Glasgow anxiety scale for people with an intellectual disability (GAS-ID): validation for Spanish population

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Abstract

Purpose – *Anxiety disorder is a common mental health problem in people with intellectual disabilities. Although this affects their quality of life, in Spain, there are no validated tools to evaluate the symptomatology of anxiety in people with intellectual disabilities. The aim of this study is to validate the Glasgow Anxiety Scale for people with an intellectual disability (GAS-ID) in the Spanish population.*

Design/methodology/approach – *The Spanish version of the GAS-ID was produced by back translation and was administered to 120 adults with intellectual disabilities. The psychometric analyses included internal consistency using the Cronbach's alpha coefficient, inter-rater and test-retest reliability were determined using intra class correlation and Pearson correlation coefficients and, finally, factor analysis with Varimax rotation to confirm the construct validity of the questionnaire.*

Findings – *Cronbach's alpha was 0.86 for the overall questionnaire. The intraclass correlation coefficient showed a good level of agreement in both test-retest (0.90) and inter-rater (0.91) analysis and the Pearson correlation showed a good significance in all dimensions and in the total scale. Varimax rotation factor analysis revealed four well-defined factors.*

Originality/value – *The GAS-ID is a feasible and reliable instrument for assessing anxiety symptoms in adults with mild and moderate intellectual disabilities, offering better diagnoses and therefore a more accurate treatment for the Spanish population with intellectual disabilities.*

Keywords *Assessment, Questionnaire, Mental health, Anxiety, Intellectual disabilities, Validation*

Paper type *Technical paper*

Introduction

Anxiety disorders are among the most common mental health problems in people with intellectual disability (ID), occurring in this group at a rate eleven times higher than that of the general population (Axmon *et al.*, 2018; Mrayyan *et al.*, 2019; Reid *et al.*, 2011). These figures are supported by research which shows that people with ID have a 72% chance of being exposed to negative life events throughout their lives, leading to an increase in depression and anxious symptomatology (Cooray and Bakala, 2005; Hermans and Evenhuis, 2012; Martorell and Tsakanikos, 2008; Martorell *et al.*, 2009; Reid, 2018; Smiley, 2005).

Some studies have shown that anxiety symptoms were significantly associated with the female gender and with a population with mild or moderate ID (Hermans *et al.*, 2013), but others show that is more prevalent in people with severe ID (Peña Salazar *et al.*, 2017).

These contradictions are due to the difficulty of diagnosis, which accounts for misdiagnosing in people with ID, or unidentified diagnoses (Baxter *et al.*, 2006; García-Ibáñez *et al.*, 2009; Mrayyan *et al.*, 2019). This may be due to the lack of specific tools that measure anxiety symptoms in people with ID (Hermans *et al.*, 2011) or depending on the degree of the

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disability, the identification or communication of some symptoms will be more difficult (Hermans *et al.*, 2013; Smiley, 2005; Shaddel, 2016). Furthermore, diagnostic overshadowing or pathoplasty are essential to knowing the clinical manifestations in people with ID (Reiss *et al.*, 1982; Núñez-Polo *et al.*, 2016). Finally, there is a lack of training among health professionals with respect to ID (García-Ibáñez *et al.*, 2009), which sometimes results in a high prescription of benzodiazepines, hiding symptoms for the diagnosis (Axmon *et al.*, 2019; Stolker *et al.*, 2002).

The diagnostic manuals used for the general population, as Diagnostic and Statistical Manual of Mental Health Disorders, DSM-V (APA, 2013) and Classification of Mental and Behavioural Disorders (WHO, 1993), do not take into account the concepts previously mentioned, such as pathoplasty, consequently specific diagnostic manuals have been created for people with intellectual disabilities. Those manuals are: the Diagnostic Criteria for Psychiatric Disorders for Use with Adults with Learning Disabilities/Mental Retardation, DC-LD (RCP, 2001), which includes the section of generalized anxiety disorders within the part of neurotic and stress-related disorders, considers behaviour as the way to express fear or anxiety, and also incorporates more psychosomatic symptoms; and the Diagnostic Manual-Intellectual Disability 2, DM-ID2 (Fletcher *et al.*, 2016), in the description of the criteria of generalized anxiety disorder diagnosis, distinguishes between people with mild and moderate intellectual disabilities, and people with profound intellectual disabilities. It also includes some annotations, such as those certain criteria cannot be applicable in some people with intellectual disabilities. For example, Criterion B, where there is a difficulty controlling worrying, is not required in persons with profound disability.

