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Original

University students and their perception of teaching effectiveness. Effects on students' engagement☆

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ABSTRACT

This paper is based on a *teacher effectiveness* model with six teaching behaviour domains *(safe learning climate, efficient classroom management, clarity of instruction, activating teaching, differentiation,* and *teaching–learning strategies*). The main purpose was to examine university students' perceptions of *teaching effectiveness* and its influence on students' *academic engagement*. The sample comprised 782 students from 16 universities. Data was collected using a transversal design and the instruments *My Teacher Questionnaire* and the *Academic Engagement Scale*, both using Likert-type response formats and adapted to the study population. The findings suggest differences regarding *teacher gender* and *type of course*: students perceived their male teachers as better, and there were more positive perceptions of teachers in arts and humanities, social and legal sciences, and health sciences courses. With respect to *student engagement*, the results confirmed the predictive power of the *effective classroom management, activating teaching* and *differentiation* domains. The percentage of explained variance was greater for *emotional engagement* than for *behavioural engagement*. This kind of study gives us very interesting information which can help to identify the aspects of higher education that need to be reinforced and in contrast, those about which students already have positive perceptions.

La percepción de los estudiantes universitarios acerca de la eficacia docente. Efe-ctos sobre el compromiso de los estudiantes

Palabras clave:
Eficacia docente
Compromiso conductual
Compromiso emocional
Enseñanza universitaria
Percepción del alumnado
Docencia

RESUMEN

Este trabajo está basado en un modelo de eficacia docente compuesto por seis dimensiones (clima de aprendizaje seguro, manejo eficiente del aula, claridad de la instrucción, enseñanza activa, diferenciación y estrategias de enseñanza – aprendizaje). El objetivo principal ha sido examinar la percepción que posee el alumnado universitario acerca de la eficacia docente de sus profesores y profesoras, así como el influjo de esta percepción en su compromiso académico. La muestra está compuesta por 782 estudiantes de 16 universidades españolas. Los datos se han obtenido en un diseño transversal a partir del instrumento My Teacher Questionnaire y la Escala de Compromiso Académico, ambos en formato likert y adaptados en la población de estudio. Los resultados sugieren diferencias atendiendo al sexo del profesorado y al tipo de estudios que se estén cursando. Así, los profesores varones reciben una mejor percepción que las mujeres, y también aquéllos que imparten docencia en estudios de Artes y Humanidades, Ciencias Sociales y Jurídicas y Ciencias de la Salud son percibidos más positivamente. En relación al compromiso del alumnado, los resultados confirman el poder predictivo de las dimensiones manejo eficiente del aula, enseñanza activa y diferenciación. El porcentaje de varianza explicada es mayor en el caso del compromiso emocional que en el conductual. Este tipo de estudios nos ofrecen información de gran interés para conocer qué aspectos de la docencia universitaria deben ser reforzados y cuáles, por el contrario, ya son percibidos satisfactoriamente por el alumnado.

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Introduction

University teaching has undergone significant change in recent years, moving from a teacher-centred to a student-centred model in which the student plays the main role (Gargallo et al., 2007; Pozo & Pérez, 2009). Because of that, students' perceptions of teaching are extremely important in understanding the extent of the reforming spirit of the Bologna agreement.

The student as a source of information about teaching practices

When research addresses *teaching effectiveness*, it is possible to use many procedures for collecting information. There is a certain consensus in the belief that using students as the information source requires fewer resources than other types of processes (Coe et al., 2014; Van der Lans et al., 2015) and that students are a reliable resource when they demonstrate sufficient maturity (De Jong & Westerhof, 2001; Mateo, 2000; Molero & Ruiz, 2005). This may be why most of the studies in the literature are based on student perceptions (Stroet et al., 2013). However, this type of procedure also has its limitations, as it can be affected by prior expectations about the subject, the teachers, and the effort needed for a particular course (De Jong & Westerhof, 2001; Hornstein, 2017; Mateo, 2000; Van der Lans et al., 2015). Nonetheless, student perceptions about teaching strategies seem to be key in predicting students' *academic engagement*, reflecting a direct relationship between good perceptions of teachers and optimal engagement in learning (Maulana et al., 2015b; Skinner & Belmont, 1993; Woolley & Bowen, 2007).

When is a teaching practice effective?

