Are future teachers academically motivated?*

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Abstract

Academic motivation is essential in future teachers, as they will be the educators of the next generations. The aim of this work was to study the degree of global academic motivation, self-efficacy, achievement motivation and causal attribution of achievement in this group, observing the influence of personal and academic variables. The sample consisted of 266 female and 58 male university students of Primary Education and Early Childhood Education, with an average age of 21.77 years. The School Motivation Scale (Barrientos-Chuqui, 2011) was used. The results indicated, overall, a medium-high tendency in academic motivation and in the three constructs of which it is composed. Female students had higher achievement motivation and male students had higher self-efficacy. Causal attribution and self-efficacy were higher in Primary Education students. There were no differences according to choice of specialisation. The best motivation scores were in the final year, and the higher the age, the better the motivation ratings, with the exception of self-efficacy. It is suggested that there is a need to design interventions that address gender differences and improve some motivational dimensions in the Early Childhood Education Degree and in the first academic years.

Keywords: motivation for studies; university students; educational sciences

Resum. *Estan els futurs mestres acadèmicament motivats?*

La motivació acadèmica és crucial en els futurs mestres, ja que seran els educadors de les noves generacions. L'objectiu d'aquest treball es va centrar a estudiar en aquest col·lectiu el grau de motivació acadèmica global, l'autoeficàcia, la motivació d'èxit i l'atribució causal d'assoliment, tot observant la influència de variables personals i acadèmiques. La mostra estava formada per 266 dones i 58 homes, estudiants del Grau d'Educació Primària i Infantil, amb una edat mitjana de 21,77 anys. Es va fer servir l'Escala de Motiva-

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ció Escolar (Barrientos-Chuqui, 2011). Els resultats van indicar, globalment, una tendència mitjana-alta en la motivació acadèmica i en els tres constructes que la componen. Les noies van presentar més motivació d'èxit i els nois més autoeficàcia. L'atribució causal i l'autoeficàcia van ser més grans en estudiants del Grau de Primària. No hi va haver diferències segons l'elecció d'especialitat. Les millors puntuacions de motivació es van donar a l'últim curs i, a mesura que augmentava l'edat, les valoracions de motivació eren millors, a excepció de l'autoeficàcia. Se suggereix la necessitat de dissenyar intervencions que atenguin les diferències de gènere i que millorin algunes dimensions motivacionals en el Grau d'Educació Infantil i en els primers cursos.

Paraules clau: agenda motivació per als estudis; estudiants universitaris; ciències de l'educació

Resumen. *¿Están los futuros maestros académicamente motivados?*

La motivación académica es crucial en los futuros maestros, ya que serán los educadores de las nuevas generaciones. El objetivo de este trabajo se centró en estudiar en este colectivo el grado de motivación académica global, la autoeficacia, la motivación de logro y la atribución causal de logro, observando la influencia de variables personales y académicas. La muestra estuvo compuesta por 266 mujeres y 58 hombres, estudiantes del Grado de Educación Primaria e Infantil, con una edad media de 21,77 años. Se utilizó la Escala de Motivación Escolar (Barrientos-Chuqui, 2011). Los resultados indicaron, globalmente, una tendencia medio-alta en la motivación académica y en los tres constructos que la componen. Las chicas presentaron mayor motivación de logro y los chicos mayor autoeficacia. La atribución causal y la autoeficacia fueron mayores en estudiantes del Grado de Primaria. No hubo diferencias en función de la elección de especialidad. Las mejores puntuaciones de motivación se dieron en el último curso y, a medida que aumentaba la edad, mejores eran las valoraciones de motivación, a excepción de la autoeficacia. Se sugiere la necesidad de diseñar intervenciones que atiendan a las diferencias de género y que mejoren algunas dimensiones motivacionales en el Grado de Educación Infantil y en los primeros cursos.

