ADAPTING A SELF-CONCEPT QUESTIONNAIRE FOR STUDENTS WITH INTELLECTUAL DISABILITIES: AN INCLUSIVE RESEARCH APPROACH

ABSTRACT

Background: Given the significant gap in tailored assessment tools, this research seeks to adapt the Self-concept (Form 5-AF5) questionnaire for young students with intellectual disabilities, employing an inclusive approach.

Method: Twenty-three disability experts initially assessed questionnaire suitability, leading to revisions for clarity. Cognitive interviews with eight students with intellectual disability clarified questions, and both original and adapted questionnaires were administered to students with and without intellectual disabilities for equivalence verification.

Results: The adapted scale showed good internal consistency. Correlation between scores of students without intellectual disabilities on original and adapted questionnaires exceeded .70. Students with intellectual disabilities reported higher levels of academic self-concept than their peers without intellectual disabilities.

Conclusions: The adaptation of the Self-concept (Form 5-AF5) questionnaire in this research facilitates the comparison of diverse student populations, as demonstrated by the alignment of results between the original and adapted questionnaires in the general student population.

Lay Summary

- Adapted the Self-concept (Form 5-AF5) questionnaire to better suit young students with intellectual disabilities, addressing a notable gap in assessment tools.
- Refined the question input from disability experts and cognitive interviews with students with intellectual disability, ensuring clarity and relevance.

- Validated the adapted questionnaire's reliability, revealing strong internal consistency and correlation with the original version among students without intellectual disabilities.
- Highlighted differences in academic self-concept between students with and without intellectual disabilities, highlighting the adapted questionnaire's usefulness in understanding diverse student populations.

Keywords: Self-concept, Inclusive research, Cognitive interviews, Questionnaire adaptation, Self-concept (Form 5-AF5) questionnaire

Introduction

The latest data published by the Spanish National Institute of Statistics (INE) in 2019 (no more recent official statistics have been published) regarding the education level by type of disability show that only 16.9% of people with disability had higher education, and none of them had intellectual disabilities. Individuals with intellectual disabilities are often prematurely excluded from the educational system, frequently being pushed out of mainstream education or placed in segregated settings, which restricts their opportunities for social integration and academic growth.

Therefore, it is essential to ensure that participation in educational activities not only promotes knowledge acquisition but also introduces positive changes in the self-concept of individuals with intellectual disabilities, enhancing the acquisition of key skills for integration into the world of work.

Self-concept refers to the perception of who we are, stemming from various direct or indirect evaluations received from different psychosocial environments (Shavelson et al., 1976). Thus, researchers generally agree that self-concept is a multidimensional construct (García et al., 2011), derived from evaluations in academic, family, social, physical, and emotional domains, each contributing to a person's well-being.

One of the most widely used scales, based on this multidimensional concept and demonstrating appropriate psychometric characteristics, is the Self-Concept Scale (Form 5-AF5) (García et al., 2013).

The dimensions of AF5 are grounded in Shavelson et al.'s (1976) multidimensional and hierarchical model, encompassing academic/professional, emotional, familial, social, and physical self-concepts. These dimensions are considered interrelated and constitute first-order dimensions that result in a second-order dimension of self-concept, as indicated by García and Musitu (2014).

Academic/professional self-concept applies to the student/employee's self-perception of their role development at school, study center, or workplace. Emotional self-concept relates to the perception of one's ability to control situations and emotions in daily life. Family self-concept focuses on a person's perception of their integration into the family structure, represented by parents or guardians and the family as a whole. Social self-concept refers to one's perception of performance in various social situations, their social network, and qualities related to establishing and maintaining interpersonal relationships. Lastly, physical self-concept involves self-perception regarding appearance and physical condition.

Originally developed in Spanish for the general population (García & Musitu, 1999), this scale has undergone various validation studies in the Spanish population (Chacón-Cuberos et al., 2020; Fuentes et al., 2011; Galindo-Domínguez, 2019; García et al., 2006; García et al., 2011, García-Grau et al., 2014; Martínez Martínez et al., 2018; Murgui et al., 2012; Núñez et al., 2007; Tomás & Oliver, 2004; Véliz Burgos & Apodaca Urquijo, 2012; Zurita-Ortega et al., 2023; Zurita-Ortega et al., 2018).

