

Development and validation of a scale to identify attitudes towards disability in Higher Education

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Abstract

Background: Attitudes towards disability in educational settings have prompted various research projects, highlighting the importance of quality tools to measure them. However, there are few studies of disability in universities, and there are no tools that specifically measure this construct within a university context. **Method:** The design and validation of the CUNIDIS ('Questions about University and Disability') Scale, a test aiming to identify attitudes towards disability in Higher Education, are described in this article. A large sample of university participants was included in the research (teaching staff, $n = 422$ and students, $n = 2,767$). **Results:** The results obtained provide evidence of the psychometric quality of the items, adequate reliability, homogeneity and high predictive validity of the tool. **Conclusions:** It is concluded that the scale designed has adequate validity and reliability to detect attitudes towards disability in university contexts. It is therefore presented as a key element in promoting the social dimension of the European Higher Education Area due to its teaching and institutional implications.

Keywords: attitudes, disability, Higher Education.

Resumen

Desarrollo y validación de una escala para la identificación de actitudes hacia la discapacidad en la Educación Superior. **Antecedentes:** las actitudes hacia la discapacidad en entornos educativos han motivado distintas investigaciones que han puesto de relieve la importancia de contar con buenos instrumentos para su medición. Sin embargo, los estudios sobre discapacidad en la Universidad han sido abordados en menor medida y no hay instrumentos que, de manera concreta, evalúen este constructo en contextos universitarios. **Método:** en este artículo se describe el proceso de diseño y validación de la Escala CUNIDIS (Cuestiones sobre UNiversidad y DIScapacidad), que tiene como objetivo identificar las actitudes hacia la discapacidad en la Educación Superior. Se contó con una amplia muestra de universitarios (profesorado, $n = 422$ y estudiantes, $n = 2.767$). **Resultados:** los resultados obtenidos aportan evidencias de la calidad psicométrica de los ítems; una adecuada fiabilidad y homogeneidad del instrumento y una alta validez predictiva. **Conclusiones:** el estudio concluye que la escala diseñada es un instrumento que aporta evidencias de validez y fiabilidad adecuadas para detectar las actitudes hacia la discapacidad en contextos universitarios. Por ello se presenta como un elemento clave para impulsar la dimensión social del Espacio Europeo de Educación Superior por sus implicaciones docentes e institucionales.

Palabras clave: actitudes, discapacidad, Educación Superior.

Disabled students are an emergent group in the educational system as a whole, including Higher Education, as a consequence of extensive regulatory developments, awareness campaigns, and the constant hard work and effort of those supporting this movement. This new framework has had a positive effect, enabling these students to enter university, but it has also resulted in difficulties inherent in all institutions when faced with new circumstances. The data from diverse studies of disabled students in higher education (Eurydice, 2012; OCDE, 2003; Orr, Gwosc, & Netz, 2011) reflect a constant increase in numbers across Europe, including Spain, where they constituted 1.2% of undergraduates in 2013. These data show that the foreseeable potential of disabled

students in universities should be greater than observed in the figures of preceding periods, but actually, their potential decreases at the beginning of the stage of Higher Education.

The extra efforts demanded from European universities should be included in the strategies of change carried out by these institutions to adapt to the requirements of the Bologna Process and its so-called "social dimension," which conceives of Higher Education as promoting social cohesion, and universities as being accessible to everyone. The direction of university policy and its inclusive approach within the European Higher Education Area are both clear. However, their practical development and the effectiveness of their implementation depend on numerous factors, and one of the most influential aspects relates to the attitude of the members of a particular educational community. In this article, attitude is defined as "a learned predisposition to respond in a consistently favourable or unfavourable way toward a given object" (Fishbein & Ajzen, 1974, 1975). Generally speaking, attitude is comprised of three components: cognitive, affective and behavioural components (Olson & Zanna, 1993). Research on this has shown that one of

the most complex obstacles to the socio-educational inclusion of disabled people are the attitudes toward their group and the direct effect on their daily lives (Bunch & Valeo, 2004; Suriá, Bueno, & Rosser Limiñana, 2011).

