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## ORIGINAL ARTICLE

# A psychometric evaluation of the ARC-INICO Self-Determination Scale for adolescents with intellectual disabilities



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### KEYWORDS

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**Abstract** The independence to decide and act as the causal agent in one's life are unchanging demands by empowerment movements focused on people with disabilities and by people with disabilities themselves. International efforts have been devoted to defining the concept of self-determination, analyzing its importance and relationship with the quality of life of people with disabilities and creating evaluation and promotion materials based on empirical evidences. The aim of this study is to present the process for developing and validating a new self-determination evaluation instrument for young people with intellectual disabilities: the ARC-INICO Scale. The sample for validating the Scale comprised 279 young people with intellectual disabilities, limited intellectual capacities and learning difficulties. The participants were aged between 11 and 19 years ( $M = 15.59$ ,  $SD = 1.89$ ). The results indicate that both the Scale and the four sections into which it is divided were reliable. The confirmatory factor analysis shows proof of validity based on the internal structure of the Scale, and confirms the correct fit of the proposed hierarchical structure. Practical implications and future directions of research are also discussed.

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### PALABRAS CLAVE

Autodeterminación;  
discapacidad  
intelectual;  
evaluación;  
adolescentes;  
estudio instrumental

### Evaluación psicométrica de la Escala ARC-INICO de Autodeterminación para adolescentes con discapacidad intelectual

**Resumen** La independencia para decidir y actuar como agente causal de la propia vida son constantes demandas realizadas por los movimientos en defensa de las personas con discapacidad y por las propias personas con discapacidad. La investigación internacional ha dedicado esfuerzos focalizados en delimitar el concepto de autodeterminación, analizar su importancia

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y relación con la calidad de vida de las personas con discapacidad, y elaborar materiales de evaluación y promoción basados en la evidencia. El objetivo de este estudio es presentar el proceso de desarrollo y validación de un nuevo instrumento de evaluación de la autodeterminación para jóvenes con discapacidad intelectual: Escala ARC-INICO. La escala se aplicó a una muestra de 279 jóvenes con discapacidad intelectual, capacidad intelectual límite y dificultades de aprendizaje cuya edad osciló entre 11 y 19 años ( $M = 15.59$ ;  $SD = 1.89$ ). Los resultados indican que tanto la escala como las secciones en las que se divide fueron fiables. El análisis factorial confirmatorio proporciona evidencias de validez basadas en la estructura interna de la escala y confirma el buen ajuste de los datos a la estructura jerárquica propuesta. Las implicaciones prácticas y las líneas de investigación futuras son también discutidas en este trabajo.

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Evaluating and encouraging the self-determination of students with intellectual disabilities is a key part of educational content that has been highly valued by teachers and educators in both regular and special education classrooms (Agran, Snow, & Swaner, 1999; Carter, Lane, Pierson, & Stang, 2008; Grigal, Neubert, Moon, & Graham, 2003; Peralta, González, & Sobrino, 2005; Thoma, Nathanson, Baker, & Tamura, 2002; Verdugo, 2011). It is not only professionals in this field who have afforded great importance to the development and promotion of self-determination; people with disabilities themselves have also demanded their right to decide and to be the primary causal agent in their lives (Wehmeyer, 2004, 2011; Wehmeyer & Abery, 2013).

In recent decades, together with the emphasis on self-determination and the self-advocacy movement of people with disabilities, there has been considerable progress in developing empirically validated theoretical models relating to the construct of self-determination. The advances in this field have also made it possible to create theoretically-based materials for evaluating and promoting self-determined behavior, the purpose of which is to support the development and exercise of self-determination of people with disabilities throughout their lives. There follows a review of various evaluation instruments that have been created using the different theoretical models proposed as a reference.

Wehmeyer (1999) proposed the functional self-determination model. According to this model, self-determined behavior refers to "volitional actions that enable one to act as the primary causal agent in one's life and to maintain or improve one's quality of life" (Wehmeyer, 2005, p. 117). Self-determination is identified as having four essential characteristics (autonomy, self-regulation, psychological empowerment, and self-realization) which are reflected in behavior by the development and acquisition of a wider set of essential components. Recently, Shogren et al. (in press) reformulate the "Causal Agency Theory" as a reconceptualization of the functional model. According to this approach, self-determination is defined as "a dispositional characteristic manifested to act as a causal agent in one's life". Behavior is self-determined if its function is to enable the person to act as the causal agent of his life (Wehmeyer & Little, 2013). In conformity with this theoretical approach, an

evaluation tool was developed for adolescents with intellectual disabilities, "The Arc's Self-Determination Scale" (Wehmeyer & Kelchner, 1995), which has been empirically validated and used as a reference in international research (Lee et al., 2011; McDougall, Evans, & Baldwin, 2010; Shogren et al., 2007).

