

Assessing self-determination in youth with and without disabilities: The Spanish version of the AIR self-determination scale

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Abstract

Background: Acting in a self-determined manner, that is, using problem-solving or decision-making strategies, strongly depends on the opportunities the person is given to do so by the context. In fact, context can either facilitate or thwart the opportunities of adolescents and young adults for self-determined action, though there is, to date, a lack of instruments within the Spanish context to assess these opportunities. **Method:** This study aims to address this need by adapting and validating the AIR self-determination scale to the Spanish context with a sample of young Spanish people with and without disabilities. **Results:** The results showed acceptable psychometric properties of validity and reliability, and stressed differences in school and home opportunities for developing self-determination depending on the presence or absence of disability. **Conclusions:** The Spanish version of the AIR self-determination scale stands as a psychometrically robust instrument to assess capacities and opportunities for acting in a self-determined manner in all young people. Implications based on the differences in contextual opportunities arising from the presence of disability are also further discussed.

Keywords: Self-determination, contextual opportunities, assessment, adolescents with and without disabilities.

Resumen

La evaluación de la autodeterminación en jóvenes con y sin discapacidad: la versión española de la escala de autodeterminación AIR. Antecedentes: actuar de forma autodeterminada, es decir, usando estrategias como la resolución de problemas o la toma de decisiones no solo depende de la persona que actúa. Si bien sabemos que el contexto puede ejercer como facilitador u obstaculizador de la acción de jóvenes y adolescentes, disponemos de pocos recursos, en contexto español, para su evaluación. **Método:** este estudio pretende dar respuesta a la escasez de recursos evaluativos que indagaran en el papel que el contexto ejerce en el desarrollo de estas habilidades adaptando y validando la escala de autodeterminación AIR al contexto español en jóvenes con y sin discapacidad. **Resultados:** los resultados muestran unas características psicométricas de fiabilidad y de validez aceptables, y señalan diferencias en las oportunidades de las que disponen los jóvenes para actuar, en contexto escolar y familiar, en función de la presencia, o no, de discapacidad. **Conclusiones:** la versión española de la escala de autodeterminación AIR se erige como instrumento psicométricamente sólido para evaluar las capacidades y oportunidades para actuar de manera autodeterminada en todos los jóvenes. Se discuten también las implicaciones de las diferencias halladas en las oportunidades contextuales en función de la presencia de discapacidad.

Palabras clave: autodeterminación, oportunidades, contexto, evaluación, adolescentes con y sin discapacidad.

Self-determination as a psychological construct has been traditionally defined from the special education field. Research within this field has documented that adolescents with disabilities (e.g., learning disabilities and emotional and behavioral disorders; Pierson, Carter, Lane, & Glaeser, 2008) are less self-determined than their peers without disabilities, thus emphasizing the need to promote self-determination. Besides, self-determination has also been related to successful academic and transition outcomes (e.g., Konrad, Fowler, Walker, Test, & Wood, 2007) and a higher quality of life (e.g., Nota, Ferrari, Soresi, & Wehmeyer, 2007). Self-determination-related skills are, however, as relevant for persons

with disabilities as for others (Shogren, López, Wehmeyer, Little, & Pressgrove, 2006), though little is known about self-determination in people without disabilities, especially in comparison to their peers with disabilities.

Learning to solve problems, to engage in decision-making processes, to set and achieve goals based on one's own interests and preferences and to plan, assess and adjust actions to reach these goals are some of the skills related to self-determination. These develop throughout childhood and adolescence as long as the child/adolescent is exposed to situations that foster opportunities to act in a self-determined manner. Self-determination must be then understood from its interactive nature, in line with the most recent definition of the construct that describes it as a "dispositional characteristic manifested as acting as the causal agent in one's life" (Shogren et al., 2015, p. 258). Defining self-determination as a dispositional characteristic that develops according to the supports and opportunities available in each situation to use the self-determination-related skills implies acknowledging that self-

determined action depends on the context that can either propel or thwart its occurrence and further development.

The impact of opportunities on the development of self-determination has largely been documented (e.g., Carter, Owens, Trainor, Sun, & Swedeen, 2009), thus emphasizing the need to teach and promote self-determination-related skills. A first step to spread and promote the professionals' awareness of the need to explicitly teach self-determination-related skills implies providing them with reliable measurement and intervention tools to guide their interventions. The *Self-Determined Learning Model of Instruction* (Wehmeyer, Palmer, Agran, Mithaug, & Martin, 2000) is a widely used teaching model based on a goal-setting and attainment structure that intends to foster self-determination-related skills and guide self-determination interventions, and it was recently adapted and translated into Spanish (Mumbardó-Adam, Vicente et al., in press). Though this model is commonly used across curricular goals (e.g., improving the student involvement in general education curriculum), its potential embraces other non-academic contexts where the person can set, plan and achieve a goal. In terms of measurement instruments, the *Arc's Self-Determination Scale* (SDS; Wehmeyer & Kelchner, 1995) and the *American Institute for Research Self-Determination Scale* (AIR; Wolman, Campeau, DuBois, Mithaug, & Stolarski, 1994) are the most used and spread assessment tools.