There have been numerous studies on attitudes toward disability or the perception thereof in the international context. Some of the most important contributions were made in the 1930s and 1940s by Edward Kellogg Strong, Roger Barker and Paul Mussen, who were the driving force behind the first attempts to study objectively—albeit with discrete analysis—attitudes toward disabled people. Subsequently, diverse instruments were developed (Table 1) which have sought to assess attitudes towards disabled people, controlling for distortion in the responses caused by social desirability (White, Gordon, & Jackson, 2006).

At the beginning of the 1960s, Yucker, Block and Young (1966) published the Attitude toward Disabled Persons Scale (ATDP). This unidimensional instrument became a global referent, as can clearly be seen from its translation into thirteen languages (ATDP-Form B), subsequent adaptations (Yucker & Block, 1986), and the comparison of its validity in cross-cultural studies (Grames & Leverentz, 2010). Despite the impression it made, Siller (1970) initially disagreed with this unidimensional conception and published the Disability Factor Scale-General (DFS), the factor structure of which has also been confirmed by other research (Findler, Vilchinsky, & Werner, 2007).

Subsequently, the Scale of Attitudes toward Disabled Persons (SADP) and the Mental Retardation Misconceptions Scale (Antonak, 1982; Antonak & Livneh, 1988) were published. These scales were widely tested in the North American context but,

according to Beckwith and Matthews (1994), they had low levels of internal consistency and were therefore not suitable for longitudinal follow-up studies. To solve this issue, Gething and Wheeler (1992) developed the Interactions with Disabled Persons Scale (IDP), which led to a review of the instrument ATDP-form O (Gething, 1986). The IDP was shown to have adequate cross-cultural validity in a study comparing Australia and South Africa (Forlin, Fogarty, & Carroll, 1999). With this in mind, recent research has adopted a multidimensional approach both to the design of instruments and to educational initiatives concerning the improvement of attitudes toward disabled people (Findler et al., 2007).

Within the Spanish context, several relevant studies have been carried out on attitudes toward disability (Alemany & Villuendas, 2004; Álvarez, Castro, Campo-Mon, & Álvarez-Martino, 2005; García Pastor, 1999; Verdugo, Jenaro, & Arias, 2002), which have mainly focused on the groups to which they belong (teachers, students, disabled persons' groups and so on), teaching staff's attitudes, and families' attitudes. One of the more frequently used instruments in Spain and Latin America is the Attitudes toward Handicapped Persons Scale (Verdugo, Arias, & Jenaro, 1994). This multidimensional tool consists of five factors addressing the perceptions of the capabilities/limitations of disabled persons, the recognition/denial of their rights, personal involvement, and the allocation of roles to handicapped people by the respondents.

In contrast to non-university stages, research on disability in higher education is scarce, and there are no specific assessment instruments available. However, some noteworthy studies have addressed access to university courses (De la Red, De la Puente, Gómez, & Carro, 2002), guidance services and support

Table 1
The Most relevant instruments for measuring attitudes toward disabled persons

Instrument	Author	Year
Attitude Toward Disabled People Scale	Yucker, Block, & Campbell	1966
A scale to measure acceptance of disability	Linkowski	1969
Disability Social Distance Scale	Tringo	1970
Disability Factor Scale-General	Siller	1970
Attitudes Toward Handicapped Individuals	Lazar	1973
Multidimensional Attitude Scale on Mental Retardation	Harth	1974
The Acceptance Scale	Voeltz	1980
Attitudes toward Mainstreaming Scale	Berryman, Neal, & Berryman	1980
Attitude toward Treatment of Disabled Students	Fonosch & Schwab	1981
Scale of Attitudes toward Disabled Persons	Antonak	1982
Disability Social Relationship Scale	Grand, Bernier, & Strohmer	1982
Attitudes toward Handicapped Vocational Students	Clauser	1983
Attitudes toward Disablement Scale	Antonak	1985
Attitudes toward Inclusive Education Scale	Wilczenski	1992
Disabled Persons Scale	Gething & Wheeler	1992
Escala de Actitudes hacia las Personas con Discapacidad [Attitudes toward Disabled Persons Scale]	Verdugo, Arias, & Jenaro	1994
College Student Experiences Questionnaire	Pace & Kuh	1998
Concerns about Inclusive Education Scale	Sharma, Ee, & Desai	2003
Disability Social Relations Generalized Disability Scale	Hergenrather & Rhodes	2007
The Multidimensional Attitudes Scale toward Persons with Disabilities	Findler, Vilchinsky, & Werner	2007