Palabras clave: motivación para los estudios; estudiantes universitarios; ciencias de la educación

Summary

1. Introduction

Today's society needs well-trained teachers to ensure the effectiveness of the educational process. Academic motivation can influence a person's expectations, decision-making and involvement in tasks. It is a person's internal drive that can lead them to participate actively in their own learning, enabling them to be persistent in their purpose and to achieve the goals they have set for

themselves (Alvariñas-Villaverde et al., 2020). This is particularly important for students who aspire to become teachers and who will play a crucial role in the education of future generations.

Therefore, in addition to the effort and engagement required to complete the learning tasks, the element of motivation is essential, as it will inspire greater willingness to sustain these efforts and activate all the necessary resources in the learning process. All of this can lead to more beneficial results; in fact, the scientific literature has provided good evidence of the positive relationship between motivation and academic performance (Lohbeck et al., 2022; Koyuncuoğlu, 2021).

Several theories have explained how motivation affects learning. In educational contexts, three constructs are key to motivation: *achievement motivation*, *self-efficacy* and *causal attribution* of achievement. *Achievement motivation* is the tendency for an individual to achieve success, overcome challenges and obtain positive outcomes. Students with high achievement motivation tend to approach and persist towards their desired goals. In contrast, subjects with low achievement motivation avoid the risk of failure and tend to withdraw from threatening activities (McClelland, 1961; Pintrich & Schunk, 2006). Regarding achievement motivation, several theories distinguish whether motivation is intrinsic or extrinsic. Intrinsic motivation is linked to the interest in learning itself and the satisfaction it produces. Extrinsic motivation is linked to the search for rewards and to factors that, when lacking, generate dissatisfaction, such as professional recognition (Deci & Ryan, 2000; Herzberg et al., 1959). From this perspective, future teachers with high achievement motivation will be more self-disciplined, will seek to improve more, and will be better prepared to deal with the challenges they face in their careers (McClelland, 1961).

Self-efficacy, on the other hand, refers to students' belief in their ability to perform a task. Students who are confident in their ability to succeed tend to be more actively engaged in their learning and to overcome obstacles with greater resilience. High self-efficacy is linked to facing challenges, coping with difficulties and performing better. Low self-efficacy is linked to avoiding participation in activities (Afari et al., 2012; Bandura, 1982).

Finally, *causal attribution* refers to how students interpret the causes of their success or failure (internal/external, controllable/uncontrollable, stable/unstable). In this sense, attributions can be more or less adaptive, depending on whether or not they bring the student closer to academic achievement. For example, internal and stable attributions, such as constant effort, tend to be linked with greater persistence and achievement; in contrast, uncontrollable attributions, such as luck, reduce motivation (Weiner, 1985).

Process theories complement academic motivation theories by focusing on how students make decisions regarding the effort they invest in their studies based on their expectations, perceptions of fairness and reinforcement. Among the best known process theories are Vroom's expectancy theory (1964) and Adams' equity theory (1965). Vroom's theory suggests that people are moti-

vated to perform tasks when they believe that their effort will lead to good performance and that this will lead to a reward, which is something that is valued (e.g. a job opportunity). Adams' theory argues that individuals can compare the effort they put into their studies with the effort of their peers and how this is reflected in the rewards they get. If they perceive that their effort is not matched by the results they receive compared to others, their motivation may decrease.

Although this is a long-established subject area, research on academic motivation is still very relevant, as educational contexts are very dynamic and need to adapt to the changing demands of society. This happens at all stages of education (Arias et al., 2022; Domínguez-Alonso et al., 2016; Sánchez-Bolívar et al., 2022).

Thus, recent studies conducted with higher education students have shown the relationship between motivation and academic performance (Hosseini et al., 2022; Jafari & Asgari, 2020). Links with other variables of interest have also been found. Such motivation has been found to be related to personality (Fuertes et al., 2020), family and peer support (Marley & Wilcox, 2022) or career decisions (Koyuncuoğlu, 2021). Its relationship with perceptions of teachers (Jiang et al., 2021), teachers' social support (Moreno-Murcia & Corbí, 2021) or academic satisfaction (Llanes-Ordóñez et al., 2021) has also been corroborated.

