



Psychometric properties of the Spanish version of the academic help seeking scale in a sample of adults

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ABSTRACT

Although academic help-seeking is an important variable in the academic context, as it is related to academic achievement, college adjustment and teacher support, among other variables, no instruments evaluate it in the Spanish adult population. The main goal of the current study was to develop an adaptation of the Academic Help-Seeking Scale for the Spanish adult population with suitable psychometric properties. The sample consisted of 536 adults with an average age of 24.98 ($SD = 8.55$). The exploratory factor analysis in the first half of the sample suggested that only one factor was underlying the data, and the confirmatory factor analysis in the second half showed that the factor structure replicated in a different sample. The results suggest that this adaptation has appropriate psychometric properties, and adequate reliability and convergent validity. We also found the expected relationships with gender and academic achievement. Therefore, this instrument may be useful for researchers and education professionals who need to assess this behaviour in adults so that they can help them improve their academic performance. The study also contributes to a better understanding of academic help-seeking as an adaptative learning strategy and the variables it is related to.

1. Introduction

Self-regulated learning (SRL) is a group of metacognitive, motivational, and, behavioral processes that students use to actively control their learning, and which help them to achieve their educational goals [1]. According to Zimmerman [2], SRL processes have three cyclical phases: forethought, performance, and self-reflection. In the forethought phase, students prepare themselves to learn. In the performance phase, students use specific strategies to perform a task. Finally, in the self-reflection phase, students react to the outcomes of the task. This reaction will influence the forethought phase of the next task.

In this study, we focus on the processes involved in the performance phase, which includes strategies for controlling the performance of a task. Despite this control, during their education, students may have difficulty completing some of their academic tasks. If they do, they may need to seek assistance from other individuals or sources that can help them to achieve their educational goals [3,4]. This strategy within the SRL paradigm has been described as academic help-seeking [5,6]. Karabenick and Berger [7] proposed a complete model about the academic help-seeking process, which includes the following stages: (1) determine whether there is a

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problem; (2) determine whether help is needed/wanted; (3) decide whether to seek help; (4) decide on the type of help needed; (5) decide whom to ask; (6) request help; (7) obtain help, and (8) process the help received. Depending on a student's purpose, two types of aid have been described: a) instrumental or adaptive help-seeking, and b) executive or expedient help-seeking. As far as the first type is concerned, students use this help to better understand the task and to solve it later by themselves. Therefore, this help enables students to assimilate the knowledge or skills to solve the problem on their own, so the help is temporary. On the other hand, in so-called executive or expedient help-seeking, the student's objective is to obtain the correct answer and finish the task, without this involving any assimilation of knowledge. In this case, the help is not temporary because students will need it whenever they have a similar task in the future [8]. Students may seek help from different sources such as teachers, peers, parents or the internet [9].

Attitudes towards academic help-seeking may affect students' final decision about asking for support or not [10]. In fact, students may perceive benefits (performance improvement, achievement of goals, etc.) and threats (feeling embarrassed to ask, being perceived as less competent by peers, etc.) from seeking assistance [6,11,12], which may have an impact on their decision to seek academic help when they need it [13]. In fact, when students perceive academic help-seeking as demanding and as a threat, they tend to avoid it [8].

Several studies have shown that there is a relationship between different types of academic help-seeking and attitudes towards this self-regulated strategy. In university students, negative relationships have been reported between instrumental help-seeking and executive help-seeking, and between instrumental help-seeking and avoidance of help-seeking [14,15]. In fact, it seems that students who tend to avoid help-seeking are more likely to prefer executive help-seeking when they decide to seek help, and less likely to choose instrumental help-seeking [4,16]. Similar relationships have also been reported for adolescent students [10,17], which indicates that those relationships are consistent through age. Furthermore, other studies carried out with adolescent samples have found a negative relationship between the perceived costs of help-seeking and instrumental help-seeking [17] and also between the perceived threats of help-seeking and instrumental or adaptive help-seeking [12]. In other words, students who tend to seek instrumental help are more likely to perceive fewer costs and fewer threats (for example, threats to their self-esteem or social embarrassment). In an adult sample of university students, Karabenick [4] found similar results, specifically a negative relationship between perceived threats and instrumental help-seeking. However, it is important to note that not all these relationships have been found in all the studies carried out with adolescents. For instance, Kessels and Steinmayr [18] found no relationship between the intentions to seek help, help-seeking avoidance, costs of help-seeking, and benefits of help-seeking in adolescents.