Various models have attempted to determine the dimensions associated with *teaching effectiveness*, including criteria such as motivation, teacher enthusiasm, classroom environment, interaction, curriculum delivery, methodology, clarity of instruction, resources, evaluation, teaching–learning activities, and amount of tasks set, to name a few examples (Devlin & Samarawickrema, 2010; Hativa et al., 2001; Molero & Ruiz, 2005; Verdugo & Cal, 2010). Models which stand out as offering greater systematization include the *Classroom Assessment Scoring System* (CLASS) model from Pianta and Hamre (2009), which distinguishes between emotional, organizational, and teaching dimensions; the model created by De Jong and Westerhof (2001), which emphasizes motivation, teaching skills, review of tasks, personalized advice, control of the group, and metacognitive strategies; and the dynamic model from Kyriakides et al. (2013) which is based on the dimensions orientation, structure, questioning, modelling, application, time management, classroom atmosphere, and evaluation. This model also establishes that teachers who employ more complex procedures are more effective in what they do than teachers who limit themselves to simpler procedures.

The framework for this current study is the construct of *teaching effectiveness* from the ICALT project (*International Comparative Analysis of Learning and Teaching*). This is for a number of reasons. Firstly, because the six dimensions in the construct (*safe learning climate, efficient classroom management, clarity of instruction, activating teaching, differentiation, and teaching–learning strategies*) incorporate most of the dimensions noted in the reviewed literature which for reasons of space we cannot expand on here. Secondly, it is an approach that has been used in other stages of the Spanish education system, which will allow us to determine whether there is continuity in teaching practices (Fernández-García et al., 2019; Inda-Caro et al., 2019). Lastly, it is the most widespread internationally in research to date, as it has been used in Europe, Latin America, and Asia, giving the option of international comparisons.

A suitable *safe learning climate* makes it easier for relationships to be based on mutual respect and proximity (Kyriakides & Creemers, 2009). The better these relationships, both with peers and teachers, the better the results of learning (Barr, 2016; Furrer & Skinner, 2003; Van de Grift, 2007) and the better the *engagement* (Anderson et al., 2004; Reyes et al., 2012).

Efficient classroom management allows the best use of learning time and appropriate structuring to reach set objectives (Danielson, 1996), it also influences the classroom at the socio-emotional level, reducing behavioural problems (Pianta & Hamre, 2009; Van de Grift, 2007).

Teachers must be able to communicate ordered instructions, sequence objectives, review whether students are following the class well enough, and provide rapid feedback. This contributes to the *clarity of instruction* and helps the student to understand exactly what is expected of them (Danielson, 2013; Van de Grift et al., 2014). Research has shown that students who perceive their teachers as able to create a clear, structured learning environment are more predisposed to demonstrate *engagement* with academic tasks (Klem & Connell, 2004) and thus achieve better results.

Activating teaching processes encourage students to be aware of their learning, use procedures that go beyond the routine basics, and be able to connect what they learn with their prior knowledge, developing their capacity of learning to learn (Bonwell & Eison, 1991; Gargallo et al., 2020). Recent studies have demonstrated that an active teaching environment is also related to the quality of the relationships in the classroom (Maulana et al., 2015b).

Differentiation allows the various student needs and abilities to be addressed and dealt with in the classroom, which requires thorough understanding of each student and their characteristics as learners (Danielson, 2013) in order to ensure that teaching is truly being converted into learning. This means, for instance, extra time, additional instructions, and reinforcing explanations, etc. (Maulana et al., 2017).

The *teaching–learning strategies* must be as varied as possible to encourage autonomous learning appropriate to the various learning styles. This will make it easier for the students to be able to cope with tasks that they might have considered complex, which they may transfer to other contexts (Coe et al., 2014; Kyriakides et al., 2013).

Academic engagement

According to Skinner et al. (2009), *engagement*, refers to the involvement demonstrated by the student in the face of the effort needed for learning, and therefore with the people, activities, values, and places where those processes happen. *Academic engagement* is essential in helping improve competencies, increasing motivation, and achieving better adjustment at school, it also acts as a preventive factor against failure, and is a mediator between class dynamics and results achieved (Fredricks et al., 2004; Furrer & Skinner, 2003; Skinner & Belmont, 1993). It is a complex construct, in which various facets (behavioural, cognitive, and emotional) can be differentiated, which are in turn dynamically interrelated (Archambault et al., 2009; Fredricks et al., 2004). The study by Skinner et al. (2009) summarized them in two groups; *behavioural engagement* (which would include effort, persistence, attention, and concentration) and *emotional engagement* (made up of enthusiasm, interest, and enjoyment).

Based on the above, we seek to explore the relationship between students' perceptions of *teaching effectiveness* and students' *engagement* using a predictive model. We have framed the study with four general research questions. (1) What is the general level of *teaching effectiveness* according to students?; (2) Does *teacher and student gender* influence this perception?; (3) Is the perception of *teaching effectiveness* independent of the degree courses the students are

doing?; and, (4) What is the effect of this perception on students' *academic engagement*?