Though both instruments measure global self-determination, they are rooted in different theoretical frameworks. The SDS is framed in the functional theory of self-determination (Wehmeyer, 2003) that defines an action as self-determined depending on the function that the action serves for the person. The AIR is rooted in self-determined learning theory (Mithaug, Mithaug, Agran, Martin, & Wehmeyer, 2003), which is based on the interaction between the person's capacities and the available opportunities to act in a self-determined manner. These capacities include both the skills to act towards achieving personal goals, and the person's perceptions about personal self-determination-related skills. The opportunities, in turn, are expected to occur in the school and family contexts, where they learn to plan, assess and adjust their thoughts and actions to ultimately develop the skills and abilities related to self-determination. Previous research (Shogren et al., 2008) has stressed that the AIR assesses different elements than instruments rooted in the functional model of self-determination that seem to measure self-determination status at a specific time. The AIR explores how opportunities provided at school and at home support students with disabilities to engage in self-determined actions (e.g., Carter et al., 2009; Pierson et al., 2008).

Within the Spanish context, initiatives to adapt and validate self-determination measurement tools must be noted. The ARC-INICO (Verdugo et al., 2015), which is rooted in the functional theory of self-determination, has been validated with adolescents with intellectual disability, and the Self-Determination Inventory (Shogren et al., 2017), based on a reconceptualization of the functional model, has actually been validated with adolescents with and without disabilities (Mumbardó-Adam, Guàrdia-Olmos, Giné, Shogren, & Vicente, 2017). However, none of those instruments allow for an in-depth exploration of the role of the context in propelling or thwarting self-determined action. For this reason, the purpose of this paper is to respond to this need by validating the AIR into Spanish to provide practitioners with a complimentary instrument that addresses the shortcomings of those that only measure personal self-determination. Also,

considering the relevance of self-determination-related skills for every person, in this study we opted to follow the work by Shogren et al. (2017) and validate the AIR-S with all the adolescents, not only with those with disabilities, to whom all self-determination measurement tools have been traditionally addressed. For this reason, though the main purpose of this study is to validate the Spanish version of the AIR-S, a subsequent objective is to explore differences in the AIR-S dimensions distributions between adolescents with and without disabilities. Concretely, this study intends to answer the following research questions:

- 1) Which is the reliability and validity psychometric evidence that allows us to validate the Spanish version of the AIR-S?
- 2) Are there empirical differences between self-determined capacities and opportunities in school and family contexts based on the presence of disability?

Method

Participants

Participants were intentionally recruited from schools or universities across different regions of Spain. Data was collected from 620 middle-school and high-school youths: 371 (59.8%) were students with disabilities either enrolled in inclusive schools (8.1%) with their peers without disabilities, or in segregated settings (91.9%); and 249 (40.2%) were students without disabilities enrolled in general education schools or universities. Most of the participants were from Spain (79.3%), and the rest were from

Table 1
Demographic information of the participants

	With		Without	
	N	%	N	%
Gender (male)	243	65.5	117	47
<i>School setting</i>				
Special education school	341	91.9	–	–
General education school	30	8.1	249	100
<i>Grade</i>				
9 th grade	84	22.64	54	21.7
10 th grade	137	36.93	41	16.5
12 th grade	3	0.81	32	12.8
Vocational training programs	116	31.26	40	16.1
Transition to adult life programs	31	8.36	–	–
University/College	–	–	82	32.9
<i>Disability type</i>				
Intellectual Disability	342	92.2	–	–
Mild	119	34.8	–	–
Moderate	149	43.57	–	–
Severe	74	21.63	–	–
ADHD	59	15.9	–	–
Learning Disability	116	31.27	–	–
Visual and Hearing Impairment	22	5.93	–	–
Autism Spectrum Disorder	41	11.05	–	–
Language and Communication Disorders	19	5.12	–	–
Emotional and Behavioral Disorders	68	18.33	–	–
Mental Health problems	37	9.97	–	–
Motor Impairment	13	3.5	–	–
Two or more disabilities	223	60.1	–	–

Latin America (10.8%) and Eastern European (1.8%), West Asian (2.6%) and African countries (5.5%). On average, the students' ages ranged from 13 to 22 years ($M = 16.86$; $SD = 2.06$), the majority being male (58.1%). Detailed demographic information is provided in tables 1 and 2.

