantitative, cross-sectional and descriptive study was carried out. Between January and March 2020, a questionnaire was sent to undergraduate students at the Faculty of Economics and Business of

the University of Zaragoza. The questionnaire refers to dishonest conduct during the preparation of assignments, exams and classroom activity along with the measures to avoid them. The analysis and tests to achieve the proposed objectives are applied to the 333 valid cases. The results show that university students adequately identify dishonest conduct, albeit with different degrees of seriousness. This does not prevent them from observing that some of them, whether serious or not so serious, appear more frequently than desirable. As regards the measures, they consider it necessary to apply corrective measures, whether through training or regulation, although they show a preference for regulatory measures. These results can serve as a basis for establishing Spanish university regulations that transpose the recently approved University Coexistence Act.

Resumen

La vida universitaria debe regirse por la honestidad, es decir, por la integridad académica de todos los agentes implicados. Sin embargo, la literatura muestra la existencia de comportamientos académicos deshonestos por parte del alumnado. El primer objetivo del trabajo es identificar qué conductas son consideradas deshonestas por parte del alumnado universitario y con qué frecuencia son observadas. Posteriormente, el segundo objetivo es identificar las medidas que podrían evitar este tipo de comportamientos y que resultarían más adecuadas y eficaces desde la perspectiva del alumnado. Para conseguir los objetivos propuestos se efectuó un estudio cuantitativo, de corte transversal y descriptivo. Entre enero y marzo de 2020 se envió un cuestionario dirigido a los estudiantes de grado de la Facultad de Economía y Empresa de la Universidad de Zaragoza. El cuestionario recoge comportamientos deshonestos durante la elaboración de los trabajos, los exámenes y la actividad en el aula y las medidas para evitarlos. Los análisis y pruebas para conseguir los objetivos propuestos se aplican a los 333 casos válidos. Los resultados muestran que los estudiantes universitarios identifican adecuadamente los comportamientos deshonestos, aunque con diferentes grados de gravedad. Esto no impide que algunos de ellos, graves o no tanto, sean observados por su parte con una frecuencia superior a la deseable. En cuanto a las medidas, consideran necesario la implantación de medidas correctivas, ya sean formativas o normativas, aunque muestran una preferencia por las normativas. Estos resultados pueden servir de base para establecer las normas propias de las universidades españolas que transpongan la recientemente aprobada Ley de Convivencia Universitaria.

Introduction

University life should be governed by such basic values as trust, rectitude, equity, honesty and equality, among others, that encourage the academic integrity of all agents involved, particularly students and faculty. However, there is a host of evidence and research that clearly shows the existence of dishonest conduct at universities in different parts of the world (Chapman & Lindner, 2016; Vlasenko & Shirokanova, 2022), including Spain (Comas, Sureda, Casero & Morey, 2011; Foltynek, 2013; Comas & Sureda, 2016). Furthermore, this type of conduct, far from disappearing, is on the rise (Alleyne & Phillips, 2011; Malesky, Baley, John & Crow, 2016), and transforming with the rise and development of information and communication technologies (ICT) (Sithole, Mupinga, Kibirige, Manyanga & Bucklein, 2019). The use of this type of conduct is becoming simpler (Young, 2012), and its spread is becoming faster and more widespread; hence, these actions may be copied by a host of people (Eckstein, 2003). The existence of dishonest conduct among university students is concerning, more so since some research papers show the existence of a relationship between its adoption at an academic level and subsequent dishonest conduct at a professional level (Alleyne & Phillips, 2011; Guerrero-Dib, Portales & Heredia-Escorza, 2020).

This student dishonesty in an academic environment is considered a constant and paramount problem at all levels of education, which has turned it into a serious educational problem (Orosz, Dombi, Tóth-Király, Bőthe, Jagodics & Zimbardo, 2016) that not only affects the credibility of the evaluations of student learning, but also affects the institutional image of the education centre (Ramos, Gonçalves & Gonçalves, 2020). Accordingly, academic dishonesty by students should be firmly addressed as an institutional concern, instead of merely the responsibility of the students (Marsh & Campion, 2018). In other words, academic honesty should be one of the fundamental cornerstones of the university life of students, such that it fosters the correct use of information, respect

for intellectual property, honest conduct and compliance with prevailing legislation.

The existence of a wide variety of definitions of the concept of academic dishonesty, along with a broad taxonomy, complicates a clear identification of the dishonest conduct to be eradicated (Ramos et al., 2020), and hence requires new studies that complete and complement the results obtained in the previous literature (Marques, Reis & Gomes, 2019).

To achieve that, the first objective sought in this paper is to try to identify the conduct considered dishonest by students in a university context, and the frequency with which it is observed. Students do not tend to have a clear awareness of all forms of conduct that are considered dishonest, and hence this lack of awareness regarding what is acceptable or not may lead them to practise it.

Given that higher education institutions seek and endeavour to eradicate dishonest student conduct, they need to firstly identify the most suitable and effective measures and tools and then implement them. It is interesting to see the students' perspective, as one of the main agents involved, which could enhance the success of discouraging and/or corrective measures. These measures include, on the one hand, training measures, which relate to those activities leading to inform and educate through knowledge and ethical skills. On the other hand, regulatory measures based on the establishment of norms and rules to follow and the consequences and sanctions in the event of not abiding by them.

Accordingly, the second objective of this paper consists of an in-depth analysis of these measures that assist in preventing dishonest conduct and that could be more suitable and effective from the perspective of the students.

The results obtained establish, on the one hand, that university students are able to correctly identify dishonest student conduct, and assign different levels of seriousness to different types of conduct. However, and despite this, this does not mean that this conduct, whether serious or not, is observed more frequently than desirable. Furthermore, they feel it is necessary to establish measures that discourage and/or correct these types of conduct. While they feel it is necessary to introduce both training and regulatory measures, they show a preference for regulatory measures. These results are very interesting because they offer the students´ perspectives regarding an issue that directly affects them, and which

turns them into the main protagonists. Observing what they consider to be dishonest conduct is key to establishing corrective measures. Furthermore, observing student opinions on the type of measures they consider to be most effective in eradicating this type of inappropriate conduct could be useful for university management as complementary information in the design of codes of conduct and corrective measures. Hence, the results of this research could be relevant for the scientific education community, the faculty, the management teams, guidance counsellors and other members of the education community, as well as for the politicians commissioned with regulating academic activities and rules.

This paper is structured in the following sections. The next section mainly reviews the concept of academic dishonesty and the conduct that could be classified as such. Subsequently, training and regulatory measures are introduced that higher education institutions could resort to in order to prevent and combat these forms of dishonest conduct. The sample and questionnaire are then indicated that serve as the basis for this paper. The following section presents and analyses the main results. Lastly, the conclusions of the work and the main limitations are then summarised.

Academic dishonesty

The literature suggests that the concept of academic dishonesty is based on three pillars related, respectively, to academic management, teaching and research, and with learning and studying (Comas, 2009). This paper focuses on the third pillar.

Academic dishonesty or fraud in the teaching-learning process amounts to a moral transgression by students in the context of their academic relations and their responsibilities *vis-à-vis* faculty, the other students and the institution they belong to. Over time, its definition has changed (see the recent revision by Ramos et al., 2020) and its evolution is heavily influenced by the historical and social period in which it is raised (Kibler, 1993), since it is a construct largely based on ethical-moral principles. This complicates its comprehension and the identification of the forms it adopts, as well as its consequences. Accordingly, as indicated by Muñoz-Cantero, Rebollo-Quintela & Mosteiro-García (2019, p. 1), the lack of

unanimity in the definition of the concept "*is down to its universality, multidimensionality, multicausality and its cultural determinants*".

Despite this, there is a certain consensus in the literature regarding two key characteristics that conceptualise and allow dishonest conduct to be identified: intentionality and the aim of obtaining an advantage.

Many authors stress the need for the existence of intentionality in the deceit for academic fraud to exist (Epstein, 2010; Von Dran, Callahan & Taylor, 2001). Von Dran et al., (2001) define academic fraud as unethical intentional conduct. Along this same line, Epstein (2010) asserts that it consists of an intentional effort to deceive, but qualifies that, if the error is committed honestly or due to a simple difference of opinion, interpretation or judgement, this would not constitute academic fraud. What's more, several studies show that the occasions on which plagiarism is employed with an intent to deceive are a minority (Almeida, Seixas, Gama, Peixoto & Esteves, 2016), and that normally plagiarism is a result of a lack of awareness of the regulations and potential sanctions (Porto-Castro, Espiñeira-Bellón, Losada-Puente & Gerpe-Pérez, 2019), although some studies have found two groups of students – those who plagiarise deliberately and those who plagiarise through ignorance and/or a lack of information (Sarmiento-Campos, Ocampo-Gómez & Castro-Pais, 2022). Along with the intentionality of the subject of the action, the aim pursued through this conduct takes on importance. Accordingly, academic dishonesty is any (intentional) conduct in the student's learning process that breaches the rules established and the ethical principles of educational institutions and which, moreover, grants the student an unfair or undeserved advantage over the other students (Reyneke, Shuttleworth & Visagie, 2021), which translates into a higher mark. Therefore, any deliberate act or omission that may comprise the fairness of the comparative evaluation of student performance, skills and knowledge among students will constitute academic fraud.

The types of conduct that fall under the concept of academic dishonesty are many and varied, and not all of them are viewed with the same seriousness. Sureda-Negre, Cerdá-Navarro, Calvo-Sastre & Comas-Forgas (2020), based on the revision of the literature and expert opinions, highlight a lack of consensus on how to scale the level of seriousness and the repercussions of dishonest conduct that university students may incur in, particularly in those cases that are perceived as less serious. Accordingly, of the 41 types of dishonest conduct analysed, only nine

can be classified as very serious with an acceptable consensus among experts. These include copying or cheating in exams, which is universally considered to be unlawful conduct, and is also the most widespread and habitual form of academic deceit (Teixeira & Rocha, 2010).

With the aim of identifying some of these types of dishonest conduct, and based on the proposal made by Comas et al., (2011), three types of groupings are proposed: i) conduct related to exams, ii) conduct related to the preparation and presentation of academic assignments, and iii) conduct within the framework of interpersonal relations and conduct related to daily aspects of respect and coexistence.

The greatest consensus in the literature can be found in the first group, in unlawful conduct when taking exams which, in turn, has been the group most closely researched by different institutions and in different countries (Teixeira & Rocha, 2010). This group includes a wide range of actions and practices related to exams: obtaining details on an exam before taking it, allowing another person to replace you during an exam, taking an exam in the place of another student, allowing someone to copy you, copying another person in the course of the exam, accessing unauthorised information during an exam either through the use of traditional "crib sheets" or through technological means (mobile phone, players, etc.). This last case is where both students and faculty agree that this constitutes dishonest conduct (Blankenship & Whitley, 2000). The second group includes those academically dishonest actions and practices relating to the preparation and presentation of academic assignments. These include copying ideas or fragments of text without quoting the corresponding source in the bibliography, the total or partial plagiarism of works (from Internet portals and/or printed documents), falsifying the bibliography and resources consulted in preparing an academic assignment, the falsification of data and/or results in assignments, not complying with the part of the assignment that corresponds to a student in groupwork, the presentation of an assignment prepared by another person while claiming it is their own work, buying academic assignments, etc. This type of conduct has played a larger role as a result of the changes undergone in methodological aspects, in learning processes and in evaluation systems of undergraduate degree subjects following the introduction of the European Higher Education Area (EHEA). Accordingly, the evaluation system is a central aspect of the teaching-learning process which, following the changes introduced by the EHEA, is being modified

to address a skills-based focus (Sánchez Santamaría, 2011). Hence, the evaluation model does not tend to be limited to a final test, but rather this is complemented by a mark obtained through preparing specific tasks, whether individually or in a group over the course of the academic year, such as the preparation of assignments, presentations, practices or classroom participation, among others. Therefore, the type of work that lecturers demand from students may condition the performance of these types of dishonest practices by students (Espiñeira-Bellón, Mosteiro-García, Muñoz-Cantero & Porto-Castro, 2020). In this context, ICT take on great importance, since they become a resource that fosters access by students to a larger range of sources of information when preparing their academic assignments (Marzal & Calzada, 2003; Cebrián-Robles, Raposo-Rivas & Ruiz-Rey, 2020), and with greater speed, and these circumstances, along with the simplicity offered by word processors, has turned academic plagiarism among students when preparing their assignments into a habitual practice (Ercegovac & Richardson, 2004). These types of conduct are not only dishonest, but also breach copyright laws, classified as a criminal offence against intellectual property. The third group contains those forms of conduct relating to interpersonal relations and conduct related to daily aspects of respect and coexistence at higher education centres. Such conduct as damaging equipment and/or furniture at academic facilities, damaging the equipment and personal belongings of other students, damaging the work and/or material of other students, interfering in the work or exams of other students and frustrating their activity, show a lack of respect towards other students or staff, etc.

Lastly, we should point out that, although the development of new technologies and their implementation in the learning and evaluation process (particularly important during the pandemic) has been key to the smooth development of the learning-education process of students, it has also facilitated the performance of some forms of dishonest conduct described above (Cebrián-Robles, Raposo-Rivas, Cebrián-de-la-Serna & Sarmiento-Campos, 2018; Sithole et al., 2019).

Discouraging and/or corrective measures

Universities are addressing this situation by taking measures to prevent and combat these forms of dishonest conduct, albeit not always successfully. Muñoz-Cantero et al., (2019) differentiate between actions of a preventative, organisational, coercive and attitudinal nature. Adam, Anderson & Spronken-Smith (2017) indicate raising awareness, prevention, information, training, detection and a disciplinary regime as forms of action. Hence, the revision of the literature shows that there are different options that higher education institutions can resort to so as to address this challenge. In this paper, we opt to distinguish between training measures and regulatory measures.

Training measures correspond to any type of informative and educational tool or activity (offer of courses, seminars, informative brochures, etc.) that contribute to the training of students in skills and ethical knowledge that prevent them incurring in dishonest conduct (Estow, Lawrence & Adams, 2011). This focuses on the students, and is based on the assumption that students who go to university lack some of the basic skills needed to tackle higher education in an educational environment (Morris, 2010). These skills include knowledge related to the appropriate and ethical use of information (American Association of School Librarians, 2009), along with a lack of awareness of the principles and rules of integrity of university institutions. For example, students frequently lack knowledge to quote or reference bibliographic sources correctly in the assignments they prepare, which leads them to incur in plagiarism (López & Fernández, 2019). Hence, if the training is suitable, it will serve to reduce certain forms of dishonest conduct. This focus shows how the lack of training by students constitutes the root cause of the performance of unintentional dishonest practices (Cerdá-Navarro, Touza, Morey-López & Curiel, 2021), and thus the use of training measures will also have a preventive aspect, so it would be advisable to include them in the initial years of university in order to reduce the prevalence of dishonest practices in the following academic years (Cebrián-Robles, Raposo-Rivas & Ruiz-Rey, 2020).