Starting from these questions, we have established a number of hypotheses. Firstly, that the perceived levels of *teaching effectiveness* will be satisfactory (H1). We expect this perception to be more evident in the less complex dimensions such as *safe learning climate, efficient classroom management,* and *clarity of instruction* (H2). Student perceptions will be the same for both male and female teachers (H3), and the students' perceptions of *teaching effectiveness* will be independent of *student gender* (H4). We also posit that students' perceptions of *teaching effectiveness* will be independent of the *degree course* they are studying (H5). Finally, we expect that higher levels of perceived *teaching effectiveness* will mean greater *academic engagement* (H6).

Method

Design

This study uses a non-experimental, predictive, explanatory transversal design, which follows an associative strategy (Alto et al., 2013).

Participants

We used a non-probabilistic intentional method. Our inclusion criteria were for students to be doing degree courses in the first and second semesters, excluding those who were doing masters' degree subjects. There were 782 participants, three-quarters were women (592, 75.7%) and one-quarter were men (189, 24.2%), one student (0.1%) indicated their gender as "non-binary". The mean age of the students was 22.00 years old ($SD = 5.33$). The mean age of the women was 22.55 ($SD = 5.07$), while the mean age of the men was 22.72 ($SD = 6.10$). A Student t test indicated that there were no statistically significant differences in student age with respect to *student gender* (t = -0.39, $p = .69$). We collected data from 16 universities in 11 autonomous communities (Andalucía, Asturias, Cantabria, Cataluña, Castilla–León, Valencia, Galicia, the Balearic Islands, Madrid, Navarra, and the Basque Country). The degree courses covered the following knowledge areas: 3.6% arts and humanities, 12.9% science, 6% health sciences, 65.9% social sciences and law, and 11.6% engineering.

Instruments

A panel of experts reviewed the suitability of the original items used, assessing their ability to provide information with regard to university education and ranking them on their potential usefulness in providing information appropriate to the study objectives. We also asked their opinions on the clarity of the language, the structure, and the ease of completion. It was necessary to remove two items from the *teaching effectiveness* instrument as the content did not fit with university students' autonomy and learning styles.

Teaching effectiveness

This instrument is an adaptation for the university level of the *My Teacher Questionnaire* created by the ASOCED research group [Análisis Sociológico y Cultural de los Procesos Escolares y Educativos] based on the *teaching effectiveness* model from Van de Grift (2007) and Van de Grift et al. (2014). The final instrument has 39 items spread over six dimensions as noted above. The item responses are from 1 = never to 4 = always. As it is the first time this instrument has been used in the university student population we performed the appropriate analyses of reliability and validity. The internal consistency of the test in the study sample was .98. The dimensions gave the following indices of reliability: *safe learning climate* $\alpha = .90$; *efficient classroom management*, $\alpha = .94$; *clarity of instruction*, $\alpha = .93$; *activating teaching*, $\alpha = .93$; *differentiation*, $\alpha = .86$, and *teaching–learning strategies*, $\alpha = .89$. In addition, a confirmatory factor analysis (CFA) gave adequate goodness-of-fit indices: $\chi^2 = 3546$, $p < .001$, TLI = .90, CFI = .91, RMSEA = .07, SRMR = .04, McDonald's Omega = .98, VME = .65.

Academic engagement

To evaluate *academic engagement*, the ASOCED research group adapted and translated the scale from Skinner et al. (2009) with two basic dimensions: *behavioural engagement* (5 items) and *emotional engagement* (5 items). All of the responses were given in a range from 1 = completely false to 4 = completely true. The internal consistency of this instrument in the university student population in the study was .91. The *behavioural engagement* factor produced ($\alpha = .96$), and the *emotional engagement* factor gave an, $\alpha = .94$. The goodness-of-fit parameters were adequate $\chi^2 = 184.08$, $p < .001$, TLI = .95, and CFI = .97, RMSEA = .07, SRMR = .04, McDonald's Omega = .90, VME = .59.

Procedure

The data were collected via an online questionnaire. All of the participants gave their consent to participate in the study. The study was evaluated and approved by the University of Oviedo in the round of projects of innovation and research that needed entry into educational facilities (Educastur, 2017).

Data analysis

Firstly, as noted in the Instruments section, we confirmed the psychometric characteristic of the instruments we used with the university population using Factor 10.10.03 (Lorenzo-Seva & Ferrando, 2020) and M-PLUS 7.3 (Muthén & Muthén, 2012). The subsequent step was to determine whether the results complied with the requirements of normality and homoscedasticity. The Kolmogorov-Smirnov and Levene tests demonstrated a significance level of $p < .05$, which allowed us to conclude that neither of the two requirements were met.

