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Self-efficacy in higher education. A study focused on student profiles

La autoeficacia en la educación superior. Un estudio centrado en el perfil del alumnado

Mar Lorenzo Moledo[1], Ígor Mella Núñez[1], Daniel Sáez Gambín[1], Ana Vázquez Rodríguez[1]

[1]University of Santiago de Compostela, mdelmar.lorenzo@usc.es, igor.mella@usc.es, daniel.saez.gambin@usc.es, ana.vazquez@usc.es

Correspondence: Ígor Mella Núñez, igor.mella@usc.es

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Abstract

Introduction: The teaching and learning processes in higher education have been subject to review, and the new, student-centred paradigm goes beyond mere memorisation of theory, instead targeting proper development of competencies enabling students to cope with academic, professional, and social situations. This broader view of learning makes self-efficacy a predictive variable for academic performance, as it influences organisation and execution processes employed to deal with situations in a forward-thinking manner. The objective of this study is to analyse university students' perceived levels of general and academic self-efficacy and determine their relationship with various socio-biographical variables.

Method: An exploratory study was carried out on the self-efficacy variable, using a questionnaire applied to 1616 students. Factor analysis allowed differentiation between the general and academic self-efficacy dimensions. Tests included the application of non-parametric tests (Mann Whitney U) and examination of ROC curves.

Results: The findings indicated high levels of perceived self-efficacy, both academically and generally, as well as the existence of significant variations based on gender, age, and participation in community service or mobility programs.

Conclusions: Research showing the levels of constructs such as self-efficacy and its possible mediating variables is important, especially given its association with university students' learning and achievement.

Keywords: self-efficacy, higher education, motivation, academic achievement.

Resumen

Introducción: La educación superior se ha visto sometida a una revisión de sus procesos de enseñanza-aprendizaje. El nuevo paradigma formativo, centrado en el/la estudiante, trasciende la exclusiva memorización de contenidos teóricos, apuntando hacia un adecuado desarrollo de competencias que permitan afrontar situaciones académicas, profesionales y/o sociales. Esta visión más dilatada sitúa a la autoeficacia como una variable predictora del rendimiento académico, pues de ella dependen los procesos de organización y ejecución de acciones para afrontar situaciones prospectivamente. El objetivo de este estudio es conocer el nivel de autoeficacia general y académica percibida por el alumnado universitario, y comprobar si se relaciona con diferentes variables sociobiográficas.

Método: Para ello, se realizó un estudio exploratorio sobre la variable autoeficacia, a través de un cuestionario aplicado a 1616 estudiantes. El análisis factorial permitió diferenciar entre las dimensiones autoeficacia general y académica. Las pruebas realizadas incluyen la aplicación de test no paramétricos (U de Mann Whitney) y el estudio de curvas ROC.

Resultados: En cuanto a los resultados, se demostraron altos niveles de autoeficacia percibida, tanto académica como general, así como la existencia de variaciones significativas en función del género, la edad, la participación en un servicio a la comunidad o en un programa de movilidad

Conclusiones: Se concluye la importancia de investigaciones que evidencien el nivel de desarrollo de constructos como la autoeficacia, y de sus posibles variables mediadoras, especialmente dada su vinculación con el aprendizaje y el rendimiento de los/as universitarios/as.

Palabras clave: autoeficacia, educación superior, motivación, rendimiento académico.

Introduction

Over recent years, university education has undergone a series of transformations that have produced new approaches to teaching and learning. The creation and consolidation of the European Higher Education Area (EHEA) brought with it an unprecedented renovation, promoting a model of education centred on the student and their work (Barboyon & Gargallo, 2022), one in which general, transversal competencies must complement more strictly technical, disciplinary knowledge (Santos Rego et al., 2020).

This has led to a reformulation of how academic performance and achievement is understood. If the aim is for students to play the protagonists in their learning processes, in order to develop competencies that are of personal, social and professional interest, it is not enough to focus attention on their ability to acquire and memorise content. They must also develop the ability to self-regulate that learning and demonstrate autonomy in the process of constructing it (Gargallo et al., 2011). Students are expected to be "active, reflective, autonomous, to understand what they learn and to learn continuously" (Álvarez-Pérez et al., 2021, pp. 482-483).

This education paradigm incorporates a broader conception of learning, as it goes beyond mastery of theory and disciplinary content (predominantly memory-related cognitive intelligence) and moves towards considering the capacity to analyse and resolve complex situations in various contexts as a fundamental building block of student competencies (Tejada, 1999). This expands the idea of what proper academic performance is. Despite all of the classroom strategies and methodologies being aimed at developing learning, and therefore driving academic achievement, their mediator variables—such as self-esteem, self-efficacy, empowerment, pro-social behaviour, motivation, and engagement—are increasingly being viewed as important (Mella-Núñez et al., 2015; Santos Rego et al., 2020).