Regulatory mechanisms also exist, which can be addressed from two complementary perspectives (Tatum & Schwartz, 2017): (i) regulations that provides for coercive measures that discourage students from participating in dishonest conduct; and (ii) codes of ethics, honour

and conduct that highlight the principles, values and basics of the institution and should be guided towards the activities undertaken at such institutions. In general, these types of mechanisms include those regulatory provisions that underline the types of dishonest conduct, along with the consequences and sanctions applicable if students incur in them (Sureda-Negre, Reynes-Vives & Comas-Forgas, 2016). These provisions may be of a general nature, approved by Parliament and which are applicable to all the universities in a country, and those inherent to each individual institution, which are approved by the governing body of the university.

In Spain, the University Coexistence Act 3/2022, of 24 February (*Ley 3/2022, de 24 de febrero, de Convivencia Universitaria en España*), has recently been approved. The main aim of this piece of legislation is to provide universities with a common framework to resolve conflicts by employing mediation at the heart of coexistence. The mechanisms of mediation seek to resolve most conflicts of coexistence between the members of the university community, endeavouring to apply the new disciplinary regime on a supplementary and residual basis. In this way, the disciplinary regime would only be activated when the parties reject the use of the mediation procedure, when the conduct leading to the disciplinary case is expressly excluded from this procedure (such as cases of harassment and gender-based violence, university fraud or the destruction of property) or when the parties are unable to reach an agreement. This Act lays the foundations for each university to enact their own rules of coexistence.

Universities tend to have their own rules approved by their governing bodies, such as rules on evaluation, general student rules and codes of ethics. Furthermore, each university centre (school, faculty, etc.) may have its own specific rules, which range from codes of ethics to specific regulations. With the entry into force of the new University Coexistence Act, these previous rules must be adapted to the new Act. Studies show that the existence of regulations that contain sanctions for the performance of proven acts against academic integrity reduce the performance of these kinds of acts by students, and furthermore, the stricter the rules, the fewer fraudulent practices take place within the institution (Ercegovac & Richardson, 2004; LoSchiavo & Shatz, 2011). However, the literature has shown that the simple existence of rules and regulations does not guarantee good conduct *per se*, since it is necessary

for the rules to be familiar to all the system agents, and furthermore, that they are actually applied (Comas, 2009). So, if the rules are well-known, strict and applied, this discourages the performance of dishonest conduct (LoSchiavo & Shatz, 2011).

Given the variety of mechanisms to prevent dishonest conduct and having shown that none of them are ideal, universities should address this situation from a holistic manner. They could even use its training dimension, not focusing on aspects that are purely academic, to include ethical education on a cross-cutting basis, whereby this takes on an essential role in the training of all higher education professionals.

Methodology

To achieve the goal of this research, a non-experimental exploratory-descriptive study was opted for (Hernández, Fernández & Baptista, 2014). Specifically, a quantitative, cross-cutting study was employed based on information collected in a survey.

An online survey was designed (through Google Doc forms) that was anonymous (to guarantee the confidentiality of the information), which was sent to the institutional electronic mail accounts of all the students enrolled on undergraduate studies at the Faculty of Economics and Business of the University of Zaragoza, authorised by the university authorities. The fieldwork was carried out between January and March 2020.

Sample

The specific population under study was made up of 3,869 students enrolled in the academic year 2019/20 on one of the qualifications offered by the Faculty of Economics and Business of the University of Zaragoza.

The sample was made up of 333 valid questionnaires (with a confidence level of 95% and a margin of error of 5.13%). The majority of students were women (60.4%). More than half of the individuals surveyed were under the age of 22 (66.3%). The distribution by year of study was: 15.6% of those surveyed were in their first year at university, 18.4% in their second year, 26.2% in their third year and the remaining 39.9% in their fourth year.

Instrument

The questionnaire was made up of three blocks of questions.

In the first block (29 items) the student was asked, on the one hand, for a valuation on the level of appropriateness of a series of forms of conduct (on the Likert scales from 1 – totally inappropriate, to 10 – totally appropriate); and, on the other hand, on the frequency observed of said conduct in their classmates (from 0 – never, to 10 – always). Specifically, nine items were related to dishonest conduct when preparing assignments; nine items were related to conduct when taking exams; and 11 items on conduct within the framework of interpersonal relations and daily aspects of respect and social harmony.

In addition, and to analyse the reliability of the instrument employed, Cronbach's alpha values were calculated for each dimension. Accordingly, for the block on "preparation and presentation of assignments", the values are 0.805 (appropriateness) and 0.853 (frequency). For the "evaluation tests" dimension, the values are 0.833 (appropriateness) and 0.875 (frequency). And for the "interpersonal relations" dimension, the values are 0.602 (appropriateness) and 0.773 (frequency). Hence, the results obtained show that the instrument offers internal consistency.

The second block of questions (eight items) contains the student's assessment of the need to introduce measures to discourage and/or prevent dishonest conduct. Specifically, four of them refer to regulatory measures and the other four to training measures (on the Likert scale from 0 – total disagreement, to 10 – total agreement).

In the same way as for the previous dimensions, and with the aim of analysing the reliability of the instrument, Cronbach's alpha was calculated. The results obtained show a value of 0.772 for regulatory measures and 0.754 for training measures, thus backing the internal consistency of the instrument used.

The wording of most of these items was based on work proposals or previous reports (Alleyne & Phillips, 2011; Burke & Sanney, 2018; Zúñiga, Toscano & Ponce, 2015; Sureda-Negre et al., 2020, among others). Four academics[2], from different fields of knowledge and universities, revised

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[2] These academics belong to such fields as the organisation of companies, the commercialisation and research of markets, and finance and accounting. One researcher among these stands out for her high-quality research acknowledged in the field of higher education, although all of them have extensive experience in this regard.

the final questionnaire and were then subjected to a pre-test by several undergraduate students with the aim of checking its comprehension and whether conduct was missing from the initial questionnaire.

Lastly, the third block contained questions on the socio-demographic characteristics of the students (sex, age) and of the subjects they are studying (academic year).

Analysis of the data

With the aim of identifying the types of conduct considered dishonest by students, a descriptive analysis was made based on the calculation of the average values obtained for each of the items in each of the blocks of conduct previously presented, and from each of the perspectives of the analysis: level of appropriateness of the conduct and frequency of occurrence observed. To facilitate the comparison between the two perspectives, the results are presented in spider graphs performed with the computer programme Excel.

Results

In light of the foregoing, the results obtained are shown in Figures I, II and III. As regards the first block (dishonest conduct in the preparation and presentation of assignments), the results show that students consider that all the types of conduct proposed in the study are inappropriate, albeit to different extents (average values from between 1.04 and 3.45). This recognition of the inappropriate nature of the conduct would lead us to expect that these forms of conduct were not observed in reality or that their frequency would be close to zero. However, this does not happen, observing frequencies between 1.12 and 5.97. For example, the lack of fair collaboration in preparing group work is considered the most inappropriate conduct but, in turn, is the most frequently observed conduct in class. A similar situation arises with such other forms of conduct as the preparation of deficient assignments to comply with the minimum requirements, the copying of bibliographic material without expressly quoting the source, and the inclusion in the authorship of

people who have not worked on the assignment. The purchase/sale of assignments was the only item that stood out for its almost non-existence.

Figure II allows us to analyse the situation of dishonest conduct related to the evaluation tests. The data analysed leads us to conclude that a broad consensus exists among students on the forms of dishonest conduct. The majority of students recognise that this conduct is totally inappropriate for the new situations raised (average values of around one). The only forms of conduct that are observed with a certain frequency are those related to copying exams (with values of around half a point on the scale – five): looking at the answers of another student, asking another student questions in an exam, allowing someone to copy you and using unauthorised material, whether traditional resources or through technological means. Hence, these forms of conduct should be monitored.

FIGURE I. Inappropriate conduct in the preparation and presentation of assignments
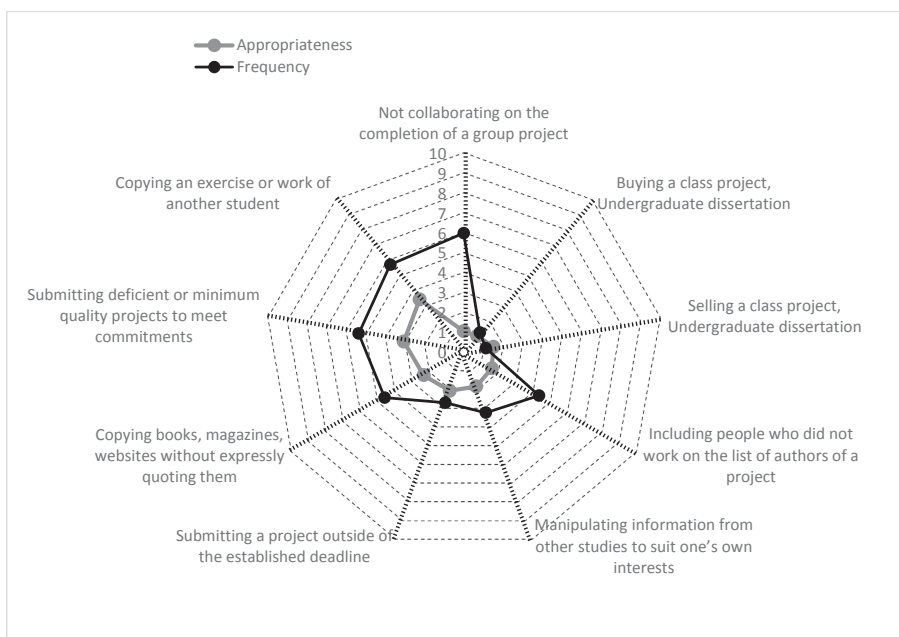
NOTE: The black colour shows the average of appropriateness of the conduct and the grey colour the frecuency of occurrence observed.

FIGURE II. Inappropriate conduct in evaluation tests
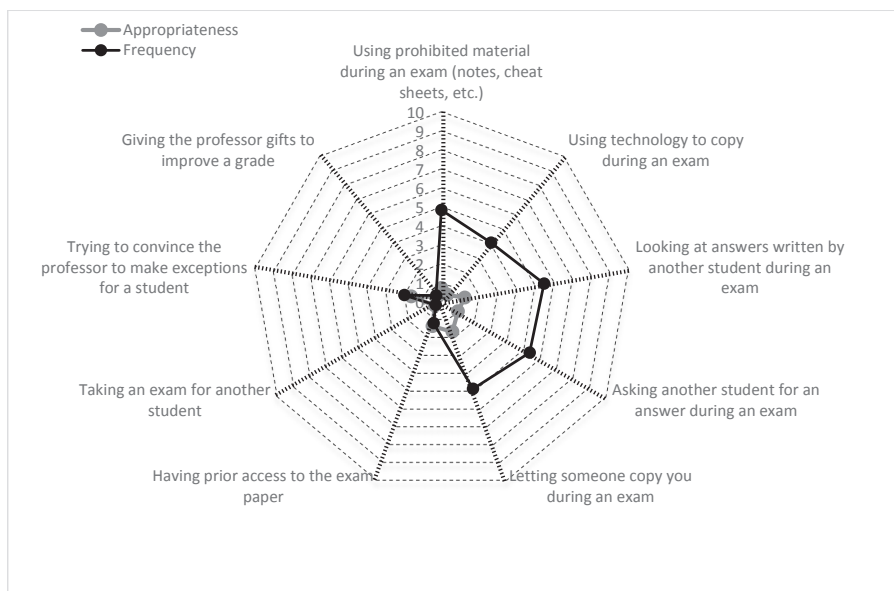
NOTE: The black colour shows the average of appropriateness of the conduct and the grey colour the frecuency of occurrence observed.

Lastly, Figure III shows the analyses related to conduct within the framework of interpersonal relations and conduct related to daily aspects of respect and harmony. The results obtained also show in this case that students adequately differentiate between appropriate and inappropriate conduct, although they observe a certain graduality in such conduct. Accordingly, while taking property belonging to another student, throwing rubbish, painting furniture, being a nuisance in class by making a noise or murmuring are considered to be highly inappropriate (average values of between 0.24 and 1.32), the perception of the appropriateness of other conduct is more permissive (average values of between 3.21 and 4.31). These forms of conduct include eating or drinking in class, talking about matters unrelated to the class with another student, and going into or leaving the classroom once the lesson has begun without justification. Furthermore, these less appropriate forms of conduct are observed with greater frequency (average values between 6.09 and 7.57).

The differentiation between appropriate and inappropriate conduct becomes patently obvious when conduct primarily related to the environment is raised. The perception of students regarding the suitability of recycling, the orderly maintenance of classroom furniture, energy saving and checking for viruses on the USB before using shared devices is worthy of mention. However, and despite the consensus on the appropriateness of these issues, it can be observed that they are not undertaken with the frequency desired.

FIGURE III. Conduct within the framework of interpersonal relations and conduct related to daily aspects of respect and harmony.
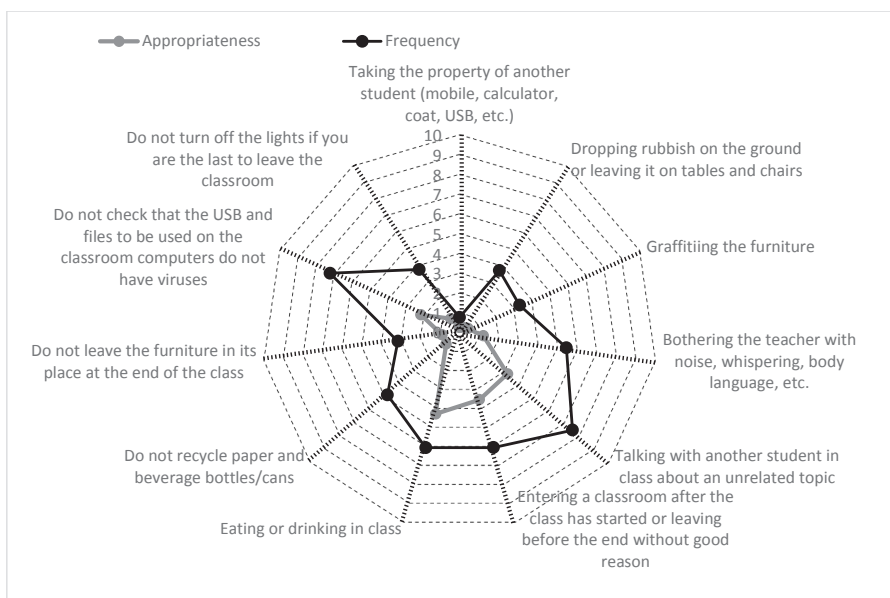

NOTE: The black colour shows the average of apropriateness of the conduct and the grey colour the frecuency of occurrence observed.

