



Research article

Factors that influence the university's inclusive educational processes: perceptions of university professors

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ABSTRACT

Background: Training in attention to diversity is a key aspect for achieving the inclusion of students with special educational needs in higher education for these students to have access to the same rights as any other student.**Aims:** To determine, through the perceptions of university professors, if the existence of barriers that arise in the teaching-learning process is determined by various factors of interest such as gender, training in attention to diversity, and, even, the attitudes that the professors present before the inclusion of these students.**Methods and procedures:** The research was carried out in eight universities in Andalusia (Spain), using as the main method of data collection a validated survey, the APTD Scale (Accessibility, Processes, Training, Demand), with the participating sample of 580 university professors.**Outcomes and results:** The university professors generally agree to perform inclusive actions in their teaching-learning process, although a significant association between variables.**Conclusions and implications:** The study includes a series of perceptions that may help other university professors to make their practice more inclusive.

What does this paper add?

This research's main novelty is to show, through the perceptions of university professors, what factors generate exclusion and how this situation can be reversed.

This article analyses the association between the attitudes that professors have regarding the inclusion of students with special educational needs in the university and the inclusive educational processes they use in their teaching-learning process.

The continuous training of university professors in inclusive responses and strategies is necessary to not be an obstacle in the development of students with special educational needs as well as the establishment of positive relationship between professors and students.

Professors are essential to create and support inclusive processes in the university classroom since they have to respond to the students' needs by making the necessary adjustments in their teaching-learning process, taking into account their abilities, needs, and interests.

1. Introduction

Inclusive education is a human right and the central axis for achieving a fair and equitable society (European Agency for Development in Special Needs Education, 2012). The concept of inclusive education implies a process aimed at providing an educational response to all students, in other words, they can be present, participate and advance in a common educational context through the use of methodological strategies that allow the lifelong learning of all (Ainscow, 2016; Crisol, 2019; Moriña, 2017; UNESCO, 2015). Moreover, this process is linked to the recognition of and attention to the educational needs of all students (Liasidou, 2014).

Traditionally, the study of the evolution of inclusive practices has been focused on non-university educational levels. In this context, a large number of studies focus on analysing the inclusion of students with special educational needs at the childhood, primary, and secondary education levels (Azorín Abellán, 2017; De Haro Rodríguez et al., 2020; Domínguez et al., 2016). Considering that inclusive education at university is the key sector that ensures the development of the potential of all students (UNESCO, 2009), the interest in implementing inclusive practices and their scientific study has arrived with a significant delay in higher education (Polo et al., 2018).

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Taking as reference the IV University and Disability Study, the access of students with special educational needs to higher education has been increasing slowly but steadily (Universia Foundation, 2018). However, UNESCO (2015) points out various inequalities regarding access to university for this group of students and voices its commitment to eliminate such inequalities as a primary goal in the Education 2030 agenda. Due to this situation, not only the opportunity to study at the university must be guaranteed for students with special educational needs, but they will also need to find professors trained and willing to understand their needs, and further trained to develop different materials in their subjects or to use various evaluation methodologies and strategies (Campoy-Cubillo and Fortea-Bagán, 2020). The European Disability Strategy (2010–2020) contemplated the understanding of the teaching-learning process in higher education for special educational needs and identified the need to provide training and support for education professionals (European Commission, 2010). Hence, the professors are a key piece in achieving an inclusive higher education (Llorent et al., 2020).

In this way, this study's purpose is to identify the actions and inclusive educational processes that university professors use to respond to students with special educational needs in the teaching-learning process, as well as their attitudes towards inclusion. In addition, the relationship between such variables and other factors of interest, such as the professors' gender and training in attention to diversity, is also analysed.

1.1. Theoretical framework

According to the consulted literature, studies on inclusive education in higher education have mainly focused on the training of university professors in attention to diversity, the use of inclusive educational processes as methodological strategies for learning, and the attitudes of professors towards students with special educational needs.

Some studies focused on training in attention to diversity highlight a lack of training in the types of disability and specific educational needs, as well as a lack of knowledge of disability legislation, and inclusive practices and methodologies (Black et al., 2014; Cook et al., 2009; Gelbar et al., 2015; Moriña et al., 2020). In other studies, however, we found authors such as Debrand and Salzberg (2005); Hockings et al. (2012); Moriña (2019); Murray et al. (2014); Rohland et al. (2003); Simpson (2002) and Sowers and Smith (2004), who have designed training programs based on inclusive education and disability, university regulations, knowledge of supports for students with special educational needs, and awareness of disabilities in order to address the scarcity of teacher training on such topics. It is essential that professors have the necessary knowledge to identify students' needs in order to make adjustments and implement effective strategies (Comes et al., 2011; Love et al., 2015; Moriña and Carnerero, 2020).