It is essential to analyse these factors, with self-efficacy in particular standing out. The importance of studies of this type is justified by the not entirely flattering results from the Spanish university system (Fernández-Mellizo, 2022). The pass rate in undergraduate degree courses in 2018/19 was 78.0% (Spanish Ministry of Universities, 2022), and a year later, 2019/20, it was slightly higher (80.4%), which the ministry for universities ascribed to the Covid-19 pandemic. In terms of drop-out, 20.7% of students who started courses in 2016/17 left university early, while 12.5% changed to different courses (Spanish Ministry of Universities, 2023). That said, when talking about drop out it is important to recognise how difficult it is to spot ahead of time and identify intentions at the point of making the decision, which is why most studies describe the situation after the fact (Morelli et al., 2023).

It should be borne in mind that numerous factors influence students' results at university, from general contextual variables (such as family socioeconomic or educational background) to more individual, cognitive and non-cognitive qualities (such as motivation and self-efficacy) (Alhadabi & Karpinski, 2020). And this is where we find the present study's leitmotif, because academic performance is often mediated by situations of stress, anxiety, and negative expectations potentially leading to demotivation and ultimately failure or dropping out (Álvarez-Pérez, 2021). This idea is complemented by what Bartimore-Aufflick et al. (2015) noted, that in order to strengthen evidence-based analysis of university education, we should analyse the variables that are shown to be consistently associated with learning results, which include self-efficacy in particular.

Sefl-efficacy, outlined in Albert Bandura's social cognitive theory, is presented as one of the most impactful mediators in learning, and therefore in students' academic performance (Santos Rego, 1989). This is backed up by Bandura's (1995) own words, defining it as the belief in one's own abilities and competence to organise and execute actions that are aimed at dealing with situations in a forward-thinking manner and that determine how people think and motivate themselves.

The definition alone indicates a notable role in the 21st century university. To put it another way, at a time when competency-based learning prevails, what matters is not only a person's aptitude for dealing with a task, their beliefs about that also play a central role. Only in this way can we understand students with similar abilities achieving different results, given their respective beliefs about their own competencies (Morales & Giménez, 2019).

It was not for nothing that Anderman (2010) indicated consolidation of self-efficacy as a notable predictor of learning, as students who trust their own abilities to complete a task successfully are more likely to do so. This highlights the direct relation between self-efficacy and motivation, as beliefs about one's own efficacy profoundly affect the effort a person will put into a task, the time they will spend on it in the face of potential obstacles, and their resilience in the face of adversity (Pajares, 1996). Along these lines, Álvarez-Pérez et al. (2021) found that students who expected higher final grades also scored higher in academic engagement, defined in terms of vigour (energy put into task execution), absorption (capacity for involvement and concentration with a task), and dedication (motivation and interest).

This shows the links between students' sense of self-efficacy and their academic performance. Research backs that up, such as the meta-analysis by Richardson et al. (2012), who reported that out of the 50 variables they found that could affect university students' performance, self-efficacy had the greatest effect.

Nonetheless, the relationship with academic success must be understood as indirect. In other words, beliefs about one's own efficacy may directly affect cognitive or motivational processes, the activities they choose to do when faced with a task, or their effort and persistence with such tasks. And it is these which will ultimately have an impact on student performance in the university context (Bartimote-Aufflick et al., 2015). The relationship between self-efficacy and academic engagement is also of interest here, as "involved, engaged students do their work with energy, concentrate more, enjoy their education, are motivated, and exhibit more confidence in their possibilities" (Álvarez-Pérez, 2021, p. 484).

Therefore it is reasonable to consider the process by which this relationship is produced. Gómez and Romero (2019) concluded that greater perceived self-efficacy was not only associated with getting better grades, but also with better use of deep learning strategies. They also showed a correlation between self-regulation, a variable that is equally associated with student performance, as it refers to the ability to work and learn proactively rather than solely in response to what teaching is received (Gargallo et al., 2016; Zimmerman, 2002).

This indicates the link between students' perceived efficacy and the learning approaches they use—understood as "the learning processes that arise from students' perceptions of academic tasks, in that they are influenced by the characteristics of the individual" (Gargallo et al., 2006, p. 45). We can distinguish between superficial or surface learning approaches, which are driven by extrinsic motivation and is aimed primarily at meeting evaluation requirements via memorisation, and deep learning

approaches, which are triggered by students' intrinsic motivation when they are interested in understanding the content they are working on. This is why the latter profile is also associated with greater self-efficacy and higher expectations of success (Biggs, 2015; Gómez & Romero, 2019).

Another study that illustrates this is from Barca-Lozano et al. (2012). After identifying the relationship between greater self-efficacy and performance, they noted that "self-efficacy activities play a role, as motivational variables, similar to a mediational incentive that directly affects academic performance and indirectly affects learning" (p. 856). In other words, the fact that students feel able to deal with a task is what facilitates motivation for success, and consequently better learning.