The previous results underline that students suitably recognise and identify forms of dishonest conduct, and that, furthermore, they observe them habitually, to a greater or lesser extent, in the course of their learning activity. Hence, the need exists to propose new measures that discourage or prevent these forms of inappropriate conduct.

Table I contains the average values and the typical deviation of the discouragement and/or corrective measures analysed in the study. The results obtained show that student opinions are more geared towards the use of regulatory measures rather than training measures. Accordingly, they highlight actions designed to establish disciplinary and corrective measures to be addressed (with values of 7). Moreover, students not only consider their existence to be necessary, but that it is even more important to be made aware of them (7.81).

Training measures are also considered to be necessary by those surveyed, although to a lesser extent than regulatory measures, as shown by their average values. Accordingly, students consider an active role by lecturers to be necessary in informing them of fraudulent activities, particularly those related to exams, more so than classroom conduct. As regards how to convey this type of training measure, those surveyed express a preference for cross-cutting ethical training in the different subjects rather than specific courses on ethics.

The preference for regulatory rather than training measures was also observed in university students from other countries. Ramos et al., (2020) discovered that disciplinary measures were more highly valued by Portuguese students than such other measures as compulsory ethics courses, which were considered to be ineffective. Malgwi and Rakovski (2009) observed that students from a university in the United States opted for a disciplinary strategy.

TABLE I. Regulatory and training measures. Descriptive statistics

	MEASURE	Average	Typical deviation
REGULATORY	Corrective measures for inappropriate conduct should be established	7.00	2.73
	Inappropriate conduct should be sanctioned	7.11	2.89
	Students should be informed of corrective measures and the sanctions for inappropriate conduct	7.81	2.33
	Centres should provide students with a code of ethics for the centre	5.81	3.10
TRAINING	Training should be provided on ethics via courses and/or seminars	5.19	3.26
	Ethical habits should be promoted in classroom subjects	6.48	2.96
	Faculty should explain the basic rules of classroom conduct	5.56	3.19
	Faculty should clearly outline actions permitted in exams	6.45	3.34

Discussion and conclusions

Higher education institutions seek to ensure academic honesty and for this to be a key value for all their members, particularly for those receiving training – their students. Regrettably, there is evidence that clearly shows that dishonest student conduct is more prevalent than could be hoped for. Furthermore, the practice of this type of conduct exceeds the purely academic ambit and can even impact the ethics of the future personal, professional and civic life of these students.

The results of the work have led us to identify student perceptions on the level of appropriateness and inappropriateness of certain types of conduct, along with the frequency of said conduct observed among other students.

In general, the results lead us to assert that students clearly identify inappropriate (dishonest) conduct and differentiate it correctly from appropriate conduct. They specifically consider those types of conduct that could be considered "illegal" as inappropriate, but are somewhat more permissive regarding other related conduct, mainly in relation to the environment, for example, recycling and energy saving.

As regards the frequency of these types of conduct observed, we should highlight that none of them were observed habitually or constantly among students, although some of them observed them more often than was to be hoped for and desirable. Specifically, among types of conduct related to the preparation of assignments, those observed more frequently (albeit in the middle range) are a lack of fair collaboration, the inclusion of authors who did not participate, the manipulation of sources of information, errors in the form and/or lack of quoting the source, the preparation of deficient assignments and the copying of assignments. The types of conduct related to exams observed the most frequently (again in the middle range) include some considered to be unlawful, such as the traditional copying in exams, specifically looking at other students' work or asking other students for the answer, allowing themselves to be copied and copying out notes – "crib sheets" – or by using electronic means. Furthermore, when looking at the types of conduct considered by a panel of Spanish experts to be the most serious, which include pretending to be another person in an evaluation, stealing exams or tests and obtaining the exam questions before taking the exam (Sureda-Negre et al., 2020), it can be seen that these were observed in our paper with a low level of frequency, and are even practically non-existent.

The types of conduct related to the rules of coexistence in classrooms are those that are broken most frequently, mainly those aimed at being a nuisance to both lecturers and students during the course of the class (talking in class, making a noise, interrupting the class by coming in and going out, etc.). Furthermore, it is surprising that some types of conduct to foster environmental sustainability are not observed with the frequency desired, particularly those related to recycling and energy saving, when there is a clear commitment at this time to greater sustainability (2030 Horizon – Sustainable Development Goals – SDG).

These results confirm the need for universities to address the introduction of measures that enable the dishonest conduct detected to be corrected. What's more, evidence exists that shows that the existence of academic rules can become a preventive factor of student dishonesty (Jordan, 2001). Being aware of what types of measures are more highly rated by students is important, because it fosters their introduction, and hence their effectiveness.

The results obtained show that university students prefer regulatory measures, in other words, regulatory provisions that indicate the types

of dishonest conduct, their consequences and the applicable sanctions if they incur in them. This result is in line with other previous research applied in universities in other countries (Malgwi & Rakovski, 2009; Ramos et al., 2020).

Given that, as indicated by Sureda et al., (2016), the establishment of codes of conduct or academic regulations that address the matter of academic integrity are more effective when drawn up through consensus among all the members of the institution, the results of this work are useful for a greater insight into the student's perspective.

However, although a preference exists for regulatory measures, training measures are also considered necessary by students. In this regard, according to Foltynek (2013), Spain is one of the European countries where university students receive less training on academic integrity, and hence requires more support and training on the matter (Cebrián-Robles et al., 2018). Despite the fact that the verification reports on the degrees analysed contain, among their skills, some aimed at promoting the ethical conduct of students, the results of the research would seem to show that the acquisition of certain skills could be improved and that, furthermore, these should be adapted to the knowledge and information society we find ourselves in at this time. Although ICT have democratised the access to information and knowledge, they have also fostered the emergence of new forms and tools that facilitate the performance of dishonest conduct (Cebrián-Robles et al., 2020), particularly plagiarism. However, ICT can also serve as the basis to create and use tools that allow more preventative and training strategies designed for students to be adopted. For example, training actions could be designed that focus on specific areas such as training in the use of bibliographic management software, like the open platform Zotera, among others.

This paper presents certain limitations that could be addressed in future research papers. While the sample focuses on a specific faculty (Economic and Business) of a Spanish university, this could be extended to other undergraduate and post-graduate studies. The procedure followed for the selection of the sample is not based on probability, in other words, it is a convenience sample. The questionnaire has been designed to see the perception of students, but it would also be useful to see the perception of faculty and university management, with the aim of identifying whether the same evidence is observed in the same way. Despite these limitations, it is considered that new evidence is offered and

results provided that could prove useful to the university community. In the short term, it serves to establish the rules corresponding to universities as transposed by the recently approved University Coexistence Act. In the medium and long term, it serves to guide and improve subjects (in both content and methodology) with a view to training and instilling more ethical and appropriate conduct in students, focusing on training to eradicate those more commonly observed types of inappropriate conduct. Training in digital skills and respect for copyright and user licences will be key in the new digital society. The future Constitutional Law on the University System (LOSU) could be turned into an opportunity for this. Furthermore, the fact that the Internet is a key resource used by students in the search for information and resources makes it necessary to strive to foster a more critical spirit in students and focus studies on the use of this resource in a constructive and suitable manner.

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Relationship between preference in teaching styles with participation in assessment and teaching styles that support basic psychological needs in Physical Education[1]

Relación de las preferencias de los estilos de enseñanza con la participación en la evaluación y los estilos que apoyan las necesidades psicológicas básicas en Educación Física

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Abstract

The aim of this research was to analyze the relationships between the preference in teaching styles of Physical Education teachers with the participation of different agents in the assessment and the teaching styles that support psychological needs. Specifically, the following particular objectives were addressed: (i) To analyze the relationship between preference in teaching styles and the agents involved in students' assessment and grading; (ii) To analyze the relationship between preference in teaching styles and teaching styles that support basic psychological needs. A cross-sectional quantitative study was carried out between April and May 2021. A total of 995 Physical

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Education teachers from Spain participated. Three instruments were used to collect information: (i) The Physical Education Teaching Styles Questionnaire; (ii) The questionnaire on evaluation processes in Physical Education #EvalEF; and (iii) The scale of styles that supports psychological needs. The results show that (i) the preference for traditional teaching styles is inversely related to the use of participatory assessment and grading processes and the assessment of the teaching practice by students; (ii) the preference for the rest of the teaching styles studied is related to the different forms of student participation in assessment and grading and with the self-assessment of the teaching practice; and (iii) there is a positive relationship between teachers who support an ego-oriented climate and identification preferably with traditional styles and those who support a task climate, styles that support autonomy and those who support relationships and identification with individualizing, socializing, cognitive and creative styles.

Keywords: Teaching styles, autonomy, relationships, ego climate, task climate, self-assessment, peer assessment, grade.

Resumen

El objetivo de esta investigación es analizar las relaciones existentes entre la preferencia en los estilos de enseñanza por parte del profesorado de Educación Física con la participación de diferentes agentes en la evaluación y los estilos docentes que apoyan las necesidades psicológicas. Concretamente, se dará respuesta a los siguientes objetivos específicos: (i) Analizar la relación existente entre la preferencia en los estilos de enseñanza y los agentes involucrados en la evaluación y calificación del alumnado; (ii) Analizar la relación entre la preferencia en los estilos de enseñanza y los estilos docentes que apoyan las necesidades psicológicas básicas. Se llevó a cabo un estudio cuantitativo de corte transversal entre abril y mayo de 2021. Participaron un total de 995 docentes de Educación Física del territorio español. Se emplearon 3 instrumentos para la recogida de información: (i) Cuestionario de Estilos de Enseñanza en Educación Física; (ii) Cuestionario sobre procesos de evaluación en Educación Física #EvalEF; y (iii) Escala de estilos que apoyan las necesidades psicológicas. Los resultados muestran que (i) la preferencia por los estilos de enseñanza tradicionales se relaciona inversamente con el uso de procesos de evaluación y calificación participativos y la evaluación de la práctica docente por parte del alumnado; (ii) la preferencia por el resto de los estilos de enseñanza estudiados se relaciona con las diferentes formas de participación del alumnado en la evaluación y la calificación y con la autoevaluación de la práctica docente; y (iii) existe una relación positiva entre los docentes que apoyan un clima ego y la identificación preferentemente con los estilos tradicionales y aquellos que apoyan el clima tarea, los estilos que apoyan la autonomía y los que apoyan las relaciones y

la identificación con los estilos individualizadores, socializadores, cognitivos y creativos.

Palabras Clave: estilos enseñanza, autonomía, relaciones, clima ego, clima tarea, autoevaluación, coevaluación, calificación.

Introduction

The theory of the spectrum of teaching styles created by Muska Mosston in 1966 has been considered internationally as the pedagogical basis in the field of Physical Education (PE). The fundamental proposition of this theory is that teaching is governed by a single unifying process: decision making (Mosston & Ashworth, 2008). It presents pre-impact decisions, those that are made before teaching begins; impact decisions, made during its execution; and post-impact decisions, made after its execution, that is during evaluation (Mosston & Ashworth, 1993; 2008). Each successive behavior derives from the systematic and accumulative decisions made by the teacher and the students. In Spain, Delgado (1991) proposed reforming the teaching of PE using the proposal of Mosston & Ashworth (1993). He grouped the teaching styles into six families according to the capabilities that they foment in the students, reformulating some of Mosston's styles and adding some new ones (Delgado, 1991; Najera et al. 2020, Sicilia-Camacho & Brown, 2008):

- The traditional styles follow the models of classical teaching, based on the lecture, in which decisions are made exclusively by the teacher.
- Individualizing styles will produce self-motivated and individual learning in the students in which they can evaluate their execution and make decisions.
- Participatory and socializing styles are characterized by the participation of the students in the teaching and learning process, carrying out specific teaching functions like correcting, evaluating, informing etc. Moreover, the social aspect seems essential for the development of the students, which is why these styles promote

the development of their capabilities permitting them to participate as effective members of groups and global society.

■ The cognitive styles present situations which force the students to solve motor problems using learning through discovery. These imply on the part of the teacher teaching through searching and a didactic intervention using a teaching technique through exploration, investigation and research,

■ The teaching styles which promote creativity seek the development of original and innovative actions on the part of the students.

The application of these styles in the classroom is not independent of the rest of the elements that form part of the teaching learning process; the most important being the evaluation process. When we opt for active methodologies that encourage the students to be protagonists and assume their roles as builders of learning, there should be a coherent evaluation process which takes the students into account in the evaluation and grading process (García-Herranz & López-Pastor, 2015). The evaluation may be carried out by the teacher (heteroevaluation), the students may evaluate themselves (self-evaluation) or it can be done among the students (co-evaluation or peer evaluation) (Bores-García et al., 2020; Otero-Saborido et al., 2021). Consequently, the same agents can participate in the grading processes. Research has shown that the participation of the students in the evaluation processes promotes autonomy and the assumption of responsibilities, and foments processes of self-regulation (Zimmerman, 2000). Moreover, it involves the students in their own learning and decision making, through processes of dialogue, respect, equality, and shared responsibility (López-Pastor & Sicilia, 2017).

The way in which methodological processes are applied can influence in turn the motivation of the students in PE classes. Some studies have shown that the application of pedagogical models that require the students' active participation foment greater intrinsic motivation (Fernández-Espínola, 2020; Gil-Arias et al, 2021). This motivation of the students is influenced by the satisfaction or frustration of their basic psychological needs (BPN). The theory of self determination (Deci & Ryan, 2020) states that human beings have three innate and universal psychological needs, the need for competency, for autonomy and for relatedness, which must be satisfied to optimize their personal development, wellbeing and health (Abós-Catalán et al. 2018a; Deci & Ryan, 2000). The satisfaction of the need for competency refers to the fact that students perceive that they

are capable of carrying out the activities that they have to complete; the satisfaction of the need for autonomy is when the students perceive that they are responsible for their own actions and can make decisions; and that of relatedness when the students establish positive relations with the rest of the agents involved in the teaching learning process (Sevil-Serrano, 2018). Therefore, those teachers that carry out actions aimed at the satisfaction of these (BPN) are supporting their development. The achievement goals theory (Ames, 1992) indicates that the actions of the teacher and the way they are carried out influences the motivational climate that is generated. Thus, a motivational climate oriented towards the task will be generated when the focus is on the students' improvement, evaluating their progress and establishing individualized criteria; and a motivational climate oriented to the ego when the teacher establishes comparisons among the students, makes evaluations on the basis of the work of others or gives standard grades (García-González et al., 2021).