Furthermore, the scale has been adapted and/or translated into various languages, including Catalan, Basque, Romanian, Portuguese, English, and Chinese. This global reach is reflected in its administration across diverse countries, spanning Brazil, Peru, Colombia, Portugal, China, Romania, the United States, Argentina, and Chile (Table 1).

Table 1. Adaptation/translations of the AF5

Countries	Languages	References
Argentina	Spanish	Marasca et al., 2013
Brazil	Brazilian	Castellà Sarriera et al., 2015; García et al., 2018
Chile	Spanish	Riquelme Mella & Riquelme Bravo, 2011
China	Chinese	Chen et al., 2020
Colombia	Spanish	Hederich-Martínez et al., 2022; Montoya Londoño et al., 2019
Perú	Spanish	Bustos et al., 2015; Carranza Esteban & Bermúdez-Jaimes, 2017
Portugal	Portuguese	Castellà Sarriera et al., 2015; García et al., 2006; García et al., 2018
Romania	Romanian	Cristea & Ghergut, 2023
Spain	Spanish	Chacón-Cuberos et al., 2020; Fuentes et al., 2011; Galindo-Domínguez, 2019; García et al., 2006; García et al., 2011, García-Grau et al., 2014; Martínez Martínez et al., 2018; Murgui et al., 2012; Núñez et al., 2007; Tomás & Oliver, 2004; Véliz Burgos & Apodaca Urquijo, 2012; Zurita-Ortega et al., 2023; Zurita-Ortega et al., 2018
	Catalan	Malo Cerrato et al., 2011
	Basque	Elosúa & Muñiz, 2010; Esnaola et al., 2011
United States	English	García et al., 2013

However, there is no adaptation of the scale for use in youth with intellectual disabilities. While Cristea and Ghergut (2023) conducted a double translation procedure of AF5 into Romanian for application to students with mild to moderate intellectual and learning disabilities (2-19 years old), the scale was not tailored to the needs of these students.

Developing scales adapted to specific targets, with a particular focus on question formulation, is crucial, especially for individuals with intellectual disabilities (Bakker-van Gijssel et al., 2020). The exact wording of questions, in plain language, is even more critical for this population (Baumbusch et al., 2014). Therefore, our research emphasizes formulating questions about self-concept in a manner that ensures they are well structured, easily understood, and accessible to young people with intellectual disabilities (Willis, 2005).

In this sense, it is necessary for young people with intellectual disabilities to participate in the design and development of tools that allow the measurement of complex constructs like this in a valid and reliable manner. For this reason, the present

study included elements of inclusive research (Haya et al., 2014; Walmsley & Johnson, 2003), with students with intellectual disabilities actively participating in the research team, playing a crucial role in the design, adaptation, and evaluation of the questionnaire. This approach has been scarcely explored in Spain (Pallisera et al., 2017), despite being identified as a challenge by various authors (González Luna, 2013; Susinos & Parrilla, 2008, 2013).

Method

Subjects and procedure

The study unfolds in two distinct phases:

Phase I. Adaptation of the questionnaire: The adaptation of instruments follows a comprehensive strategy involving both the expertise of professionals in the field of training for individuals with intellectual disabilities and the active participation of young individuals with intellectual disabilities who are integral members of the research project.

Twenty-three experts (seniority=16.7 years) in the area of training for individuals with intellectual disabilities (22.7% psychopedagogist, 18.2% psychologist, 18.2% social worker, 13.6% social educator, 13.6% special education teacher, 13.7% others) assessed the questionnaire for clarity of instructions, representativeness, formulation precision of items, and alignment with the unique characteristics of the participants. Their insights led to recommendations for the removal, inclusion, or modification of specific items.

Following this, eight participants (21-26 years old; 4 female and 4 male) with mild intellectual disabilities engaged in the assessment of the questionnaire appropriateness through cognitive interviews (CI), guided by the methodology outlined

by Willis (2005). To facilitate the assessment of the instrument, it was divided into two parts. Each participant evaluated only one of these two parts, in addition to the instructions and the variables related to sociodemographic characteristics.

Finally, the academic researchers analyzed the responses of the participants, both experts in disability and people with intellectual disabilities, and made a proposal for the wording of the items for the next phase.