Student gender also has an important role in academic help-seeking. More specifically, women tend to report greater intentions to seek help and higher adaptive help-seeking [12,18–20] while men tend to report more executive help-seeking behaviours [21]. In fact, these gender differences have also been identified in attitudes towards academic help-seeking [22].

Academic help-seeking has also been studied in terms of several leading variables in education, although the literature on academic help-seeking in the adult population is scarce. Finney et al. [16] found small correlations between various help-seeking components and academic outcomes in a sample of university students after their first year of college. Similarly, Astatke [23] reported a positive correlation between academic outcomes and academic help-seeking in a sample of university students. Kessels and Steinmayer [18] found that academic achievement in adolescents was positively related to the intention to seek help and negatively related to avoiding help-seeking, but with a low effect size [16]. On the other hand, Schenke et al. [21] found a significant correlation between help-seeking from peers and academic achievement in adolescents, but only in students who took more advanced and difficult classes. Xie and Xie [15] and Finney [16] reported that academic self-efficacy in university students was positively related to instrumental help-seeking and negatively to executive help-seeking and avoidance of help-seeking. However, a study in Taiwanese university students found no correlation between academic help-seeking and self-efficacy, so the relationship between these variables remains unclear [24]. Other variables found to be related to academic help-seeking in university students are achievement goals [16,25], college adjustment [26] and learning self-regulation [27,28]. In adolescents, some studies have found that academic help-seeking is related to teacher support [11,12,29] and emotional loneliness [22], among other things.

The Academic Help-Seeking Scale (AHSS; [4]) is one of the most common self-report measures used to evaluate the tendency to seek help in the face of academic difficulties and the attitudes towards this behaviour [30]. It is based on a previous scale by Karabenick and Knapp [8], who assessed university students' sources of help, and the questionnaire developed by Newman [3] on attitudes towards help-seeking. Both studies relied on the Theory of Reasoned Action, which aims to explain how behavioural intentions can predict the final behaviour [31]. The AHSS consists of 13 items on academic help-seeking and preferred sources of help (formal or informal). The original version of this questionnaire is in English. According to Karabenick [4], the items are grouped in five subscales: 1. Instrumental help-seeking (2 items): when students ask for just the amount of help they need so that they can do the task for themselves; 2. Executive help-seeking (2 items): when students want the task to be done for them and just get the right answer; 3. Avoidance of help-seeking (3 items): not seeking help even though the students recognize they need it; 4. Help-seeking threat (3 items): when asking for help is related to being perceived as less competent or can be a threat to self-esteem; and 5. Source of help (3 items): whether the source of help is the professor (formal) or a peer (informal). However, in this study with university students from the USA, the author did not provide objective evidence about the dimensionality of this questionnaire. Regarding the internal consistency of the subscales, Cronbach's alpha coefficients ranged from .62 to .81 which were considered to be acceptable, although some are quite low. Using a hierarchical cluster analysis, the study by Karabenick [4] suggested four different profiles of help-seeking, based on the means obtained in each subscale: strategic/adaptive formal (high scores on the instrumental help-seeking and formal source subscales, and low scores on the others), strategic/adaptive informal (high scores on the instrumental help-seeking and informal source subscales, and low scores on the others), non-strategic (low scores on the instrumental help-seeking and formal source subscales, and high scores on threat and avoidance), and avoidant (high scores on the threat, avoidance and executive help-seeking subscales).