The second point is concerned with the development of inclusive practices carried out in the teaching-learning process. The literature emphasises the need to improve attention to students with special educational needs (Álvarez and López, 2015; Sánchez and Carrión, 2010). For this reason, university professors must use diverse teaching strategies (Seatter and Ceulemans, 2017), and inclusive and innovative methodologies (Moriña, 2020; Tal-Saban and Weintraub, 2019), so that all students can benefit from these strategies (Evans et al., 2015; Perera and Moriña, 2019), helping them to be more motivated and involved (Almarghani and Mijatovic, 2017).

The last point is oriented around professors' attitudes towards inclusion. In this regard, the literature argues that attitudes can facilitate or hinder inclusion in the educational context (Messiou et al., 2016). Some studies reveal that university professors have negative attitudes towards students with special educational needs (Hong and Himmel, 2009; Magnus and Tøssebro, 2014; Moriña et al., 2015). While others suggest that professors' attitudes towards inclusion are positive, although they highlight that more effort is needed to ensure that these students have equal opportunities to progress academically (Martins et al., 2018).

Other research studies focusing on professors' attitudes towards inclusion show that factors such as the professors' gender or amount of training in attention to diversity can influence these attitudes. In regard to diversity training, the literature indicates that professors who are trained have more positive attitudes towards inclusion and show skills for developing inclusive actions (Davies et al., 2013; Hong, 2015; Lombardi et al., 2011; Murray et al., 2011). Conversely, when professors do not have the training, they show negative attitudes towards inclusion (Collins et al., 2019; Moswela and Mukhopadhyay, 2011). They are reluctant to make inclusive adaptations (Mutanga, 2018), and may even feel stressed due to lack of knowledge and time to make these adaptations because they consider them to be an unrecognised workload (Riddell et al., 2007; Weiss et al., 2018). Finally, although there seem to be few studies that analyse the relationship between a professor's gender and an inclusive attitude, the literature indicates that female professors showed more positive attitudes towards inclusion (Álvarez and Buenestado, 2015; Avramidis and Norwich, 2002) and the use of inclusive methodologies in their teaching-learning process (Llorent et al., 2020). Other studies concluded that men were more in favour of carrying out actions and inclusive educational processes in their classes (Emmers et al., 2020).

Since the findings of these studies are contradictory, it remains relevant to carry out analyses in different cultural contexts. The main research question, which we attempt to answer throughout this study, is: Do the university professors respond with positive attitudes towards the inclusion of students with special educational needs through the use of actions and inclusive educational processes in their classes? Several other questions that will be answered in the course of this study proceed from this main research question:

- Is the training in attention to diversity presented by university professors related to the development of inclusive practices?
- Is the gender of university professors related to the development of inclusive practices?
- Is there an association between university professors' training in attention to diversity and their attitudes towards inclusion of students with special educational needs?
- Is there an association between university professors' gender and their attitudes towards inclusion of students with special educational needs?

2. Method

2.1. Participants and procedures

The population under study was made up of 2,025 participants, comprised of the professors who teach at the Faculty of Education of the eight public universities of Andalusia's Autonomous Community (Spain). Stratified random sampling was performed, using the province where the university was located and the gender of the respondents as stratification variables. From January 2019 to April 2019, the professors were invited to participate in this research. Professors from the different universities were contacted by e-mail, informing them about the aim of the research and the relevance of the study. In the requests for participation, the anonymity of the participants was respected at all times and they were informed that the Ethics Committee of the Vice-Rectorate for Research of the University of Jaén approved the study (R: ABR.18/9.TES), attaching an anonymous link to the online questionnaire that was designed using Google Forms for the collection of information (the answers were received automatically via Google Drive). As a pre-fieldwork step, the optimal sample size was estimated for a 95% confidence level and a maximum estimation error of 5%. The calculations yielded an optimal sample size of $n = 323$ professors, a figure that was largely exceeded by obtaining 580 valid responses. To complete the description of the participating sample, 12.1% of the professors who participated in this study have never taught students with special educational needs and 39% of the professors surveyed have not attended complementary training

activities related to attention to diversity and inclusion (courses, conferences, seminars, Master's degree, etc). The remaining socio-demographic characteristics of the sample are described in Table 1 and Figures 1 and 2.