Phase II. Administration of the questionnaire: The questionnaire adapted in the previous phase was administered to 131 young people between 18 and 30 years old with mild intellectual disabilities who were participating in post-compulsory education training courses for individuals with intellectual disabilities at two different Spanish universities. The sample was composed of 55.7% men and 44.33% women. The average age of the participants was 21.55 years (SD=2.6). The administration of the questionnaire was done in pencil and paper format, and the participants received support from the staff of the centres, who were previously trained to avoid influencing the participants' responses.

A second group of vocational training students (n=35; 45.7% male and 54.3% female) without intellectual disabilities answered both, the original version of the instrument and the adapted version in order to assure the equivalence of the responses. The average age of the participants was 22.6 years (SD=2.9). Finally, a third group of vocational training students (n=54; 44.4% male, 53.7% female, and 1.9% non-binary) without intellectual disabilities answered the adapted version of the questionnaire. The average age of these participants was 20.4 years (SD=1.9). T-test and χ^2 test were conducted to determine if there were significant differences between groups by age and gender. Results confirm that there were no significant differences in gender distribution or mean age between students with and without intellectual disabilities (Table 2).

Table 2. Samples comparison by gender and age

	Students with intellectual disabilities (n=131)	Students without intellectual disability (Sample 1+2) (n=89)	Comparisons
Gender			
• Male	55.7%	44.9%	$\chi^2 = 2.463$
• Female	44.3%	55.1%	p = .1166
Mean age	21.6 (SD=2.65)	21.3 (SD=2.57)	t = -.834 p = .4051

The informed consent of all participants on phase I and phase II was obtained, and their anonymity was ensured at all times. Institutional Review Board (IRB) approval was obtained from the Bioethics Commission of the xxx (censored for blinded review) (IRB00003099- CER112311) after evaluation of the methodological, ethical, and legal aspects of the project.

Instrument

The questionnaire that was adapted was the Self-Concept Questionnaire Form 5 (Garcia & Musitu, 1999). In its original version, validated in young Spanish population (Garcia el al., 2011), the questionnaire consists of 30 items grouped into five dimensions (with six items per dimension) (RMSEA = .06; GFI = .89; AGFI=.87; CFI=.91; AIC = 2527): academic self-concept (α = .91), social self-concept (α = .89), emotional self-concept (α = .82), family self-concept (α = .89), and physical self-concept (α = .86). The scale assesses these five self-concept dimensions on a scale of 1 to 99, where 1 signifies "Totally Disagree" and 99 signifies "Totally Agree".

Data Analysis

The experts' responses were analysed qualitatively and quantitatively. The means of the experts' scores were calculated and a score of two or above was considered sufficient to guarantee the representativeness, clarity and adequacy of each item analysed. However,

in scores higher than two, where experts provided considerations for changes, these were evaluated and taken into account by the research team. The cognitive interviews were analysed qualitatively under the guidelines developed by Willis (2005).

The internal consistency of the adapted questionnaire (administered to students with and without intellectual disabilities) and the original questionnaire (administered to students without intellectual disabilities) was calculated using Cronbach's alpha.

To verify the equivalence between scores obtained from the original version and the short version, a Kendall's tau-b correlation was employed. It does not assume a specific distribution for the data and it is robust and suitable for use with ordinal or ranked data, such as Likert scale ratings (in this case, an adapted scale from 1 to 3 and an original scale from 1 to 99) (Kendall, 1938).

Finally, the scores derived from the adapted questionnaire for students, both with and without intellectual disabilities, were subjected to comparison using the Student's t-test for independent samples to establish any significant differences.

Results

Phase I.

Experts' assessment

The instructions were deemed fairly clear by the experts (Mean = 2.16; SD = .834), although they suggested simplifying the measurement scale. The original scale proposal, ranging from 1 to 99, was condensed into a three-category scale: "Never or almost never", "Sometimes", and "Always or almost always". Subsequently, experts recommended a further refinement to avoid absolute values: "Almost never", "Sometimes", and "Almost always".

Regarding the items, five of them obtained adequacy averages below two (Table 3). On the other hand, based on the suggestions from the experts, modifications were made in the wording of six items with adjustments above two. Finally, all items were revised following the European guidelines for generating easy-to-read information (Freyhoff et al., 1998).

Table 3. Assessment of clarity of the original items by the experts (n=22).