In a systematic review, Hermans *et al.* (2011) found 14 instruments for assessing anxiety disorder in people with ID. From all these tools, some of them measured anxiety exclusively. The GAS-ID (Mindham and Espie, 2003), showed better psychometric properties, with a short time for application (five to ten minutes), and is being used in other studies (Bond *et al.*, 2019; Forte *et al.*, 2011; Gobrial and Raghavan, 2012; Hagopian and Jennett, 2008; Hall *et al.*, 2014; Hermans *et al.*, 2013; Hermans *et al.*, 2012).

Diagnosing adequately the anxiety symptomatology is important considering the high prevalence in the population with ID, which affects their quality of life and their personal and social functioning. In Spain, there are no specific and validated tools those can assess anxiety symptoms in people with ID. Therefore, the main objective of this study is to validate the Glasgow Anxiety Scale for People with ID (GAS-ID) with the Spanish population.

Materials and methods

Procedure

This study was conducted at the A LA PAR Foundation in collaboration with the Universidad de Alcalá and Universidad Autónoma de Madrid. The A LA PAR Foundation responds to the needs of people with ID, providing support for around 1,000 people yearly.

This study aims to evaluate the validity and reliability of the GAS-ID, in the Spanish population. The Spanish version was produced by back translation; two native Spanish speakers fluent in English translated the Spanish version of the GAS-ID Scale into Spanish. This Spanish draft was then translated back into English by a native English speaker fluent in Spanish, and compared with the original version. Our ethical committee also approved the study and two psychologist experts in ID administered the questionnaire.

The purpose of the application of the scale was explained to the participants. They were asked to answer how they felt or if they had had any anxiety symptoms during the last week. Once the informed consent of the 120 participants and family members was collected, the scale was applied to them.

The questionnaire were then administered again to 30 randomly selected participants, by another evaluator, to obtain data on inter-rater reliability. Another 30 randomly selected participants were re-evaluate after two weeks in order to obtain data on test-retest reliability.

Participants

A total of 120 participants with ID were recruited, from different programs at A LA PAR Foundation (sheltered workshops, sheltered employment units, specialised training programmes and victim support unit for people with ID). The inclusion criterion was that the participants presented ID over 18 years.

Data referring to participants (Table 1) show an average age of 32 years (M_{age} = 32, SD = 9.90). Women accounted for 57% of the sample (n = 68) and 43% were men (n = 52). Eighteen percent (n = 22) of the participants presented borderline intelligence (IQ 70–86), 67% (n = 80) mild intellectual disabilities (IQ 50–69) and 15% (n = 18) had moderate intellectual disabilities (IQ 35–49) according to WHO (1993). All were assessed through the Wechsler Adult Intelligence Scale IV, (WAIS-IV) (Wechsler, 2012). As concerns the living conditions of the participants at the time of the study, 78% (n = 94) lived with their family of origin, 12% (n = 14) lived in shared sheltered apartments with other people with ID, 5% (n = 6) lived in residential centres and 5% (n = 6) lived as a couple.

Wechsler intelligence scale for adults IV (WAIS-IV)

All participants had the ID assessed through the WAIS-IV (Wechsler, 2012) and had a certification of disability.

Glasgow anxiety scale for people with an intellectual disability (GAS-ID)

Mindham and Espie (2003) developed the original scale. It is composed of 27 items, measured by a three-point Likert scale (no/never, sometimes, a lot/always). In addition, it measures three dimensions, represented by worries with 10 items, specific fears with 9 items and physiological symptoms with 8 items.

Table 1 Demographic data

	N (%)
Average age	32 (SD = 9.90)
18–30 years	55 (46%)
31–40 years	39 (33%)
41–50 years	22 (18%)
51–60 years	4 (3%)
Gender	68 (57%)
Women	52 (43%)
Men	
Type of intellectual disability	
Borderline	22 (18%)
Mild	80 (67%)
Moderate	18 (15%)
Type of living	
Familiy of origin	94 (78%)
Shared sheltered appartments	14 (12%)
Residential centers	6 (5%)
Couple	6 (5%)

Statistical analysis

For reliability to be analysed, Cronbach's alpha coefficient was used to calculate the correlation of the items with the total, in order to assess the internal consistency.

Of the total cases, 30 were randomly selected and evaluated by a different professional, and another 30 were interviewed fifteen days later to obtain inter-rater data for reliability analysis. This was calculated using intraclass correlation coefficient (ICC), with both using inter-rater and test-retest data (Koo and Li, 2016). In addition, in both groups (test-retest and inter-rater), a Pearson's correlation analysis was performed. Finally, a factor analysis with Varimax rotation was used to confirm the construct validity of the questionnaire. Analyses were completed with the Statistical Package for Social Sciences (IBM Corp, 2016).