However, there are few studies about teaching styles that have dealt with the relation that can exist between them and evaluation processes; or the relation that can exist between the teaching styles and motivation or BPN. Among them can be found the study by Espada and Pineño (2020) that concludes that PE teachers state that the use of cognitive styles in class favors students' autonomy. Similarly, when using individualizing teaching styles the students can evaluate themselves and develop propioception through internal feedback which will make it possible to develop practice in an autonomous way. Moreover, if the teacher uses participative and socializing teaching styles, as well as developing the students' autonomy through their participation in decision making, they will work on the relation among classmates, which will increase satisfaction with the classes and student's learning (Sánchez & Espada, 2018). Given the scarcity of studies and the diversity of approaches taken, it is necessary to delve more deeply into these relations.

Objectives

The objective of this research was to analyze the relations existing between the preference for teaching styles on the part of PE teachers and the participation of different agents for evaluation and the teaching styles

that support psychological needs. Specifically, the aims were to address the following specific objectives:

- ■ To analyze the relation between the preference for teaching styles and the agents involved in the evaluation and grading of students.
- ■ To analyze the relation between the preference for teaching styles and the teaching styles that support basic psychological needs.

Method

This investigation followed a quantitative cross-sectional design.

Sample

Random, incidental and probabilistic sampling of the PE teachers in Spain was used to select the participants. The characteristics of the sample are shown in Table 1. This study included a total of 995 PE teachers with a mean age of 42.26 (9.23) years, 65.4% of whom were men and 34.2% were women and 0.4% preferred not to state their sex. Of the total, 51.8% gave classes in primary education and 43.6% in secondary education and sixth form studies, and the remaining 5.6% gave classes at other stages (Infant education, Vocational training, Special education, etc.). They had a mean experience of 15.08 (9.94) years. Of the total sample 27.4% had a master's degree and 2.9% a doctorate.

Items		%
Sex	Man	65.4
	Woman	34.2
	Not indicated	0.4
Educational stage	Primary Education	51.8
	Secondary Education	43.6
	Infant Education	1.1
	Vocational Training	1.3
	Special Education	0.5
	Others	1.7
Ownership of the school	State	76.3
	Private-Subsidized	22.7
Highest Academic Qualification Achieved	Degree	69.6
	Post-graduate	27.4
	Doctorate	2.9

Source: compiled by author

Procedure

The participants in the study completed a questionnaire between April and May 2021 that recorded independently the four scales used for this investigation. The questionnaire was created on the *Google Forms* platform and sent by email to the primary and secondary schools in Spain. The email asked those in charge of the schools to send the questionnaire to the school's PE teachers. All the participants were treated according to the ethical procedures of the *American Psychological Association* with regard to consent, confidentiality and anonymity of the participants.

Instruments

Three questionnaires were used to collect information:

- **The Questionnaire on Teaching Styles in Education (EEEF in its Spanish acronym)**: Composed of 20 items organized in 5 dimensions (traditional teaching styles, individualizing teaching styles, socializing teaching styles, cognitive teaching styles and creative teaching styles). The questionnaire presents a Cronbach's alpha of 0.79 (Merino-Barrero, Valero-Valenzuela & Moreno-Murcia, 2017). The subscales present a Cronbach's Alpha of: (i) traditional styles = 0.73; (ii) individualizing styles = 0.70; (iii) participative and socializing styles = 0.76; (iv) cognitive styles = 0.70 and (v) creative styles = 0.75. The answers respond to a Likert-type scale where 1 corresponds to "Totally agree" and 5 to "Totally disagree". The sentence introducing the items was "As a physical education teacher, I think that---".

- **The Questionnaire on the Evaluation Process in PE #EvalEF**: Composed of 81 items grouped in 13 dimensions. Specifically, this study used the dimensions of "Participants" and "Grading Procedures". The Participants dimension collects items related to who participates in the evaluation of the students (3 items) and the teachers (3 items); and the Grading Procedures dimension records items related to who participates in the grading of the students (5 items), and who evaluates the teaching activity (3 items). Specifically, in this study each of the items that make up the dimensions was used independently. The scale presents a Cronbach's Alpha of 0.94 (Zubillaga-Olague & Cañadas, 2021). It is answered using a Likert-type scale of 6 points: 1 Totally disagree and 6 Totally agree and the introductory sentence was "In your physical education classes..."

- **Need-Supportive Teaching Style Scale** (Abós-Catalán et al., 2018b): Composed of 15 items that measure the support for the task climate (5 items), support for the ego-oriented climate (3 items), support for autonomy (4 items) and support for relations (3 items). It is answered with a Likert-type scale of 5 points from 1 (Totally disagree) to 5 (Totally agree), The premise presenting the questions is "As a P.E. teacher..."

TABLE II. Synthesis of the characteristics of the questionnaires included in the investigation

	Number of items	Scale	Examples of items
Questionnaire on Teaching Styles in Physical Education			
Traditional	3	1-5	I set the pace of the class to make all students finish at the same time, without attending to individual differences.
Individualizing	3	1-5	The students should work at their own individual pace thus favoring their learning.
Socializing	6	1-5	The participation of the students in the teaching process favors their learning.
Cognitive	5	1-5	Using teaching through discovery favors students' autonomy
Creative	3	1-5	I enjoy it when I see my students working and creating choreographies in my class.
Questionnaire on the Evaluation Processes in Physical Education #EvalEF			
Evaluation			
Evaluation by the teacher	1	1-6	The Physical Education teacher evaluates the students.
Self-evaluation	1	1-6	The students evaluate themselves (self-evaluation).
Co-evaluation	1	1-6	The students evaluate their classmates (co-evaluation).
Grading			
Grading by the teacher	1	1-6	The grades are decided by the teacher.
Self-grading (partial or total)	1	1-6	The students self-grade establishing their own mark (partially or totally).
Dialogue grading (partial or total)	1	1-6	Grading is the result of a dialogue and consensus between the teachers and students (partially or totally).
Grading based on self-evaluation (partially or totally)	1	1-6	Grading based on self-evaluation (partially or totally).

Grading based on co-evaluation (partially or totally)	1	1-6	Grading is based on the co-evaluation among classmates (partially or totally).
Need-Supportive Teaching Style Scale			
Task support climate	5	1-5	The most important aspect is that my students progress yearly in their own skills.
Ego-oriented support climate	3	1-5	I try to make my students do better than their classmates.
Autonomy support	4	1-5	My students have the freedom to make decisions during my classes
Relations support	3	1-5	I try to get my students to really work together like a team in my classes.

Source: compiled by author

Statistical analysis

Statistical analysis was performed using SPSS (Windows, v.26.0). Statistical significance was set at $P<0.05$. Normality was confirmed with the Kolmogorov-Smirnov test, and thus, parametric tests were used. All the variables are presented as mean ± SD (standard deviation). Pearson's correlation was used to analyze the relations between preference for teaching styles and the items of participation in the evaluation and grading, satisfaction of BPN in the work, and preference for styles which support BPN. Values of under 0.1 refer to a null correlation, between 0.1 and 0.3 to a weak correlation, between 0.3 and 0.5 to a moderate correlation, and over 0.5 to a strong correlation

Results

Table III presents the descriptive statistics on the variables teaching styles, evaluation and grading. In the teaching styles, the main ones that stand out are the creative styles with the highest mean values (4.58±0.54) and the traditional styles with the lowest means (2.71±0.79). Regarding evaluation,

results reveal the predominance of evaluation by the teacher (5.47±0.68), although the forms of student participation obtained mean values above the mid-point of the scale. The same tendency was evident with regard to grading, where grading by the teacher obtained the highest mean values (4.75±1.28). With respect to the evaluation of the teaching, self-evaluation was the procedure with the highest mean (5.12±1.11). High values were revealed for feelings of support for autonomy (3.52±0.,71) and relations (4.25±0.73). On their part, the teachers also showed a high climate of support for the task (4.53±0.63) and a limited one of support for the ego (1.73±0.85).

TABLE III. Descriptive statistics of the variables teaching styles, evaluation and grading

	Total
n	**995**
Teaching styles	(1-5)
Traditional	2.71±0.79
Individualizing	4.24±0.62
Socializing	4.37±0.53
Cognitive	3.78±0.57
Creative	4.58±0.54
Evaluation	(1-6)
Evaluation by the teacher	5.47±0.68
Self-evaluation	4.45±1.20
Co-evaluation	4.32±1.27
Grading	(1-6)
Grading by the teacher	4.75±1.28
Self-grading (partial or total)	3.56±1.39
Dialogue grading (partial or total)	3.55±1.50
Grading based on self-evaluation (partially or totally)	3.50±1.38
Grading based on co-evaluation (partially or totally)	3.47±1.40
Need-Supportive Teaching Style Scale	1-5
Task support climate	4.53±0.63
Ego-oriented support climate	1.73±0.85
Support for autonomy	3.52±0.71
Support for relations	4.25±0.73

Source: compiled by author

The relation between the teaching styles with which the teachers identify and the forms of evaluating the students are presented in Table IV. There is an inverse relation between identification with the traditional styles and the use of participatory evaluation processes (self-evaluation r=-0.248 and co-evaluation r=-0.230). Positive and significant correlations were revealed between the rest of the teaching styles and different forms of evaluation.

TABLE IV. Relation between the teaching styles with which the teachers identify and the forms of evaluating the students

	Evaluation by the teacher	Self-evaluation	Co-evaluation
Traditional	0.006	-0.248**	-0.230**
Individualizing	0.257**	0.193**	0.146**
Socializing	0.340**	0.232**	0.186**
Cognitive	0.195**	0.152**	0.119**
Creative	0.344**	0.230**	0.215**

Source: compiled by author

Table V presents the relation between the teaching styles with which the teachers identify and the forms of grading the students. The positive relation between preference for the traditional teaching styles and grading by the teacher stands out (r=0.243; P<0.001). In contrast, the individualizing (r=0.108), socializing (r=0.141) and cognitive (r=0.164) styles are positively related with self-grading (all, P<0.001). The traditional styles are inversely correlated with dialogue grading, and grading based on self-evaluation and co-evaluation, although the relation is weak. Lastly the individualizing, socializing, cognitive and creative styles are positively related to dialogue grading, and grading based on self-evaluation and co-evaluation.

TABLE V. Relation between the teachings styles with which teachers identify and the forms of grading the students

	Grading by the teacher	Self-grading	Dialogue grading	Grading based on self-evaluation	Grading based on co-evaluation
Traditional	0.243**	-0.061	-0.066*	-0.068*	-0.076*
Individualizing	0.014	0.108**	0.163**	0.162**	0.123**
Socializing	0.067*	0.141**	0.169**	0.177**	0.121**
Cognitive	0.066*	0.164**	0.160**	0.193**	0.143**
Creative	0.065*	0.050	0.115**	0.096**	0.069*

Source: compiled by author

The relation between the styles that the teachers support and the teaching styles with which they identify is presented in Table VI. The results highlight that the teachers that support an ego-oriented climate identify preferentially with traditional styles (r=0.303; P<0.001). Also worthy of note is the positive relation between a task support environment, the styles that support autonomy and those that support relations with the individualizing, socializing, cognitive and creative styles.

TABLE VI. Relation among the styles that the teachers support and the teaching styles with which they identify.

	Traditional	Individualizing	Socializing	Cognitive	Creative
Task support climate	0.090*	0.363**	0.409**	0.267**	0.394**
Ego-oriented support climate	0.303**	-0.110**	-0.114**	0.068*	-0.157**
Styles that support autonomy	-0.102**	0.334**	0.367**	0.270**	0.293**
Styles that support relations	-0.022	0.388**	0.471**	0.324**	0.445**

Source: compiled by author

Discussion

This research has shown that: (i) The preference for traditional teaching styles is inversely related to the use of participatory evaluation and grading processes and the evaluation of the teaching on the part of the students; (ii) The preference for the rest of the teaching styles studied is related to the different forms of student participation in evaluation and grading and self-evaluation by the teacher; and (iii) There is a positive relation between the teachers who support an ego-oriented climate and the preferential identification with traditional styles and those who support a task climate, autonomy and relations and the identification with individualizing, socializing, cognitive and creative styles.

The descriptive data from the present study show how the teachers stated that they preferred creative teaching styles, while traditional styles received the lowest score from the teachers. These results are contrary to those obtained in previous research (Espada & Pineño, 2020; Jaakkola & Watt, 2011; Syrmpas et al., 2017) in which traditional styles were indicated as the preferred styles of the teachers. Similarly, the data from the present investigation are completely opposed to those of the study by Parsak & Saraç (2020) in which the teachers indicated that the traditional styles are those that they mostly use and that they never used the creative styles. This may signal a change in teaching intervention that is occurring in the context of Spanish PE.

In relation to the evaluation process, the results obtained in this investigation follow the line of previous studies where evaluation and grading by the teacher are used most frequently. Research like that of Cañadas y Santos-Pastor (2021) and Rodríguez & Zulaika (2016) show that the participatory forms of evaluation and grading are very seldom used at compulsory educational levels. It is also important to underline that the mean values of participation of the students are higher in evaluation processes than in grading processes where they do not attain the same value. This gives an image of how the teachers increasingly value students' participation in evaluation but are much more reticent to their participating in grading processes (Rodríguez & Zulaika, 2016).

Finally, with regard to the styles that support the satisfaction of BPN, there is a clear preference for the task support climate and support for relations, although the latter obtained lower values, coinciding with

previous investigations (Méndez-Giménez et al., 2013; Moreno-Murcia et al., 2009; Sevil-Serrano et al., 2017).

When relating teaching styles with the evaluation process, an inverse relation can be seen between the identification with the traditional teaching styles and the use of participatory evaluation processes on the part of the students. This relation is completely coherent, as traditional teaching styles are characterized by direct, unilateral teaching, in which the teacher makes the decisions in the teaching and learning process, including the evaluation process. Positive and significant correlations were established between the rest of the teaching styles and the different forms of evaluation, a fact which seems to indicate that, with the exception of the traditional teaching styles, any other generates a learning space where the students can participate in their evaluation process. Regarding the grading process, the positive relation between the preference for traditional styles and grading by the teacher stands out. Moreover, the preference for traditional styles is inversely related to dialogue grading, and grading based on self-evaluation and co-evaluation. As was indicated in previous investigations, teachers prefer using traditional styles because they perceive that they have greater control over the teaching-learning process (Najera et al., 2020). It is, therefore, coherent that these teachers also want to have control over grading (López-Pastor & Sicilia, 2017).