In order to respond to the first three research questions, we performed an analysis of the mean values in the *teaching effectiveness* dimensions. According to Maulana et al. (2015a), the measurement scale was: 1.00–1.99 (*unsatisfactory*), 2.00–2.99 (*satisfactory*), and 3.00–4.00 (*good*). To determine whether there were intrasubject differences in perceptions we performed Friedman's test, the Wilcoxon signed rank test, and an analysis of the effect sizes, p_{dep} (Grissom & Kim, 2012). Subsequently, we compared the non-parametric means, where the criterion variables were the six dimensions of *teaching effectiveness* and the independent variables were *student gender, teacher gender,* and *knowledge areas* of each degree. We chose to use the Mann-Whitney U test and the Z statistic to make the comparison with *teacher* and *student* gender, and the Kruskal-Wallis test to analyse possible differences with regard to *knowledge area*. We also calculated the effect sizes for the variable *sex* and *knowledge area* using the p_U statistic (Grissom & Kim, 2012). In addition, we applied the Bonferroni correction for pairwise comparisons. All analyses were done using IBM SPSS 22.

To respond to the fourth research question, determining the predictive power of the six dimensions on both *behavioural engagement* and *emotional engagement*, we used the structural equation technique. More specifically, path analysis using the statistical software MPLUS 7.3 (Muthén & Muthén, 2012). We used unweighted least squares as the estimator, with the indices of fit χ^2, TLI, CFI, RMSEA, and SRMR.

Table 1
Analysis of the intrasubject perceptions of teaching competencies. Wilcoxon test (Effect sizes)

	LC	CM	CI	AT	DI
Safe learning climate (LC)					
Efficient classroom management (CM)	$Z = -11.41^{***}$ ($p_{dep} = .17$)				
Clarity of instruction (CI)	$Z = -15.98^{***}$ ($p_{dep} = .13$)	$Z = -10.18^{***}$ ($p_{dep} = .22$)			
Activating Teaching (AT)	$Z = -19.05^{***}$ ($p_{dep} = .08$)	$Z = -14.46^{***}$ ($p_{dep} = .13$)	$Z = -6.67^{***}$ ($p_{dep} = .29$)		
Differentiation (DI)	$Z = -20.53^{***}$ ($p_{dep} = .03$)	$Z = -19.51^{***}$ ($p_{dep} = .08$)	$Z = -16.29^{***}$ ($p_{dep} = .15$)	$Z = -14.57^{***}$ ($p_{dep} = .20$)	
Teaching – learning strategies (TLS)	$Z = -21.06^{***}$ ($p_{dep} = .04$)	$Z = -20.03^{***}$ ($p_{dep} = .71$)	$Z = -16.67^{***}$ ($p_{dep} = .65$)	$Z = -14.51^{***}$ ($p_{dep} = .59$)	$Z = -1.00$ ($p_{dep} = .41$)

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Table 2
Perception of teachers' behaviour considering students' and teachers' gender. Mean (Standard Deviation) and median

	Female Students				Male Students			
	Females	Males	Z	p_U	Females	Males	Z	p_U
Safe learning climate	3.59 (0.54) 3.80	3.69 (0.48) 3.80	−2.11*	.45	3.30 (0.85) 3.60	3.65 (0.48) 3.80	−2.97**	.38
Efficient classroom management	3.49 (0.66) 3.75	3.61 (0.55) 3.88	−2.56**	.44	3.14 (0.87) 3.38	3.51 (0.58) 3.75	−3.16**	.37
Clarity of instruction	3.39 (0.64) 3.57	3.52 (0.61) 3.71	−2.79**	.43	3.06 (0.90) 3.29	3.45 (0.59) 3.71	−3.03**	.37
Activating teaching	3.35 (0.62) 3.50	3.42 (0.62) 3.63	−1.81	.45	3.00 (0.87) 3.13	3.35 (0.61) 3.50	−2.61*	.39
Differentiation	3.19 (0.65) 3.20	3.27 (0.66) 3.40	−1.62	.46	2.81 (0.84) 3.00	3.19 (0.67) 3.30	−3.06**	.37
Teaching – learning strategies	3.17 (0.66) 3.17	3.27 (0.64) 3.33	−1.92*	.45	2.78 (0.85) 3.00	3.23 (0.63) 3.33	−3.74***	.34

$^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Results

Analysis of the general perceived level of higher education teaching effectiveness

According to the parameters established by the authors of the original version of the instrument, we found good perceptions in all dimensions: *safe learning climate* ($M = 3.59$, $SD = 0.57$), *efficient classroom management* ($M = 3.48$, $SD = 0.64$), *clarity of instruction* ($M = 3.39$, $SD = 0.67$), *activating teaching* ($M = 3.32$, $SD = 0.66$), *differentiation* ($M = 3.17$, $SD = 0.69$), and *teaching–learning strategies* ($M = 3.16$, $SD = 0.70$). The Friedman test indicated that there were statistically significant differences in the intrasubject analysis ($\chi^2 = 1477.33$, $p < .001$). Pairwise post hoc analysis showed that students had better perceptions of the dimensions *safe learning climate, efficient classroom management,* and *clarity of instruction* (Table 1). The lowest mean values were in *teaching–learning strategies* and *differentiation*.