Results

The sample was characterized with the descriptive data (means and standard deviations) (Table 2). The total average anxiety symptomatology in the sample was 17.27 (DS = 9.37).

Internal consistency

Internal consistency was analysed using Cronbach's alpha coefficient (Table 3). The result in the whole scale was 0.86, which is above the acceptable level of 0.70 (Cronbach, 1951), indicating a high internal consistency. In addition, it showed an adequate homogeneity within the worries and physiological symptoms dimensions with values of 0.73 and 0.83, respectively. The dimension of specific fears resulted in a lower homogeneity, although acceptable, with a value of 0.58.

Intraclass correlation coefficient

Both test-retest and inter-rater analysis (Table 4) showed a good level of agreement in the total scale, and in the dimensions. Although the level of agreement in the inter-rater analysis in the worries dimension is moderate (0.73), it can be concluded that the level of reliability is between good and excellent.

Table 2 GAS-ID descriptive results

GAS-ID	*N*	*Minimum*	*Maximum*	*M*	*SD*
GAS-ID Total	120	1	45	17.27	9.37
GAS-ID Worries	120	0	15	8.81	4.35
GAS-ID Fears	120	0	15	4.61	3.16
GAS-ID Physiological symptoms	120	0	18	3.85	3.83

Table 3 Internal consistency of the GAS-ID and its dimensions

GAS-ID dimensions	α
Total	0.86
Worries	0.73
Specific fears	0.58
Physiological symptoms	0.83

Note: α = Cronbach's alpha coefficient

Table 4 Psychometric properties. Intraclass correlation coefficient

Dimensions	*ICC* *Test-retest*	*Inter-rater*
Worries	0.90***	0.73***
Specific fears	0.84***	0.91***
Physiological symptoms	0.89***	0.92***
Total	0.90***	0.91***

Notes: *$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$; ICC = intraclass correlation coefficient

Reliability

Pearson's correlation analysis was carried out between the dimensions of the scale and the total value, with test-retest and inter-rater data. The correlations were statistically significant in all dimensions and in the total scale (Table 5).

Validity

The construct validity was explored through a factor analysis (Table 6). A Varimax rotation was carried out and four factors were found to explain 43% of the variance. From a sample size of $n = 120$, loadings with adequate values were obtained in all the items in the factors, some with higher loading (0.866) and others with an acceptable loading (0.326).

Discussion

The present study assesses the psychometric properties of the Glasgow Anxiety Scale for the Spanish population with ID.

The analysis shows a good internal consistency in the total of the scale, as does the original study by Mindham and Espie (2003), which showed a good internal consistency with a Cronbach's alpha coefficient of 0.93.

Furthermore, the analysis shows adequate reliability in the degree of precision and accuracy of the test, with a good level of significance in the Pearson correlation.

Regarding the construct validity, the items of the first and second factors behave appropriately with respect to the authors' construct, corresponding to the dimensions of physiological symptoms and worries respectively, offering a good degree of validity. It should be noted that the dimension of specific fears is represented by the third factor, referring to fears of phobic objects, and by the fourth factor referring to fears of social situations.

There are two items, item 8 (Do you worry about what you are going to do tomorrow?) and item 19 (Are you scared of open spaces?) that behave differently from the authors' constructs, both loading in the first factor. This may be because agoraphobia sensations and worries about an immediate future can be experienced as bodily sensations in people

Table 5 Test-retest and inter-rater Pearson's correlation analysis

Dimensions	*Test-retest* *r*	*Inter-rater* *r*
Worries	0.826***	0.573***
Specific fears	0.768***	0.852***
Physiological symptoms	0.798***	0.870***
Total	0.819***	0.869***

Notes: *$p \leq 0.05$, **$p \leq 0.01$, ***$p \leq 0.001$; *r*, pearson's correltaion coefficent

Table 6 Factor analysis. Construct validity ($n = 120$)