In the case of the individualizing, socializing and cognitive styles, they are positively related to self-evaluation. And these, together with the creative styles are positively related to dialogue grading, and grading based on self-evaluation and co-evaluation. In this respect, as concluded by Van Doren et al. (2021) support for students' autonomy correlates positively with a more active involvement in classes. In this same line of thought, students also show their preference for individualizing styles which allow them greater autonomy and increases their motivation (Brya et al., 2014). The inverse relation between preference for the traditional styles and evaluation on the part of the students stands out. The traditional styles are based solely on the teachers' instructions, and they are the ones who have control over all the decisions about the teaching and learning process (Najera et al., 2020). In the rest of the styles the relation between them and teachers' self-evaluation stands out, also relating to the rest of the forms of evaluation although more weakly.

There is no relation between the satisfaction of BPN and identification with the traditional teaching styles. However, there is a positive relation

between satisfaction of each of the BPN and the rest of the styles studied. This could be due to the fact that in the individualizing, socializing, cognitive and creative styles the students participate in some way in their learning process. In this line of thought, Diloy-Peña et al. (2021) state that PE teachers are agents of support for the satisfaction of BPN. They support the need for autonomy of the students, allowing them to be the decision makers in the teaching and learning process. The need for competence using interrogative feedback, permits them to identify the different rules of action of the proposed motor situations. Finally, support of social relations will be satisfied when teachers develop a favorable environment for fomenting the positive interaction and integration of the students.

The results highlight that the teachers who support an ego-oriented climate preferentially identify with the traditional styles. They also underline the positive relation between task climate support, styles that support autonomy and those that support relations and the identification with the individualizing, socializing, cognitive and creative styles. These data corroborate the results of the research by Moreno-Murcia et al. (2020) which presents the conclusion that active teaching styles predict support for autonomy.

Conclusion

This study has shown a relation between the traditional teaching styles and the forms of evaluation and grading on the part of the teachers, as well as support for an ego-oriented climate; in the same way, a weak relation has been shown between the preference for styles which grant a more important role to the students and their participation in evaluation and grading processes, and support for autonomy, relations and preference for a task climate. Among the strong points of this study is the fact that it is an original investigation that has not been previously explored, that sought to relate fundamental aspects for the development and coherence of teaching and learning processes. Moreover, it presents a very large sample of Spanish PE teachers. Among the limitations, we find that it was not able to delve more deeply into the reasons that lead teachers to prefer determined styles, not to carry out certain evaluative processes in

their classrooms, or to have one support style or another. Furthermore, as it was an original investigation it was difficult to find prior research to support and debate the findings.

Finally, this is a line of research that has many possible future paths for investigation. For example, to analyze the preference for styles and the way the teachers implement them, and the relation with the other elements of the evaluation process. It is also necessary to evaluate the students' perception of these processes and establish the impact that certain questions about the teaching and learning process (teaching styles, evaluation) have on the students' motivation and development.

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Comparison of multiple regression and artificial neural network performances in determining the order of importance of predictors in educational research[1,2]

Comparación del rendimiento de la regresión múltiple y la red neuronal artificial en la determinación del orden de importancia de los predictores en la investigación educativa

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Abstract

Studies aiming to determine the importance rankings of one or more predictor variables on the predicted variable are frequently encountered in education. Multiple Regression (MR) and artificial neural network (ANN) are widely used in this type of research. The present study compares the predictive importance rank performances of MR and ANN methods. For this purpose, two separate real data sets, in which MR assumptions are met and the predictor variables are *continuous* or *discrete*, and simulation data generated by considering the

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relationships in these data sets were used. Absolute relative bias (ARB) and mean square errors (MSE) were used to compare the methods' performances. The results of the research showed that the increase in sample size had an improving effect on the ARBs and MSEs of the methods. In addition, if the predictors are *continuous*, researchers may be advised to choose either MR or ANN. However, in cases where the predictors are *discrete* and the number of predictors is three or more, the use of ANN is recommended. In order to obtain optimal estimations with both methods, it is recommended that researchers use a sample size of at least 200.

Resumen

Los estudios que tienen como objetivo determinar los rangos de importancia de una o más variables predictoras en la variable predicha se encuentran con frecuencia en la educación. La regresión múltiple (RM) y la red neuronal artificial (RNA) son ampliamente utilizadas en este tipo de investigación. El presente estudio compara el desempeño del rango de importancia predictiva de los métodos RM y RNA. Para este propósito, dos conjuntos de datos reales separados, en los que se cumplen los supuestos de RM y las variables predictoras son *continuas* o *discretos*, y se utilizaron datos de simulación generados al considerar las relaciones en estos conjuntos de datos. Se utilizaron sesgos relativos absolutos (SRA) y errores cuadráticos medios (ECM) para comparar el rendimiento de los métodos. Los resultados de la investigación mostraron que el aumento en el tamaño de la muestra tuvo un efecto de mejora en los SRAs y ECMs de los métodos. Además, si los predictores son continuos, se puede recomendar a los investigadores que elijan RM o RNA. Sin embargo, en los casos en que los predictores sean *discretos* y el número de predictores sea tres o más, se recomienda el uso de RNA. Para obtener estimaciones óptimas con ambos métodos, se recomienda que los investigadores utilicen un tamaño de muestra de al menos 200.

Introduction

Predictive type of correlational studies is frequently encountered in the fields of education. In predictive type correlational studies, if there is an adequate correlation between two variables, the score for one variable can be used to predict the score for the other variable (Fraenkel et al., 2011). In these studies, the variable that is estimated can be expressed as the predicted (dependent/criteria) variable, and the variable/s used for the estimation can be expressed as the predictive (independent) variable/s.

In predictive type correlational studies conducted in the fields of education variables related to the cognitive (e.g., Akgül, 2019; Aramburo et al., 2017; Lee, 2016, etc.), affective or psychomotor characteristics (e.g., Arthur & Doverspike, 2001; Atabey, 2020; Ivcevic & Eggers, 2021; Marroquin & Nolen-Hoeksema, 2015, etc.) are addressed. In these studies, the order of importance of the predictor variables on the predicted variable can be determined. In addition, important results revealing the relationships between latent structures (e.g., achievement, motivation, depression, etc.) that cannot be observed directly can be revealed. In this way, a scientific basis can be provided to education researchers, educational practitioners, and decision-makers regarding the issues they need to prioritize and/or improve.

When predictive correlational studies conducted in the fields of education are examined, it is seen that simple and multiple linear regression analyses are mostly used to predict the dependent variable (e.g., Akhtar & Herwig, 2019; Alandete, 2015; Bergold & Steinmayr, 2018; Garcini et al., 2013; Teressa & Bekele, 2021, etc.). However, regression analyses have many assumptions that need to be met, and there may be situations where not all of these assumptions are met. This situation reveals the need to employ different methods in prediction studies. One of the methods that can be used as an alternative to multiple regression (MR) analysis in prediction studies is artificial neural networks (ANNs). ANN has been used in social sciences, engineering, business, and many other fields (e.g., Bayru, 2007; Cansız et al., 2020; Okkan & Mollamahmutoğlu, 2010; Tolon, 2007, etc.) for a long time, it has recently been used frequently in educational research (e.g., Kalkan & Coşguner, 2021; Moreetsi & Mbako, 2008; Toprak & Gelbal, 2020, etc.). The MR and ANN methods used in the research are briefly introduced below.

Multiple regression (MR)

Regression analyses are a set of statistical techniques that allows evaluating the relationship between a dependent variable and one or more independent variables (Tabachnick & Fidell, 2013). MR is concerned with predicting a dependent variable based on a set of estimators (Stevens, 2009). In addition, MR allows for determining the total variance explained by the predictor variables on the dependent variable, examining the statistical significance of the predictor variables, and interpreting the relationship between the predictor variables and the dependent variable (Büyüköztürk, 2014). In addition, MR is a quite efficient technique for analyzing the total and separate effects of predictor variables on a dependent variable (Pedhazur, 1997).

In MR, the predictive variables should be *continuous* variables at least on an interval scale; however, *discrete* variables can also be included in the analysis after they are defined as dummy variables (Büyüköztürk, 2014). In addition, MR has some assumptions to be met, such as normality, linearity, homoscedasticity of residuals, independence of errors, multicollinearity, adequate sample size, and examination of outliers (Tabachnick & Fidell, 2013).

Artificial neural networks (ANNs)

The beginning of ANN studies, which is based on the working principle of the human brain, dates back to the 1940s. ANNs are also expressed as computer programs that imitate biological neural networks in the human brain, in the form of simulating the biological nervous system (Elmas, 2003). A biological nerve cell consists of four essential components: dendrite, nucleus, axon, and synapse (Öztemel, 2012). Similarly, an artificial neuron consists of the inputs created by the information coming from the outside world, the weights by which the importance level of the information is determined, the sum function that provides the calculation of the net information entering the cell, and the activation function that determines the output to be produced (Baş, 2006; Öztemel, 2012).

Some advantages are effective in the widespread use of ANN. These can be listed as being able to solve complex problems, adapting to new situations with minor changes, generalizing based on the results

obtained, being faster than traditional statistical methods, working with incomplete data, handling defective or multidimensional data with error tolerance, and pattern recognition in missing data (Çırak & Çokluk, 2013; Haykin, 1994; Öztemel, 2012; Simpson, 1990). These advantages of ANN make it preferable to regression-based methods.

There are studies in the literature conducted for the purpose of comparing the prediction performances of MR and ANN. In these studies, the performances of the methods were examined over different parameters such as mean squares of error, percentages of prediction, coefficients of determination, and scatter diagrams (e.g., Akbilgiç & Keskintürk, 2008; Cansız et al., 2020; Gorr et al., 1994; Lykourentzou et al., 2009; Okkan & Mollamahmutoğlu, 2010; Turhan et al., 2013; Zaidah & Daliela, 2007, etc.). To the best of our knowledge, no research has been found that examines the performance of both methods in determining the order of importance of predictor variables on real and simulation datasets based on predictor type, the number of predictors, and sample size. Therefore, the results of the research can contribute to the determination of the limitations of the methods in practice; in addition, it is thought that it can provide inferences for researchers and practitioners. For that reason, the present study aims to compare the priority rankings obtained from MR and ANN, in determining the order of importance of the variables over real and simulation datasets of different sample sizes consisting of *continuous* or *discrete* variables. For this purpose, answers to the following research questions (RQ) were sought:

RQ1. What are the relationships between variables in real datasets consisting of *continuous* or *discrete* predictive variables?

RQ2. When predictor variables are *continuous*;
a. What is the order of importance obtained by MR and ANN from the real dataset?
b. How does the order of importance, absolute relative bias (ARB), and mean square error (MSE) obtained by MR and ANN from simulation datasets with different sample sizes (100, 200, 400, 800) and the number of predictors (2, 3, 4) change?

RQ3. When predictor variables are *discrete*;

a. What is the order of importance obtained by MR and ANN from the real dataset?

b. How does the order of importance, ARB, and MSE obtained by MR and ANN from simulation datasets with different sample sizes (100, 200, 400, 800) and the number of predictors (2, 3, 4) change?

Method

Study group

Within the scope of the research, two different real datasets belonging to the studies of Toprak and Kalkan (2019a, 2019b) were used to compare the performance of the MR and ANN methods in determining the order of importance of the *continuous* and *discrete* variables. The first dataset consists of the answers given by 445 students (324 female, 121 male) enrolled at three different high schools in Turkey (Toprak & Kalkan, 2019a). This dataset was used to compare the order of importance of the methods when the predictor variables were *continuous*.

The second dataset consists of the answers given by 992 students (540 female, 452 male) enrolled in five different secondary schools in Turkey (Toprak & Kalkan, 2019b). This dataset was used to compare the ordering of the methods when the predictor variables were *discrete*.

Data collection instruments

The first dataset of the present study consists of the Cognitive Flexibility Scale, Coping Strategies Scale, and Competency Expectation Scale scores used by Toprak and Kalkan (2019a) in their research. These scales are introduced below, respectively.

Cognitive flexibility scale

The scale developed by Martin and Rubin (1995) and adapted into Turkish by Çelikkaleli (2014) consists of 12 items. The Cronbach Alpha

(Cr α) reliability coefficient of the scale was .71. The scale has a one-dimensional factor structure.

Coping strategies scale

The scale, developed by Spirito et al. (1988) and adapted into Turkish by Bedel et al. (2014), consists of 11 items and three sub-dimensions: active coping, avoidant coping, and negative coping. The Cr α reliability coefficient of the scale was .72 for active coping, .70 for avoidant coping, and .65 for negative coping.

Competency expectation scale

The scale, which was developed by Muris (2001) and adapted into Turkish by Çelikkaleli et al. (2006), consists of 23 items and three sub-dimensions: academic competence expectation, social competence expectation, and emotional competence expectation. The Cr α reliability coefficient was reported as .64 for academic competence expectation, .69 for emotional competence expectation, and .71 for social competence expectation.

The second dataset of the present research consists of the data obtained by Toprak and Kalkan (2019b) with the personal information form in their studies. This information form and the variables included in the study are briefly introduced below.

Personal information form

This form consists of *discrete* variables determined as predictors of mathematics course achievement scores, such as gender, family income level, mother's education level, and father's education level (Table I).

TABLE I. Descriptive statistics on the predictors of mathematics course achievement scores

Variables		f	%
Gender	Female	540	54.4
	Male	452	45.6
Family income level	2000 Turkish Lira (TL) and below	220	22.2
	2001-4000 TL	414	41.7
	4001-6000 TL	197	19.9
	6001 TL and above	161	16.2
Mother's education level	Up to primary school	280	28.2
	Secondary school	259	26.1
	High school	279	28.1
	Undergraduate and above	174	17.5
Father's education level	Up to primary school	166	16.7
	Secondary school	247	24.9
	High school	290	29.2
	Undergraduate and above	289	29.1

Data analysis

MR and ANN methods were used to determine the order of importance of the variables. For this purpose, two different real datasets and simulation datasets generated by considering these datasets were used. Missing data, adequacy of sample size, and outlier analysis were performed to evaluate the fitting of real data sets for MR, and normality, linearity, homoscedasticity of residuals, independence of errors, multicollinearity assumptions were tested.