High levels of self-efficacy can even lead to a perception of failures and mistakes as challenges, which means greater engagement and perseverance in orientation towards goals and objectives, whereas low levels mean loss of confidence in oneself, avoiding complex tasks, and giving up academic activities (García-Carrera et al., 2023; Morelli et al., 2023).

One must not forget that perceived efficacy itself has an impact on how students cope with stressful situations in university life, especially depending on how they view or evaluate stressors, and on how they respond to those events (Freire et al., 2019). This is directly linked to the results reported by González et al. (2012), which demonstrate the significant correlation with psychological wellbeing.

Based on the literature, the objective of this study is to determine university students' perceived levels of general and academic self-efficacy and whether those levels are related to various socio-biographical variables: gender, age, knowledge area, prior participation in university-led community service activities, and participation in a mobility programme.

Method

Participants

The study involved participation of 1616 students at the University of Santiago de Compostela, selected through non-probabilistic intentional sampling. Around a third (34.4%) were aged between 17 and 20 years old, with the remainder being older. The mean age was 21.98 years (SD = 3.39). The sample was predominantly women (73.5%), and mostly doing courses in social sciences, law, arts and humanities (86.2%), with a minority studying healthcare sciences, engineering or architecture. Just over half (51.9%) were in the last two years of their degree courses. Some of the students (3%) were part of a mobility program at the time the questionnaire was applied, and a larger proportion of the sample (16%) had previously taken part in a community service activity led by the university.

Instrument

The study used the Questionnaire on University Students' Social-civic Competencies and Self-Efficacy [*Cuestionario sobre Competencias Cívico-Sociales y Autoeficacia del Alumnado Universitario (CUCOCSA)*], which had been validated in previous studies (Mella, 2019; Santos Rego & Lorenzo, 2018). For this study, we focused on the student self-ef-

ficacy scale (5-point Likert-type), which was constructed based on two previously-validated instruments, the General Self-efficacy Scale (Baessler & Schwarzer, 1996) and the Perceived Self-efficacy Scale Specific to Academic Situations (Palenzuela, 1983).

While the scale had 19 items in its initial version, exploratory factor analysis produced a final version with 14 (Table 1). It demonstrated two factors that together explained 54.03% of the variance: general self-efficacy (α=.82) and academic self-efficacy (α=.88).

Table 1

Items making up the self-efficacy scale

Factor	Item	Description
GENERAL SELF-EFFICACY	Item 1	I am confident that I could effectively manage unexpected events
	Item 2	Thanks to my qualities and resources, I can overcome unforeseen situations
	Item 3	When I encounter difficulties, I can stay calm because I can count on the abilities I need to deal with complex situations
	Item 4	Whatever comes my way, I'm generally able to deal with it
	Item 5	I can solve most problems if I make the necessary effort
	Item 6	If I find myself in a difficult situation, I can generally think of what I have to do
ACADEMIC SELF-EFFICACY	Item 7	I think I'm sufficiently able to successfully cope with any academic task
	Item 8	I think I am capable of understanding a subject quickly and well
	Item 9	I feel confident to deal with situations that test my academic capabilities
	Item 10	I am convinced that I can produce excellent exam results
	Item 11	I don't mind whether teachers are demanding or strict, as I have a lot of confidence in my own academic capabilities.
	Item 12	I think I'm quite a capable, competent person in my academic life
	Item 13	If I put my mind to it, I think I'm sufficiently capable to achieve a good qualification
	Item 14	I think that I can pass the courses relatively easily, and even get good grades

Procedure

The instrument was applied over two consecutive academic years. To get the highest possible number of responses, it was administered in-person, and took no longer than 15 minutes to complete. The study was approved by the University of Santiago de

Compostella Bioethics Committee, and complied with all relevant data protection and privacy legislation (Organic Law 3/2018, 5 December, on Protection of Personal Data and ensuring digital rights).

Data Analysis

Due to the nature of the collected data, it was analysed using non-parametric tests. More specifically, we used the Mann-Whitney U test to compare the students' responses to the self-efficacy scale according to the variables related to their socio-biographical profiles. Effect sizes were calculated using Rosenthal's r coefficient, which identifies small ($r < .1$), moderate ($.1 < r < .3$) or large effects ($r > .5$) (Rosenthal, 1991).

In addition, in order to produce a more comprehensive picture of the results, we carried out an analysis using ROC curves. Although this test is designed for binary classification models, it is useful as a visual means of representing how scores in self-efficacy are distributed according to the classification variables in our study, something that is already practiced in the literature (García-Valcárcel & Tejedor, 2017). The interpretation focuses on the ability of the scale factors to differentiate between the clusters of student profiles, examining the area under the curve in each case. In graphical terms, if the line representing a factor is above the reference category (e.g., men), and its area is significantly greater than 0.5, that could indicate that the variable has a certain discriminatory ability in its favour. In contrast, if it is below the reference line, and is significantly smaller than .5, the differences would be in favour of the other category (e.g., women).