Research has also focused on determining the possible relationship between academic motivation and personal variables (gender, age, marital status, economic status, etc.) and academic variables (degree, subjects studied, year, etc.). In this respect, there is still a great deal of argument regarding some variables, as a result of the studies reviewed.

Although there is plenty of research relating to this subject in university students, there are very few studies of future teachers of Early Childhood Education and Primary Education. It seems essential to look more closely at this if we accept the following premise, based on the scientific literature: If future teachers are more motivated towards academic tasks, this will favour achievement and, probably, they will be better prepared to face future challenges in their profession.

This study seeks to fill this gap by providing valuable data on the constructs relating to motivation noted above – achievement motivation, self-efficacy and causal attribution – and how they interact with personal and academic variables in this specific group.

Therefore, the objectives of this research were: 1) to determine what is the level of motivation for academic tasks as well as in the three constructs relating to motivation: academic self-efficacy, achievement motivation and causal attribution of achievement; 2) to establish whether there are associations between the constructs relating to motivation and different personal/academic variables: gender, age, degree, course and specialisation; 3) to analyse the correlation between the three constructs relating to motivation, and with respect to age.

2. Method

A cross-sectional, observational study was conducted using a non-probabilistic sample of volunteer subjects.

2.1. Participants

The sample consisted of 324 student teachers aged between 17 and 25 years (mean: 21.77±5.49). There was a predominance of females (82.1%) compared to males (17.9%), as is usual in the degrees under study. With regard to degree, 48.46% of the participants were enrolled in Early Childhood Education, and 51.54% in Primary Education. Finally, 42.9% were enrolled in the first year, 25.6% in the second year, 21.6% in the third year and 9.9% in the fourth year. 69.1% of the students did not study any specialisation and 30.9% studied the specialisations of Music Education or Physical Education. The context of the study was the Autonomous Community of Galicia (Spain). No previous university degree was required for access to these courses, but a minimum grade of baccalaureate was required.

2.2. Instruments

The scale used to measure motivation was the School Motivation Scale (SMS). The original instrument was developed by Thornberry (2008) and consisted of 20 items evaluated according to a Likert-type scale. In the case of the present study, the adaptation of Barrientos-Chuqui (2011) was used, which has the same characteristics as the original instrument, except that the number of items was reduced from 20 to 18.

Through this scale it was possible to measure academic self-efficacy, internal attributions of achievement, and achievement-oriented actions, which are the three dimensions of the instrument. Items 3, 6, 8, 10, 11, 15 and 17 assessed achievement motivation, thus measuring the student's achievement-oriented behaviours in academic tasks.

To measure causal attributions of achievement, items 1, 4, 9, 12, 14 and 18 were used to assess the explanations that the student gave for their academic results.

Self-efficacy was measured by items 2, 5, 7, 13 and 16, which assessed respondents' perception of their ability to perform successfully in academic tasks.

To score the scale data, a correction template was used so that higher scores revealed higher levels of academic motivation, while lower scores revealed lower levels. Thus, most of the items were scored as follows: "I always think and act like this" is worth 2 points, "I sometimes think and act like this" is worth 1 point, and "I never think and act like this" is worth 0 points. In any case, it should be noted that some of the items were worded negatively. Therefore, in items 1, 3, 5, 7, 9, 12, 15, 17 the scores were reversed.

The reliability of the scale was estimated using Cronbach's alpha coefficient to determine the internal consistency of the scale. Results showed an alpha coefficient of .70 for achievement motivation; .71 for causal attributions; .80 for self-efficacy; and .84 for total academic motivation. This questionnaire has been used in other studies, obtaining a Cronbach's alpha reliability of .81 (Arias et al., 2022) and .75 (Alvariñas-Villaverde et al., 2020).

2.3. Procedure

The questionnaire was administered collectively to students during regular academic hours, between November 2022 and January 2023. They were contacted in several regular classes of their degree course. The average time of application of the instrument was 15 minutes. It was voluntary and anonymous. Participants were informed of the aims and characteristics of the study, as well as the possibility of access to the study results. All ethical procedures for data collection followed the ethical standards recognised by the British Educational Research Association (BERA, 2019).