Content of the item	Factor I	Factor II	Factor III	Factor IV
		% Variance		
	18%	13%	7%	5%
Physiological symptoms				
22. Hands and legs shaking	0.701			
8. Worry about tomorrow	0.675			
21. Fast heartbeats	0.644			
24. Hard to breath	0.631			
25. Urinate more often	0.608			
19. Scared of open places	0.607			
20. Get hot or sweaty	0.600			
27. Panic	0.588			
26. Difficulty to sit still	0.526			
23. Butterflies in your stomach	0.438			
Worries				
4. Worry about the future		0.866		
5. Worry of something bad happening		0.731		
2. Thoughts in your head		0.555		
3. Worry about relatives		0.395		
6. Worry about being ill		0.362		
10. Worry about dying		0.357		
1. Worry/anxious		0.356		
9. Stop worrying yourself		0.343		
7. Worry of doing something new		0.326		
Specific fears				
Phobic objects or situations				
12. Scared heights			0.653	
15. Scared of spiders			0.624	
11. Scared of the dark			0.447	
13. Scared in lifts			0.437	
14. Scared of dogs			0.348	
Social situations				
18. Scared in crowded places				0.644
17. Scared of meeting new people				0.603
16. Scared of going to the doctor/dentist				0.395

with ID. The dimension of specific fears is represented in the last two factors, with clear divisions in the classification of specific fears (social situations or phobic objects).

Due to the simple use of the scale, this tool can be used by mental health professionals, and by professionals working in the field of ID, so it can be more easily referred to the specialists.

As study limitations, the sample was limited to a single centre, which could be relevant in the generalization of the results. On the other hand, as the GAS-ID was developed for people with mild or moderate ID, but not for people with severe or profound disabilities, it would be worth developing a version for this population. In addition, symptoms related to behavioural equivalents, very common in people with ID, are not included. It would be necessary to include other forms of evaluation, such as observation and the use of behaviour scales.

In summary, in terms of reliability and validity, the GAS-ID [Escala Glasgow de Ansiedad para Personas con Discapacidad Intelectual (GAS-ID)], shows adequate psychometric properties for the measurement of anxiety symptoms in people with ID in the Spanish population.

Escala Glasgow de Ansiedad para Personas con Discapacidad Intelectual (GAS-ID):

1. ¿Te preocupas/angustias/tensas mucho? ¿te sientes angustiado? ¿te notas tenso?

2. ¿Tienes muchos pensamientos en la cabeza? Pensamientos que no puedes parar, que no vienen de ninguna parte. . .
3. ¿Te preocupas por tus padres/familia? ¿Piensas que les puede pasar algo malo?
4. ¿Te preocupa lo que puede pasar en el futuro? (Adaptado al individuo)
5. ¿Te preocupa que algo malo pueda pasar?
6. ¿Te preocupas cuando no te encuentras bien? ¿Te preocupas cuando te sientes enfermo?
7. ¿Te preocupa hacer cosas nuevas? ¿Te da miedo hacer cosas por primera vez?
8. ¿Te preocupa pensar lo que estarás haciendo mañana?
9. ¿Puedes dejar de preocuparte? ¿Puedes pensar en cosas diferentes?
10. ¿Te preocupa morir o la muerte?
11. ¿Te da miedo la oscuridad? Piensa que estás en la cama con las luces apagadas: ¿te daría miedo?
12. ¿Te dan miedo las alturas? Piensa en que estás en un edificio alto: ¿te daría miedo?
13. ¿Sientes miedo en los ascensores? ¿Te subirías a uno?
14. ¿Te dan miedo los perros? ¿Acariciarías a uno?
15. ¿Te dan miedo las arañas? ¿Podrías tocar una? ¿Podrías estar cerca de una?
16. ¿Te da miedo ir al médico o al dentista? ¿Irías si lo necesitaras?
17. ¿Te da miedo conocer a gente nueva? ¿Eres tímido/a?
18. ¿Te da miedo estar en sitios con mucha gente? Multitudes, centros comerciales. . .
19. ¿Te da miedo estar en espacios abiertos? Cuando no hay nada a tu alrededor
20. ¿Alguna vez te sientes muy acalorado o sudas mucho? Sientes mucho calor y te encuentras muy incómodo
21. ¿Tu corazón late muy deprisa? ¿Sientes los latidos de tu corazón? ¿Son fuertes?
22. ¿Te tiemblan las manos y las piernas?
23. ¿Alguna vez sientes un hormigueo en el estómago? Un nudo en el estómago, mariposas en el estómago
24. ¿Alguna vez te cuesta respirar? Te quedas sin aliento, o se te corta la respiración o te cuesta respirar
25. ¿Sientes que tienes que ir al baño más de lo habitual?
26. ¿Se te hace difícil permanecer sentado/a? Sientes que no puedes permanecer sentado tranquilamente o relajarte
27. ¿Alguna vez te sientes como en estado de pánico?

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