programmes (Forteza & Ortego, 2003; Díez et al., 2008; Trujillo & Cayo, 2006), attitudes and participation in university life (Gómez & Infante; 2004; Konur, 2006; Sachs & Schreuer, 2011), teaching capabilities (Fernández Batanero, 2011), accessibility and universal design (Guasch, Dotras, & Llinares, 2010) and globally, attitudes toward disabled students (Alcantud, Ávila, & Asensi, 2000; Fuller, Bradley, & Healey, 2004). The common denominator of this research is the importance of determining attitudes toward disabled students in the university community, as they are crucial in adapting the institutional initiatives developed along these lines.

Accordingly, the objective of this work was to develop and validate the “Cuestiones sobre Universidad y Discapacidad” Scale (CUNIDIS translated as, ‘Questions about University and Disability’) in order to contextually assess teaching staff and students’ attitudes toward disabled students and the institutional implications of such attitudes within the university setting. The scale was designed to be individually and/or collectively applied to assess these attitudes and thereby modify the influence of educational programmes on teaching and academic relations.

Method

Participants

The sample consisted of 422 university teachers (274 men and 148 women) and 2,767 students (910 men and 1,857 women) in the Canary Islands, representing all the undergraduate degrees offered at the university, being 24% and 10% of the total population of teachers and students, respectively.

The majority (84%) of participating teaching-staff members had taught at the university for over 10 years, in the areas of Architecture and Engineering (26.7%), Social and Legal Sciences (25.6%), Health Sciences (19.9%), Science (14.7%), and Art and Humanities (13.2%). With regard to their link with disability, they stated that they currently have or have had contact with disabled individuals (76.7%), mostly people with motor disabilities (65.8%), visual disabilities (44.7%) and hearing disabilities (32%). Among the reasons for their contact is the presence of disabled students in the classroom (39.8%), workplace (36.8%), through leisure/friendship (27.4%) and through their families (25.9%).

The students were distributed in the study areas of Social and Legal Sciences (51.5%), Engineering and Architecture (26.5%), Art and Humanities (10%), Health Sciences (8%), and Science (7%). Most reported that they had contact with disabled people (74.1%), largely with motor disabilities (52.2%), hearing disabilities (22.4%) and visual disabilities (20.4%), through mainly leisure and friendship (36.5%) and family relationships (27%).

The sample was selected following the cluster sampling guidelines, taking into account the areas of study and degrees (students) and the faculty (teaching staff) as respective sampling units, assuming a confidence interval of 95% and a margin of error of +/- .05.

Instrument

The instrument CUNIDIS Scale was specifically designed in accordance with the stages for the development of measuring instruments (Muñiz & Fonseca-Pedrero, 2008), the empirical selection of items (Prat & Doval, 2003), suitable distribution and assessment clarity (Vallejo, 2006).

Before constructing the scale, a semi-structured interview was conducted with 63 disabled university students in order to determine their difficulties and the attitude that they perceived in their fellow students and the teaching staff. This sample was a non-probabilistic convenience sample and did not respond to statistical

Table 2
Final version of the CUNIDIS Scale [in Spanish]