Figures 1 and 2 represent the distribution of the age ranges of the respondents, as well as their length of service as a professor at the university.

2.2. Measures

This research uses a survey as the main method of data collection, which incorporated items from a new scale called the "APTD scale". This is a tool that allows us to analyse the perceptions of university professors regarding the inclusion of students with special educational needs in higher education. The questionnaire was structured in three main sections.

- The first section is devoted to socio-demographic data (university, gender, age, length of time as a professor at the university, professional category, areas of knowledge, students with special educational needs who have been taught and complementary training activities related to attention to diversity such as courses, conferences, seminars, Master's degree).
- A second section consists of short dichotomous questions (yes/no) which collect the attitudes that professors have towards the inclusion of students with special educational needs at university.
- A third section encompasses a scale of 21 items distributed in different dimensions/factors. The measurement scale used is a Likert-type scale with answers ranging from 1 to 7 (1 = totally disagree, 7 = totally agree). For the construct validity of the scale, an Exploratory Factor Analysis (EFA) was first performed to discover the factor structure. The data was appropriated to carry out this type of analysis, the KMO indicator reaching the value 0.893, and the Bartlett test was statistically significant with the values $\chi^2_{(210)} = 4.675,35$ and $p < 0.001$. Four clearly defined factors were obtained that represented 67.25% of the total variance, the dimensions showing a good level of reliability evaluated through internal consistency:

1°) Accessibility to the university campus: focused on detecting the barriers that limit the access of students with special educational needs to the university campus ($\alpha = .857$; $\omega = .859$).

2°) Actions and inclusive educational processes: identifies the actions and inclusive educational processes of the university professors to provide answers to students with special educational needs ($\alpha = .873$; $\omega = .878$).

3°) Permanent training: aims to find out about the ongoing training of university professors in processes of attention to diversity ($\alpha = .932$; $\omega = .933$).

4°) Demanded training: explores the training in attention to diversity demanded by the professors from the university ($\alpha = .951$; $\omega = .951$).

Then, to confirm the existence of four dimensions/factors on the proposed scale, we performed a Confirmatory Factor Analysis (CFA). The four factors extracted showed good internal consistency and formed a consistent scale. The scale was named the APTD due to the name of the different factors comprising it: Accessibility to the university campus; actions and inclusive educational Processes; permanent Training; Demanded training. Nevertheless, in this study, we have only focused on the second dimension: "Actions and inclusive educational processes", therefore, we have carried out an individual validation process of this scale for this study.

2.3. Analysis of data

Statistical analyses have been carried out using version 25 of the IBM statistical package (IBM Corp. Released, 2017) and R (R Core Team, 2018). In addition to the basic descriptive statistics (frequencies), other statistical procedures were performed.

On the one hand, the internal consistency of the measurement scale was evaluated through two indicators. First, the Cronbach's alpha coefficient (α) is often used as a measure of the internal consistency of a test or scale, with the acceptable values for this coefficient varying between a minimum of .7 and a maximum of .95 (Tavakol and Dennick, 2011). Given that the use of this coefficient is not exempt from criticism (Dunn et al., 2014; Sijtsma, 2009), the omega (ω) coefficient (McDonald, 1999) was also calculated; this has been proposed as an alternative that makes it possible to overcome some of the disadvantages inherent to the Cronbach's alpha coefficient (Dunn et al., 2014). For the calculation of these coefficients (ω ; α), and corresponding confidence intervals at 95%, the R Statistical Package and "userfriendlyscience" library (Peters and Jorn, 2018) were used, and to validate the measurement scale we used the *lavaan* package available in R (Rosseel, 2012).

On the other hand, a T-test was used to analyse the existence of statistically significant differences between the scores of the items that make up the scale, "Actions and inclusive educational processes" and the variables of the professors' gender and of whether or not the professors have received complementary training in attention to diversity (courses,

Table 1. Demographic characteristics of participants.

| Characteristics | Values | Number | % |
|-----------------------|-------------------|--------|------|
| Gender | Male | 267 | 46 |
| | Female | 313 | 54 |
| University | Almería | 35 | 6 |
| | Cádiz | 52 | 9 |
| | Córdoba | 40 | 6.9 |
| | Granada | 88 | 15.2 |
| | Huelva | 63 | 10.9 |
| | Jaén | 138 | 23.8 |
| | Málaga | 54 | 9.3 |
| | Sevilla | 110 | 19 |
| Areas of Knowledge | Education | 333 | 57.4 |
| | Psychology | 128 | 22.1 |
| | History/Sociology | 34 | 5.9 |
| | Philology | 85 | 17.7 |
| Professional category | Public Official | 208 | 35.9 |
| | Permanent Staff | 93 | 16 |
| | Other | 279 | 48.1 |