Instruments

The AIR-S measures a person's capacities and opportunities for self-determination and is available in Student, Educator, and Parent versions. For the purpose of this study, the Spanish online student version form was used, which has 24 questions divided into two scales that gather data on the students' self-reported capacities and opportunities to engage in self-determined actions. The Capacity scale is in turn divided into two subscales and covers questions about the students' (1) *ability* related to self-determination and (2) *perceptions* about performing self-determined actions. The Opportunity scale is also composed of two subscales that measure (1) the students' perceptions of their *opportunities at home* to perform self-determined actions and (2) *opportunities at school*. Scores are rated on a Likert scale from 1 (Never) to 5 (Always). The AIR has been extensively used and has demonstrated adequate test-retest reliability (.74 after 3 months) and a strong internal consistency (Cronbach's alpha ranging from .89 to .99). In terms of validity, the original authors conducted a factor analysis that supported a four-factor structure explaining 74% of the instrument variance (Mithaug et al., 2003).

Procedure

Translation, adaptation and pilot test

Tassé and Craig's (1999) guidelines were followed to adapt the AIR-S Spanish version. Two official translators translated the instrument independently into Spanish and discrepancies between the translations were resolved to develop one initial version of the scale. Then, a back translation was performed which showed that the final translation reflected the content of the original questionnaire. Five experts (researchers and professionals) assessed this translated version for items' clarity, importance and suitability. All the comments were analyzed and discussed by the authors until common agreement was reached. Few modifications of the scale were made, such as rewording some generic nouns to improve comprehension (e.g., avoiding synonyms of the word 'goal').

After the experts' changes were implemented, a pilot study was performed to test this instrument's preliminary version. In total, 114 youths participated in the study; 55 (48.2%) were students with disabilities and 59 (51.8%) were students without

disabilities. In terms of disability label, 26 (47.3%) students were reported to have mild intellectual disability and 26 (47.3%) were classified as having moderate intellectual disability. Additionally, three students (5.4%) were also diagnosed with Autism Spectrum Disorder. On average, students were 17 years old ($M = 17.36$; $SD = 2.70$), ranging from 13 to 22, the majority being female (66.7%). Students answered the AIR-S (Spanish version) in a self-report format, although the teachers and the first author provided support (i.e., item clarification) when needed.

An analysis of the item-subscale correlation matrix was performed to identify low-discrimination items (below .30). All items showed significant item-subscale correlations higher than .40, the lowest (.430) and highest (.778) correlation being found within the Perceptions subscale. The items' internal consistency was also checked, resulting in Cronbach's alpha ranging from .680 for Ability to .848 for Opportunities at school, with a .696 value for the whole scale. Results of the pilot test demonstrated empirical evidence of acceptable psychometric indexes, and this version was used in the field test.

Field test

General education schools, universities and special schools spread throughout Spain were intentionally contacted. To be included in this study, schools needed an Internet connection, since the self-determination survey was administered online. Out of the 48 schools contacted, 6 general education schools, 4 universities, and 21 special schools agreed to participate in the study. Regarding student selection, different procedures were followed for students with and without disabilities. For students with disabilities, a sample of the questionnaires was sent to schools, so that teachers could intentionally choose students with disabilities who could render reliable information when answering the questions if support was provided. For students without disabilities, general education schools were asked to select a class between 9th and 12th grade, and universities were asked to select a 1st, 2nd or 3rd year class. Once potential participants had been selected, consent from the parent or the participant, if they were of legal age, was obtained. Students were provided as much time as needed to complete the scale. Teachers were explained the items' meanings and response system as well as how to support the scale administration. Students could be provided with different kinds of supports such as: facilitating access to information (i.e., reading the questions) and understanding and interpreting the questions (i.e., giving synonyms for misunderstood words).