Several studies have been made on the psychometric properties of the scale in different samples. For example, Karabenick [32] conducted a principal components analysis using a root-one extraction criterion and a varimax rotation in a sample of 883 university

students. This analysis was performed on the basis of subscale scores, from which two-second order factors were extracted (help-seeking approach pattern and help-seeking avoidance pattern) explaining 69% of the variance. Nevertheless, it does not analyze how many primary factors there are or which items load on each of them. On the other hand, Gonida et al. [17] conducted a confirmatory factor analysis (CFA) in their Greek adaptation of the scale, with a sample of 207 adolescents, and found a good fit for the model with five dimensions. However, they do not report the values of the item loadings or provide further evidence about the psychometric properties of the questionnaire.

Despite being one of the most common measures for assessing academic help-seeking behaviours [30], the AHSS presents some weaknesses that should be taken into account. Firstly, as has been explained above, there is not enough evidence about the dimensionality of the instrument. In fact, none of the studies carried out an Exploratory Factor Analysis to determine the most appropriate number of factors underlying the data or to identify if some items were poorly functioning. Secondly, each subscale has only 2 or 3 items, but authors such as McDonald [33] have recommended against retaining factors with fewer than five items. In fact, according to Ferrando and Lorenzo-Seva [34], factors with so few items may be artifactual, giving rise to an item doublet or triplet that shares specific content, which means that the strength and construct validity of a solution like this one may be rather questionable. For these reasons, more research is needed to assess the psychometric properties of the AHSS in different populations and conditions.

Although academic help-seeking is a relevant variable in the academic context, to our knowledge no questionnaires in Spain focus specifically on this construct. Although the Spanish adaptation of the Motivated Strategies for Learning Questionnaire (MSLQ; [35]) developed by Albert [36] includes a strategy labelled “help-seeking” in a wider factor, it does not allow this construct to be properly assessed because it only includes three items. Similarly, the Coping Scale of the Academic Stress Questionnaire (*Escala de Afrontamiento del Cuestionario de Estrés Académico*, A-CEA; [37]) includes a subscale to assess social support in the academic context, which is a similar construct but not identical. In fact, this subscale refers to the tendency to seek advice, information and support to be able to face problems, and to be able to face the emotional situation caused by these problems. In conclusion, we could not find any questionnaires for assessing the same construct presented in the Academic Help-Seeking Scale in the Spanish population.

Professional educators and researchers need to be able to measure academic help-seeking if they are to improve and facilitate their students’ performance. To be able to study this construct in the Spanish adult population, a suitable instrument is required. However, as mentioned above, there are no tools for assessing academic help-seeking in the Spanish adult population. For this reason, and also because of the importance of this variable in the learning process and its relationship with educational and psychosocial outcomes, the main goal of the current study was to develop an adaptation of the Academic Help-Seeking Scale for the Spanish adult population with suitable psychometric properties. Due to the limitations of the previous studies on assessing psychometric properties with this instrument, as explained above, and the need to gather evidence about these properties in the population of interest in the current study, we also aimed to examine the factor structure of the scale, examine the reliability, and assess the validity of the scale by collecting evidence of convergence with a similar construct and examining the relationship with academic outcomes and gender.

Considering the previous findings, we anticipated that the factor analysis would suggest at most two factors, corresponding to the patterns of help-seeking avoidance and approach described by Karabenick [32], and not support the original five-factor structure of the scale. In fact, there are an insufficient number of items in the scale to adequately identify more than two factors. We also hypothesized that the scores on the Academic Help-Seeking Scale would be moderately correlated with the scores on the support seeking subscale of the Coping Scale of Academic Stress questionnaire [37], a construct similar to help-seeking, which would provide further evidence for the convergent validity of the scale. In the same way, we expected to find sex differences, since previous studies have found that

Table 1
Descriptive characteristics of the sample.

Characteristic	n	%
Gender		
Female	386	72
Male	146	27.2
No binary or other genders	3	0.6
Refuse to answer	1	0.2
Sexual orientation		
Straight	358	66.8
Lesbian or Gay	61	11.4
Bisexual	102	19.0
Other orientations	7	1.3
Refuse to answer	8	1.5
Personal situation		
Training course student	7	1.3
Degree student	342	63.8
Master student	66	12.3
PhD student	9	1.7
Employed	82	15.3
Unemployed	13	2.4
Other circumstances	17	3.2
Place of birth		
Spain	475	88.6
Other countries	61	11.4

women are more likely to engage in academic help-seeking than men [30].