We then performed the statistical tests to examine the differences in the three independent variables. Although we found that the girls tended to have more positive perceptions than the boys about their teachers' *teaching effectiveness*, both groups of students had higher scores in the dimensions *safe learning climate, efficient classroom management,* and *clarity of instruction* (the responses tended to be "very often" or "always"), whereas in *activating teaching, differentiation,* and *teaching–learning strategies* teachers were seen to be less effective (Table 2). The effect sizes associated with *teacher gender* were larger in the girls' group. Nonetheless, we also examined the interaction of these two variables with knowledge area.

In terms of differences related to *teacher gender*, students had more positive perceptions of male teachers. Once again, we saw that the highest scores were in the dimensions *safe learning climate, efficient classroom management,* and *clarity of instruction,* indicating that teachers use these methodologies "very often" or "always" (Table 2). In addition, the Kruskal-Wallis test looks at whether there were differences in terms of knowledge area (Table 3). Post hoc analysis of the median scores showed that students felt that science teachers demonstrated fewer competencies compared to arts and humanities teachers in *efficient classroom management* ($Z = -2.87$, $p < .05$, $p_U = .32$), *activating teaching* ($Z = -3.46$, $p < .01$, $p_U = .29$), *differentiation* ($Z = -3.23$, $p < .01$, $p_U = .30$), and *teaching–learning strategies* ($Z = -3.05$, $p < .05$, $p_U = .31$). Science teachers were also perceived as less effective than social sciences and law teachers in: *safe learning climate* ($Z = -3.11$, $p < .05$, $p_U = .41$), *efficient classroom management* ($Z = -4.27$, $p < .001$, $p_U = .37$), *clarity of instruction* ($Z = -3.32$, $p < .001$, $p_U = .40$), *activating teaching* ($Z = -4.85$, $p < .001$, $p_U = .35$), *differentiation* ($Z = -4.39$, $p < .001$, $p_U = .36$) and *teaching–learning strategies* ($Z = -4.52$, $p < .001$, $p_U = .36$).

We then examined the interaction of *student* and *teacher gender* with the type of course being studied. We did this by analysing the differences with regard to the *knowledge area* each course belonged to. On doing this grouping, the differences by *student gender* disappeared; there were no differences between male and female students. However, there were still differences in the interaction of *knowledge area* and *teacher gender* (Table 3). Students doing courses in the arts and humanities, social sciences and law, and engineering had significantly better perceptions of male teachers in the six dimensions of *teaching effectiveness*. It is also interesting to note that the differences were more pronounced in engineering courses, with the students indicating that teachers "seldom" used teaching strategies that promoted a *safe learning climate, efficient classroom management, activating teaching,* or considered *differentiation*.

The influence of teaching effectiveness on academic engagement

The analysis began by focusing on the correlations and descriptive analysis of the variables (Table 4). The relationship between the criterion and predictor variables was clear, as all of the Spearman correlations were greater than .50 with student *emotional engagement*. Although the values for *behavioural engagement* were slightly lower, the relationship was also adequate, with values above .30.

Lastly, we performed a path analysis. Because neither the endogenous nor exogenous variables followed a normal distribution, we used unweighted least squares as the estimator, producing a model identified with TLI and CFI = 1 and $df = 0$. The model parameters were considered unconstrained to produce a generalizable model, and based on the correlations, we removed *safe learning climate, clarity of instruction,* and *teaching–learning strategies* as they did not have significant weight in the first model. The second model had good fit ($\chi^2 = 2.52$, $p < .001$, $df = 3$, TLI = .98, CFI = .99, RMSEA = .04, SRMR = .004), indicating that the variables best predicting *behavioural engagement* and *emotional engagement* were *efficient classroom management, activating teaching*, and *differentia-*

Table 3
Comparison of teaching effectiveness domains considering teachers' gender, students' gender and knowledge areas of degree course