2.4. Analysis of the data

First, a descriptive analysis of the items: mean, median, mode and standard deviation was performed. Asymmetry and kurtosis indices were also found, to assess the normal behaviour of the variables.

Student's t-tests and ANOVA tests were then performed to compare independent means. In the case of ANOVA tests, the Bonferroni test is used when there are significant differences between groups. Subsequently, the correlation between different variables was analysed using Pearson's correlation coefficients.

The confidence level used was 0.05. Data analysis was performed with the SPSS 23.0 statistical package.

3. Results

University students' motivation towards their studies was medium-high, both in their factors and in total academic motivation (Table 1). Moreover, skewness was negative for all motivation variables. A negative (platykurtic) kurtosis was observed in the achievement motivation and self-efficacy variables. However, it was positive (leptokurtic) for causal attribution of achievement and total academic motivation. When the distribution has an asymmetric tail extending towards negative values, the values are more clustered at levels above the arithmetic mean. The lowest-rated factor was achievement motivation (M = 1.35) and the highest-rated factor was causal attribution (M = 1.50).

Table 1. Descriptive statistics for the sample (n = 324)

	Age	Achievement Motivation	Achievement Attributions	Self-Efficacy	Overall Motivation
Mean	21.77	1.35	1.51	1.45	1.44
Median	20	1.43	1.50	1.60	1.49
Mode	20	1.43	1.67	1.80	2.00
Standard Deviation	5.49	.38	.37	.45	.31
Asymmetry	3.23	–.46	–.72	–.66	–.80
Kurtosis	11.45	–.254	.43	–.15	.77
Minimum	17	.29	.17	0	.32
Maximum	52	2	2	2	2
25th percentile	19	1.14	1.33	1.26	1.20
50th percentile	20	1.43	1.50	1.49	1.60
75th percentile	22	1.57	1.83	1.66	1.80

Source: Own elaboration.

In terms of gender differences (Table 2), it is worth noting that there were significant differences in the factors of achievement motivation and self-efficacy. Female students had higher achievement motivation (M = 1.40 versus M = 1.15 for male students) and lower self-efficacy (M = 1.42 versus M = 1.60 for male students). The value of 1.15 for male students is the lowest in all the motivational constructs studied.

Table 2. Analysis of the difference between means by gender for each variable

	Sex	*n*	Mean	*SD*	*t*	Sig.	ES
Achievement Motivation	Woman	266	1.39	.37	4.53	< .001	.24
	Man	58	1.15	.38			
Achievement Attributions	Woman	266	1.49	.37	–1.89	.060	–.10
	Man	58	1.59	.36			
Self-Efficacy	Woman	266	1.42	.44	–2.65	.01	–.16
	Man	58	1.59	.43			
Overall Motivation	Woman	266	1.44	.31	–.185	.86	–.01
	Man	58	1.44	.29			

SD = Standard Deviation; ES = Effect Size
Source: Own elaboration.

When studying the motivation variables with respect to specialisation (whether or not a specialisation was chosen in the studies), no statistically significant difference (p > .05) was observed, either in the motivation dimensions or in total motivation (Table 3).

Table 3. Analysis of the difference between means by specialisation for each variable

	Specialisation	*n*	Mean	*SD*	*t*	Sig.	ES
Achievement Motivation	No	224	1.37	.36	1.56	.12	.07
	Yes	100	1.30	.43			
Achievement Attributions	No	224	1.53	.36	1.78	.08	.08
	Yes	100	1.45	.38			
Self-Efficacy	No	224	1.45	.44	–.49	.62	–.03
	Yes	100	1.47	.47			
Overall Motivation	No	224	1.45	.30	1.10	.27	.04
	Yes	100	1.41	.33			

SD = Standard Deviation; ES = Effect Size
Source: Own elaboration.