Results

Table 2 shows the results of the descriptive analysis of the items making up the self-efficacy scale. It indicates that the students were very confident that, if they put their minds to it and made the necessary effort, they would be able to deal with problems in general (item 5) and get a good qualification at university (item 13), as they feel academically competent (item 12), and able to pass courses with good grades (item 14). In contrast, there were lower scores in general self-efficacy in terms of adapting to and responding to complex, difficult situations or the unexpected and unknown (items 3 and 4). This was similar to the academic side, where the lowest scores where related to students' perceptions of their ability to respond to strict, demanding teaching (item 11).

Table 2

Descriptive statistics for responses to the self-efficacy scale

	Responses to each item (%)						Overall mean
	1	2	3	4	5	4+5	
Item 1	.6	8.4	25.6	54.3	11.1	65.4	3.67 (.803)
Item 2	.2	4.3	26.3	57.6	11.5	69.1	3.76 (.718)
Item 3	2.2	17.1	33.4	39.2	8.2	47.4	3.34 (.927)
Item 4	1.2	13.2	34	43.3	8.4	51.7	3.44 (.867)

	Responses to each item (%)						Overall mean
	1	2	3	4	5	4+5	
Item 5	.3	2.4	9.5	65.2	22.6	87.8	4.07 (.662)
Item 6	.4	6.7	27.4	55	10.5	65.5	3.68 (.766)
Item 7	.8	11.3	22.3	50.3	15.4	65.7	3.68 (.894)
Item 8	.4	8.1	21.3	54.4	15.7	70.1	3.77 (.825)
Item 9	.6	7.7	23.5	54.3	13.9	68.2	3.73 (.816)
Item 10	2.2	12.4	29.8	40.7	14.9	55.6	3.54 (.962)
Item 11	3.9	22	31.2	34.3	8.5	42.8	3.21 (1.007)
Item 12	.7	5.2	18.9	60.6	14.5	75.1	3.83 (.762)
Item 13	.7	3.1	11.4	58	26.8	84.8	4.07 (.750)
Item 14	1	7.5	21.5	49.4	20.6	70	3.81 (.881)

Looking at the student profiles, there were differences according to the variables used for grouping. There was a significant difference in responses by gender (Table 3). Men had consistently higher scores in aspects such as ability to deal with unforeseen situations due to their qualities and resources (item 2), keeping calm in the face of difficulties (item 3), and finding solutions to difficult situations (item 6). This indicates a more robust perception of their general self-efficacy. There was a similar picture in academic self-efficacy, with men exhibiting more confidence of being able to deal with any academic task, even those which test them (items 7 and 9), and passing exams, getting good marks, or passing courses (items 10 and 14), even with demanding teachers (item 11).

Table 3

Comparison by student gender

Var	Mean (SD) Men (N=427)	Mean (SD) Women (N=1186)	Z	P	r
Item 1	3.71 (.845)	3.66 (.788)	-1.395	.163	-.03
Item 2	3.85 (.724)	3.73 (.712)	-3.189	.001	-.08
Item 3	3.62 (.915)	3.24 (.910)	-7.434	<.001	-.18
Item 4	3.51 (.910)	3.42 (.850)	-1.933	.053	-.05
Item 5	4.04 (.784)	4.09 (.610)	-.021	.984	-.001
Item 6	3.77 (.741)	3.65 (.772)	-2.866	.004	-.07
Item 7	3.75 (.951)	3.66 (.870)	-2.377	.017	-.06
Item 8	3.83 (.850)	3.75 (.815)	-1.815	.070	-.05

Var	Mean (SD) Men (N=427)	Mean (SD) Women (N=1186)	Z	P	r
Item 9	3.85 (.789)	3.69 (.822)	-3.657	<.001	-.09
Item 10	3.67 (.979)	3.49 (.951)	-3.377	.001	-.08
Item 11	3.38 (1.058)	3.16 (.982)	-4.306	<.001	-.11
Item 12	3.85 (.797)	3.83 (.747)	-.591	.555	-.01
Item 13	4.11 (.802)	4.06 (.728)	-1.713	.087	-.04
Item 14	3.91 (.860)	3.78 (.886)	-2.395	.017	-.06
Self-efficacy	3.78 (.557)	3.66 (.511)	-4.351	<.001	-.11
General self-efficacy	3.75 (.607)	3.63 (.563)	-4.266	<.001	-.11
Academic self-efficacy	3.80 (.662)	3.68 (.626)	-3.766	<.001	-.09

Looking at the responses by age (Table 4), the older students (over 20) had significantly higher scores in questions related to confidence in everyday situations, especially when it comes to dealing with unexpected situations, mainly due to their qualities and resources (items 1 and 2). In contrast, the younger students had higher scores in items associated with academic self-efficacy, demonstrating greater confidence in properly and quickly understanding course content (item 8) and in being competent in their academic life (item 12). They also indicated greater confidence in being able to achieve good qualifications if they put their minds to it (item 13), because they felt that they could perform well in exams and easily pass their courses, and get good grades (items 10 and 14).