Original version		N	Min	Max	Mean	SD
1.	Hago bien los trabajos escolares [I do my schoolwork well]	22	1	3	2.36	.727
2.	Mis profesores me consideran un buen trabajador [My teachers consider me a hard worker]	21	1	3	2.24	.831
3.	Trabajo mucho en clase [I work a lot in class]	22	1	3	2.82	.501
4.	Mis profesores me estiman [My teachers like me]	19	1	3	1.68	.820
5.	Soy un buen estudiante [I am a good student]	21	1	3	2.67	.577
6.	Mis profesores me consideran inteligente y trabajador [My teachers consider me intelligent and hardworking]	20	1	3	1.90	.788
7.	Hago fácilmente amigos [I easily make friends]	22	1	3	2.36	.790
8.	Soy una persona amigable [I am a friendly person]	20	1	3	2.05	.826
9.	Es difícil para mí hacer amigos [It's hard for me to make friends]	22	1	3	2.55	.671
10.	Soy una persona alegre [I am a cheerful person]	22	3	3	3.00	.000
11.	Me cuesta hablar con desconocidos [I find it hard to talk to strangers]	22	1	3	2.68	.568
12.	Tengo muchos amigos [I have many friends]	22	2	3	2.95	.213
13.	Tengo miedo de algunas cosas [I'm afraid of some things]	22	1	3	2.55	.739
14.	Muchas cosas me ponen nervioso [Many things make me nervous]	22	1	3	2.50	.740
15.	Me asusto con facilidad [I get scared easily]	22	1	3	2.59	.666
16.	Cuando los mayores me dicen algo me pongo muy nervioso [When adults tell me something I get very nervous]	21	1	3	2.19	.814
17.	Me pongo nervioso cuando me pregunta el profesor [I get nervous when the teacher asks me a question]	22	1	3	2.82	.501
18.	Me siento nervioso [I feel nervous]	21	1	3	1.76	.889
19.	Soy muy criticado en casa [I am very criticized at home]	21	1	3	1.67	.658
20.	Me siento feliz en casa [I feel happy at home]	22	1	3	2.73	.550
21.	Mi familia está decepcionada de mí [My family is disappointed in me]	19	1	3	1.74	.806
22.	Mi familia me ayudaría en cualquier tipo de problemas [My family would help me with any kind of problem]	22	1	3	2.77	.528
23.	Mis padres me dan confianza [My parents give me confidence]	22	1	3	2.41	.734
24.	Me siento querido por mis padres [I feel loved by my parents]	21	1	3	2.67	.577
25.	Me cuido físicamente [I take care of myself physically]	21	1	3	2.33	.796
26.	Me buscan para realizar actividades deportivas [People seek me out to participate in sports activities]	21	1	3	2.00	.837
27.	Me considero elegante [I consider myself stylish]	22	1	3	2.32	.780
28.	Me gusta como soy físicamente [I like how I look physically]	22	1	3	2.68	.568
29.	Soy bueno haciendo deporte [I am good at sports]	22	2	3	2.77	.429
30.	Soy una persona atractiva [I am an attractive person]	19	1	3	2.37	.684

Note: The English version of the items has not been validated in this language.

Cognitive interviews

Participants in the cognitive interviews considered the wording of the instructions and the majority of the items to be appropriate, expressing their ability to explain them in

their own words and provide responses.

They proposed rephrasing three items (Table 4). In the item "*Mis profesores me aprecian*" ("My teachers appreciate me"), they felt they could not assess it unless specifically asked. For this reason, they suggested changing it to "*Creo que mis profesores me aprecian*" ("I believe my teachers appreciate me"). In the item "*Me cuesta hablar con personas que no conozco*" ("I have difficulties to talk to people I don't know"), they proposed changing it to "*Me es difícil hablar con personas que no conozco*" ("I find it difficult to talk to people I don't know"). The justification was based on a literal interpretation of "*costar*" as difficulty in speaking. Finally, in the item "*Tengo muchos amigos*" ("I have many friends"), they noted that specifying a quantity was challenging, suggesting removing the term "*muchos*" ("many"). They also observed that the response scale did not align well with this item, but the researchers deemed it necessary to maintain it for the uniformity of the instrument.