Field and Hoffman (1994) developed a model comprising five main components for the development of self-determination. The first two components (*knowing oneself* and *valuing oneself*) describe the internal processes that provide a base for acting in a self-determined manner. The next two components (*plan* and *act*) identify the abilities necessary to act in conformity with that base. Finally, the last component (*experience outcomes* and *learn*) enables the cycle to be closed, by celebrating the successes achieved or reviewing the efforts to become a self-determined individual. As did the previous authors, Hoffman, Field, and Sawilowsky (1995, 2004) developed and validated a Self-Determination Evaluation Battery based on this theoretical approach. This battery comprises five instruments that evaluate cognitive, affective and behavioral factors associated with self-determination, and are included in a curriculum for promoting self-determination (Field & Hoffman, 1996).

Similarly, Abery and Stancliffe (1996) proposed an ecological tripartite model of self-determination that defines this construct as "a complex process, the ultimate aim of which is to achieve the degree of personal control over his life that the person desires and in those areas that he perceives as important" (p. 27). According to these authors, self-determination is a product of both personal and environmental factors with the aim of obtaining desired outcomes. The Minnesota Self-Determination Scales (Abery, Elkin, Smith, Springborg, & Stancliffe, 2000) were developed using this approach as a benchmark. They comprise five instruments that evaluate, respectively, personal and desired control, importance, associated environmental factors and self-determination skills.

Finally, Mithaug, Mithaug, Agran, Martin, & Wehmeyer (2003) developed a theory of self-determined learning that focuses on the process by which students become more self-determined. This model postulates that self-determination depends on the student's capacities and on the opportunities provided. A scale was consistently developed (the AIR

Self-Determination Scale) to evaluate both factors (capacities and opportunities) associated with self-determination (Wolman, Campeau, Dobois, Mithaug, & Stolarsky, 1994).

Despite such significant international progress both in developing theoretical models and in creating evaluation tools in English, evaluation tools in Spanish available for people with intellectual disabilities are still lacking. Specifically, studies were carried out (Verdugo, Benito et al., 2012; Verdugo, Gómez-Vela, Badia, González-Gil, & Calvo, 2009; Wehmeyer, Peralta, Zulueta, González-Torres, & Sobrino, 2006) to apply the functional model of self-determination in Spain (Wehmeyer, 1999) as an international benchmark theoretical approach. The developments applied and derived from it (The Arc's Self-Determination Scale; Wehmeyer & Kelchner, 1995) have also been used in Spain as a starting-point for research aimed at developing evaluation tools in Spanish. Specifically, the purpose of these researches (Verdugo et al., 2009; Wehmeyer et al., 2006) was to translate, adapt and validate The Arc's Self-Determination Scale within the Spanish context (Wehmeyer & Kelchner, 1995). Both studies applied an adapted translation of this Scale to students with and without intellectual disabilities to try to confirm how useful it would be in the Spanish context, but the results obtained were not as good as hoped.

Wehmeyer et al. (2006) applied the adapted version of the Scale to a total of 296 students with and without disabilities from a wide range of schools in Navarra and Álava. Although the reliability results were acceptable (the Cronbach's alpha coefficients for the sections and the Scale as a whole varied between .69 and .89), the factor solution obtained through exploratory factor analysis was not entirely as satisfactory as might be hoped. The results obtained by Verdugo et al. (2009) confirmed that the psychometric properties of the adapted version of the The Arc's Self-Determination Scale were not as good as expected (reliability coefficients varied between .51 and .74). Moreover, a confirmatory factor analysis was not conducted for any of the instruments. In short, the limitations encountered in the psychometric properties of this Scale clearly showed the need to develop new evaluation tools able to overcome the limitations encountered.

The aim of this article is to present the psychometric development and validation process of the ARC-INICO Self-Determination Assessment Scale for young people with intellectual disabilities, limited intellectual capacities or learning disabilities. In short, the purpose of this instrument is to add to the considerable theoretical and empirical development achieved in this field, at the same time as it tries to bring fresh evidence and knowledge to international research in the area of self-determination.

## Method

### Instruments

The development of the ARC-INICO Scale was proposed with the aim of overcoming the limitations of the adaptations produced in Spain (Verdugo et al., 2009; Wehmeyer et al., 2006) of The Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995). The purpose was to create a powerful

instrument from the psychometric viewpoint, following the different stages in the process of test creation according to Carretero-Dios & Pérez (2007), and one consistent with the theoretical framework in the area of self-determination that would enable the limitations encountered in certain evaluation tools to be overcome. To this end, an exhaustive process was carried out of reviewing the associated scientific literature and the existing background information on evaluation resources (Abery & Stancliffe, 1996; Field & Hoffman, 1994; Gómez-Vela, Verdugo, Badia, González-Gil, & Calvo, 2010; Hoffman et al., 2004; Martin & Marshall, 1996; Shogren et al., 2008; Wehmeyer & Field, 2007; Wolman et al., 1994).

An initial field version of the Scale was created from a review of the strengths and weaknesses of two available evaluation instruments applied to the educational context (Hoffman et al., 2004; Wehmeyer & Kelchner, 1995) and the translation and adaptation of The Arc's Self-Determination Scale within the Spanish context (Verdugo et al., 2009; Wehmeyer et al., 2006). This initial version of the Scale was made up of a wide set of items (102 items) divided into four sections, each corresponding to the four dimensions or essential characteristics of self-determination (autonomy, self-regulation, empowerment and self-realization) proposed by the functional model (Wehmeyer, 1999).