2. Materials and methods

2.1. Participants

The sample consisted of 536 students who were recruited from the general population via an online survey in the spring of 2021. Study inclusion criteria were the following: (1) being 18 years old or above; (2) being able to read and write in Spanish; and, (3) being a student enrolled on an academic degree/course at the moment of the study.

The age range of the participants was from 18 to 66 years old, with an average of 24.98 ($SD = 8.55$). As far as gender is concerned, 386 identified as female (72%), as can be seen in Table 1. The mean age was 24.34 ($SD = 8.4$) for those who identified as female, 26.61 ($SD = 8.9$) for those who identified as male, and 23.0 ($SD = 5.0$) for the three people who identified as no binary or others genders. Regarding sexual orientation, 358 (66.8%) identified as straight. A total of 475 (88.6%) were born in Spain, and for those born in other countries the average number of years spent in Spain was 11.93. More than half of the participants were undergraduate students ($N = 342$, 63.8%) at the time of the study, of whom 102 (29.8%) were in the first year, 62 (18.1%) in the second year, 63 (18.4%) in the third year, 77 (22.5%) in the fourth year, 12 (3.5%) in the fifth and sixth year, and 26 (7.6%) did not provide this information. Regarding the field of studies of the undergraduate students, 142 (41.5%) were social sciences students, 56 (16.4%) science students, 55 (16.1%) health sciences students, 51 (14.9%) engineering and architecture students, 27 (7.9%) arts and humanities students, and 11 (3.2%) did not provide this information. Although some participants described themselves as employed, unemployed or other circumstances, it is worth noting that one inclusion criterion was being enrolled on some sort of academic course, so they were working and studying at the same time, doing training courses to find a job, or doing other courses to improve their skills. Table 1 depicts more descriptive information of the participants. Taking into account the characteristics of the sample, it can be considered to be heterogeneous.

2.2. Measures

Participants answered a survey that contained items on sociodemographic and educational issues, and the following two questionnaires: The Academic Help-Seeking Scale (AHSS) and the Coping Scale of Academic Stress (A-CEA). Although answering these questionnaires was not expected to be particularly tiring because they do not take long (10 min), the order in which the A-CEA and AHSS were presented was counterbalanced to prevent possible fatigue from always affecting the same questionnaire. Each questionnaire included its own instructions about how it should be answered. These measures are described below.

2.3. Sociodemographic and educational items

We collected data regarding age, gender, sexual orientation, national origin, years in Spain, personal situation and also information such as the educational level, educational background and academic results. Participants were asked to rate their academic results on a five-point scale from “very bad” to “very good”.

2.4. Academic Help-Seeking Scale (AHSS)

This questionnaire developed by Karabenick [4] aims to assess the tendency to seek academic help when it is needed. We administered the 13 original items and participants were asked to rate their agreement with each statement of the scale from 1 (completely disagree) to 5 (completely agree). Detailed information about the psychometric properties of this questionnaire has been provided in the introduction.

The AHSS was translated and adapted to Spanish using the back-translation procedure, following the guidelines of the International Test Commission (ITC) and the European Federation of Psychologists' Associations (EFPA) [38,39]. The scale was first translated from the original English into Spanish by an expert translator. The translation was reviewed by the research team and minor corrections were made to make sure the items were understood without difficulty. Then, a reverse translation was carried out by an expert translator and the result was compared to the original version. Finally, a pilot study was carried out with fifty undergraduate students in order to determine if the vocabulary and the item content was understandable. These participants did not suggest further changes. Final approval was given by the research team.

To ensure the suitability of the content and wording, each item was evaluated by four external judges. In this way, all potential errors or issues in the content and wording were identified and the necessary adjustments could be made before the item was approved and used for its intended purpose.