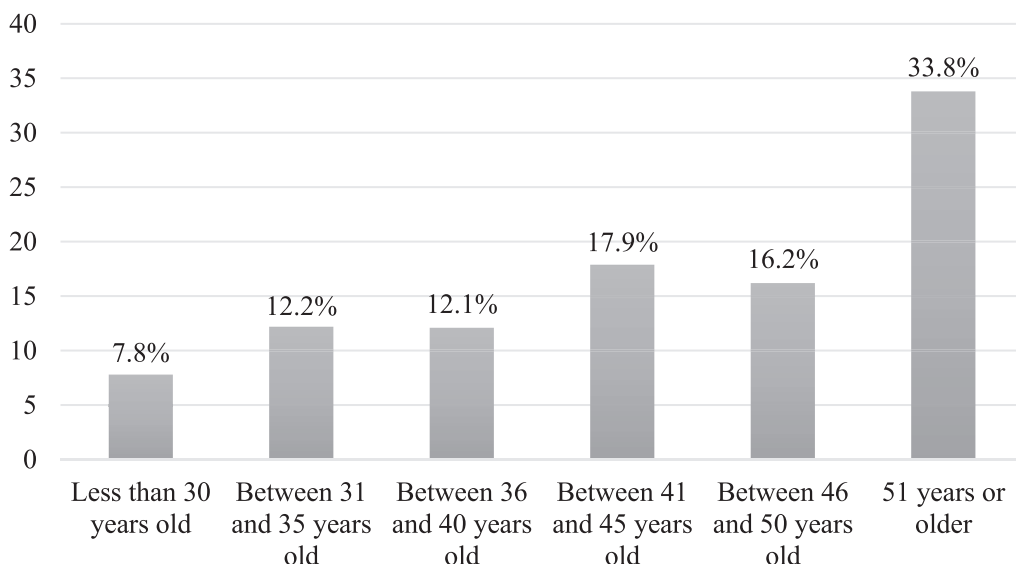


Figure 1. Histogram with age distribution.

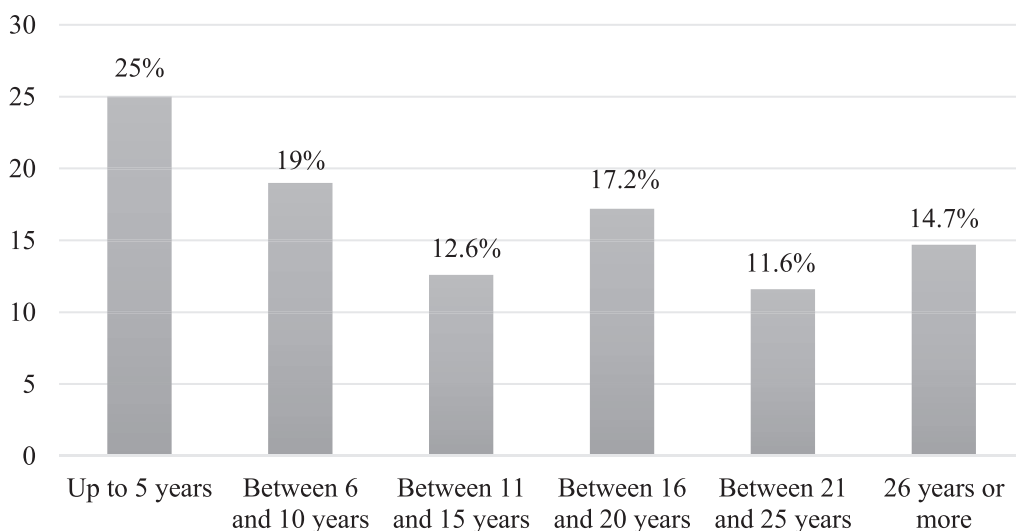


Figure 2. Histogram of work experience.

conferences, seminars, Master's degree). The T-test was chosen because it has been proved robust in the face of the violation of the normality hypothesis when the sample size is large enough, as in this case (Edgell and Noon, 1984; Lumley et al., 2002). The effect size test was calculated by interpreting the effective size between significant differences, following the guidelines of Cohen (1991). Finally, the chi-square test was calculated by using the contingency table procedure to determine the existence of a statistical association, on the one hand, between the variables: professors' gender and whether or not the professors have received complementary training in attention to diversity (courses, conferences, seminars, Master's degree), and on the other hand, between these two variables and the professors' attitudes towards inclusion.