Taking into account the review of strengths and weaknesses (Vicente et al., 2012), three sections (autonomy, empowerment and self-realization) remained the contents of the corresponding sections of The Arc's Self-Determination Scale (Wehmeyer & Kelchner, 1995). The most important change was performed in the section of self-regulation. Specifically, items of the Student Self-Determination Scale (Hoffman et al., 2004) were selected, ensuring maintain the theoretical framework to guide the incorporation of these items. Along the entire process of development, the International Test Commission (ITC) guidelines on adapting tests were followed (Bartram, 2001; Hambleton, 2001; Muñiz, Elousa, & Hambleton, 2013; Van de Vyjver & Hambleton, 1996). A rigorous translation methodology was applied to those items taken from tests in English and, finally, a four-point response format was established for all the items in order to simplify the application.

A pilot study was carried out (Vicente, Verdugo, Gómez-Vela, Fernández-Pulido & Guillén, in press) to verify the preliminary properties of the Scale. The results of that initial study showed satisfactory evidence of the Scale's psychometric properties and concluded with a second field version of the Scale comprising 97 items.

This second version of the Scale was applied to a wide sample in order to make a definitive valuation of the Scale. Like the first version, this second field version of the ARC-INICO Scale was a self-report questionnaire in which the students had to answer a series of statements on self-determination using a multiple response system. The items that made up the Scale were divided by the same four subscales (autonomy section = 32 items; self-regulation section = 22 items; empowerment section = 28 items; and self-realization section = 15 items) corresponding to the same four self-determination domains (Wehmeyer, 1999). The Scale used a multiple answer format with four options based on frequency for the autonomy section (*I never do; I sometimes do; I almost always do; I always do*) and based on

**Table 1** Distribution of participants by type of disability.

Variable	<i>n</i>	%
Learning difficulties	3	1.08
Intellectual disabilities (ID)		
Limited intellectual capacity	5	1.79
Mild	82	29.39
Moderate	150	53.76
Severe	6	2.15
No data	33	11.83
Total	279	100

the level of agreement for the remaining sections (*ranging from disagree strongly to agree strongly*).

Both, first and second field-test versions, were composed of a wide set of items. However, taking into account this instrument is a self-reported scale for adolescents with intellectual and developmental disabilities, the aim was to create a shorter scale by selecting the best items in order to assure the quality and usefulness of the scale.

Besides this scale, professionals completed a sociodemographic questionnaire to collect data concerning the gender, age, and disability of the person evaluated. That questionnaire also included a brief section consists of 9 items in which they had to assess the participants' support needs in self-determination and self-advocacy. The data obtained in this section was used to test ARC-INICO Scale external validity.

## Participants

The second field version of the ARC-INICO Scale was applied to a sample of convenience formed by 279 young people with disabilities. Three selection criteria were used to select this sample. The participants had to (a) be students with intellectual or developmental disabilities, limited intellectual capacity or learning disabilities; (b) be aged between 11 and 19; and (c) have a communication level appropriate for understanding and answering questions in the Scale. The professionals from the organizations that took part in the study were in charge of recruiting users who met these criteria, and of collecting the informed consents signed by the parents or legal guardians in which they give their willing agreement to participation.

A set of 31 schools (77.42%) and organizations (22.58%) from 10 different Autonomous Communities in Spain expressed interest and agreed to participate in this study. In regard to the sociodemographic characteristics of the participants, the number of men ( $n = 152$ ; 54.48%) was slightly higher than for women ( $n = 127$ ; 45.52%), although they showed a uniform distribution in regard to gender ( $\chi^2_1 = 2.240$ ,  $p > .05$ ). Ages ranged between 11 and 19 years ( $M = 15.59$ ;  $SD = 1.89$ ) and more than half the sample ( $n = 189$ ; 67.74%) were aged between 14 and 17.

All participants were students with some type of associated disability or difficulty (see Table 1), as this was a requirement for participation in the study. However, it should be borne in mind that this specific information could not be gathered for 11.82% of the sample. In line with the percentage of the sample for which this information

was available, it is worth pointing out that the majority of students had intellectual disabilities (mild and moderate). Related to the scholar setting, most of participants attended special education schools (73.12%).

## Procedure

A formal letter presenting the project was drawn up to request the participation of different organizations in the ARC-INICO Scale validation process. This letter gave a brief description of the study and its aims, and requested the collaboration of those organizations and their users.

Once the agencies expressed an interest in participating, a protocol for communication with them was begun in which the particulars of the research project and the tasks to be undertaken by each party were set out in detail. Similarly, enquiries were made about the criteria to be met by the participants in order to be able to take part in administering the Scale, and the organizations were asked to inform the users and the families of potential participants. To make sure that the families were properly informed, they were sent a letter briefly explaining the aim of the study and the procedure to be carried out with regard to processing the data collected for the evaluation. Attached to this letter was an Informed Consent Form which was to be signed to allow participation in the evaluation process.