Table 4. Literals of the items in the original version, after expert review and cognitive interviews

Original	**Experts**	**Cognitive interviews**
1. Hago bien los trabajos escolares	Hago bien los deberes	Hago bien los deberes
2. Mis profesores me consideran un buen trabajador	Mis profesores me dicen que soy una persona trabajadora	Mis profesores me dicen que soy una persona trabajadora
3. Trabajo mucho en clase	Trabajo mucho en clase	Trabajo mucho en clase
4. Mis profesores me estiman	Mis profesores me aprecian	Creo que mis profesores me aprecian
5. Soy un buen estudiante	Soy buen estudiante	Soy buen estudiante
6. Mis profesores me consideran inteligente y trabajador	Mis profesores consideran que soy una persona lista	Mis profesores consideran que soy una persona lista
7. Hago fácilmente amigos	Hago amigos fácilmente	Hago amigos fácilmente
8. Soy una persona amigable	Caigo bien a la gente	Caigo bien a la gente
9. Es difícil para mí hacer amigos	Me cuesta hacer amigos	Me cuesta hacer amigos
10. Soy una persona alegre	Soy una persona alegre	Soy una persona alegre
11. Me cuesta hablar con desconocidos	Me cuesta hablar con personas que no conozco	Para mi es difícil hablar con personas que no conozco
12. Tengo muchos amigos	Tengo muchos amigos	Tengo amigos
13. Tengo miedo de algunas cosas	Hay cosas que me dan miedo	Hay cosas que me dan miedo
14. Muchas cosas me ponen nervioso	Hay muchas cosas que me ponen nervioso	Hay muchas cosas que me ponen nervioso
15. Me asusto con facilidad	Me asusto con facilidad	Me asusto con facilidad
16. Cuando los mayores me dicen algo me pongo muy nervioso	Me pongo muy nervioso cuando los mayores me dicen algo	Me pongo muy nervioso cuando los mayores me dicen algo

17.	Me pongo nervioso cuando me pregunta el profesor	Me pongo nervioso cuando me pregunta el profesor	Me pongo nervioso cuando me pregunta el profesor
18.	Me siento nervioso	Soy una persona nerviosa	Soy una persona nerviosa
19.	Soy muy criticado en casa	En casa me critican mucho	En casa me critican mucho
20.	Me siento feliz en casa	Me siento feliz en casa	Me siento feliz en casa
21.	Mi familia está decepcionada de mí	Mi familia está decepcionada conmigo	Mi familia está decepcionada conmigo
22.	Mi familia me ayudaría en cualquier tipo de problemas	Mi familia me ayuda con mis problemas	Mi familia me ayuda con mis problemas
23.	Mis padres me dan confianza	Mis padres me dan confianza	Mis padres me dan confianza
24.	Me siento querido por mis padres	Mis padres me quieren	Mis padres me quieren
25.	Me cuido físicamente	Me cuido físicamente	Me cuido físicamente
26.	Me buscan para realizar actividades deportivas	Cuentan conmigo para hacer deporte	Cuentan conmigo para hacer deporte
27.	Me considero elegante	Creo que soy elegante	Creo que soy elegante
28.	Me gusta como soy físicamente	Me gusta como soy físicamente	Me gusta como soy físicamente
29.	Soy bueno haciendo deporte	Soy bueno haciendo deporte	Soy bueno haciendo deporte
30.	Soy una persona atractiva	Soy una persona guapa	Soy una persona guapa

Note. See English translation in Supplementary file 1

Phase II

Internal consistency

The adapted scale demonstrated satisfactory internal consistency across the different dimensions for students with intellectual disabilities and those without (Table 5), as evidenced by coefficients ranging from .699 to .834. These results are equivalent to those obtained in the original scale when administered to students without intellectual disabilities (range: .748-.906).

Table 5. Internal consistency

	Adapted scale			Original scale
	Students with intellectual disabilities (n=131)	Students without intellectual disability (Sample 1) (n=35)	Students without intellectual disability (Sample 2) (n=54)	Students without intellectual disability (Sample 1) (n=35)
Academic self-concept	.756	.792	.781	.906
Social self-concept	.727	.699	.795	.748
Emotional self-concept	.710	.832	.734	.878
Familiar self-concept	.834	.746	.790	.775
Physical self-concept	.791	.798	.741	.837

Equivalence between the adapted and the original version of the scale

Finally, the correlations between scores attained by students without intellectual disabilities on both the adapted and original scales were significant across all dimensions (Table 6). However, it's noteworthy that, particularly in the social and emotional dimensions, Kendall's tau coefficients fall below .35. In these dimensions, the lower limits of the confidence intervals were recorded at .108 and .115 respectively.