3. Results

3.1. Validation process of the scale used in the study

First, we proceeded to validate the "Actions and educational inclusive processes" scale using the *lavaan* package available in R (Rossee, 2012). After verifying that the hypothesis of multivariate normality could not be

assumed, and given the ordinal nature of the measurement scales of the different items, we estimate the model using the WLSMV method available from *lavaan*. Table 2 shows the results after estimating the model, including factor loadings, indicators of goodness of fit of the one-dimensional model, and indicators of the validity and reliability of the scale. The information shown in Table 2 indicates that the fit of the model was good, and that the scale is valid and reliable.

3.2. Descriptive analysis of the scale items

Table 3 shows descriptive statistics of the individual items comprising the "Actions and inclusive educational processes" scale as well as the score calculated as the arithmetic mean of the five items considered.

In the global assessment of the items, it is shown that the mean score of the total of the scale is above the average ($M = 5.52$; $SD = 1.168$), which means that, in general, the professors agree on carry out inclusive actions in their teaching-learning process. However, analysing each score in detail, we find that the professors are less convinced about the modification of content in the subjects to adapt them to the characteristics of these students (Item 1: $M = 4.30$; $SD = 2.082$). However,

Table 2. One factor model estimation results for “Actions and educational inclusive processes” using WLSMV estimator.

| Items | Estimate | Std.Err. | Z-value | Standardized solution |
|---|--|----------|---------|-----------------------|
| Item 1 Professor must modify content in the subjects to adapt them to the characteristics of students with special educational needs | 1.000 | | | 0.541 |
| Item 2 Professor must modify the activities to be developed in the subjects to adapt them to the characteristics of students with special educational needs | 1.643 | 0.085 | 19.314 | 0.889 |
| Item 3 Professor must make modifications to the materials used in the activities to adapt them to the characteristics of students with special educational needs | 1.734 | 0.102 | 16.984 | 0.938 |
| Item 4 I believe that students with special educational needs should be provided with materials appropriate to their educational needs | 1.264 | 0.072 | 17.458 | 0.684 |
| Item 5 Professor makes modifications to the methodology to adapt it to the characteristics of students with special educational needs (exemplifications, use of visual aids, sequencing of tasks, etc.) | 1.472 | 0.079 | 18.650 | 0.797 |
| Goodness-of-fit indexes | Robust Chi Square = 6.213 df = 3 (p = 0.102) Comparative Fit Index (CFI) = 0.999 Tucker-Lewis Index (TLI) = 0.998 RMSEA = 0.043 90 percent confidence interval RMSEA: [0.000, 0.091] p-value RMSEA <0.05 = 0.517 SRMR = 0.013 | | | |
| Scale reliability | Cronbach Alpha = 0.8130 Ordinal Cronbach Alpha = 0.8898 Omega = 0.8023 Average Variance Extracted (AVE) = 0.6133 | | | |

professors agree to provide students with special educational needs with materials appropriate to their educational needs (Item 4: M = 6.29; SD = 1.035). In addition, the professors consider that they must make modifications in the activities to be developed in the subjects (Item 2: M = 5.38; DT = 1.646), in the materials used (Item 3: M = 5.65; DT = 1.460) and in the methodology (Item 5: M = 5.99; DT = 1.295) to adapt the teaching-learning process to the characteristics of students with special educational needs.

3.3. Analysis of differences between gender

To determine if gender is a relevant factor when explaining the score obtained for the scale of interest, a T-test was calculated to find out if there is a relationship between carrying out inclusive educational

processes in the classroom and professors' gender, obtaining the results shown in Table 4.