Students' gender								
	Males ($n = 279$) *M (SD) Md*	Females ($n = 500$) *M (SD) Md*	Total *M (SD) Md*	Z^1	Z^2	$p_U{}^1$	$p_U{}^2$	χ^2
Arts and Humanities ($M = 12$, $F = 16$)								
Safe learning climate	3.83 (0.28) 3.90	3.66 (0.31) 3.60	3.73 (0.30) 3.80	−0.41	−2.01*	.44	.28	
Efficient classroom management	3.82 (0.28) 3.94	3.55 (0.44) 3.69	3.66 (0.37) 3.81	−0.91	−1.97*	.36	.28	
Clarity of instruction	3.81 (0.29) 3.93	3.37 (0.44) 3.36	3.56 (0.43) 3.71	−1.07	−2.76**	.33	.20	
Activating teaching	3.74 (0.31) 3.81	3.40 (0.48) 3.37	3.54 (0.44) 3.62	−0.30	−1.86	.45	.29	
Differentiation	3.72 (0.31) 3.70	3.15 (0.56) 3.00	3.39 (0.54) 3.60	−1.30	−2.74**	.30	.20	
Teaching – learning strategies	3.64 (0.37) 3.75	3.09 (0.45) 3.08	3.32 (0.49) 3.33	−0.17	−2.88**	.47	.18	
Sciences ($M = 70$, $F = 31$)								
Safe learning climate	3.47 (0.63) 3.80	3.39 (0.62) 3.60	3.45 (0.63) 3.60	−0.10	−0.94	.49	.44	
Efficient classroom management	3.27 (0.74) 3.50	3.15 (0.71) 3.37	3.24 (0.73) 3.50	−0.08	−1.27	.50	.42	
Clarity of instruction	3.21 (0.78) 3.43	3.10 (0.70) 3.14	3.17 (0.75) 3.28	−0.48	−1.20	.47	.43	
Activating teaching	3.06 (0.77) 3.19	3.01 (0.64) 3.00	3.04 (0.73) 3.12	−0.35	−0.61	.48	.46	
Differentiation	2.91 (0.78) 3.00	2.84 (0.69) 3.00	2.89 (0.75) 3.00	−0.12	−0.54	.49	.47	
Teaching – learning strategies	2.92 (0.71) 3.00	2.83 (0.63) 3.00	2.90 (0.69) 3.00	−0.50	−0.69	.47	.46	
Health Sciences ($M = 9$, $F = 38$)								
Safe learning climate	3.78 (0.33) 4.00	3.53 (0.76) 3.80	3.57 (0.71) 3.80	−1.45	−0.79	.37	.42	
Efficient classroom management	3.72 (0.50) 3.87	3.36 (0.82) 3.75	3.43 (0.78) 3.87	−0.99	−1.35	.40	.36	
Clarity of instruction	3.70 (0.52) 4.00	3.34 (0.83) 3.64	3.41 (0.79) 3.71	−0.49	−1.36	.45	.36	
Activating teaching	3.55 (0.54) 3.75	3.25 (0.87) 3.62	3.31 (0.82) 3.62	−1.04	−0.72	.40	.42	
Differentiation	3.44 (0.62) 3.60	3.09 (0.80) 3.20	3.16 (0.78) 3.20	−0.73	−1.32	.43	.36	
Teaching – learning strategies	3.43 (0.48) 3.00	3.07 (0.86) 3.17	3.14 (0.81) 3.17	−1.60	−1.02	.35	.39	
Social Sciences and Law ($M = 129$, $F = 383$)								
Safe learning climate	3.72 (0.44) 3.80	3.61 (0.49) 3.80	3.64 (0.48) 3.80	−0.89	−2.08*	.47	.44	
Efficient classroom management	3.65 (0.46) 3.75	3.51 (0.53) 3.75	3.55 (0.52) 3.75	−1.72	−2.46**	.44	.43	
Clarity of instruction	3.56 (0.51) 3.71	3.40 (0.59) 3.57	3.44 (0.58) 3.57	−0.80	−2.80**	.47	.42	
Activating teaching	3.50 (0.54) 3.62	3.37 (0.57) 3.50	3.41 (0.56) 3.50	−0.76	−2.74**	.47	.42	
Differentiation	3.32 (0.60) 3.40	3.20 (0.62) 3.20	3.24 (0.61) 3,20	−1.06	−1.94*	.46	.44	
Teaching – learning strategies	3.35 (0.59) 3.35	3.18 (0.62) 3.17	3.23 (0.62) 3.33	−1.02	−2.79**	.46	.42	
Engineering ($M = 59$, $F = 32$)								
Safe learning climate	3.77 (0.33) 4.00	2.76 (1.16) 3.00	3.41 (0.88) 3.80	−0.66	−4.31***	.46	.24	
Efficient classroom management	3.67 (0.46) 3.87	2.67 (1.26) 3.18	3.32 (0.95) 3.75	−0.93	−4.01***	.44	.25	
Clarity of instruction	3.59 (0.49) 3.85	2.61 (1.27) 3.00	3.25 (0.96) 3.71	−0.76	−3.00***	.45	.31	
Activating teaching	3.45 (0.48) 3.62	2.44 (1.14) 3.00	3.10 (0.91) 3.37	−0.02	−4.24***	.50	.23	
Differentiation	3.34 (0.57) 3.40	2.40 (1.11) 2.90	3.01 (0.92) 3.20	−0.65	−3.92***	.46	.25	
Teaching – learning strategies	3.35 (0.58) 3.50	2.37 (1.12) 2.83	3.00 (0.93) 3.17	−0.16	−4.07***	.53	.24	
Total								
Safe learning climate	3.67 (0.48) 3.80	3.54 (0.62) 3.80	3.59 (0.57) 3.80	−2.51**	−2.83**	.44	.44	10.55*
Efficient classroom management	3.57 (0.56) 3.75	3.42 (0.67) 3.62	3.48 (0.63) 3.75	−3.36***	−3.17**	.42	.43	18.59***
Clarity of instruction	3.50 (0.60) 3.71	3.33 (0.70) 3.57	3.39 (0.67) 3.57	−2.35*	−3.46***	.44	.43	12.88**
Activating teaching	3.40 (0.62) 3.62	3.28 (0.69) 3.50	3.32 (0.67) 3.50	−2.91**	−2.34*	.43	.45	30.02***
Differentiation	3.24 (0.66) 3.40	3.12 (0.70) 3.20	3.17 (0.69) 3.20	−3.10**	−2.41*	.43	.45	21.86***
Teaching – learning strategies	3.25 (0.64) 3.33	3.10 (0.71) 3.17	3.16 (0.69) 3.17	−2.78**	−3.10**	.43	.43	21.31***