On the other hand, there were differences between students who studied Primary Education and those who studied Early Childhood Education (Table 4). These differences occurred in the causal attribution factor and in the self-efficacy factor. Primary Education students had higher scores on both variables (M = 1.56 for causal attribution, compared to M = 1.40 and M = 1.51 for self-efficacy, compared to M = 1.41).

Table 4. Analysis of the difference between means by university degree for each variable

	Degree	*n*	Mean	*SD*	*t*	Sig.	ES
Achievement Motivation	ECE	157	1.37	.37	.72	.48	.03
	PE	167	1.34	.39			
Achievement Attributions	ECE	157	1.45	.38	–2.70	.01	–.11
	PE	167	1.56	.35			
Self-Efficacy	ECE	157	1.40	.43	–2.37	.02	–.12
	PE	167	1.51	.46			
Overall Motivation	ECE	157	1.40	.31	–1.89	.06	–.06
	PE	167	1.47	.31			

ECE = Early Childhood Education; PE = Primary Education; *SD* = Standard Deviation; ES = Effect Size
Source: Own elaboration.

In the analysis of differences between academic years, differences were found in achievement motivation (sig. = .004), causal attribution (sig. = .004) and total academic motivation (sig. = .002). These differences were mainly between the third and fourth academic years (the fourth year is where the highest scores were given) and between the second and third years (Table 5).

Table 5. Analysis of the difference between means by academic year for each variable

	Academic year	*n*	Mean	*SD*	*F*	Sig.	Bonferroni
Achievement Motivation	1º	139	1.34	.35	4.56	< .001	2-3=.008 4-3=.022
	2º	83	1.43	.39			
	3º	70	1.23	.40			
	4º	32	1.46	.41			
	Total	324	1.35	.38			
Achievement Attributions	1º	139	1.53	.34	5	< .001	1-3=.017 2-3=.018 4-3=.016
	2º	83	1.55	.38			
	3º	70	1.37	.39			
	4º	32	1.60	.32			
	Total	324	1.51	.37			
Self-Efficacy	1º	139	1.48	.44	2.53	.06	There are no differences
	2º	83	1.41	.41			
	3º	70	1.38	.51			
	4º	32	1.62	.40			
	Total	324	1.45	.47			
Overall Motivation	1º	139	1.45	.29	5.04	< .001	4-3=,002
	2º	83	1.46	.32			
	3º	70	1.33	.33			
	4º	32	1.56	.28			
	Total	324	1.44	.31			

SD= Standard Deviation
Source: Own elaboration.

As shown, the correlations were all significant, except for age with self-efficacy ($p > .05$). The older the age, the higher the level of study motivation, but also the higher the achievement motivation and causal attribution. However, Pearson's correlation coefficient indicated in all cases that this was a weak relationship, as it was close to 0.

The correlations between the factors of the motivation construct were all positive and significant. This means that the higher the achievement motivation, the higher the causal attribution, self-efficacy and total motivation. The same was true for the other factors in relation to each other and to total motivation (Table 6). In the total motivation variable, it is noteworthy that the Pearson correlation coefficients were close to 1 when related to the motivational factors; therefore, one can speak of quite strong correlations. This is entirely logical and indicated that this variable was largely explained by the others. Also, Pearson's coefficient was close to 0.6 between the causal attribution-self-efficacy variables.

Table 6. Correlations between the variables analysed

		Age	Achievement Motivation	Achievement Attributions	Self-Efficacy	Overall Motivation
Age	r	1				
	Sig.					
Achievement Motivation	r	.13*	1			
	Sig.	.02				
Achievement Attributions	r	.11*	.36**	1		
	Sig.	.05	< .001		1	
Self-Efficacy	r	.05	.30**	.57*	1	
	Sig.	.38	< .001	< .001		
Overall Motivation	r	.12*	.70**	.81**	.82**	1
	Sig.	.03	< .001	< .001	< .001	

* Correlation is significant at the .05 level (bilateral).
** Correlation is significant at the .01 level (bilateral).
Source: Own elaboration.