<i>Indique su grado de acuerdo (de 1 a 5) con las afirmaciones que se realizan</i>				
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Totalmente en desacuerdo</i>	<i>Poco de acuerdo</i>	<i>De acuerdo</i>	<i>Muy de acuerdo</i>	<i>Totalmente de acuerdo</i>
Respecto a los estudiantes con discapacidad, el profesorado debe:				
1. ... adaptar los objetivos de las asignaturas				
2. ... adaptar los contenidos de las asignaturas				
3. ... adaptar la metodología empleada en las clases				
4. ... adaptar las actividades a desarrollar en las asignaturas				
5. ... adaptar los materiales empleados en las actividades				
6. ... adaptar los instrumentos de evaluación/				
7. ... adaptar los criterios de evaluación/calificación				
8. ... adaptar las prácticas de la titulación				
9. ... ampliar el tiempo para exámenes y entregar trabajos				
10. ... realizar tutorías de manera habitual				
Respecto a los estudiantes con discapacidad, en la realidad del aula, el profesorado:				
11. ... adapta los objetivos de las asignaturas				
12. ... adapta los contenidos de las asignaturas				
13. ... adapta la metodología empleada en las clases				
14. ... adapta las actividades a desarrollar en las asignaturas				
15. ... adapta los materiales empleados en las actividades				
16. ... adapta los instrumentos de evaluación				
17. ... adapta los criterios de evaluación/calificación				
18. ... adapta las prácticas de la titulación				
19. ... amplía el tiempo para los exámenes y entregar trabajos				
20. ... realiza tutorías de manera habitual				
Respecto a la accesibilidad de los estudiantes con discapacidad:				
21. ... la Facultad/Escuela no tiene barreras arquitectónicas				
22. ... el equipamiento de las clases está adaptado				
23. ... las condiciones de las clases favorecen el acceso y movilidad				
24. ... la disposición de las clases permite el trabajo en grupo				
25. ... se emplean tecnologías para el seguimiento de las clases				
26. ... los materiales impresos/auditivos de clase están adaptados				
27. ... cuentan apoyos humanos y materiales para seguir las clases				
28. ... realizan todas las prácticas de la titulación				
29. ... participan en todas las actividades en clase				
30. ... tienen similares dificultades que el resto de los compañeros/as				
Respecto a la sensibilización y relaciones de los estudiantes con discapacidad:				
31. ... Las iniciativas universitarias para la sensibilización y concienciación sobre discapacidad son adecuadas				
32. ... Todos los estudiantes pueden participar en las actividades culturales, deportivas y de ocio que se organizan				
33. ... Los compañeros respetan la disposición de la clase para facilitar el acceso y movilidad de estos estudiantes				
34. ... La comunicación con el profesorado es fluida				
35. ... La relación de los estudiantes y el profesorado de la Facultad/Escuela es adecuada				
36. ... La relación de los estudiantes y el resto de compañeros de la Facultad/Escuela es la adecuada				
37. ... El profesorado de la Universidad está formado para dar respuesta a los estudiantes con discapacidad				
38. ... Un estudiante con discapacidad puede estudiar cualquier titulación				
39. ... Un estudiante con discapacidad puede ser un buen profesional				
40. ... La Universidad está preparada para formar y atender a estudiantes con discapacidad				
Ítems 1-10 (Adaptaciones curriculares); 11-20 (Acción docente); 21-30 (Accesibilidad), 31-40 (Comunidad Universitaria)				

Table 3
Descriptive statistics of the items

Item	M	SD	Item-total subscale correlation	Skewness	Kurtosis	Item	M	SD	Item-total subscale correlation	Skewness	Kurtosis
1	3.00	1.28	.724	.04	-.93	21	2.44	1.23	.477	.41	-.60
2	2.85	1.26	.726	1.16	-.89	22	2.21	1.04	.756	.73	.15
3	3.73	1.10	.692	-.56	-.22	23	2.22	1.07	.761	.66	-.19
4	3.69	1.06	.727	-.56	.13	24	2.44	1.16	.637	.43	-.57
5	3.81	1.09	.684	-.68	.13	25	3.06	1.20	.472	-.21	-.38
6	3.16	1.26	.711	-.14	-.85	26	2.65	1.22	.574	.08	-.53
7	3.16	1.26	.711	-.14	-.85	27	2.52	1.21	.544	-.04	-.36
8	3.71	1.16	.634	-.64	-.16	28	2.49	1.34	.424	-.28	-.40
9	3.20	1.31	.525	-.11	-.04	29	2.64	1.30	.444	-.35	-.17
10	3.67	1.17	.509	-.53	-.35	30	2.37	1.27	.470	.10	-.48
11	2.26	1.31	.851	-.04	-.52	31	2.66	1.16	.436	-.10	-.17
12	2.22	1.30	.848	.01	-.54	32	2.69	1.26	.465	.01	-.47
13	2.51	1.40	.873	-.23	-.61	33	3.17	1.29	.619	-.55	-.02
14	2.53	1.41	.877	-.25	-.57	34	3.10	1.22	.726	-.69	.56
15	2.61	1.46	.874	-.24	-.66	35	3.08	1.11	.766	-.67	1.01
16	2.42	1.40	.874	-.09	-.62	36	3.21	1.16	.770	-.90	1.21
17	2.42	1.40	.874	-.09	-.62	37	2.58	1.23	.623	-.11	-.32
18	2.49	1.44	.864	-.17	-.69	38	2.79	1.40	.379	.11	-1.00
19	2.37	1.45	.830	.04	-.76	39	4.19	1.09	.478	-.53	2.42
20	2.65	1.50	.806	-.24	-.74	40	2.72	1.12	.504	-.12	.01