Mahalanobis distances obtained in determining the outliers were compared with the chi-square critical value (α = .001). While evaluating the adequacy of the sample size, the number of predictors x 15 proposed by Stevens (2009) and 50 + 8 x the number of predictors proposed by Tabachnick and Fidell (2013) were taken into account. Normal probability plots (P-P) and scatter plots of regression standardized residuals were used to control the assumptions of normality, linearity, and covariance of residuals. In determining the multicollinearity problem, bivariate

correlation, tolerance, condition index (CI), and variance inflation factor (VIF) values were considered. Real data and simulation data were used in MR and ANN analyses.

Real data

Two different datasets were used for real data analysis. In dataset1, all variables are *continuous*, and the dependent variable is cognitive flexibility. Social competence expectations, academic competence expectations, emotional competence expectations, and active coping variables were used to predict cognitive flexibility (Toprak & Kalkan, 2019a).

In dataset2, the dependent variable is the mathematics course achievement scores (*continuous* variable). *Discrete* variables of gender, family income, father's education level, and mother's education level were used as predictors of mathematics course achievement scores (Toprak & Kalkan, 2019b).

Simulation design

R software (Core team, 2017) was used to generate simulation data. 24 (2 x 4 x 3) study conditions were created by crossing 2 variable types (*continuous*, *discrete*), 4 sample sizes (100, 200, 400, 800), and 3 number of predictors (2, 3, 4) and one hundred datasets were generated for each study condition.

Using the variance, covariance, and mean values obtained from the real dataset (dataset1) consisting of *continuous* variables, simulation data were generated. SimDesign (Chalmers & Adkins, 2020) package was used to generate these datasets.

Using the correlation, mean, and standard deviation values obtained from the real dataset (dataset2) consisting of *discrete* predictors, simulation data were generated. The OrdNor (Amatya & Demirtas, 2015) package was used to generate these data. The values of the dependent variable (mathematics course achievement scores) in the generated datasets were rounded to the nearest integer and limited to the range of 0-100 to be fitted with the real values.

Discrete predictors were coded as dummy variables and included in the analysis. The first category for each variable was determined as the reference group (Table I). In determining the order of importance of the *discrete* variables, the mean of the standardized coefficients obtained from all categories of the relevant variable except the reference group was taken into account.

In order to compare the performance of the methods, the order of importance of the variables, ARB, and MSE were used. Parameter values obtained from real datasets were assumed as true values, and ARB was calculated with estimations obtained from simulation data. The following formula was used to calculate ARB (Bandalos & Leite, 2013).

$$\text{ARB}\,(\hat{\theta}_i) = \sum_{j=1}^{n_r} \left(\frac{|\hat{\theta}_{ij} - \theta_i|}{\theta_i} \right) / n_r \tag{1}$$

The mean square error (MSE) formula was used to determine the efficiency of parameter estimations (Bandalos & Leite, 2013).

$$\text{MSE}\,(\hat{\theta}_i) = \sum_{j=1}^{n_r} \frac{(\hat{\theta}_{ij} - \theta_i)^2}{n_r} \tag{2}$$

In Equations 1 and 2, is *j*th sample estimation of the *i*th true parameter value is the replication number. ARB can be interpreted as percent ARB by multiplying it by 100.

The R was used for the MR analysis, and the statistical program for social sciences (SPSS; IBM, 2020) was used for the ANN analysis. Multilayer Perceptron Model was used in ANN analysis; 70% of the datasets were chosen as training samples and 30% as the test sample. The hyperbolic tangent function was used for the cells in the hidden layer, and the softmax function was used for the cells in the output layer. Different training and test data are used in each analysis made with ANN. For this reason, each dataset in the relevant condition was analyzed 100 times to ensure stability.

Results

The adequacy of sample size, outliers, normality, linearity, homoscedasticity of residuals, and multicollinearity (e.g., tolerance, condition index, variance inflation factor, etc.) assumptions were examined before performing MR analyses, and it was seen that these assumptions were met. Then, the results related to the research problems are presented respectively.

Correlation between variables in real datasets consisting of *continuous* or *discrete* predictor variables

The bivariate correlations between the variables in the real datasets are presented in Table II, respectively.

TABLE II. Correlations in the real dataset consisting of *continuous* and discrete *variables*

Continuous Variables	CF	ESC	EAC	EEC	AC
CF	–				
ESC	.439**	–			
EAC	.424**	.306**	–		
EEC	.425**	.418**	.338**	–	
AC	.401**	.291**	.379**	. 483**	–
Discrete Variables	**MCAS**	**G**	**FI**	**FEL**	**MEL**
MCAS	–				
G	-.201**	–			
FI	.307**	.016	–		
FEL	.320**	-.067**	.425*	–	
MEL	.324**	-.031**	.457**	.589**	–

**p<.01; *p<.05. Note. CF: cognitive flexibility; ESC: expectation of social competence; EAC: expectation of academic competence; EEC: expectation of emotional competence; AC: active coping; MCAS: mathematics course achievement scores; G: gender; FI: family income; FEL: father's education level; MEL: mother's education level.

Table II shows that there is a positive, moderate level, and significant correlation between CF and ESC, EAC, EEC, and AC. The variable with the highest correlation with CF was ESC; the variable with the lowest

correlation is AC. In addition to this, there is a positive, moderate level, and significant correlation between MCAS and FI, FEL, and MEL, and a negative, low level and significant correlation with G. The variable with the highest correlation with MCAS is MEL; the variable with the lowest correlation is G.

Results for *continuous* predictors

The order of importance and standardized coefficients obtained with MR and ANN in conditions where there are 2, 3, and 4 *continuous* predictors in the real dataset (dataset1) are presented in Table III.

TABLE III. MR and ANN's order of importance in the real dataset consisting of *continuous* predictors

DV	Method	NP	Predictors' order of importance and standardized coefficients (in brackets)							
CF	MR	2	I.	ESC (0.34)	2.	EAC (0.32)				
		3	I.	EAC (0.27)	2.	ESC (0.26)	3.	EEC (0.22)		
		4	I.	ESC (0.25)	2.	EAC (0.23)	3.	EEC (0.16)	4.	AC (0.16)
	ANN	2	I.	ESC (0.50)	2.	EAC (0.49)				
		3	I.	EAC (0.35)	2.	ESC (0.34)	3.	EEC (0.31)		
		4	I.	ESC (0.30)	2.	EAC (0.29)	3.	EEC (0.21)	4.	AC (0.20)

Note. DV: dependent variable; NP: number of predictors.

Table III shows that for the conditions with two and four predictors in predicting CF, ESC is the variable with the highest importance level according to both methods. In the prediction with three variables, although the importance order of the predictor variables is the same in terms of methods, the variable with the highest importance level is EAC. These results show that both methods reveal the same order for the condition where the predictor variables are *continuous*, regardless

of the number of predictors. The order of importance and standardized coefficients obtained by MR from simulation datasets with the different number of predictors and sample sizes are presented in Table IV.

TABLE IV. MR's order of importance and standardized coefficients in simulation datasets consisting of *continuous* predictor

DV	NP	SS	Predictors' order of importance and standardized coefficients (in brackets)							
CF	2	100	I.	ESC (0.34)	2.	EAC (0.32)				
		200	I.	ESC (0.34)	2.	EAC (0.31)				
		400	I.	ESC (0.34)	2.	EAC (0.32)				
		800	I.	ESC (0.34)	2.	EAC (0.32)				
	3	100	I.	EAC (0.27)	2.	ESC (0.26)	3.	EEC (0.23)		
		200	I.	ESC (0.27)	2.	EAC (0.26)	3.	EEC (0.22)		
		400	I.	EAC (0.27)	2.	ESC (0.25)	3.	EEC (0.23)		
		800	I.	EAC (0.27)	2.	ESC (0.26)	3.	EEC (0.23)		
	4	100	I.	ESC (0.24)	2.	EAC (0.23)	3.	EEC (0.18)	4.	AC (0.17)
		200	I.	ESC (0.26)	2.	EAC (0.22)	3.	EEC (0.17)	4.	AC (0.16)
		400	I.	ESC (0.25)	2.	EAC (0.23)	3.	EEC (0.17)	4.	AC (0.16)
		800	I.	ESC (0.25)	2.	EAC (0.23)	3.	EEC (0.17)	4.	AC (0.16)

Note. SS: sample size.

Table IV shows that the variable with the highest significance level according to the MR results obtained from two predictors in different sample sizes is ESC. In the condition that the number of predictors is four, the variable with the highest importance level is again ESC. In addition, in conditions

with two and four predictors, the order of importance of the predictors is the same for all sample sizes. On the other hand, in the conditions with three predictors, ESC is the variable with the highest importance level for the sample size of 200; it is EAC for sample sizes of 100, 400, and 800. In addition, for this condition, EEC is the least important variable in all sample sizes. The order of importance obtained for all predictors is generally fitted with the real data (Table III). The order of importance and standardized coefficients obtained by ANN from simulation datasets with different number of predictors and sample sizes are presented in Table V.

TABLE V. ANN's order of importance and standardized coefficients in simulation datasets consisting of *continuous* predictors

DV	NP	SS	Predictors' order of importance and standardized coefficients (in brackets)							
CF	2	100	1.	ESC (0.52)	2.	EAC (0.48)				
		200	1.	ESC (0.52)	2.	EAC (0.48)				
		400	1.	ESC (0.52)	2.	EAC (0.48)				
		800	1.	ESC (0.51)	2.	EAC (0.49)				
	3	100	1.	ESC (0.35)	2.	EAC (0.34)	3.	EEC (0.31)		
		200	1.	ESC (0.35)	2.	EAC (0.34)	3.	EEC (0.31)		
		400	1.	EAC (0.35)	2.	ESC (0.34)	3.	EEC (0.31)		
		800	1.	EAC (0.35)	2.	ESC (0.34)	3.	EEC (0.31)		
	4	100	1.	ESC (0.27)	2.	EAC (0.26)	3.	EEC (0.24)	4.	AC (0.22)
		200	1.	ESC (0.30)	2.	EAC (0.26)	3.	EEC (0.23)	4.	AC (0.21)
		400	1.	ESC (0.29)	2.	EAC (0.27)	3.	EEC (0.22)	4.	AC (0.21)
		800	1.	ESC (0.30)	2.	EAC (0.28)	3.	EEC (0.21)	4.	AC (0.20)

Table V shows that ESC is the variable with the highest importance level according to the ANN results obtained from two and four predictors in different sample sizes. In addition, in conditions with two and four predictors, the order of importance of the predictors is the same for all sample sizes. On the other hand, in the condition with three predictors, ESC is the variable with the highest importance level for sample sizes of 100 and 200; it is EAC for sample sizes of 400 and 800. In addition, for this condition, EEC is the least important variable in all sample sizes. The order of importance obtained for all predictors is generally fitted with the real data (Table III).

The ARBs of the parameter estimations obtained by MR and ANN from simulation datasets with different numbers of *continuous* predictors and sample sizes are presented in Figure I.

FIGURE I. ARBs obtained by MR and ANN in simulation datasets consisting of *continuous* predictors
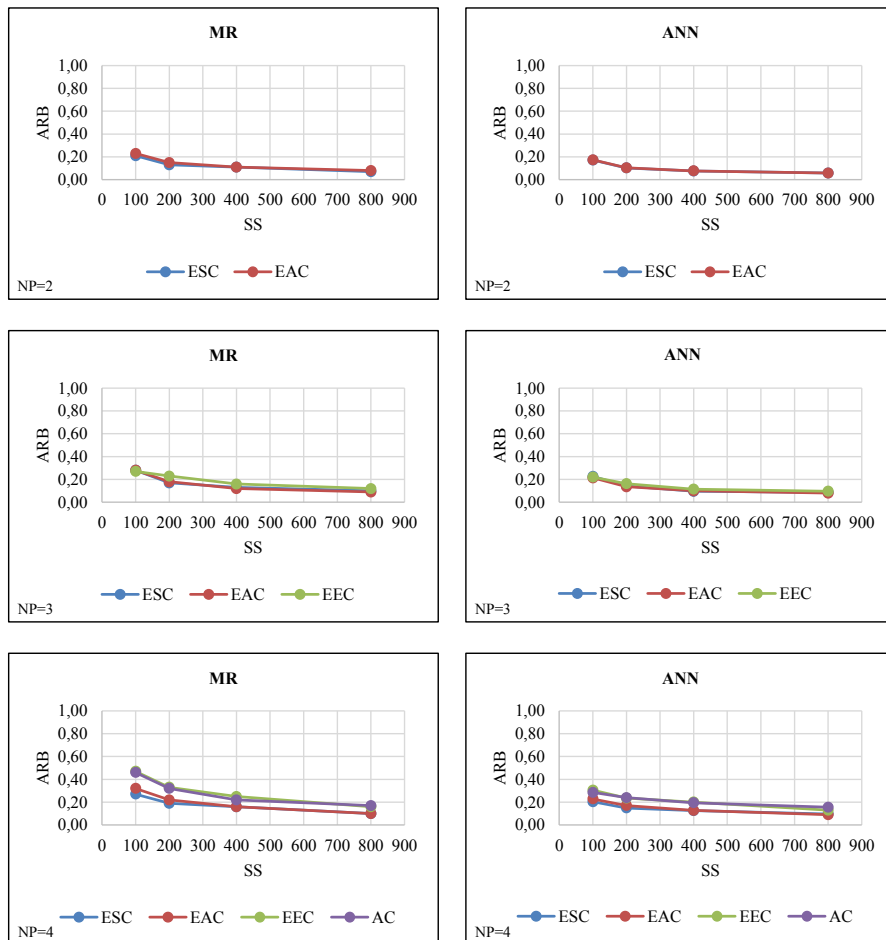

Figure I shows that ARB decreases as the sample size increases for both methods, regardless of the number of predictors. While dramatic decreases were observed in ARB, specifically in the transition from 100 to 200 sample sizes, these decreases were lower in larger samples (i.e., 400-800). In addition, for all predictors, the highest ARBs were observed at a sample size of 100 and the lowest ARBs at a sample size of 800.

When MR and ANN ARB means were compared, it was determined that ANN had lower ARB averages, regardless of the number of predictors. However, since the ARB averages of both methods are over 10% for all numbers of predictors (Flora & Curran, 2004), it can be said that these estimates have substantial bias.

On the other hand, the increase in the number of predictors while the sample size was fixed, caused an increase in the ARB means of both methods. However, the increase in ANN ARB means was lower in comparison to MR. It should be noted that these increases in the ARB means were more dramatic, specifically in small sample sizes.