The ARC-INICO Scale was applied jointly in small groups of a maximum of four or five students at a time, guaranteeing that those participants who needed it had personal support to help them work with and understand the Scale.

## Data analysis

The IBM SPSS Statistics [v. 20] software (SPSS, 2010) was used to calculate the descriptive statistics and the corrected homogeneity indexes obtained by the items. A Confirmatory Factor Analysis (CFA) was carried out by implementing the Unweighted Least Squares (ULS) estimation method with regard to the covariance matrix and using the LISREL [v. 8.80] program (Jöreskog & Sorbom, 2006) as reference software. Besides, data obtained from Factor [v. 9.2] program (Lorenzo-Seva & Ferrando, 2006) was used to compute alpha coefficients of the scale and its subscales. Finally, Pearson correlational analyses were performed to test ARC-INICO Scale external validity.

## Results

### Items analysis

Taking as our basis the descriptive statistics obtained by the Scale items and distribution of the answers given to the different categories of answer for the items, the data obtained for the autonomy subscale showed the need to recode the answer options. Specifically, it was noticed for the autonomy subscale that one of the answer options proposed (*I almost always do*) was, generally speaking, used less by the participants (the frequency with which this category was used was exceptionally low compared with the rest of the categories). In order to respond to this situation, and despite the fact that the use of three-point response items could entail some limitations, it was considered that the most appropriate

**Table 2** Unidimensionality of the parcels.

Section	Parcel	Eigenvalue1 (E1)	Eigenvalue2 (E2)	% explained variance E1	% explained variance E2
S1. Autonomy section	S1p1	2.33	0.84	46.61	16.77
	S1p2	1.78	0.99	35.65	19.69
	S1p3	1.86	0.97	37.20	19.40
	S1p4	1.97	1.05	39.47	20.89
	S1p5	2.04	0.81	40.84	16.24
S2. Self-regulation section	S2p1	1.83	0.83	45.82	20.80
	S2p2	1.91	0.91	47.77	22.80
	S2p3	1.74	0.87	43.41	21.65
S3. Empowerment section	S3p1	1.91	0.90	38.17	17.94
	S3p2	1.93	0.92	38.63	18.36
	S3p3	1.72	0.90	42.91	22.61
S4. Self-realization section	S4p1	1.66	0.87	41.56	21.81
	S4p2	1.62	0.94	54.02	31.17
	S4p3	1.52	0.63	50.61	32.10

decision was to recode the answer options for the items in this subscale, from a frequency-based four-option answer format to a three-option format (*I never do; I sometimes do or I always do*). The answer format for the remaining subscales was retained since all the answer options proposed worked properly.

On the other hand, the analysis of the psychometric quality of the items for each subscale and for each complete scale revealed that 61 of them (62.89% of the items) could be considered acceptable. However, 36 items were removed, bearing in mind two criteria: (a) poor psychometric quality represented by a corrected homogeneity index (CHI) of less than .230 (taking both the Scale [CHI<sub>1</sub>] and the sections [CHI<sub>2</sub>] as a reference in the analyses); and (b) a review of the adjustment of the statement and formulation of the items in accordance with the recommendations suggested by [Finlay and Lyons \(2001, 2002\)](#).

Specifically, most of the removed items (80.56%) were discarded because they did not meet the first criterion for psychometric quality: the CHI<sub>1</sub> for these removed items varied between -.083 and .190; and the CHI<sub>2</sub> between -.083 and .209. However, in addition to the 29 items removed as a result of this first criterion, another seven items were also removed that did not meet the quality criteria relating to the content and formulation of the statement for the item. Specifically, they were items with an abstract, confused, redundant statement or which involved the use of negatives or double negatives which, according to [Finlay and Lyons \(2001, 2002\)](#), are methodological problems that should be avoided when designing evaluation tools aimed at people with intellectual disabilities. Eliminating these items allow the final version of the ARC-INICO Scale to be composed of a more adequate number of quality items (i.e., 61 items) (see Appendix 1). Finally, differential item functioning (DIF) across gender was analyzed using the generalized Mantel-Haenszel test. This statistic could be applied to DIF assessment for both dichotomous and polytomous items and it is especially appropriate for the case of two groups ([Fidalgo, 2011](#)). As expected, the Chi Square values were not significant ( $p < .01$ ) and, consequently, DIF was not detected for any of the items when men and women responses were compared.

### Construct validity based on the internal structure

With the aim of providing evidences of validity based on the internal structure of the Scale, a Confirmatory Factor Analysis (CFA) was carried out to evaluate how well the data was adjusted to the Scale's structure based on the self-determination construct proposed by [Wehmeyer \(1999\)](#). Three models were tested: (1) a unidimensional model with one general factor (self-determination); (2) a correlational structure with four related factors (autonomy, self-regulation, empowerment and self-realization); and (3) a hierarchical structure with four underlying domains (the four sections that represent the essential characteristics that define self-determined behavior) and a higher order factor (the global construct of self-determination).