Table 4
Factor analysis of the subscales

Unifactorial subscales	α	Eigenvalues	% of explained variance	% accumulated explained variance
Academic accommodation	.89	43.225	43.225	43.225
Teaching	.93	18.334	18.334	61.559
Accessibility	.87	16.869	16.869	78.428
University community	.80	8.866	8.866	87.294

significance criteria, but rather to structural criteria. Using the qualitative data collected, the review of instruments applied in non-university contexts, and in the reference literature on inclusive education (Ainscow, 2001; Stainback & Stainback, 1999), a preliminary version of the 49-item scale, with four theoretical dimensions (Academic Accommodation, Teaching, Accessibility and University Community) was prepared.

To verify content validity and applicability of the first version, two processes were carried out: (a) We requested 6 experts to analyze the adequacy of the items according to the theoretical dimension on a 5-point Likert scale, using interjudge agreement to eliminate items that caused confusion; (b) A pilot study was conducted with a sample of 742 students and 55 teachers in order to eliminate items that produced errors, due to their formulation or lack of clarity. Nine items that loaded on more than one factor and had been included under a theoretical criterion in one of the

four defined dimensions were eliminated from the initial version. The final 40-item version of the scale (Table 2) has 8 classification variables (gender, age, degree, school course, prior contact with disabled people, cause and type of disability).

Procedure

In the case of the students, the questionnaire was administered collectively during their normal class time, after requesting the teacher's permission. For teachers, the questionnaire was administered individually. The participants were informed that their participation was voluntary and that the data was confidential, in order to avoid the effect of social desirability, and they were asked to answer as honestly as possible. After the data was collected, it was computerised for its subsequent statistical analysis.

Results

Item analysis

Data were analysed with the SPSS 19.0 program. Reliability and factor validity of the instrument were analysed. Additionally, exploratory and confirmatory factor analyses were performed to determine its factor structure. Subsequently, analysis of descriptive statistics (Table 3), analysis of differences of means by sex, group and prior contact, and ANOVAs were conducted as a function of the subject area of the teaching staff and the students. Lastly, discriminant analysis was carried out using Wilks' Lambda. There

were very few missing values in the study and they were treated through single assignment by means of multiple regression.

Validation of the Scale

Reliability analysis. Reliability analysis (internal consistency) revealed a Cronbach's alpha of .921 and the existence of four unifactorial subscales (Table 4) that make up the scale: (a) Academic Accommodation ($\alpha = .898$), (b) Teaching ($\alpha = .931$), (c) Accessibility ($\alpha = .877$) and (d) University Community ($\alpha = .805$). These data were corroborated by the split-half method and Spearman-Brown correction formula ($\alpha = .89$).

Validity analysis. The study of validity followed the systematic process described below. First, item correlations were analysed to identify items presenting low correlations with the rest of the instrument, although all the items had correlations over .73. Second, exploratory factor analysis was carried out and, with a KMO index of .91 and $p < .001$ in Bartlett's sphericity test, four factors were obtained with eigenvalues > 1 , which conjointly explained 87.29% of the total variance. We used the principal components extraction method with varimax rotation to maximise the variance between factors, requesting four factors corresponding to the four defined theoretical dimensions.

Descriptive analysis was also performed on the items with skewness and kurtosis coefficients close to zero and below 2.0 respectively, as recommended by Bollen and Long (1994), which indicates similarity to the normal curve. To verify the factor structure in the general population, confirmatory factor analysis with the AMOS module of the SPSS 19.0 was carried out, yielding a good fit of the proposed model: $\chi^2 = 897.029$, $p < .000$; comparative fit index (CFI) of .96 and root mean square error of approximation (RMSEA) of .63, in accordance with the criteria of various authors (Byrne, 2010; Hu & Bentler, 1999).