The MSEs of the parameter estimations obtained by MR and ANN from simulation datasets with different numbers of *continuous* predictors and sample sizes are presented in Figure II.

FIGURE II. MSEs obtained by MR and ANN in simulation datasets consisting of *continuous* predictors
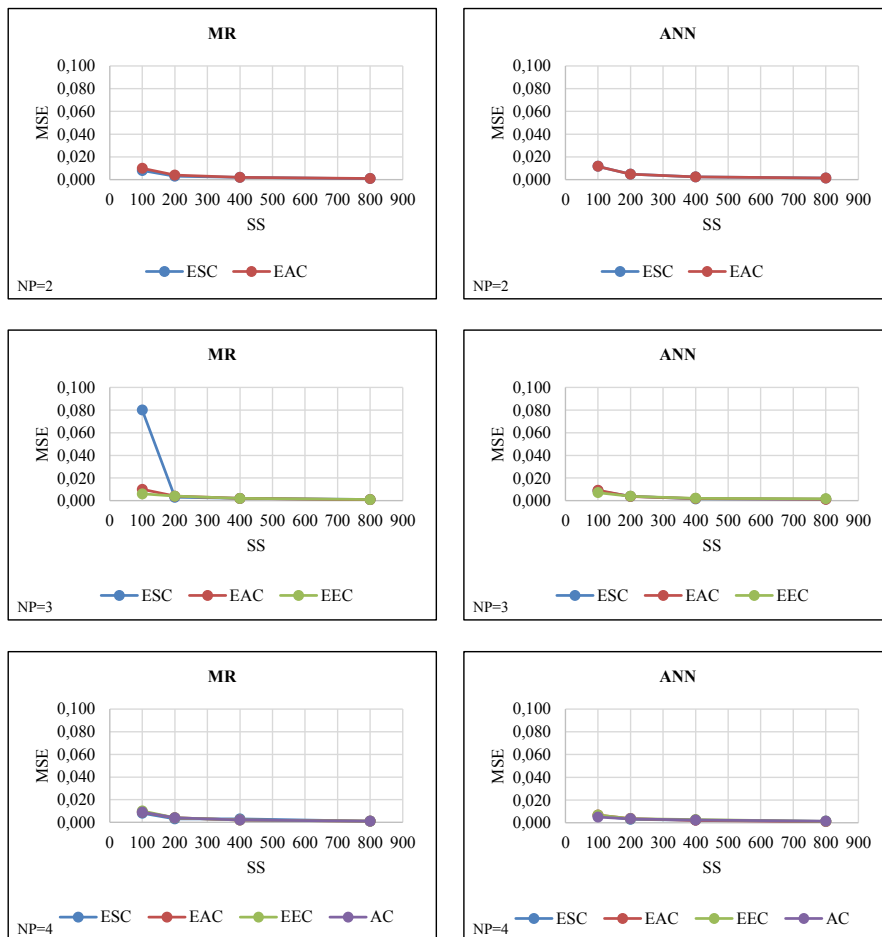

Figure II shows that for both methods, regardless of the number of predictors, MSE decreases as the sample size increases. Generally, dramatic decreases were observed in MSE in transitions from 100 to 200 sample sizes; in larger samples (i.e., 400-800), these decreases were lower. In addition, for all predictors, the highest MSE values were observed at a sample size of 100, and the lowest MSEs at a sample size of 800. When

MR and ANN MSEs were compared, it was determined that ANN had lower MSEs, except when the number of predictors was two.

On the other hand, as the number of predictors increased, no important change was observed in the MSEs of the methods (except NP=3, ESC). In addition, it can be said that MSEs have quite similar values in samples of 200 and above.

Results for *discrete* predictors

The order of importance and standardized coefficients obtained with MR and ANN in conditions where there are 2, 3, and 4 *discrete* predictors in the real dataset are presented in Table VI.

TABLE VI. MR and ANN's order of importance in the real dataset consisting of *discrete* predictors

DV	Method	NP	Predictors' order of importance and standardized coefficients (in brackets)							
MCAS	MR	2	I.	FI (0.25)	2.	G (0.21)				
		3	I.	G (0.19)	2.	FI (0.17)	3.	FEL (0.13)		
		4	I.	G (0.19)	2.	FI (0.14)	3.	FEL (0.09)	4.	MEL (0.09)
	ANN	2	I.	FI (0.27)	2.	G (0.20)				
		3	I.	G (0.16)	2.	FI (0.15)	3.	FEL (0.13)		
		4	I.	G (0.14)	2.	FI (0.10)	3.	MEL (0.09)	4.	FEL (0.08)

Table VI shows that for the condition with two predictors in predicting MCAS, the predictor with the highest importance level according to both methods was FI and that G for conditions with three and four predictors. In addition, for the conditions where the number of predictors is 2 and 3, the order of importance obtained by both methods is the same; it was seen that only the third and fourth-order changed when the number of predictors was 4. The order of importance and standardized coefficients obtained by MR from simulation datasets with the different number of predictors and sample sizes are presented in Table VII.

TABLE VII. MR's order of importance and standardized coefficients in simulation datasets consisting of *discrete* predictors

DV	NP	SS	Predictors' order of importance and standardized coefficients (in brackets)							
MCAS	2	100	1.	FI (0.28)	2.	G (0.18)				
		200	1.	FI (0.28)	2.	G (0.21)				
		400	1.	FI (0.26)	2.	G (0.20)				
		800	1.	FI (0.27)	2.	G (0.19)				
	3	100	1.	FI (0.21)	2.	FEL (0.20)	3.	G (0.17)		
		200	1.	FI (0.20)	2.	G (0.19)	3.	FEL (0.19)		
		400	1.	G (0.19)	2.	FEL (0.18)	3.	FI (0.18)		
		800	1.	FEL (0.19)	2.	FI (0.19)	3.	G (0.18)		
	4	100	1.	FI (0.18)	2.	FEL (0.17)	3.	G (0.17)	4.	MEL (0.15)
		200	1.	G (0.19)	2.	FI (0.17)	3.	FEL (0.14)	4.	MEL (0.12)
		400	1.	G (0.19)	2.	FI (0.15)	3.	FEL (0.13)	4.	MEL (0.12)
		800	1.	G (0.18)	2.	FI (0.15)	3.	FEL (0.13)	4.	MEL (0.12)

Table VII shows that FI is the predictor with the highest importance according to the MR results obtained from two predictors at different sample sizes. When the number of predictors was three, the predictor with the highest importance level differentiated according to the sample sizes. In the case where the number of predictors is four, the predictor with the highest importance level in sample sizes of 200 and above is G. While the importance rankings obtained from the conditions with two and four predictors were generally congruent with the real data importance rankings (Table VI); no such agreement was observed in conditions where the number of predictors was three. The order of importance and standardized coefficients obtained by ANN from simulation datasets with

the different number of predictors and sample sizes are presented in Table VIII.

TABLE VIII. ANN's order of importance and standardized coefficients in simulation datasets consisting of *discrete* predictors

DV	NP	SS	Predictors' order of importance and standardized coefficients (in brackets)								
MCAS	2	100	1.	FI (0.26)	2.	G (0.21)					
		200	1.	FI (0.26)	2.	G (0.22)					
		400	1.	FI (0.26)	2.	G (0.21)					
		800	1.	FI (0.27)	2.	G (0.19)					
	3	100	1.	FI (0.16)	2.	G (0.14)	3.	FEL (0.14)			
		200	1.	G (0.16)	2.	FI (0.15)	3.	FEL (0.14)			
		400	1.	G (0.15)	2.	FI (0.15)	3.	FEL (0.14)			
		800	1.	FI (0.16)	2.	FEL (0.14)	3.	G (0.13)			
	4	100	1.	G (0.11)	2.	FI (0.10)	3.	MEL (0.09)	4.	FEL (0.09)	
		200	1.	G (0.13)	2.	FI (0.10)	3.	FEL (0.09)	4.	MEL (0.09)	
		400	1.	G (0.13)	2.	FI (0.10)	3.	MEL (0.09)	4.	FEL (0.09)	
		800	1.	G (0.12)	2.	FI (0.10)	3.	MEL (0.09)	4.	FEL (0.09)	

Table VIII shows that FI is the predictor with the highest importance level according to the ANN results obtained from different sample sizes with two predictors. When the number of predictors was three, the predictor with the highest importance level differentiated according to the sample sizes. For the condition where the number of predictors was four, the predictor with the highest importance level is G. When all conditions are taken into account (except NP=3, SS=100 and 800; NP=4, SS=200), the predictive importance rankings obtained from the simulation datasets

were generally congruent with the real data importance rankings (Table VI).

The ARBs of the parameter estimations obtained by MR and ANN from simulation datasets with different numbers of *discrete* predictors and sample sizes are presented in Figure III.

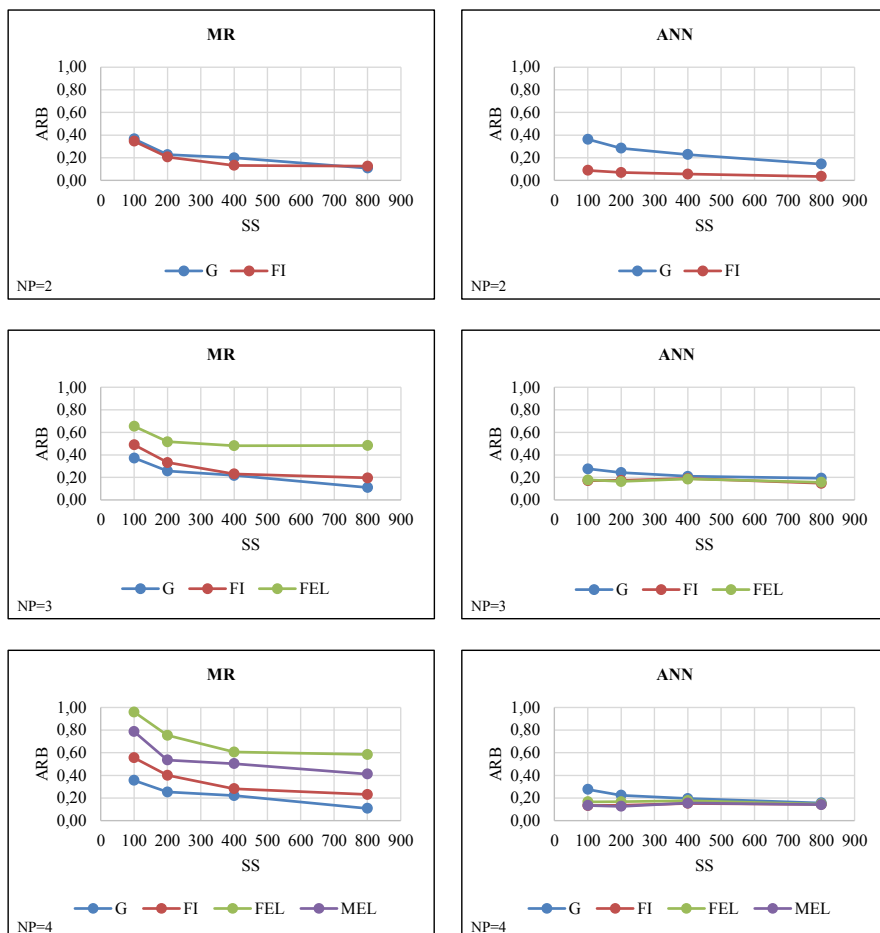**FIGURE III.** ARBs obtained by MR and ANN in simulation datasets consisting of *discrete* predictors

Figure III shows that the ARB generally decreases as the sample size increases for both methods, regardless of the number of predictors. In addition, ANN ARBs were less affected by the increase in sample size in comparison to MR. Generally, dramatic decreases were observed in ARB, specifically in the transition from 100 to 200 sample sizes, these decreases were lower in larger samples (i.e., 400-800). In addition, for all predictors in MR, the highest ARBs were observed with a sample size of 100 and the lowest ARBs

with a sample size of 800. On the other hand, a common pattern related to the increase in sample sizes was not detected in the ANN ARBs. For example, while the increase in sample size remediates the gender predictor's ARBs, it did not have the same effect on the ARBs of other variables (FI, FEL, MEL). When the MR and ANN ARB means were compared, it was determined that ANN had lower ARBs, regardless of the number of predictors. Since the ARB averages of both methods are over 10% for all predictor numbers (Flora & Curran, 2004), it can be said that these estimations have substantial bias.

On the other hand, when the sample size is fixed, the increase in the number of predictors led to an increase in the MR ARB means; no such common pattern (i.e., increase, decrease) was observed for ANN ARB means. In addition, it is noteworthy that the deterioration in ARB means is more dramatic, specifically in small sample sizes.

The MSEs of the parameter estimations obtained by MR and ANN from simulation datasets with different numbers of *discrete* predictors and sample sizes are presented in Figure IV.