4. Discussion and conclusions

This study aimed to examine the academic motivation of prospective teachers by exploring total motivation, achievement motivation, causal attribution and self-efficacy. The objectives also included the observation of possible relationships between these constructs and different personal and academic variables of the students.

The sample was fairly balanced in terms of the two degree programmes studied; however, an asymmetry was observed in the gender variable. In both degree programmes, the lower rate of males is quite common (Garrote & Jiménez-Fernández, 2018; Llanes-Ordóñez et al., 2021), as teaching is a highly feminised profession. This is a problem in most countries where male role models in education are scarcer and male performance tends to be lower (Parr et al., 2008).

The data revealed that in all motivational variables there was a medium-high tendency, around 1.5, for both male and female students. As an exception, it should be noted that in the achievement motivation variable, male students obtained a value closer to 1 than to 1.5. Therefore, the majority of trainees have thoughts that bring them closer to academic achievement. The close relationship between constructs relating to motivation and professional learning must be taken into account (Durksen et al., 2017); in this sense, the results are quite encouraging if we consider that the subjects under study are future educational trainers.

The positive trend observed has also been found in other recent similar research. Thus, Taskesen (2019) find that academic motivations are at a good level in pre-service visual arts teachers. Similarly, in the study by Koyuncuoğlu

(2021), conducted on undergraduate students from several Turkish universities, medium-high scores are observed. Similarly, there are positive scores among medical science students (Hosseini et al., 2022). The work of Sánchez-Bolívar et al. (2022) also shows this orientation in the intrinsic motivation of students in four degrees in Education Sciences.

In relation to this topic, Froment et al. (2023) observe positive effects of motivation on academic commitment and satisfaction in students of the undergraduate degrees in Early Childhood and Primary Education. Also, with students of these degrees, Garrote & Jiménez-Fernández (2018) find that the motivational subscale with the highest score is intrinsic goal orientation, which is related to achievement and satisfaction.

Gender differences were found in the achievement motivation variable in favour of females and in self-efficacy in favour of males. However, no gender differences were noted in causal attributions and total motivation. Similarly to the present study, no gender differences in global academic motivation were found in the work of Hosseini et al. (2022) or Koyuncuoğlu (2021).

Based on the theories explained in the introduction to this article, future female teachers, as they are as they have greater motivation for high achievement, will be more willing to face challenges in their training, seeking success for its intrinsic value and not for external rewards, although these may reinforce their behaviour. The data for male students, which are in the middle range, need to be improved. and it would be interesting to analyse whether in some cases the motivations are extrinsic in nature.

In other studies in the context of degrees in Education Science, it was indicated that women were more intrinsically motivated than men (Fuertes et al., 2020; Sánchez-Bolívar et al., 2022). In the case of Sánchez-Bolívar et al. (2022), it was also observed that male students had higher levels of amotivation. Along the same lines, Taskesen (2019) observed a significant difference in intrinsic motivations in favour of female students; moreover, intrinsic motivations relating to performance were higher among female students.

As for the data on self-efficacy, the higher self-efficacy rates reported for male students indicate that the conviction of being able to perform tasks successfully is higher in male students, although female students' self-efficacy is not low. Other studies have also noted this higher self-efficacy in male university students (Fuertes et al., 2020; Kiehlbauch et al., 2024). Based on Bandura's contributions, it is possible that male students receive more encouragement regarding their ability to succeed and that this reinforces their self-efficacy. Also, some research has verified that they may overestimate their ability, although objectively women have similar or better performances (Pajares, 2002). These gender divergences in self-efficacy may be explained by the influence of social and cultural factors relating to levels of confidence in academic skills depending on whether one is male or female. However, it seems that the type of discipline plays a key role; for example, in language-related subjects or careers, self-efficacy data may be of equal or higher levels for female students (Bouih et al., 2021; Pajares, 2002).