As Table 4 shows, the mean scores for the different items are higher in females than in males. However, the test of differences between means indicates that such differences are not statistically significant in all cases. We see that for item 1 the differences are not statistically significant, while for item 3 the significance is relative (p < 10%). In the case of item 2, the differences are statistically significant at 5%, while for items 4, 5 and the total scale, this significance is 1%. Taking into account Cohen's indications (1991) for the interpretation of effect size, these significant differences can be considered as weak (d < .80). This means that female professors are more conforming than male professors in considering that the professors should make modifications in activities, in materials, in providing appropriate materials and

Table 3. Descriptive statistics.

| Items | N | Min. | Max. | Mean | Std. Dev. | Skewness | Kurtosis |
|---|-----|------|------|------|-----------|----------|----------|
| Item 1 Professor must modify content in the subjects to adapt them to the characteristics of students with special educational needs | 580 | 1 | 7 | 4.30 | 2.082 | -.272 | -1.190 |
| Item 2 Professor must modify the activities to be developed in the subjects to adapt them to the characteristics of students with special educational needs | 580 | 1 | 7 | 5.38 | 1.646 | -1.083 | .554 |
| Item 3 Professor must make modifications to the materials used in the activities to adapt them to the characteristics of students with special educational needs | 580 | 1 | 7 | 5.65 | 1.460 | -1.182 | 1.067 |
| Item 4 I believe that students with special educational needs should be provided with materials appropriate to their educational needs | 580 | 1 | 7 | 6.29 | 1.035 | -1.604 | 2.626 |
| Item 5 Professor makes modifications to the methodology to adapt it to the characteristics of students with special educational needs (exemplifications, use of visual aids, sequencing of tasks, etc.) | 580 | 1 | 7 | 5.99 | 1.295 | -1.561 | 2.580 |
| Total Scale | 580 | 1 | 7 | 5.52 | 1.168 | -.751 | .382 |

Table 4. Analysis of differences according to gender (differences in average scores).

| Items | Male (n = 267) | Female (n = 313) | Mean Diff. | Sig. (2-tailed) | Cohen's d |
|---|----------------|------------------|------------|----------------------|-----------|
| Item 1 Professor must modify content in the subjects to adapt them to the characteristics of students with special educational needs | 4.22 | 4.36 | -.139 | .422 ^{n.s.} | -0.07 |
| Item 2 Professor must modify the activities to be developed in the subjects to adapt them to the characteristics of students with special educational needs | 5.23 | 5.51 | -.279 | .042** | -0.17 |
| Item 3 Professor must make modifications to the materials used in the activities to adapt them to the characteristics of students with special educational needs | 5.52 | 5.76 | -.237 | .052* | -0.16 |
| Item 4 I believe that students with special educational needs should be provided with materials appropriate to their educational needs | 6.14 | 6.42 | -.286 | .001*** | -0.28 |
| Item 5 Professor makes modifications to the methodology to adapt it to the characteristics of students with special educational needs (exemplifications, use of visual aids, sequencing of tasks, etc.) | 5.78 | 6.18 | -.393 | .000*** | -0.31 |
| Total Scale | 5.38 | 5.64 | -.266 | .006*** | -0.23 |

Note: n.s. not significant; *p<10%; **p<5%; ***p<1%.

in modifying the methodology to adapt to the characteristics of students with special educational needs.

3.4. Analysis of differences between training received

Similarly to the gender factor, to check whether having received complementary training in attention to diversity (courses, conferences, seminars, Master's degree) is related to carrying out inclusive educational processes in the classroom, a T-test was used again. The results obtained are summarized in Table 5.

In this case (see Table 5), it was found that complementary training in attention to diversity (courses, conferences, seminars, Master's degree) significantly increases the score, both in the global scale and in the items that integrate it (p < 0.01). Despite the fact that professors agree to carry out inclusive educational processes, the training that the professors have in attention to diversity is related to their conformity in carrying out these inclusive actions, since for those who have received training, their mean score is statistically significant in all the items of the scale. Taking into

account Cohen's indications (1991) for the interpretation of the effect size, these significant differences can be considered as weak (d < .80).

3.5. Analysis of the association between variables

Given the previous results, in which gender and previous training are determining factors of the values reached in the "Actions and inclusive educational processes" scale, the contingency tables procedure was used to analyse the association between these variables and others of interest related to respondents' attitudes towards inclusion.

First, a statistically significant association was found between gender and having received or not received complementary training activities in the field of attention to diversity. The results indicate that women show a greater tendency than men to train in these areas ($\chi^2_{1df} = 8.396, p = .004$). In this way, of the professors who indicate having received complementary training in attention to diversity (courses, conferences, seminars, Master's degree), 58.8% are women compared to 41.2% of men.