Given the high number of items for the Scale and in each section, a total of 14 parcels were used as indicators for the latent constructs for each dimension of self-determination. The parcels were formed using a combination of four or five items for each domain through a correlative method, depending on the number of items of each section.

Using parcels is only appropriate if a unidimensional structure has been identified for each ([Bandalos & Finney, 2001; Little, Cunningham, Shahar, & Widaman, 2002](#)). An Exploratory Factor Analysis (EFA), using the Maximum Likelihood method, was carried out to ensure the unidimensionality of each parcel. As shown in [Table 2](#), the parcels used were one-dimensional according to two criteria: (a) the eigenvalue of the first factor extracted must be considerably higher than the eigenvalue of the second factor ([Reise, Moore, & Haviland, 2010](#)); and (b) the percentage of variance explained by the first factor must be higher than 40%.

Bearing in mind the data obtained by the parcels, the CFA was carried out. According to [Hu and Bentler \(1999\)](#), the models' fit was evaluated using a combination of chi-square and other indices of partial fit (indices of absolute fit and indices of relative fit). The Goodness of Fit Index (GFI), which evaluates how the model is reproduced in the sample data, or the Adjusted Goodness of Fit Index (AGFI), must be higher than .95, while the remainder-based indices (RMSEA: "Root Mean Square Error of Approximation" and

**Table 3** Model fit indices Confirmatory Factor Analysis.

Indices of fit	Unidimensional Model	Correlational Model	Hierarchical Model
$\chi^2$ (gl)	664.93 (77)	143.03 (71)	169.75 (73)
Significance	.000	.000	.000
RMSEA	.166	.060	.069
RMSEA interval (90%)	(.154; .177)	(.046; .075)	(.056; .083)
GFI	.964	.997	.996
AGFI	.951	.995	.994
SRMR	.096	.052	.060

Note.  $\chi^2$  = Chi-square; RMSEA = Root Mean Square Error of Approximation; GFI = Goodness of Fit Index; AGFI = Adjusted Goodness of Fit Index; SRMR = Standardized Root Mean Square Residual

SRMR: "Standardized Root Mean Square Residual") must be less than .10.

As shown in Table 3, the indices of two models were satisfactory, with the exception of chi-square (bearing in mind that this index is very sensitive to sample size) and obtained similar goodness-of-fit indices. Both correlational and hierarchical models (Figures 1 and 2) obtained CFI and TLI values that indicate a good model fit (> .99), and SRMR and RMSEA values revealed low and acceptable error indices (< .07). However, the unidimensional model exhibited an increase of the SRMR and RMSEA, showing a poor fit, far from acceptable. In conclusion, the goodness-of-fit indices suggested that correlational and hierarchical models provided a good fit in order to explain the self-determination structure. Specifically, the correlation model solution seemed to fit better our data.

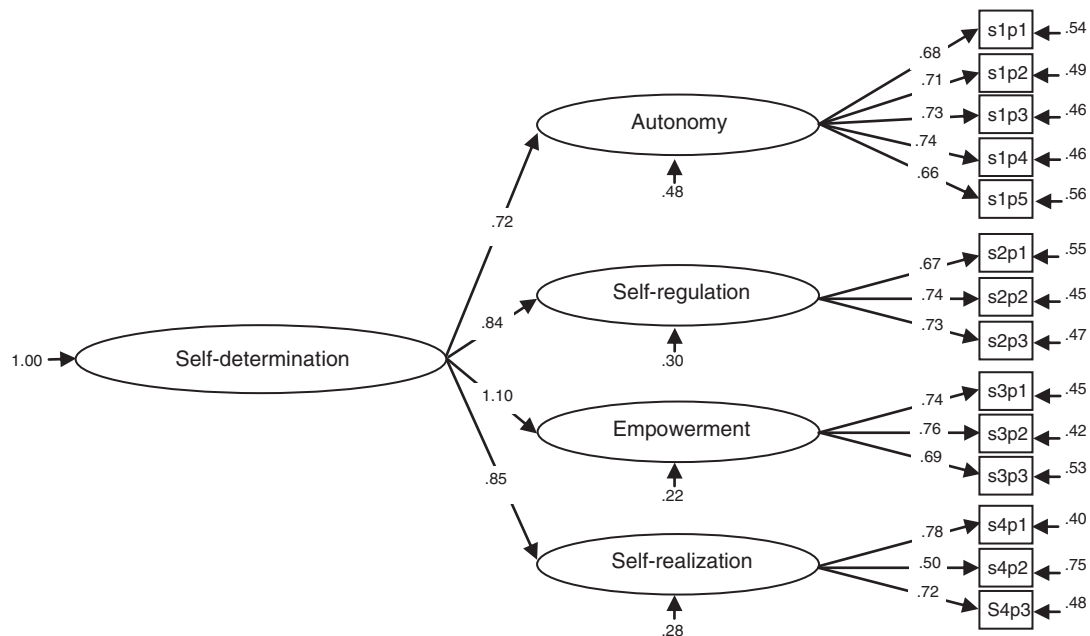
**Reliability**

Reliability was analyzed in terms of internal consistency using the ordinal alpha and Armor's theta, considered the more appropriate indices for categorical scales than

the Cronbach's alpha. The data show that the reliability coefficients for the four sections were higher than .80 (Table 4) and the ordinal alpha and Armor's theta for the total Scale (i.e., 61 items) were .91 and .93, respectively. The results confirm the correct reliability both for the Scale and its sections.