Predictive validity. Predictive validity was analysed using the results of a discriminant analysis, taking as the criterion whether or not the interviewee had any prior contact with disability. Using the four unifactorial subscales of the instrument as variables, the results showed that 74.1% of the participants were correctly classified, with a significant Wilks' Lambda value of $\Lambda = .79$, $\chi^2 = 66.17$, $p < .003$. The analysis produced a discriminant function with an Eigenvalue of 0.35 and a canonical correlation of .185. The group centroids were at (0.111) for the group of participants with contact with disabled persons and at (-319) for the participants who stated that they had no contact with disabled persons. An ANOVA was also carried out to establish significant group differences, which, conjointly with the analysis of means, showed that the participants who had had prior experience with disabled people were more favourable towards academic accommodation and more critical of the aspects of accessibility and university community, regardless of the group.

Discussion

The results obtained reveal the adequate psychometric properties of the items and the validity and reliability of the scores of the CUNIDIS to assess attitudes toward disability in universities. The analyses carried out provide evidence of the structure of the instrument, with four unifactorial subscales, which is consistent

with the theoretical approaches described in the literature and in Spanish legal requirements on the rights of university students. Also noteworthy are the statistical indices, which are shown to be adequate according to the proposals of Tabachnick and Fidell (2013) the predictive validity of the instrument, which is a relevant indicator and the satisfactory rates of internal consistency obtained for the instrument as a whole and for the subscales that comprise it.

The most relevant contribution was the creation of a specific instrument to measure attitudes toward disability in the university setting. This allows us to classify students and teaching staff as a function of whether or not they had had maintained prior contact with disabled people. Contact with disabled people is revealed as a variable that conditions the level and quality of responses, particularly with regard to academic accommodation in higher education, a controversial issue that has been addressed from diverse perspectives in other studies (Alcedo, Aguado, Real, González, & Rueda, 2007; Arnaiz, 2000; Dalmau, Llinares, & Sala, 2011; Suriá, 2011). This finding, also revealed in previous studies (Newberry & Parish, 1987; Polo, Fernández, & Díaz, 2011; Wai & Man, 2006; Yazbeck, McVilly, & Parmenter, 2004) confirms the important influence of information and prior education on attitudes.

Furthermore, the results obtained highlight the differences in attitudes that mainly arise as a function of the group and field of studies to which the teaching staff and students belong. The influence of the degree courses studied observed in this study is coherent with previous research (Gómez & Infante, 2004; Moreno, Rodríguez, Saldaña, & Aguilera, 2006; Sánchez Palomino, 2011). Thus, the teaching staff and students of the area of Social and Legal Sciences and, to a lesser degree, Health Sciences, displayed the most informed attitudes in all factors. The differences between the areas of study are indisputable, firstly due to the professional profiles of the teaching staff and, secondly, to the characteristics of the degree courses involved.

The CUNIDIS scale may be particularly useful at a time when European and Latin American universities are attempting to promote synergies to improve their response to social responsibility and, in line with the social dimension of the European Higher Education Area, to oblige institutions to respond in an all-inclusive manner to the diversity of their students. The CUNIDIS scale provides the directors of these institutions and the university community as a whole with the opportunity to determine the prevailing attitudes toward disability and, using this information, to design and implement appropriate educational and informational actions.

This study has some limitations that should be taken into account. Firstly, no element was included to determine differences according to the type of disability of the person with whom the participants had had contact. This aspect is relevant, as the combination of education/information may influence the viewpoints that are adopted. Secondly, it would have been useful to compare these opinions with those of the disabled students themselves, a line of research in which we shall continue to work. Thirdly, the analysis of disabled students' learning styles could yield relevant findings for their academic success. Lastly, it is important for future studies on this topic to validate the instrument in other cultural contexts. This aspect has led to more extensive research evaluating the use of this scale in several European (Spain, Portugal and Latvia) and American (Brazil, Argentina and Chile) universities.

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