Note. 1. Differences according to students' gender; p_U = effect sizes. 2. Differences according to teachers' gender. p_U = effect sizes: X^2 = Kruskal-Wallis test.
*$p < .05$, **$p < .01$, *** $p < .001$.

Table 4
Correlations between the dimensions of teaching effectiveness and academic engagement

	LC	CM	CI	AT	DI	TLS	BE
Classrrom climate (LC)							
Efficient classroom management (CM)	.86 ***						
Clarity of instruction (CI)	.82***	.87***					
Activating teaching (AT)	.82***	.86***	.85***				
Differentiation (DI)	.79***	.85***	.85***	.90***			
Teaching - learning strategies (TLS)	.78 ***	.84***	.84***	.88***	.89***		
Behavioural engagement (BE)	.41***	.46***	.41***	.43***	.42***	.38***	
Emotional engagement (EE)	.57***	.63***	.57***	.60***	.60***	.68***	.57***

*$p < .05$, **$p < .01$, *** $p < .001$.

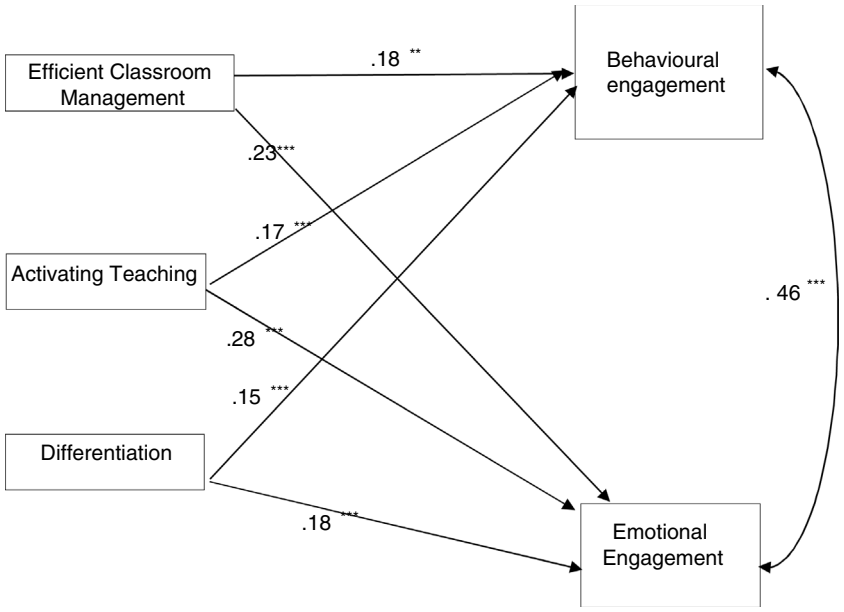

Figure 1. Influence of teaching competencies on students' behavioural engagement and emotional engagement, considering the knowledge areas of the degree courses being studied.
*$p < .05$, **$p < .01$, ***$p < .001$.

tion. The percentage of variance explained was 18% in *behavioural engagement* and 42% in *emotional engagement* (Figure 1).