Table 4

Comparison by student age

Var	Mean (SD) Aged 17-20 (N=556)	Mean (SD) Over 20 (N=1060)	Z	p	r
Item 1	3.61 (.839)	3.70 (.782)	-2.185	.029	-.05
Item 2	3.71 (.720)	3.79 (.716)	-2.115	.034	-.05
Item 3	3.30 (.947)	3.36 (.917)	-1.154	.249	-.03
Item 4	3.40 (.884)	3.46 (.858)	-1.091	.275	-.03
Item 5	4.07 (.649)	4.08 (.669)	-.176	.861	-.004
Item 6	3.65 (.783)	3.70 (.756)	-1.445	.148	-.04
Item 7	3.65 (.920)	3.70 (.880)	-.697	.485	-.02
Item 8	3.83 (.796)	3.74 (.839)	-2.064	.039	-.05

Var	Mean (SD) Aged 17-20 (N=556)	Mean (SD) Over 20 (N=1060)	Z	p	r
Item 9	3.75 (.798)	3.72 (.826)	-.735	.462	-.02
Item 10	3.61 (.955)	3.50 (.963)	-2.280	.023	-.06
Item 11	3.23 (1.019)	3.21 (1.002)	-.479	.632	-.01
Item 12	3.91 (.731)	3.79 (.775)	-3.174	.002	-.08
Item 13	4.17 (.677)	4.02 (.781)	-3.716	<.001	-.09
Item 14	3.89 (.845)	3.77 (.897)	-2.540	.011	-.06
Self-efficacy	3.70 (.513)	3.68 (.534)	-.586	.558	-.01
General self-efficacy	3.63 (.576)	3.68 (.578)	-1.980	.048	-.05
Academic self-efficacy	3.76 (.611)	3.68 (.650)	-2.422	.015	-.06

Participating in, or having participated in a community service activity promoted by the university also led to significant differences, with higher scores in those students who had done so (Table 5). They specifically demonstrated greater confidence in their abilities to deal with unforeseen situations (items 2 and 4), and greater confidence in their abilities in all of the academic self-efficacy items.

Table 5

Comparison by prior participation in a community service activity promoted by the university

Var	Mean (SD) Did not participate (N=1358)	Mean (SD) Participated (N=258)	Z	p	r
Item 1	3.67 (.806)	3.69 (.788)	-.446	.655	-.01
Item 2	3.74 (.723)	3.85 (.686)	-2.181	.029	-.05
Item 3	3.33 (.937)	3.39 (.877)	-.874	.382	-.02
Item 4	3.42 (.862)	3.57 (.885)	-2.488	.013	-.06
Item 5	4.07 (.669)	4.12 (.622)	-1.048	.294	-.026
Item 6	3.68 (.772)	3.72 (.731)	-.904	.366	-.02
Item 7	3.65 (.903)	3.84 (.827)	-3.055	.002	-.08
Item 8	3.74 (.829)	3.90 (.792)	-2.779	.005	-.07
Item 9	3.70 (.823)	3.90 (.759)	-3.393	.001	-.08
Item 10	3.52 (.964)	3.65 (.945)	-2.125	.034	-.05
Item 11	3.18 (1.002)	3.42 (1.013)	-3.879	<.001	-.1
Item 12	3.81 (.771)	3.95 (.706)	-2.618	.009	-.07

Var	Mean (SD) Did not participate (N=1358)	Mean (SD) Participated (N=258)	Z	p	r
Item 13	4.05 (.747)	4.16 (.763)	-2.416	.016	-.06
Item 14	3.78 (.895)	3.96 (.788)	-2.649	.008	-.07
Self-efficacy	3.67 (.527)	3.79 (.513)	-3.659	<.001	-.09
General self-efficacy	3.65 (.581)	3.72(.559)	-1.836	.066	-.05
Academic self-efficacy	3.68 (.641)	3.85 (.604)	-3.878	<.001	-.1

Students who were participating in mobility programs when they completed the questionnaire (SICUE, Erasmus, or bilateral agreements) had higher scores in self-efficacy (Table 6). The differences were significant in general self-efficacy, and more specifically in items related to students' ability to overcome unforeseen situations (item 2) and knowing how to act in difficult situations (item 6).