Data analysis

To answer the first study objective, the reliability of the scale was first assessed through internal consistency by calculating Cronbach's alpha. The ordinal reliability coefficient was also calculated to confirm the scale internal consistency, as Cronbach's alpha – albeit the most used reliability estimation within the psychology field – assumes the response items to be continuous. Specifically, the theta coefficient was calculated – a reliability estimation based on the eigenvalues extracted from a principal component analysis was calculated following Amor's (1974) estimation procedures. Secondly, construct validity was examined using confirmatory factor analyses (CFA) with the first- (Ability, Perceptions, Home and School) and second- (Capacities and Opportunities) order

Table 2
Participants' age by gender and disability detailed description

Age	Gender		Disability	
	Male	Female	With	Without
13-14	42 (11.6%)	39 (15%)	45 (12.1%)	36 (14.5%)
15-16	136 (37.8%)	69 (26.5%)	130 (35%)	75 (30.1%)
17-18	120 (33.3%)	83 (32%)	140 (37.7%)	63 (25.3%)
19-20	55 (15.3%)	47 (18%)	52 (14.1%)	50 (20.1%)
21-22	7 (2%)	22 (8.5%)	4 (1.1%)	25 (10%)

factor structures. As items were measured in an ordinal response scale and the variances of the items' distributions were unequal, a Weighted Least Squares solution was used to analyze model fit estimations. Thirdly, configural invariance was established to assert that the same latent construct was measured across students with and without disabilities. Finally, regarding the second research objective, differences between the means of adolescents with and without disabilities were finally explored for the four first-order factors through a t-test analysis. All the analyses were performed with the whole sample of participants (i.e., with and without disabilities) and using the IBM SPSS statistical package .22 and Mplus software (5.0) (Muthén & Muthén, 2012).

Results

In response to the first research question, which focused on exploring psychometrical properties of the AIR-S (Spanish version) to validate it into the Spanish context, the instrument's reliability and validity were examined. Internal consistency values obtained through Cronbach's alpha yielded acceptable values for the following subscales: Ability (.717) and Perceptions (.763). In turn, they yielded good values for Opportunities at School (.769) and at Home (.847) subscales. Higher order constructs showed good Cronbach's alpha values too: Opportunities (.862) and Capacities (.846). The theta coefficient was calculated for the whole scale (.925) and showed a higher value than the whole scale Cronbach's alpha (.880).

Construct validity was analyzed through a CFA. Although to date a complete consensus about goodness-of-fit indexes interpretation is still lacking, Hu and Bentler (1999) recommendations were followed for model fit interpretation. The χ^2 to degrees of freedom ratio (χ^2/df), which are either acceptable ($\chi^2/df < 5$), good ($\chi^2/df < 3$), or excellent ($\chi^2/df < 2$); the Comparative Fit Index (CFI $\geq .90$); the Tucker Lewis Index (TLI $\geq .90$); and the Root Mean Square Error of Approximation (RMSEA $< .06$) were considered for model fit interpretation. The values obtained showed an acceptable model fit (CFI = .982, TLI = .962, RMSEA = .043), except for the chi-square test, which was statistically significant ($\chi^2(247) = 1561.89, p < .001$), though chi-square is usually highly influenced by large effect sizes (Hooper, Coughlan, & Mullen, 2008). Also, the value of the ratio of χ^2 by degrees of freedom (χ^2/gf) was 6.3. Although lower values for the χ^2/gf index would have been more adequate, this result was still under reasonable value ranges. Standardized factor loadings of first- and second-order factors and items are shown in Table 3.

A two-group CFA model was used to examine measurement invariance across the disability and no-disability groups. The model fit for configural invariance was good (CFI = .910, TLI = .991, RMSEA = .031, $\chi^2/gf = 2.5$), and all item factor loadings were very similar between groups (i.e., students with and without disabilities), further purporting the presence of measurement invariance between groups.

In response to the second research question, differences between the first-order-factor latent means of students with and without disabilities were probed. Significant differences were not found in the Ability ($t(597) = -.937, p = .349$) and Perceptions ($t(585) = -1.068, p = .286$) dimensions, as opposed to both Opportunities dimensions. Significant differences were found in favor of participants with disabilities at School ($t(618) = 5.093, p < .001$), as opposed to Home ($t(618) = -2.739, p = .006$), with significant differences favoring participants without disabilities.

Table 3
Standardized factor loadings from the confirmatory factorial analysis

	Ability	Perceptions	School	Home
Item 1	.709			
Item 2	.693			
Item 3	.738			
Item 4	.767			
Item 5	.660			
Item 6	.731			
Item 7		.815		
Item 8		.864		
Item 9		.827		
Item 10		.809		
Item 11		.758		
Item 12		.700		
Item 13			.836	
Item 14			.912	
Item 15			.878	
Item 16			.896	
Item 17			.870	
Item 18			.838	
Item 19				.896
Item 20				.916
Item 21				.892
Item 22				.921
Item 23				.888
Item 24				.886
<i>Second-order factors</i>				
Capacities	.962	.992		
Opportunities			.927	.870

Note: All factorial loadings: $p < .001$

Discussion

The present study aimed to validate the Spanish version of the AIR-S and to explore differences in the dimensions' distributions between adolescents with and without disabilities. Firstly, statistical estimators of reliability and construct validity corroborated an acceptable internal consistency, as well as a good fit of the second-order factor structure tested. Measurement invariance was also established between groups, thus confirming that the AIR-S measures the same construct in youths with and without disabilities. Secondly, as opposed to the Capacities dimension, significant differences were found in the Opportunities dimension in favor of participants with disabilities in the school context and in favor of participants without disabilities in the family context.