Table 6. Correlations between original and adapted version of the Self-concept AF-5

	Kendall's tau-b	Significance (2-tailed)	95% Confidence Intervals (2-tailed)[a]	
			Lower	Upper
Academic self-concept	.689	<.001	.546	.792
Social self-concept	.328	.008	.108	.518
Emotional self-concept	.335	.007	.115	.523
Familiar self-concept	.751	<.001	.631	.836
Physical self-concept	.617	<.001	.453	.741

a. Estimation is based on Fisher's r-to-z transformation.

Self-concept in students with and without Intellectual Disabilities

To facilitate a comparative analysis between student groups with and without intellectual disabilities, we consolidated the available datasets from students without disabilities. This process yielded a sample of 89 participants, while the counterpart group of students with disabilities comprised 131 individuals.

As evident from Table 7, distinctions were observed solely in academic self-concept between the two cohorts. Remarkably, students with intellectual disabilities exhibited higher levels of academic self-concept compared to their counterparts without disabilities.

Table 7. Mean comparison between students with and without intellectual disabilities

	Students with intellectual disability (n=131)	Students without intellectual disability (Sample 1+2) (n=89)	Significance (2-tailed)
Academic self-concept	2.55	2.43	<.01
Social self-concept	2.35	2.44	ns
Emotional self-concept	2.13	2.10	ns
Familiar self-concept	2.67	2.61	ns
Physical self-concept	2.36	2.29	ns

Discussion and conclusions

The main objective of this research has been to adapt a widely used tool for assessing self-concept to the needs of students with intellectual disabilities aged between 18 and 30 years old.

The adaptation is crucial because it addresses the lack of suitable assessment tools tailored to the specific needs of young adults with intellectual disabilities. By modifying the existing self-concept assessment tool, researchers aim to provide a more inclusive approach for evaluating self-perception among this group (González Luna, 2013; Susinos & Parrilla, 2008, 2013).

Cognitive interviews have been used to adapt questionnaires for the general population, although they have rarely been utilized with individuals with intellectual disabilities. One of the few studies that did so is by Bakker-van Gijssel et al. (2020), who highlighted the importance of preparing participants by providing them with easy-to-read materials and emphasizing that it was not a test, and that there were no right or wrong answers. Additionally, as we have done in our study, the scale was simplified to make it more concrete, as indicated by Jen-Yi et al. (2015).

The results obtained in this research provide valuable insight into the effectiveness of the adapted scale for measuring self-concept in students with and without intellectual disabilities. There are few studies that have analysed the correspondence between the results obtained from a scale developed for the general

population and those for individuals with intellectual disabilities. Moreover, most of these studies focus on confirming the equivalence of scales used to measure intelligence in both populations (Facon et al., 2011; Reynolds et al., 2013).

A benefit of our research is that the scale adapted for individuals with intellectual disabilities is also suitable for administration to vocational training students of similar ages without intellectual disabilities. In this regard, our results empirically demonstrate the correlation between the scores obtained by students without disabilities on both versions of the instrument, proving the suitability of the adapted scale for measuring self-concept in both groups, and to compare their results.

Yakut and Akgul (2023) indicated the need to use adapted instruments to make appropriate comparisons between different groups. Some previous studies on self-concept, using non-adapted scales, indicated that students with disabilities showed lower levels of academic self-concept compared to students without disabilities (Gans et al., 2003; Yakut & Akgul, 2023; Zeleke, 2004;). Additionally, regarding social self-concept, no significant differences were found between the two groups (Zeleke, 2004).

In contrast, our study has revealed that students with disabilities showed a higher level of academic self-concept compared to their peers without disabilities when assessed with the adapted scale. This finding challenges common stereotypes and underscores the importance of fostering positive academic self-concept in all students, regardless of intellectual ability.

It should be noted that these results might be explained by the educational context in which young people with intellectual disabilities were situated. All of them were enrolled in vocational training courses offered at various universities exclusively for individuals with this type of disability, aged between 18 and 30 years, ultimately obtaining a recognized degree from the university upon completion.