Table 6

Comparison by participation in mobility programmes

Var	Mean (SD) Non-participant (N=1564)	Mean (SD) Participant (N=49)	Z	p	r
Item 1	3.66 (0.801)	3.88 (.857)	-1.883	.060	-.05
Item 2	3.75 (0.717)	4.00 (.707)	-2.386	.017	-.06
Item 3	3.33 (.925)	3.53 (1.002)	-1.433	.152	-.04
Item 4	3.43 (.866)	3.67 (.899)	-1.749	.080	-.04
Item 5	4.07 (.661)	4.20 (.676)	-1.506	.132	-.037
Item 6	3.67 (.765)	4.06 (.697)	-3.516	<.001	-.09
Item 7	3.68 (.891)	3.82 (1.014)	-1.482	.138	-.04
Item 8	3.76 (.820)	3.88 (.971)	-1.218	.223	-.03
Item 9	3.73 (.811)	3.67 (.987)	-.329	.742	-.01
Item 10	3.54 (.956)	3.51 (1.175)	-.341	.733	-.01
Item 11	3.21 (1.006)	3.43 (1.061)	-1.559	.119	-.04
Item 12	3.83 (.762)	3.88 (.789)	-.429	.668	-.01
Item 13	4.07 (.750)	4.14 (.764)	-.681	.496	-.02
Item 14	3.81 (.885)	3.90 (.770)	-.486	.627	-.01
Self-efficacy	3.68 (.525)	3.84 (.584)	-2.009	.174	-.05

Var	Mean (SD) Non-participant (N=1564)	Mean (SD) Participant (N=49)	Z	p	r
General self-efficacy	3.66 (.576)	3.91 (.594)	-2.129	.033	-.05
Academic self-efficacy	3.71 (.635)	3.78 (.743)	-1.360	.54	-.03

Finally, the only significant differences in terms of knowledge area (Table 7) were in students doing social and legal sciences, and arts and humanities, who reported being more confident of easily passing courses and getting good grades (items 14).

Table 7

Comparison by knowledge area

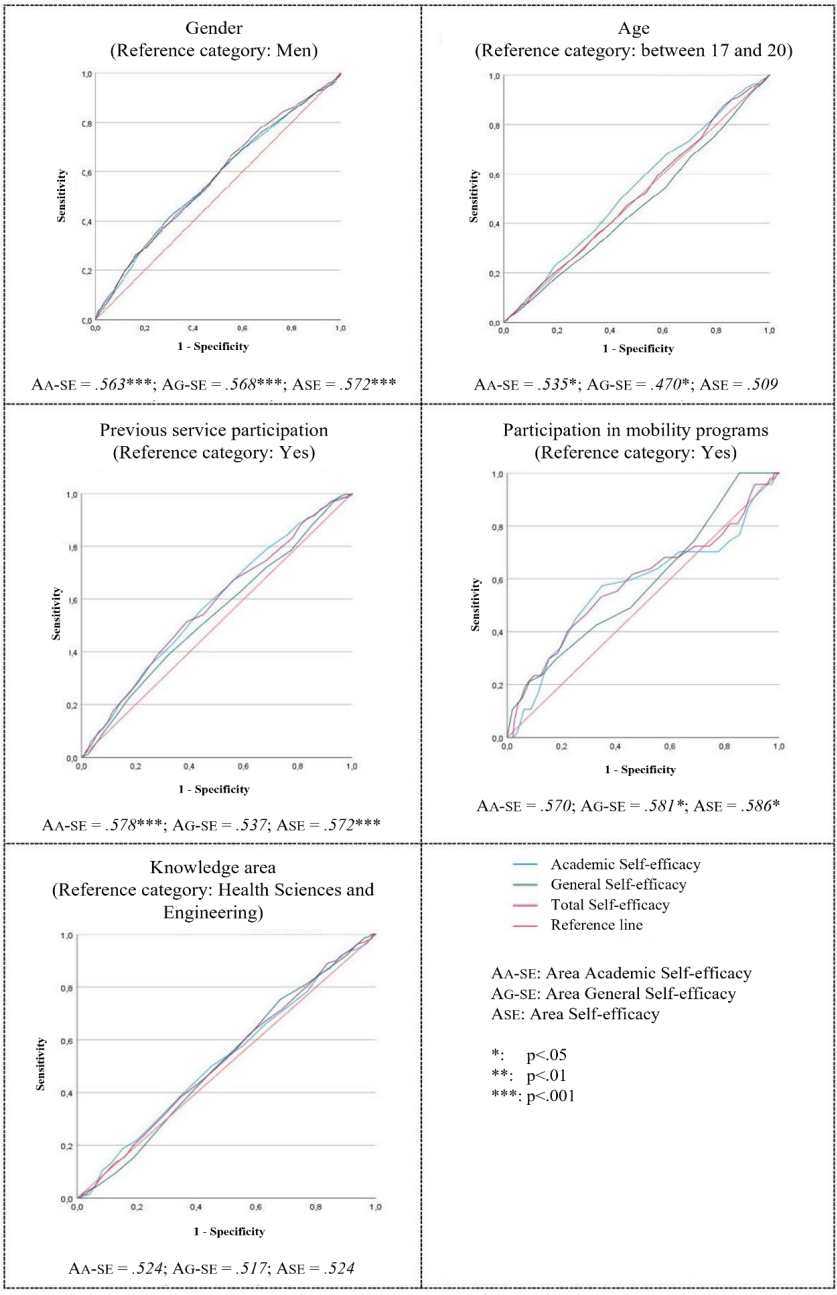
Var	Mean (SD) Health sciences, engineering and architecture (N=223)	Mean (SD) Social sciences and law, arts and humanities (N=1393)	Z	p	r
Item 1	3.66 (.770)	3.67 (.808)	-.276	.783	-.01
Item 2	3.78 (.623)	3.76 (.733)	-.448	.654	-.01
Item 3	3.37 (.828)	3.34 (.943)	-.465	.642	-.01
Item 4	3.43 (.768)	3.44 (.882)	-.289	.773	-.01
Item 5	4.11 (.668)	4.07 (.661)	-.941	.347	-.023
Item 6	3.73 (.706)	3.68 (.775)	-.836	.403	-.02
Item 7	3.76 (.808)	3.67 (.907)	-1.055	.292	-.03
Item 8	3.79 (.792)	3.77 (.831)	-.257	.797	-.01
Item 9	3.80 (.737)	3.72 (.828)	-1.213	.225	-.03
Item 10	3.58 (.921)	3.53 (.969)	-.703	.482	-.02
Item 11	3.30 (.998)	3.20 (1.008)	-1.652	.099	-.04
Item 12	3.90 (.716)	3.82 (.769)	-1.463	.144	-.04
Item 13	4.05 (.737)	4.07 (.752)	-.519	.604	-.01
Item 14	3.70 (.873)	3.83 (.882)	-2.343	.019	-.06
Self-efficacy	3.72 (.481)	3.68 (.53374)	-1.127	.260	-.03
General self-efficacy	3.69 (.508)	3.66 (.588)	-.690	.490	-.02
Academic self-efficacy	3.74 (.622)	3.70 (.640)	-.951	.342	-.02