**External validity**

Finally, Pearson correlational analyses were performed to test ARC-INICO Scale external validity. Correlation coefficients were calculated between the self-determination score, reported by participants themselves, and their self-advocacy and self-determination support needs, informed by professionals, as related external criteria. The results indicated that there was a modest, negative and statistically significant correlation between both measures ( $r = -.29, p < .01$ ). These results indicated that the support needs in self-determination, informed by professionals, were inversely related to the level of self-determination, scored by participants with disabilities themselves using the ARC-INICO Scale. As



**Figure 1** Standardized solution for the hierarchical model obtained in the CFA.

**Table 4** Reliability coefficients.

Sections	Ordinal alpha	Armor's theta	Items	<i>n</i>
Section 1. Autonomy	.90	.90	25	233
Section 2. Self-regulation	.84	.84	12	257
Section 3. Empowerment	.85	.85	14	260
Section 4. Self-realization	.80	.82	10	258
ARC-INICO Scale	.91	.93	61	201

expected, higher support needs were associated with lower self-determination levels and vice versa, showing good evidences of the external validity of this instrument.

## Discussion

The study presented provides proofs of the reliability and validity of the ARC-INICO Scale, an instrument intended for young people with intellectual disabilities, limited intellectual capacity or learning disability to assess self-determination and its essential characteristics. This tool responds to the need to develop this type of evaluation instrument within the Spanish context and thus to be able to come into line with the considerable advances achieved in this field in other countries (Abery et al., 2000; Hoffman et al., 2004; Wehmeyer & Kelchner, 1995; Wolfman et al., 1994). Given that the target of this scale was to be a self-reported scale for adolescents with support needs, the final version of the ARC-INICO Scale (consisted of 61 items) is a useful assessment tool in order to avoid the negative effect (such as fatigue or demotivation) derived from the application of instruments formed by a high numbers of items.

The research project has many strengths. Firstly, all the internal consistency coefficients, including the values obtained for the complete Scale and for each of the

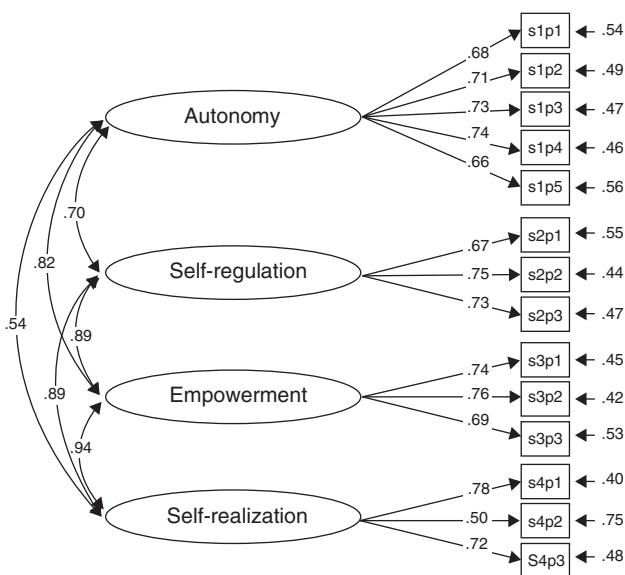
sections making it up, were appropriate and exceeded those found for the same domains in previous studies on validating adapted evaluation instruments (Verdugo et al., 2009; Wehmeyer et al., 2006).

Secondly, the use of confirmatory factor analysis proves the validity of the internal structure proposed by the Scale. The data show that two models (correlational and hierarchical) obtain good fit, taking as reference the relative fit indices (i.e., GFI, AGFI, RMSEA, and SRMR). In short, the results support the multidimensional structure of the Scale comprising four main dimensions, which correspond to the essential characteristics of self-determination. Similarly, the hierarchical model data and its goodness-of-fit indices support the structure of the scale and the approaches proposed by the functional self-determination model (Wehmeyer, 1999). Nevertheless, deeper research about this issue is recommended.

Beyond the Scale's psychometric properties, it also has an element of added value in that it uses the students themselves as informants in their own evaluation (i.e., they have the opportunity to complete and answer the items in the Scale). According to Wehmeyer (2001), the people being evaluated for the self-determination should manage their own evaluation (exercising their right of self-determination), while the evaluators undertake the role of additional collaborator or facilitator. The design of the ARC-INICO Scale takes on the challenge of giving students with disabilities a protagonist role as informants in the process of evaluating their self-determination, encouraging them to be able to take control of the process and help express their self-determination.