It suggests that the educational context in which young people with intellectual disabilities were situated influenced their responses and perceptions (Maïano et al., 2019). By participating in vocational training courses specifically tailored for individuals with intellectual disabilities allowed them to develop a more positive academic self-concept. Therefore, the university context may have significantly contributed to the observed results in the research.

The adaptation of the scale has been essential for better understanding the strengths and challenges of students with intellectual disabilities, ultimately leading to more effective support and intervention strategies tailored to their unique needs and circumstances.

Despite the evident added value of the adapted instrument for students with intellectual disabilities, our research has some limitations. First, it is important to note that the participants had mild intellectual disabilities. Future research should include individuals with more severe or milder degrees of intellectual disability, using proxies to assist with responses as done in similar studies (Bakker-van Gijssel et al., 2020).

Secondly, it is noteworthy that correlation coefficients for the social and emotional dimensions assessed by the original and the adapted scales fell below .35, indicating a weaker correlation in these areas. This suggests that the adapted scale may not capture these dimensions as effectively in students without intellectual disabilities, warranting further investigation.

Thirdly, although this research is grounded in inclusive research from a collaborative group perspective (Bigby et al., 2013), there remains significant potential for individuals with intellectual disabilities to be more comprehensively engaged in such research. Future studies should aim to involve individuals with disabilities across

all phases of the research process, ensuring they assume leadership and decision-making roles.

Finally, during the cognitive interviews, in order to avoid overload and fatigue in the participants, each of them was presented with only half of the items that make up the instrument. They all also reviewed the instructions and sociodemographic variables. This may have influenced the participants' analysis of the instrument. However, the results obtained in phase II with the administration of the questionnaire indicate its validity and reliability.

Overall, the study demonstrates that the adapted scale maintains its internal consistency regardless of the sample characteristics, providing evidence for its reliability and suggesting its suitability for assessing these domains across diverse student populations.

The findings underscore the empowerment of individuals with disabilities through the development of tailored tools, shifting them from passive objects to active research participants.

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Supplementary file 1

Original	Experts	Cognitive interviews
I do my homework well	I do my homework well	I do my homework well
My teachers consider me a hard worker	My teachers say I am a hard worker	My teachers say I am a hard worker
I work a lot in class	I work a lot in class	I work a lot in class
My teachers like me	My teachers appreciate me	I think my teachers appreciate me
I am a good student	I am a good student	I am a good student
My teachers consider me intelligent and hardworking	My teachers think I am smart	My teachers think I am smart
I easily make friends	I make friends easily	I make friends easily
I am a friendly person	People like me	People like me
It's hard for me to make friends	I find it hard to make friends	I find it hard to make friends
I am a cheerful person	I am a cheerful person	I am a cheerful person
I find it hard to talk to strangers	I find it hard to talk to people I do not know	It's difficult for me to talk to strangers
I have many friends	I have many friends	I have friends
I'm afraid of some things	There are things that scare me	There are things that scare me
Many things make me nervous	There are many things that make me nervous	There are many things that make me nervous
I get scared easily	I get scared easily	I get scared easily
When adults tell me something I get very nervous	I get very nervous when adults tell me something	I get very nervous when adults tell me something
I get nervous when the teacher asks me a question	I get nervous when the teacher asks me a question	I get nervous when the teacher asks me a question
I feel nervous	I am a nervous person	I am a nervous person
I am very criticized at home	I am criticized a lot at home	I am criticized a lot at home
I feel happy at home	I feel happy at home	I feel happy at home
My family is disappointed in me	My family is disappointed in me	My family is disappointed in me
My family would help me with any kind of problem	My family helps me with my problems	My family helps me with my problems
My parents give me confidence	My parents give me confidence	My parents give me confidence
I feel loved by my parents	My parents love me	My parents love me
I take care of myself physically	I take care of myself physically	I take care of myself physically
People seek me out to participate in sports activities	They count on me to play sports	They count on me to play sports
I consider myself stylish	I think I am stylish	I think I am stylish
I like how I look physically	I like how I look physically	I like how I look physically
I am good at sports	I am good at sports	I am good at sports
I am an attractive person	I am a good-looking person.	I am a good-looking person.

Note: The English version of the items has not been validated in this language.