Table 5. Impact of having received training on scores (differences in average scores).

| Item | No (n = 226) | Yes (n = 354) | Mean Diff. | Sig. (2-tailed) | Cohen's d |
|---|--------------|---------------|------------|-----------------|-----------|
| Item 1 Professor must modify content in the subjects to adapt them to the characteristics of students with special educational needs | 3.97 | 4.51 | -.535 | .002*** | -0.26 |
| Item 2 Professor must modify the activities to be developed in the subjects to adapt them to the characteristics of students with special educational needs | 5.08 | 5.58 | -.497 | .000*** | -0.30 |
| Item 3 Professor must make modifications to the materials used in the activities to adapt them to the characteristics of students with special educational needs | 5.33 | 5.85 | -.526 | .000*** | -0.37 |
| Item 4 I believe that students with special educational needs should be provided with materials appropriate to their educational needs | 6.13 | 6.40 | -.263 | .003*** | -0.26 |
| Item 5 Professor makes modifications to the methodology to adapt it to the characteristics of students with special educational needs (exemplifications, use of visual aids, sequencing of tasks, etc.) | 5.65 | 6.21 | -.564 | .000*** | -0.45 |
| Total Scale | 5.23 | 5.70 | -.476 | .000*** | -0.42 |

Note: ***p<1%.

Table 6. Association between having received previous training and attitudes towards inclusion.

| Questions | Chi Square test results | Conclusions |
|--|---|--|
| Item 1 Specific training of professors is necessary to work with students with special educational needs | $\chi^2_{1df} = 10.036$ p = .002 1% | 63.4% of those who think that training is important have carried out training activities |
| Item 2 I would have difficulties in modifying the contents and materials of my subject to adapt them to the needs of students with special educational needs | $\chi^2_{1df} = 2.013$ p = .156 | No statistically significant association was detected between the analysed variables |
| Item 3 The development of parallel activities for students with special educational needs would be a problem | $\chi^2_{1df} = 10.864$ p = .001 1% | 86.4% of people who have carried out previous training believe that adaptation does not have to be problematic |
| Item 4 I believe that working with students with special educational needs is an added job for professor | $\chi^2_{1df} = 6.825$ p = .009 1% | There is a statistically significant association. Overall, 61.0% of respondents believe that attention to diversity implies a workload for professors. Within this group there are more individuals than have previously been trained against people who have not been trained (55.6% vs. 44.4%) |

Table 7. Association between gender and attitudes towards inclusion.

| Questions | Chi Square test results | Conclusions |
|--|--|--|
| Item 1 Specific training of professors is necessary to work with students with special educational needs | $\chi^2_{1df} = 5.696$ p = .017 5% | Of the professors who consider specific training is important, 55.8% are women and 44.2% are men |
| Item 2 I would have difficulties in modifying the contents and materials of my subject to adapt them to the needs of students with special educational needs | $\chi^2_{1df} = 4.569$ p = .033 5% | Of the professors who find it difficult to make changes to subject content and materials, 46.2% were women and 53.8% were men. Therefore, fewer women than men find the adaptation process difficult |
| Item 3 The development of parallel activities for students with special educational needs would be a problem | $\chi^2_{1df} = 8.665$ p = .003 1% | Of the professors who think that the development of parallel activities would be a problem, 59.2% are men and 40.8% are women. Thus, it is more problematic for male professors than for female professors |
| Item 4 I believe that working with students with special educational needs is an added job for professor | $\chi^2_{1df} = .769$ p = .381 | No statistically significant association was detected between the analyses variables |

Second, the possible association between having received or not received complementary training in attention to diversity (courses, conferences, seminars, Master's degree) and professors' attitudes towards inclusion of students with special educational needs were analysed. Table 6 summarises the chi-square tests results and the conclusions derived from them (the answer to all the questions was dichotomous yes/no). It can be seen that three of the four tests carried out were statistically significant at 1% (items 1, 3, and 4), that is, showing a statistically significant association between the variables analysed. As can be seen, the professors with training in attention to diversity are those who consider that specific training is necessary to attend to students with special needs, and who also believe that the development of parallel activities would not be a problem, although they state for the professors to work with these students would imply a workload (see Table 6).

Finally, the possible association between professors' gender and professor's attitudes towards inclusion of student with special educational needs was analysed. Table 7 summarises the chi-square tests results and the conclusions derived from them. It can be seen that three of the four tests carried out were statistically significant at 5% (items 1 and 2) and 1% (item 3), which indicates that there is a statistically significant association between these variables. As can be seen, more female professors consider specific training for working with students with special educational needs to be important, they also find it less difficult to carry out certain modifications in their subjects, and they would have fewer problems in developing parallel activities for this group of students (see Table 7).