The Spanish version of the AIR-S obtained acceptable internal consistency values (Cronbach's alpha from .717 to .847). While the original version of the scale obtained higher internal consistency indexes (Cronbach's alpha from .89 to .99; Mithaug et al., 2003), the present study results align with other validations of the instrument such as the Chinese version (Cronbach's alpha from .70 to .83; Wong, Wong, Zhuang, & Liu, 2017), only validated with youths with intellectual disability. In both adapted versions, higher values are reported for the Opportunities subscales in comparison with the Capacities subscales, with Opportunities at home obtaining higher Cronbach's alpha values (.847 for the Spanish version and

.83 for the Chinese version). The Spanish results also confirmed the four first-order-factor and two second-order-factor structures supporting the original scale structure. The goodness-of-fit indexes aligned with Wong et al. (2017) values, too (CFI = .933, TLI = .926, RMSEA = .041).

Though informative, these results are not exempt from some limitations. To date, there is no measure in Spanish to assess contextual opportunities to develop self-determined actions for youths with and without disabilities with which to compare the results or establish concurrent validity. However, this particularity represents an added value to the study, too. Furthermore, when interpreting the results, it should be taken into account that the participants' disabilities, age and gender were not proportionally represented within the sample. Validating the AIR-S into Spanish with youths with and without disabilities adds to the newest and innovative approaches within the field of intellectual and developmental disabilities that promote universal assessment and intervention initiatives that target all youths, limiting exhaustive and individual interventions for students with higher support needs (Shogren, Wehmeyer, & Lane, 2016). In this sense, though future research must endeavor in establishing standardized norms for the Spanish version of the AIR-E, having a validated tool to use with all youths and making it accessible for professionals and institutions nurtures the need to collect significant information about how the person values the context as a propelling or hindering factor. A recent review of self-determination studies has stressed the scarcity of available research providing empirical data about the person's context, thus concluding that no general assumptions can be drawn from past research (Mumbardó-Adam et al., 2017), and that further evidence based on empirical data is needed to explore the context role in self-determination promotion.

That participants with disabilities report having fewer opportunities at home than their non-disabled peers to act in a self-determined manner might emphasize parental overprotection towards children with disabilities, thus limiting their opportunities to act, make mistakes and adjust their actions based on their own experiences. Parents have been found to rate their children with disabilities skills lower than teachers (Carter et al., 2009), thus nurturing the youths' perceptions about the lack of opportunities at home. Also, that youths with disabilities report having more opportunities than their peers without disabilities in the school

context highlights the lack of explicit teaching of skills related to self-determination in mainstream environments, though further research including participants without disabilities is needed to nurture this body of knowledge (e.g., assessment implications, differences and similarities with students with disabilities). Everyone uses these skills on a daily basis, but they are too often taken for granted for youths without disabilities while they would undoubtedly benefit from this learning (Shogren et al., 2016). Future research must compare teachers', parents' and youths' perceptions, as aligning them has the potential to share needs and adjust expectations and supports towards teaching self-determination-related skills.

The presence of significant differences between youths with and without disabilities with regard to their perceptions of opportunities but not in the capacities strengthens the relevance of assessing the context to plan tailored interventions. In parallel, recent studies (Mumbardó-Adam, Guàrdia-Olmos et al., in press) found no significant differences in the beliefs of youths with and without disabilities about their self-determination capacities. Future research should then focus on exploring the mediating role that the person's beliefs about their actions play in contextual opportunities and their self-determined actions (Wehmeyer, Shogren, Little, & López, 2017). The beliefs that students assume about their abilities directly influence their school performance (Yeager & Dweck, 2012). When youths believe that their skills can be improved, they develop a self-efficacy sense that allows them to face and respond to challenges and opportunities. Empirical evidence on the role of beliefs in self-determination development has the potential to inform intervention programs on building empowerment beliefs, self-knowledge and adjusted expectations that promote, in turn, the use of self-determination-related skills, as long as the context renders them opportunities to do so.

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