To round off the study, and examine the results more closely, we carried out an analysis using ROC curves. This only looked at the scale factors (general and academic self-efficacy) and total self-efficacy—the scale as a whole (Figure 1). The results of this analysis were consistent with the previous results.

- Men had higher scores in general and academic self-efficacy. Consequently, their total scores were also significantly higher.
- For age, the line determining general self-efficacy was below the reference line (indicating higher levels in students who were over 20) while the academic self-efficacy line was above (indicating higher levels in younger students). Given that, the line corresponding to total self-efficacy had no discriminatory capacity.
- Those who had previously taken part in a university-run community service programme had significantly higher levels of academic self-efficacy than those who had not.
- Students doing mobility programmes had higher levels of general self-efficacy.
- Knowledge area did not seem to be related to levels of either academic or general self-efficacy.

Figure 1

Analysis of ROC curves for self-efficacy dimensions, by study variables



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Discussion

The change in educational paradigm at universities has led to a new idea about learning, stressing the importance of students' autonomy and their willingness to work in the process of acquiring and developing competencies. This has broadened the concept of what makes good academic performance, because it no longer only depends on cognitive abilities such as memorisation, but includes other variables that directly affect the education process, such as self-efficacy, self-esteem, motivation, and academic engagement (Pérez et al., 2018; Santos Rego et al., 2020).

The move from a teacher-centred model to one focused on how the students work demands rigorous analysis providing evidence about the factors that can have the greatest impact on performance (Bartimore-Aufflick et al., 2015). This is the impetus for the presents study, which was able to show that while university students did have high levels of self-efficacy, there were dimensions in which those perceptions were lower. This was the case for students' confidence when dealing with difficult or complex situations (in terms of general self-efficacy), or their opinions of their capabilities in terms of demanding teaching (for academic self-efficacy).

That said, the students did not demonstrate homogeneous levels of self-efficacy, as our study indicated various variables related to significant differences, albeit with a small effect. The first of these was gender. Men reported higher levels of self-efficacy both generally and academically, which is in line with previous studies (Freire et al., 2019; Morales & Giménez, 2019). This variability may be due to, among other things, the different mental predispositions between men and women when answering the questions. According to Pajares (2002), this may lead men to being self-satisfied, which responds directly to a specific cultural construction that is stereotypical of the different gender roles.