The fact that the instrument offers standardized scores and percentiles allows the scores obtained by the evaluated students to be represented in a personal graphic profile that makes it easier to interpret the scores (Verdugo et al., 2015). This tool will be useful in implementing evidence-based practices (Schallock, Verdugo, & Gómez, 2011), in designing intervention strategies adapted to the individual characteristics of the participants (Verdugo et al., 2013), in the self-evaluation and self-realization of the student himself or herself as a resource to promote self-confidence and self-acceptance (Wehmeyer, Agran, & Hughes, 1998) and in evaluating the personal results achieved through a process of encouraging self-determination (Field, Martin, Miller, Ward, & Wehmeyer, 1998).

This study is not free of limitations. One of the limitations of the sample size is the use of an incidental procedure, together with problems in accessing the specific type of participants for the study. From the start, the research team worked to try to tackle the challenge of guaranteeing



**Figure 2** Standardized solution for the correctional model obtained in the CFA.

that the sample obtained should be representative of the types of student with intellectual disabilities and other difficulties for which the Scale was designed. Nevertheless, bearing in mind that the organizations and participants collaborated voluntarily, it was difficult to get a comprehensive, representative number of students with learning difficulties or limited intellectual capacity to take part, the majority of the sample comprising students with intellectual disabilities.

Another limitation worth pointing out is that the classification of students into the different types of disability and into the specific categories of intellectual disability (mild, moderate and severe) was produced on the basis of the clinical judgment provided by the professionals belonging to the collaborating centers, rather than by making an objective evaluation of the classification.

The importance and usefulness of the instrument validated in this study lies in the need within the Spanish context to develop self-determination evaluation tools applicable in an educational environment. The ARC-INICO Scale thus constitutes a useful tool for those organizations, associations and schools that wish to implement programs aimed at promoting and ensuring development of the self-determined behavior of young people with intellectual disabilities. However, it is necessary to continue working on validating the Scale, providing fresh, on-going evidence of its reliability and validity. Similarly, there is the emergence of future lines of research focused on developing new evaluation tools designed specifically for other well-defined communities (adults, people with autism, etc.), and it

is equally necessary to expand research that is able to show the usefulness of this type of scale within programs promoting self-determination.

For its part, internationally, the validation of the structure of the ARC-INICO Scale is adjusted to the principles of conceptualization of the functional self-determination model (Wehmeyer, 1999, 2005), it is in keeping with the current conceptual advances in this field (Shogren et al., in press). Furthermore, the development of the ARC-INICO Scale contributes to the breakthrough in the construction of assessment tools designed to persons with disabilities (Arias, Verdugo, Navas, & Gomez, 2013; Guillén, Verdugo, Arias, & Vicente, 2015; Verdugo, Arias, Gómez, & Schalock, 2010; Verdugo, Arias, Ibáñez, & Schalock, 2010; Verdugo, Gómez, Arias, Navas, & Schalock, 2014) and it is in line with movements for the protection of people with disabilities (Navas, Gómez, Verdugo, & Schalock, 2012; Verdugo, Navas, Gómez, & Schalock, 2012).

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## Appendix A. Items in the ARC-INICO Self-Determination Assessment Scale.

Item	Section 1. Autonomy
1	<i>Yo mismo preparo alguna de mis comidas</i> (I make my own meals)
2	<i>Cuido mi ropa yo mismo</i> (I care for my own clothes)
3	<i>Hago algunas tareas de la casa</i> (I do chores in my home)
4	<i>Ordeno mis cosas</i> (I keep my own personal items)
5	<i>Si me duele algo o me hago una herida, sé lo que tengo que hacer para resolverlo</i> (If something hurts me or I get wounded, I know what to do for solving it)
6	<i>Cuido mi imagen y mi higiene personal</i> (I keep good personal care and grooming)
7	<i>Utilizo el transporte público</i> (I use public transport)
8	<i>Cuando voy a tiendas o bares, yo mismo pido lo que quiero tomar</i> (I deal with salespeople at stores or restaurants)
9	<i>Cuando quedo con mis amigos, sé dónde he quedado y llego puntual</i> (I keep my appointment and meetings with my friends)
10	<i>Los fines de semana hago actividades que me gustan</i> (I plan weekend activities that I like to do)
11	<i>Participo en actividades organizadas por el colegio</i> (I am involved in school-related activities)
12	<i>Escribo cartas, sms, e-mails o llamo por teléfono a mis amigos y familiares</i> (I write letters, notes or talk on the phone to friends and family)
13	<i>Escucho la música que me gusta</i> (I listen to music that I like)
14	<i>Voy al cine, conciertos y discotecas</i> (I go to movies, concerts, and dancefloors)
15	<i>Hago planes sobre mi futuro</i> (I make long-range career plans)
16	<i>En el colegio y en mi tiempo libre hago aquellas actividades relacionadas con lo que me gustaría ser de mayor</i> (I do school and free time activities based on my career interests)
17	<i>Trabajo o he trabajado para ganar dinero</i> (I work or have worked to earn money)
18	<i>Cuando me interesa un trabajo, pregunto a la gente acerca de ese trabajo o visito lugares donde lo realizan</i> (I ask people about their job or visit (their) workplaces (settings) when I'm interested in that work)
19	<i>Elijo la ropa y los complementos que uso cada día</i> (I choose my clothes and the personal items I use every day)
20	<i>Yo elijo cómo me quiero peinar o cortar el pelo</i> (I choose my own hair style)
21	<i>Yo mismo elijo los regalos para mi familia y mis amigos</i> (I choose gifts to give to my family and friends)
22	<i>Decoro mi propia habitación</i> (I decorate my own room)
23	<i>Empleo mi tiempo libre en actividades que me interesan</i> (I do free time activities based on my interests)