There were differences depending on the degree course studied in the causal attribution of achievement and in self-efficacy, with higher scores for students in the Primary Education degree course. These results could be explained on the basis of the average cut-off mark of the degree course, since the average mark required to enter the degree course in Primary Education is considerably higher than that required to enter Early Childhood Education. We can interpret, in this sense, that Primary Education students perceive themselves to be more successful.

On the other hand, neither total academic motivation nor any of its factors depended on whether the student had a specialisation or not (Physical Education, Music or no specialisation). Farah (2022) also found no differences according to the prospective teachers' specialisations. It seems, therefore, that prospective teachers have motivational perceptions that do not depend on their chosen pathways.

In terms of academic year, the findings showed significant differences in achievement motivation, causal attribution and total academic motivation. In all these cases, the highest mean was in the final academic year, and the differences were mainly between the third and fourth academic years and between the second and third academic years. The scientific literature tends to coincide with the data from this research in also finding differences in terms of this variable. However, there are nuances depending on the specific study. Taskesen (2019) find an increase from year 1 to year 4. Similarly, Koyuncuoğlu (2021) finds that the mean increases with ascending academic year, with such differences occurring between the fourth year and the first year, and between the third year and the first year. These inequalities may be due to the influence of the curriculum or of the teaching staff in the different academic years. What does seem encouraging is the trend towards more positive values in the last academic year than in previous years. This may be explained by the fact that as they progress in their training they develop greater clarity about their career goals, increasing their achievement motivation (McClelland, 1985). In addition, they will have been able to refine their causal attribution strategies, which will become more adaptive with experience (Weiner, 1985).

Finally, when testing the correlations between different variables, it was observed that the higher the age of the students, the higher the level of motivation towards studies, and also the higher the achievement motivation and causal attribution. In any case, these were weak relationships. Explanations may be along the lines of the above and in relation to academic and personal maturity. However, other research has found no differences according to this variable (Hosseini et al., 2022).

Regarding the correlations between the motivational variables, the data revealed that they were all significant and positive, which is quite common in research on motivation in educational contexts (Öqvist & Malmström, 2018).

The following conclusions can be drawn from this study:

— Academic motivation in future teachers is positive and similar to that observed in previous studies in other disciplines and countries. The specific findings for Early Childhood and Primary Education allow us to better understand the particularities of these degrees and to design future training programmes that reinforce these aspects in the next generations of teachers.
— The observed gender differences in achievement motivation and self-efficacy between males and females are broadly consistent with previous research and highlight the need to design educational interventions that address these differences.
— Students in advanced grades, especially seniors, showed higher levels of achievement motivation, causal attribution and total academic motivation. This trend suggests that, as they progress in their studies, they develop greater clarity in their career goals, which drives their motivation to achieve academic success.
— The Primary Education students demonstrate better self-efficacy and causal attribution of achievement than the Early Childhood Education students, so it would be interesting to increase these values in future Early Childhood teachers so they can better face the challenges in their training.
— This study revealed positive correlations between all the motivational variables analysed, which underlines the interconnection between these factors, confirming that more motivated students tend to have better perceptions of their capacity for success and control over academic results.

5. Study limitations and future lines of research

The study's limitations include the absence of an experimental design, the impossibility of generalising results, and the use of self-reports, among others. It would be desirable to increase the sample to include other universities and specialisations relating to teaching careers. Likewise, research could be undertaken in future studies by using qualitative instruments in order to gain a deeper understanding of the perceptions relating to academic motivation and the inequalities found according to certain variables. This would provide valuable information for the implementation of programmes to improve self-efficacy, achievement motivation or causal attributions in future teachers.

In a similar vein, it is especially important to address the improvement of achievement motivation in male students, and to explore which pedagogical strategies may be more effective in improving their perceptions. Similarly, and although the values are quite positive, self-efficacy can be increased in female students, and motivational dimensions can be strengthened from the first years of university degree courses.

Likewise, it seems relevant to look at the influence of external factors, such as family support or social expectations, on the thinking of future teachers. Finally, it is suggested that interventions should be implemented to examine

the relationship between motivational variables and academic performance in this group.

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