2.5. Coping Scale of Academic Stress (A-CEA)

This scale was developed by Cabanach et al. [37] for the Spanish population. It contains 23 items that assess 3 different factors: (1) *positive re-evaluation*, (2) *seeking* support and (3) *planning*. In the current study we only used the subscale of seeking support, which contains items about the tendency to seek advice and information on how to solve problems, and also items about the tendency to seek support and understanding in relation to the emotional situation caused by these problems. This subscale has 7 items. In the current study, the mean and standard deviation in this subscale was 22.2 and 6.8, respectively. Its internal consistency, measured by

Cronbach's alpha, is 0.91 in the current study.

2.6. Procedure

We obtained the approval of the ethical committee of the Rovira i Virgili University for the study design and the protocol administered (CEIPSA-2021-TD-0025).

The survey was disseminated online using several procedures. More specifically, we sent the survey to university students by email, using the Rovira i Virgili University's institutional e-mail. Participants were also recruited through student associations and social media, in order to get a more diverse sample of people enrolled on some sort of course or study programme. Therefore, the sampling was non-probabilistic by convenience.

The survey included information about the voluntary participation in the study, and also about the anonymity and confidentiality of the data collected. For security reasons, data was stored in a server under the custody of the university. We provided an e-mail for doubts or questions about the study. All participants gave their informed consent.

2.7. Data analysis

The sample was randomly split in two halves. The first half was used as a calibration subsample to determine the most appropriate number of factors underlying the data, and to identify the poorly functioning items. We first calculated the Kaiser-Meyer-Olkin (KMO) to determine if the correlation matrix was well suited for factor analysis. We carried out several Exploratory factor analyses (EFAs) with this first subsample using Robust Unweighted Least Squares (RULS) estimation with second order (mean and variance) corrections. The factors were expected to correlate so the direct solution was obliquely rotated using Robust Promin Rotation [40]. The cut-point used to determine if an item substantially loaded in a factor was 0.30. Therefore, those items with loading values under this cut-point were removed. In order to determine the most appropriate dimensionality, we used Schwarz's Bayesian Information Criterion (BIC) and Parallel Analysis [41] (as proposed by Lattin et al. [42]). The BIC statistic is essentially a trade-off between goodness of model-data fit and parsimony. The usual procedure in the assessment of dimensionality is to obtain the values for a range of solutions with a different number of factors. These values usually define a U-shaped function and the chosen solution is the one that provides the minimum value. We also used the following indices that assess closeness to unidimensionality [34]: Unidimensional Congruence (UniCo), Explained Common Variance (ECV), and Mean of Item Residual Absolute Loadings (MIREAL). Values higher than 0.95 for UniCo, higher than 0.85 for ECV and lower than 0.30 for MIREAL suggest that the data can be treated as essentially unidimensional. The following fit indices were also used: Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Goodness of Fit Index (GFI) and Root Mean Square of Residuals (RMSR). Values of CFI and GFI higher than 0.90, and values of RMSR and RMSEA lower than 0.08 and 0.07, respectively, are indicative of an acceptable fit [43–45].

The final solution obtained in the calibration subsample was fitted in the validation subsample (second half of the sample) to determine if the results could be generalised to a different sample. a Confirmatory Factor Analysis (CFA) was fitted in the validation subsample. Finally, a unidimensional CFA solution was fitted to the entire sample in order to achieve more stable and generalizable results.

Considering the results obtained in the skewness and kurtosis indexes, explained below, we decided to treat the item scores as ordered-categorical, which means that the item-factor regressions are not linear. Therefore, the most consistent approach to obtaining score estimates in this case is to use factor scores rather than raw scores, since the latter involves considering the test scores as unweighted linear composites of the item scores. However, we decided to calculate the Ordinal Coefficient of Fidelity (O-COF) to determine if, for most practical purposes, the raw scores were already good proxies for the latent scores [46], which would justify the use of raw scores, in spite of the skewness and kurtosis indexes obtained. Considering the result of the O-COF coefficient, we calculated the overall scores of each participant in the AHSS questionnaire and we obtained the standard deviations and the discrimination indices (item-rest correlations) of the items. To compute the discrimination indices, the responses to the reverse-worded item (item 5) were reversed. As evidence of the convergent validity of the AHSS, we calculated the correlation between the scores of this questionnaire and the scores of the A-CEA questionnaire, which measures a construct related to academic help-seeking. We also performed a *t*-test mean comparison between men and women and Spearman's rho between AHSS and academic results to test if our scale presented the same pattern of relationships with other variables as is described in the literature.