- 24 *Suelo hacer aquellas actividades del colegio que me ayudarán en el futuro a trabajar en lo que quiero ser de mayor* (I usually work on school work that will improve my career chances)
- 25 *Yo decido cómo gastar mi dinero* (I choose how to spend my own money)
- Item Section 2. Self-regulation**
- 26 *Cuando hago una tarea, evalúo el resultado porque creo que eso me ayudará la próxima vez* (When I do a task, I evaluate how things turned out because I think it will help me the next time)
- 27 *Sueño sobre cómo será mi vida después de que acabe mis estudios* (I dream about how will be my life after I finish school)
- 28 *Después de hacer algo, pienso en cómo podría hacerlo mejor la próxima vez* (After doing something, I think about how I could have done something better)
- 29 *Sé lo que es importante para mí* (I know what is important to me)
- 30 *Quiero informarme sobre las distintas opciones laborales que tengo antes de elegir una* (I plan to explore many options before choosing a career)
- 31 *Cuando hago las cosas, pienso en lo que es mejor para mí* (I think about what is good for me when I do things)
- 32 *Antes de hacer algo, pienso en las consecuencias que puede tener* (Before I do something, I think about what might happen)
- 33 *Me gusta plantearme metas y objetivos en mi vida* (I like having goals and aims in my life)
- 34 *Al final de cada trimestre, comparo mis notas con las que esperaba* (At the end of the term, I compare my grades to those I expected)
- 35 *Antes de ir a un sitio nuevo, pregunto la dirección o miro el camino en un mapa* (I ask directions or look at a map before going to a new place)
- 36 *Generalmente, después de hacer algo (por ejemplo, un examen o hacerle un favor a alguien...), me paro a pensar si hice las cosas bien* (After doing something, I think about how well I did it)
- 37 *Cuando quiero sacar buenas notas, trabajo mucho para conseguirlas* (When I want good grades, I work hard to get them)
- Item Section 3. Empowerment**
- 38 *Cuando tengo opiniones o ideas diferentes a las de los demás, se lo digo* (I tell others when I have different ideas or opinions)
- 39 *Si alguien me hace daño se lo digo* (I tell people when they have hurt my feelings)
- 40 *Tomo mis propias decisiones* (I can make my own decisions)
- 41 *Puedo conseguir lo que quiera si trabajo duro* (I can get what I want if I work hard)
- 42 *Tengo capacidad para hacer el trabajo que quiero* (I have the ability to do the job I want)
- 43 *Soy capaz de trabajar en equipo* (I am able to work with others)
- 44 *Sé que si me preparo, conseguiré el trabajo que quiero* (If I prepare myself properly, I will be able to get the job I want)
- 45 *Digo que NO, cuando mis amigos me piden que haga algo que yo no quiero hacer* (I tell NO to my Friends if they ask me to do something that I don't want to do)
- 46 *Cuando yo pienso que puedo hacer algo, lo digo, aunque los demás crean que no puedo hacerlo* (I tell people when I think I can do something that they tell me I can't)
- 47 *Esforzarme y trabajar duro en el instituto me ayudará a conseguir un buen trabajo* (Trying hard at school will help me to get a good job)
- 48 *Sigo intentando las cosas aunque me hayan salido mal varias veces* (I keep trying even if I've failed sometimes before)
- 49 *Cuando tengo que elegir, suelo hacerlo bien* (I can make good choice)
- 50 *Me resulta fácil hacer amigos en situaciones nuevas* (I am able to make friends in new situations)
- 51 *Cuando sea necesario seré capaz de tomar decisiones importantes para mí* (When necessary I will be able to make important decisions to me)
- Item Section 4. Self-realization**
- 52 *Me preocupa hacer las cosas mal* (I am afraid of doing things wrong)
- 53 *Es mejor ser tú mismo que ser popular* (It is better to be yourself than to be popular)
- 54 *Creo que la gente me quiere porque soy cariñoso* (I think I am loved because I give love)
- 55 *Sé cuáles son las cosas que hago mejor* (I know what I do best)
- 56 *Acepto mis limitaciones* (I accept my own limitations)
- 57 *Me gusta cómo soy* (I like myself)
- 58 *Creo que soy una persona importante para mi familia y mis amigos* (I believe I am an important person to my family and friends)
- 59 *Sé cómo compensar mis limitaciones* (I know how to make up for my limitations)
- 60 *Creo que caigo bien a otras personas* (I think other people like me)
- 61 *Confío en mis capacidades* (I am confident in my abilities)

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