FIGURE IV. MSEs obtained by MR and ANN in simulation datasets consisting of *discrete* predictors
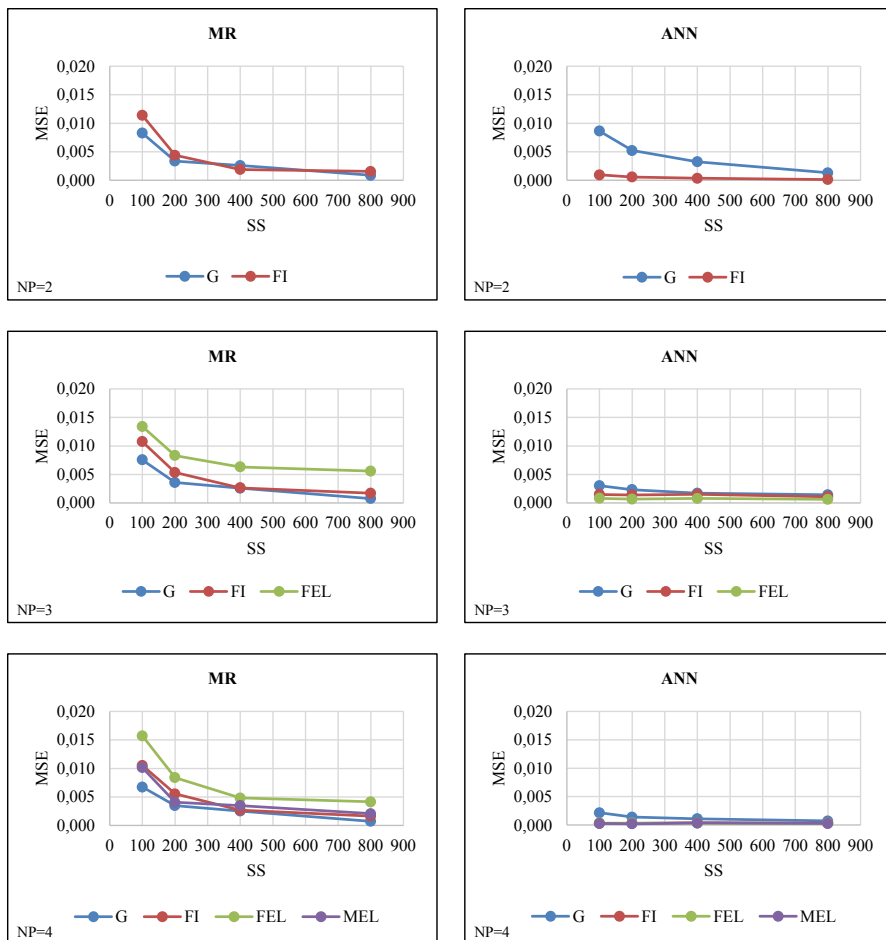

Figure IV shows that the MSE generally decreases as the sample size increases for both methods, regardless of the number of predictors. In addition, ANN MSEs were less affected by the increase in sample size in comparison to MR. Generally, dramatic decreases were observed in MSEs of the MR, specifically in the transition from 100 to 200 sample sizes, these decreases were lower in larger samples (i.e., 400-800). On the other

hand, MSEs of ANN were not generally affected by the increase in sample size. In addition, it can be said that for all predictors in both methods, the highest MSEs were observed in a sample size of 100, and the lowest MSEs were observed in a sample size of 800. When MR and ANN MSEs were compared, it was determined that ANN generally had lower MSEs, regardless of the number of predictors.

In general, ANN MSEs decreased while MR MSEs increased as the number of predictors increased. In addition, it is noteworthy that the deterioration in MR MSEs is more dramatic, specifically in small sample sizes.

Discussion

In this study, MR and ANN performances were compared in determining the order of importance of the predictor variables. For this purpose, real datasets and simulation data were used. The type of variable, sample size, and the number of predictors were manipulated in the simulation study. First, the correlations between the variables in the real datasets and the MR assumptions were examined. Then, the methods' performances were compared over their predictors' order of importance, ARB, and MSE.

Comparison of predictors importance rankings of methods

When the predictors' importance rankings obtained from the real dataset in which the predictors are *continuous* are compared, it is seen that the rankings of both methods are the same regardless of the number of predictors. The importance rankings obtained from the simulation datasets are the same as the real data importance rankings, except for one simulation condition for MR and two for ANN.

On the other hand, when the predictors' importance rankings obtained from the real dataset in which the predictors are *discrete* are compared, the importance rankings obtained by both methods are the same for the conditions where the number of predictors is two and three. In the condition that the number of predictors is four, only the third and fourth ranks have changed. Since this change is caused by a value less than 0.01, it can be stated that it is not very important. Therefore, it can be

said that the methods have almost the same rankings. The importance rankings obtained from the simulation datasets are the same as the real data importance rankings, except for five simulation conditions for MR and three for ANN. In addition, it should be noted that MR may not perform real data importance rankings when the number of predictors is three.

In summary, in the present study, it can be said that the methods perform the same order of importance if the predictors are *continuous* and that they perform quite similar order of importance if the predictors are *discrete*. Turhan et al. (2013) performed MR and ANN to the dataset consisting of *continuous* and *discrete* predictors and reported that the same variable was the best predictor according to both methods. It can be stated that this finding supports the findings of the present research.

Comparison of ARBs of methods

In conditions where the predictors are both *continuous* and *discrete*, as the sample size increases, the ARB of the methods decreases regardless of the number of predictors. This remediate effect of the increase in sample size is specifically greater when transitioning from 100 to 200. In addition, when the ARB means are compared, it can be said that ANN outperforms MR, regardless of the number of predictors. On the other hand, it should be noted that the methods perform predictions with substantial bias (>10%; Flora & Curran, 2004).

On the other hand, in conditions where the predictors are *continuous*, while the sample size is fixed, the increase in the number of predictors leads to an increase in the ARB means of the methods. In general, the increase in MR ARB means is higher in comparison to ANN. In the conditions where the predictors are *discrete*, while the sample size is fixed, the mean of the MR ARB increases as the number of predictors increases. However, no such common pattern (i.e., increase, decrease) is determined in ANN. In addition, the increases in the mean of ARB are higher, specifically in small sample sizes, in conditions where the predictors are both *continuous* and *discrete*. Considering the ARB means, it can be stated that ANN outperforms MR.

Comparison of MSEs of methods

In conditions where the predictors are both *continuous* and *discrete*, the MSEs of the methods tend to decrease as the sample size increases, regardless of the number of predictors. This remediate effect of the increase in sample size reaches its maximum level, specifically when the sample size is increased from 100 to 200. In addition to this, it is quite low in other sample transitions. When the mean MSEs of the methods are compared, it can be said that ANN generally outperforms MR. Lykourentzou et al. (2009) and Turhan et al. (2013), who compared different variables that predict student achievement in the field of educational sciences, revealed that ANN performs better predictions than MR. Altun et al. (2019) estimated the graduation grades of classroom teaching students using MR and ANN and determined that both methods (MR=94.30%, ANN=94.43%) provided very close results. On the other hand, when the studies comparing the methods in the field of business over MSEs are examined, Akbilgiç and Keskintürk (2008); Aktaş et al. (2003), and Yüzük (2019) reported that ANN outperformed MR. When the studies comparing the methods in the field of engineering over MSEs are examined, Okkan and Mollamahmutoğlu (2010) state that ANN outperforms MR whereas Cansız et al. (2020) reported that MR outperformed ANN.

On the other hand, when the number of predictors increases while the sample size is fixed, no important change is determined in the MSEs of the methods in the conditions where the predictors are *continuous*. The MSEs of the methods are quite similar, specifically in the sample size of 200 or more. In the conditions where the predictors are *discrete*, when the number of predictors increases while the sample size is fixed, the MR MSEs increase in general; ANN MSEs, on the other hand, tend to decrease. It should be noted that increases in MR MSEs are more dramatic, specifically in small sample sizes.

Conclusion and Suggestions

Generally, the increase in sample size, regardless of the predictor type (i.e., *continuous* and *discrete*) and the number of predictors, remediates the ARBs and MSEs of the methods. In order to obtain optimal estimations

with both methods, it is recommended to use a sample size of at least 200. However, it should be noted that the estimates obtained for this sample size may have moderate bias.

In case the predictors are *continuous*, researchers may prefer one of the two methods since the predictor order of importance of the methods is the same. However, in cases where the predictors are *discrete* and the number of predictors increases (specifically>2), ANN can be recommended due to its superior performance.

On the other hand, when the predictors are *continuous*, the increase in the number of predictors leads to a deterioration of the ARB means of the methods. However, it should be noted that this deterioration is more dramatic in MR. In case the predictors are *discrete*, ANN provides more robust estimations than MR.

While the predictors are *continuous*, the increase in the number of predictors does not lead to an important change in the MSEs of the methods. The MSEs of the methods are quite similar, specifically in sample sizes of 200 or more. When the estimators are *discrete*, the increase in the number of estimators generally leads to a deterioration in the MSEs of the MR, while the MSEs of the ANN are affected slightly.

As a result, when ARB and MSEs are considered, ANN outperforms MR. For this reason, it can be suggested that researchers prefer ANN firstly. MR is a reasonable alternative to ANN if the predictors are *continuous* and their assumptions are met. However, it should be noted that MR may not perform well even if its assumptions are met if the predictors are *discrete*. Specifically, in the case of three or more *discrete* predictors, it may be recommended for researchers to use ANN. In addition to this, it should be emphasized that an important advantage of ANN is that it does not need the assumptions required by MR.

It is important for educational research to reveal estimation methods that allow for determining the order of importance of the predictors in different models. Therefore, it can be assumed that studies in which methods are addressed comparatively have the potential to contribute to other studies in the field of education. In this context, the results of the present study provide a better understanding of the functioning of MR and ANN, which contributes to educational research, under different conditions.

The present research has been carried out on two different real datasets where the assumptions of the MR are met and the predictor

variables are *continuous* or *discrete*. The simulation data was generated by considering the relationships in these datasets. This research design can be considered as a limitation of the present research. In addition, it should be noted that another limitation is that the predictors explain the total variance in the dependent variable in the real sets, which is 34.3% and 20.4%, respectively. To the best of our knowledge, since there are no studies comparing both methods in the field of education under conditions such as variable type, sample size, and the number of predictors, more research is needed to generalize the results. In future studies, data can be generated by modeling relationships in larger samples, and method comparisons can be performed through models in which *continuous* and *discrete* predictors combined are used.

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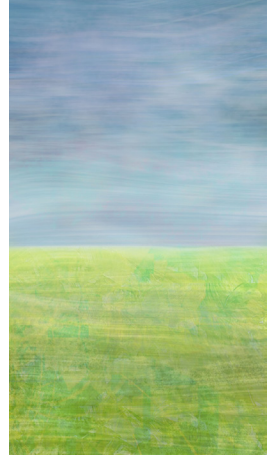
Review

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Dans Alvarez de Sotomayor, I. and Varela Portela, C. (2022). *Educational programming. Core items.* **Madrid: Editorial Universitas, S. A., 122 pages. ISBN: 9788479915858.**

The book is the result of theory and educational practice of two university teachers who stand out for their innovative attitude and teaching experience, as well as the research carried out on didactics subject as an instrument for improving the programs in the Degrees applying the updated criteria of the curriculum, its legal justification along with the development of skills, content, and methodologies, bearing in mind the attention to diversity.

The book begins with an introduction that includes the importance of the teacher who has prepared their classes so that they can carry out their subjects with quality and guide the student. All the curricular elements are explained to carry out a correct didactic planning. Furthermore, both authors combine the methodological innovation of classrooms and traditional pedagogy knowing how to combine both tasks without neglecting either to achieve a flexible curriculum integrating each of the students considering their cognitive, affective, intellectual capacities and sociocultural changes.

For this reason, the following chapter deals with the contextualization together with the entire educational community indicating its importance before programming, for this reason it is recommended to include the structure of the school organization that implies the presence of the governing bodies, both the single-person ones that are integrated by the management team and coordinators (teams or departments and course tutors) together with the members who refer to the faculty, school council and parent associations. It is indicated that each centre has its own culture that participates in an institutional, administrative, and legislative culture, always with regard to inclusion in the classrooms.

In the third chapter, the curricular levels are collected with a more contemporary vision (Priestley et al., 2021) so that the teacher can

implement in their programming perfecting each of the levels (supra, macro, meso, micro and nano). This approach offers us an international panorama since it specifies the influence of the different international organizations in charge of education such as the OECD, UNESCO and collecting those 2020-2030 objectives for Sustainable Development, specifically in objective 4 of the Agenda 2030 that includes aspects for quality education. In addition, the different Spanish educational laws are collected, highlighting the last two: the LOMCE and the LOMLOE, highlighting three essential concepts: inclusive education, skills, and diversity. Thus, it is specified how to carry out a good complete and realistic didactic programming, legal references must be included together with a set of organization documents of the center to be able to apply the corresponding curriculum.

In the fourth chapter, one of the essential concepts of the LOMLOE is nuanced: the abilities that involve the combination of skills, knowledge, motivation, ethical values, attitudes, and emotions that both teachers and students must acquire. In addition, the different professional abilities are distinguished, both generic and instrumental or transversal, although emphasis is placed on digital competence that affects the whole of society, where it is subdivided into six areas: professional commitment; digital content; teaching and learning; evaluation and feedback; empowerment of students and the development of digital competence of students. All this involves distinguishing that any competence must include 4 basic knowledge: knowing how to know; know to do; knowing how to be and knowing how to be.

The fifth chapter indicates the objectives that should be framed in the coherence of the programming since these involve the intermediate steps to achieve the results, it is about specifying the teaching-learning process, so each of the stages will be considered. Educational institutions that are taught along with the psycho-evolutionary development of the student, specifying the following: the general objectives of the stage, specific to each area for the stage, the specific ones of the cycle and the didactic objectives for each subject, didactic unit, or project.

In the following chapter reference is made to the contents that these consider the metacurricular objectives that are essential for learning. For this reason, the contents appear collected, published, or expressed in the curricular materials. In this way, it is specified that there are certain contents that are specific to each discipline, traditional or perpetual

contents as opposed to the new contents that arise as a response to a flexible teaching and located in a cultural context and the transversal ones that respond with flexibility.

The seventh chapter deals with the methodology that is the maximum exponent of teacher autonomy since it is the set of strategies, procedures and actions organized to facilitate the learning of the dissident considering the different teaching methods: inductive, deductive, analytical, and synthetic. Depending on each of these methods, different methodological strategies will be used as content exposure.

For this reason, the authors present different strategies such as: learning contracts, cooperative learning, project-based learning, flipped classroom, gamification, design thinking, thought-based learning, and service-learning among others.

In the eighth chapter, evaluation is presented, which "is the process by which information related to a certain activity is collected, analysed and interpreted, with the double objective of making judgments and facilitating decision-making, in terms of thematic adjustments, reorientation of objectives, reformulation of profiles, selection and reorganization of resources, etc." (Roldan, 2005). The difference between formative, summative, continuous, and final evaluation is nuanced, always bearing in mind that, for both the teacher and the student, evaluation enhances improvement and decision-making, always focusing on student learning. In addition, techniques and instruments are indicated that could be useful to carry out, such as: summative tests, observation, interview, work, portfolio, reflective diary, conceptual map, among others.

The following chapter specifies those cross-cutting elements that a didactic unit could contain and on which any teacher would have to ensure that they are integrated into the classroom and the curriculum. Therefore, in chapter ten, the resources, materials, and didactic means that teachers can use to promote good didactic programming are nuanced, considering the features that characterize the digital learning objectives, offering a good bibliographic selection that accompanies especially more advanced subjects. focused on communication, culture, or literature. For this reason, attention to diversity is indicated in the antepenultimate chapter, assessing capacities, motivations, cognition, and other individual differences, always considering the different educational stages: infant, primary, secondary, and special education.

In the last two chapters we find some proposals for improvement

focused on those people who are teaching, considering the legislative prism, and providing a list of bibliographical references that can help integrate and deepen the teaching task. In short, it is a useful work for teachers of any educational level and area of knowledge since the objective is to plan a teaching program.

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