4. Discussions

University professors must be prepared to teach any set of students in the classroom (Moriña, 2020). For this reason, it is important to know what kinds of inclusive actions professors develop in order to adapt the didactic process to the characteristics of students with special

educational needs (Colmenero et al., 2019). Thus, this study offers, through the perceptions of university professors, a description of the actions and inclusive educational processes that they have carried out with this group of students. It also provides the relationship that exists between these inclusive actions and certain factors of interest, such as the professors' training in attention to diversity and their gender. We also consider the association between professors' attitudes towards inclusion and these same factors of interest.

The results obtained in this study demonstrate how the surveyed professors who teach in the Faculties of Education of the different public universities in Andalusia (Spain) are in agreement with the implementation of strategies that allow for the inclusion of students with special educational needs in university classrooms, such as the modification of content, activities, materials, and methodologies to be followed. Thus, these professors are actively involved in carrying out various strategies in the teaching-learning process (Moriña, 2020; Tal-Saban and Weintraub, 2019; Seatter and Ceulemans, 2017). By analysing the relationship between these inclusive actions and the variables of gender and training, we draw conclusions and implications for the improvement of this didactic process.

Concerning the professors' gender, we found significant differences between the two, as female professors are more willing than male professors to carry out inclusive educational processes, which is why we concur with related research (Llorent et al., 2020). In regard to the training in attention to diversity variable, we observed that the professors with training are more willing to carry out inclusive actions in their didactic process, which means that their training allows them to identify the students' needs and have the skills to develop the appropriate adjustments (Comes et al., 2011; Davies et al., 2013; Hong, 2015; Lombardi et al., 2011; Love et al., 2015; Moriña and Carnerero, 2020; Murray et al., 2011). From this perspective, both the professors' gender and their previous training in attention to diversity are factors related to the

development of inclusive practices in the didactic process. We can justify the association between both factors since female professors are more likely to express a willingness to carry out actions and inclusive educational processes and are also the ones who are more willing to complete training in attention to diversity. The results suggest that the development of inclusive practices would increase as professors underwent relevant training.

The literature has shown how professors' attitudes towards inclusion can facilitate or hinder the inclusion of students with special educational needs in higher education (Messiou et al., 2016). The results of this study have shown the association between training in attention to diversity and professors' gender with professors' attitudes towards inclusion, as relevant to the research context of this study. On the one hand, the association between attitudes towards inclusion and having previous training shows that professors trained in this area are the ones who consider it necessary to maintain this training in order to better respond to the students' needs. These professors also felt that it would not be difficult to design parallel activities for students with special educational needs, although it would involve additional work. These results reveal that they have positive attitudes towards inclusion, but highlight that more effort is needed to ensure that students with special educational needs have equal opportunities to make academic progress (Martins et al., 2018; Murray et al., 2011). On the other hand, the association between attitudes towards inclusion and professors' gender suggests that female professors consider specific training to be more necessary than male professors, and would not hesitate to either modify subject content or materials or develop parallel activities for students with special educational needs. Our results thus align with previous research since female professors showed positive attitudes towards inclusion and the ability to use inclusive methodologies in their teaching-learning process (Álvarez and Buenestado, 2015; Avramidis and Norwich, 2002; Llorent et al., 2020). It seems that this differentiation between women and men can be eliminated through more training in attention to diversity, as pointed out by Llorent and Álamo (2016).

5. Conclusion

In conclusion, this study has allowed us to verify, based on the perceptions of the professors who teach in the different Faculties of Education in Andalusia (Spain), their conformity to the implementation of actions and inclusive educational processes and confirm that they have positive attitudes towards inclusion. Therefore, we consider it essential to train professors in aspects related to attention to diversity, as progress towards achieving a high-quality inclusive higher education that is accessible to all students will depend on it.

Through the analysis of the gender and training variables, it has been shown that having the necessary knowledge improves professors' development and understanding of inclusive actions in the classroom, as well as their attitudes towards inclusion. The trained professors have the skills to adapt the didactic process to the students' needs and therefore do not find it difficult to carry out the required adjustments. We can conclude that the role performed by professors is one of the necessary factors that contribute to achieving an inclusive higher education because they have high levels of responsibility in the educational system. Moreover, their training determines their attitudes towards the inclusion of students with special educational needs, as well as the inclusive educational processes that they carry out in their teaching-learning process.

Declarations

Author contribution statement

Nuria González-Castellano: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Wrote the paper.

María Jesús Colmenero-Ruiz: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Euligio Cordón-Pozo: Performed the experiments; Analysed and interpreted the data; Contributed analysis tools or data.

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Data availability statement

The data that has been used is confidential.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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