Discussion

Although there is a long history of researching teaching behaviour generally, in Spanish-speaking countries it has been less extensive, especially when considering an approach that can be applied in various educational stages, one of the principal contributions of this line of research. One of the most interesting aspects of research such as this is that it deals with constructs that have a certain margin for improvement, offering shared knowledge that seems to be key to ensuring teaching quality (Devlin & Samarawickrema, 2010), which comes from information provided by the student, one of the main strengths of this line of study proposed by Pascual and Gaviria (2004) and Van der Lans et al. (2015).

The instrument we used has a variety of indicators and dimensions, responding to the complexity of the reality for which it was adapted—university teaching—and it is put forward as a reliable, low-cost mechanism for reviewing teaching practices and supporting teachers' continual professional development. To that end, in this study we sought to analyse the general level of *teaching effectiveness*, to determine the influence of certain variables (*teacher* and *student gender, knowledge areas* of the courses), and how all of that determines students' *academic engagement*.

Our results allow us to confirm our first hypothesis (H1) by showing that university students' perceptions of *teaching effectiveness* is in the range 3.16–3.59 (good). Our data are consistent with previous studies (Fernández-García et al., 2019; Maulana et al., 2015a, 2017; Van de Grift et al., 2014), also confirming our second hypothesis (H2), as the results confirmed that students' perceptions of teachers was lowest in the more complex dimensions (*activating teaching, differentiation,* and *teaching–learning strategies*), with the latter being where we saw clear differences compared to the remaining dimensions, as the effect sizes demonstrate, reaching 71% in the differences with *efficient classroom management*). This data provides an initial identification of needs, which can lead to recommendations for improving teacher performance in specific areas.

Although the influence of *student gender* was not significant (the differences we found that suggested female students had better perceptions of *teaching effectiveness* disappeared when we took *knowledge areas* into account), *teacher gender* did seem to be significant (perceptions of male teachers were better than perceptions of female teachers). This leads us to reject hypotheses 3 and 4, and is in line with the results from Opdenakker et al. (2012), but in contrast to other research with trainee teachers (Maulana et al., 2017) and with teachers in other stages of the Spanish education system (Fernández-García et al., 2019). Our study also seems to indicate that *teacher gender* has more influence on female students' perceptions.

Our analysis also indicated differences in the perceptions of *teaching effectiveness* from students doing different degrees, which leads us to reject hypothesis 5. The perceptions of students doing

degrees in arts and humanities, social sciences and law, and health sciences were better. In line with conclusions from Devlin & Samarawickrema (2010), it is worth noting that university teaching practices are in a disciplinary context that varies enormously depending on the departments and faculties, circumstances that may have a fundamental influence on what is understood as *teaching effectiveness* and which should not be forgotten when interpreting the results.

On the other hand, it is important to bear in mind that it is essential to distinguish between the students' perception of *teaching effectiveness* and the dimensions of that effectiveness which most influence the students. Our results were slightly different in terms of the dimensions that were perceived more positively (*safe learning climate, efficient classroom management,* and *clarity of instruction*) and those that best predicted *academic engagement*: *efficient classroom management, activating teaching,* and *differentiation*. It is also important to highlight that the strongest correlations with those six dimensions were with *emotional engagement*, with lower values for *behavioural engagement*, confirming findings from other stages in our educational system (Inda-Caro et al., 2019). Our results are also consistent with empirical evidence reflecting the relationship between teaching behaviours and *academic engagement* (Furrer & Skinner, 2003; Maulana et al., 2015b, 2017; Opdenakker et al., 2012). Lastly, we can confirm hypothesis number 6, all of the dimensions had good scores, although in the end only three remained in the model due to their predictive capacity. This is in contrast to data from Maulana et al. (2017), who used an observational instrument and found that the dimensions that best predicted *academic engagement* were *efficient classroom management* and *clarity of instruction.*

The sample in this study was restricted, which means appropriate caution must be used when extrapolating the results to other contexts. Similarly, because the participation in the study of students from different *knowledge areas* was not representative of the proportions in each degree in the population, and owing to possible bias in the interpretation, we chose not to do multigroup analysis. We took a conservative approach to the data analysis, but in this same regard, we also considered non-parametric tests to examine the differences in measures of central tendency between non-balanced groups.

Finally, it is important to note that this study looked at perceptions in relation to specific degree courses, which makes it impossible to make generalizations from the overall assessment of university *teaching effectiveness*.

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