The EFA and the CFA analyses were carried out using FACTOR 11.02.04 [47] and M-Plus 8.6. We also used SPSS 26.0 to compute the item analyses and the correlations.

3. Results

3.1. Factor analyses in the calibration and validation subsamples

As explained above, we first carried out an EFA with the calibration subsample. Item 12 was asymmetric and had excess kurtosis (skewness and kurtosis indexes higher than 1 in absolute value), and for this reason we decided to treat the item scores as ordered-categorical and fit the non-linear EFA model with the inter-item polychoric correlation matrix [48]. The Kaiser-Meyer-Olkin (KMO) index value was 0.81, which suggests that the correlation matrix is well suited for factor analysis. The results of Schwarz's Bayesian Information Criterion (BIC) and Parallel Analysis suggested that there were two factors underlying the data. In fact, as can be seen in Table 2, the minimum BIC value was obtained for the 2-factor solution. Regarding the Parallel analyses results, no additional

significant increase in explained common variance were obtained in the solutions with more than two factors, then suggesting that two factors were underlying the data (see Table 2). However, one of these factors contained only three items, all of which had very similar content and wording: 4. *If I were to seek help in class I would ask the teacher rather than another student*; 9. *I would prefer asking another student for help in class rather than the instructor*; 13. *In class, the teacher would be better to get help from than would a student*. Therefore, these items were considered to give rise to a “triplet”, an artifactual factor. Now, to determine whether these items could be included in a unidimensional solution (apart from their shared specificity), we decided to sequentially fit a one-factor solution, in which only one item of the triplet was included every time. None of them, however, loaded on the single factor when entered item-by-item (their loadings ranged between .08 and .19). Therefore, we removed these three items and carried out another EFA with the remaining 10 items. The BIC index and Parallel Analysis suggested that the data now had only one underlying factor. In fact, as can be seen in Table 2, the minimum BIC value was obtained for the 1-factor solution. Likewise, the results of the parallel analysis showed that no additional significant increase in explained common variance were obtained in the solutions with more than one factor, then suggesting that one factor was underlying the data (see Table 2). However, item 1 (*The purpose of asking somebody for help in class would be to succeed without having to work as hard*) did not load substantially on this single factor (loading of .21). Furthermore, item 10 (*Getting help would be one of the first things I would do if I were having trouble in class*) shared specific residual variance with item 11 (*Getting help in class would be an admission that I am just not smart enough to do the work on my own*) and item 5 (*If I were having trouble understanding the material in this class I would ask someone who could help me understand the general ideas*). The short distance between items 10 and 11 (serial effects; item 11 follows item 10), and the fact that they have the same wording at the beginning of the sentence, gives rise to this shared specific residual variance. Likewise, the content of items 5 and 10 are similar, which also gives rise to shared specific residual variance. For this reason, we removed items 1 and 10 and carried out another EFA with the remaining 8 items. The closeness-to-unidimensionality results suggested that the solution was now: (a) essentially unidimensional, and (b) with substantial loadings for all the items. As for the first point, indices were: UniCo = 0.96; ECV = 0.88; and MIREAL = 0.20, which is congruent with the BIC index and Parallel Analysis. In fact, as can be seen in Table 2, the minimum BIC value was obtained for the 1-factor solution. Likewise, the results of the parallel analysis showed that no additional significant increase in explained common variance were obtained in the solutions with more than one factor, then suggesting that one factor was underlying the data (see Table 2). As for the second, loadings were between 0.41 and 0.75 in absolute value, so all these items loaded substantially on the single factor. The fit indices were RMSEA = 0.053, CFI = 0.99, GFI = 0.99, RMSR = 0.043, which suggests that this solution is tenable.