However, other studies have reported the opposite, with women reporting higher scores in this dimension. For example, Aguirre et al. (2015) concluded that female students not only reported higher perceived self-efficacy, but also greater desired self-efficacy (interest in being capable) and achievable self-efficacy (confidence in their abilities with effort).

Age was also related to university students' self-efficacy, unequally. Students under 20 years old reported higher academic self-efficacy, whereas older students reported higher general self-efficacy. This is similar to results from Morales and Giménez (2019), who took academic year as a grouping variable, although they found no differences in general self-efficacy between the different years.

In addition to those two variables, activities that students do that are directly related to their education, such as participating in university-led service activities or mobility programmes, are related to a feeling of self-efficacy. The most notable results were related to involvement in community service, as students who had participated in such programmes demonstrated higher levels of academic self-efficacy, with significant differences in all of the elements making up that dimension.

This is consistent with the findings from Griffiths et al. (2021), who reported that extracurricular activities were related to students' feelings of efficacy, although those differences were in the general dimension and were not seen on the academic side. Doing more extracurricular activities was associated with greater general self-efficacy, and volunteering was one of the experiences where the data indicated greater significance.

We can reaffirm the usefulness of non-formal educational activities at university, such as volunteering. In addition to promoting development of a set of general competencies, they affect dimensions such as student motivation, engagement, and self-efficacy (Santos Rego et al., 2018). However, it is also prudent to consider the possibility that participation in community service is not the cause of improvements of self-efficacy, but the opposite; students with greater self-efficacy may be more engaged and motivated to be volunteers (Lindenmeier, 2008).

We can also confirm that students who are engaged in mobility programmes demonstrate higher levels of self-efficacy, although in this case the differences were only significant in general self-efficacy. We agree with Emirza et al. (2021), about the role played by the quality of international experiences—in terms of developing student competencies—when it comes to increasing feelings of self-efficacy.

As with community service activities, it is important to be cautious when considering mobility programmes, as many factors can lead students to sign up to them. These factors include socio-economic levels and family support (Lorenzo-Moledo et al., 2023), along with self-efficacy, motivation, and the students' previous academic history.

This indicates that self-efficacy, despite being an individual construct, has a clear social dimension. This is explained by these aforementioned links with both community service and mobility programmes. Along these lines, Ferradás and Freire (2020) showed that maintaining good social relationships affected self-perceived competence for dealing with general day-to-day situations.

Lastly, we were unable to confirm that knowledge area had any significant impact on the types of self-efficacy, as we only found that students doing social sciences, law, arts and humanities subjects were more confident of easily passing courses and getting good grades.

Although this study sheds light on a dimension of interest, using a reasonably-sized sample, it does have some limitations that must be considered. Firstly, although the differences the study found were significant, they mostly had small effects, despite being sufficient to indicate that certain student characteristics are related to different levels of self-efficacy. In addition, the study was restricted to a quantitative approach, and it would be interesting to have similar studies use more qualitative techniques and instruments.

Given those considerations, the study suggests new lines of research that would allow our results to be expanded on and made more tangible. This includes considering self-efficacy as a dimension that can be worked on and developed at university. Based on such a premise, it would be useful to study the possible impact of different teaching styles or the use of various methodological strategies and resources.

Another suggested line of research is related to the timing of studies like the current one, and the response possibilities that would produce. In other words, if a sense of self-efficacy affects the strategies and activities the students put in place in their learning processes, and hence their academic performance, it would be worth putting measures in place once that perception has been described. In that way, this kind of study can become a tool allowing responses to be tailored to specific groups of students' situations, especially when—as in this study—student profiles are defined based on what they think of their own competence.

Given all of the above, we have been able to confirm that university students' levels of self-efficacy are far from being homogeneous, and a range of variables may be

related to them. It would be interesting to look more deeply into students' own opinions of their competence, both general and academic, as this is a strong predictor of academic success. Furthermore, confidence in one's own capacity contributes to being more likely to succeed when dealing with not only situations at university, but events in day-to-day life. In fact, studies such as García-Carrera et al. (2023) reported that student self-efficacy is even related with their own perceptions of employability, another reason to pay attention to one of the variables that can most affect not only students' academic development, but also their personal and professional performance.

In summary, our findings have direct implications for the work of higher education institutions, because the greatest impact on dropping out is from individual variables, linked to student characteristics or their family environment (Fernández-Mellizo, 2022). Among these, self-efficacy is a key factor in ensuring students move through higher education smoothly, as confidence that academic goals are achievable will directly influence whether they remain at university (González et al., 2007). Therefore university policies should promote initiatives such as supervision, tutoring, and guidance; methodologies such as service-based learning in the community, projects, or challenges; along with other complementary activities such as volunteering, mobility, or social entrepreneurship, that can affect students' motivation, engagement, and self-efficacy, leading them to mobilise deeper learning strategies and approaches.

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