The final one factor, 8-item solution obtained in the first subsample was then fitted as a CFA solution in the second subsample. All the items loaded substantially on the single factor, with estimated values between 0.38 and 0.79 in absolute value. Fit indices were RMSEA = 0.059, CFI = 0.99, GFI = 0.99, RMSR = 0.064, which suggests that the solution is tenable. Therefore, these results suggest that the final solution is generalizable to different samples drawn from the target population.

As the results in the calibration and validation subsamples lead to the same conclusions, we carried out a final unidimensional CFA solution in the overall sample. As can be seen in Table 3, all the items again loaded substantially on the single factor. Multiple indices of fit were examined to evaluate the adequacy of this model: RMSEA = 0.063, CFI = 0.98, GFI = 0.99, RMSR = 0.055. These results suggest an adequate fit.

The reliability of the factor score estimates was 0.88. This value can be regarded as appropriate, especially considering the few items that make up the single factor.

4. Properties of the score estimates

The Ordinal Coefficient of Fidelity (O-COF) was 0.88, which suggests that, for most practical purposes, the raw scores are already good proxies for the latent scores [46] and more so considering that the reliability of the factor score estimates has the same value. Overall, we concluded that using raw scores instead of factor scores does not involve a substantial loss of measurement accuracy (at

Table 2
Exploratory Factor Analyses: Results of the BIC and Parallel analyses.

Analysis	BIC analyses		Parallel Analyses			
	Number of factors	BIC	Number of factors	Percentage of explained variance	Mean of random	Upper end of the 95% confidence interval
EFA with 13 items	0	2777.66	1	41.8	15.6	17.7
	1	407.95	2	16.8 ^a	13.9	15.8
	2	349.76 ^a	3	11.5	12.6	14.0
	3	351.32	4	7.1	11.3	12.4
EFA with 10 items	4	398.92	5	5.7	10.0	11.0
	0	1736.54	1	50.2 ^a	20.3	23.8
	1	181.54 ^a	2	15.2	17.7	20.0
	2	189.57	3	9.1	15.4	17.3
EFA with 8 items	3	230.59	4	8.1	13.2	14.7
	0	1238.17	1	64.8 ^a	25.6	30.6
	1	105.34 ^a	2	14.4	21.3	24.6
	2	141.39	3	7.7	17.7	20.2
	3	180.23	4	6.9	14.1	16.5

^a Recommended number of common factors.

Table 3

Loading matrix obtained in the exploratory factor analysis of the Academic Help-Seeking Scale with the whole sample.

Item	F1
2. Me siento fracasado/a si necesito ayuda en clase./I would feel like a failure if I needed help in this class	.74
3. Si no entiendo algo en clase, intento deducirlo antes que pedir ayuda a alguien./If I didn't understand something in this class I would guess rather than ask someone for assistance.	.46
5. Cuando tengo problemas para entender el contenido en una clase, pido ayuda a alguien para comprender las ideas generales./If I were having trouble understanding the material in this class I would ask someone who could help me understand the general ideas.	-.48
6. Buscar ayuda en clase es una forma de evitar hacer una parte del trabajo./Getting help in this class would be a way of avoiding doing some of the work.	.43
7. No me gustaría que alguien descubriese que necesito ayuda en clase./I would not want anyone to find out that I needed help in this class.	.82
8. Aunque el trabajo sea demasiado difícil para hacerlo por mi cuenta, no pido ayuda en clase./Even if the work was too hard to do on my own, I wouldn't ask for help with this class.	.75
11. Buscar ayuda en clase es admitir que no soy bastante listo/a para hacer el trabajo por mi cuenta./Getting help in this class would be an admission that I am just not smart enough to do the work on my own.	.71
12. Ante una tarea que no puedo terminar, prefiero hacerlo peor, antes que pedir ayuda./I would rather do worse on an assignment I couldn't finish than ask for help.	.71

least in the data available so far). For this reason, we used raw scores in the analyses that follow. The mean and standard deviations for the overall raw scores are 30.4 and 5.3, respectively.

4.1. Item analyses

Table 4 shows the means, the standard deviations and the discrimination indices (item-rest correlations) of items. As can be seen in the table, all the item discriminations were higher than 0.20 with a maximum of 0.66. Indeed, the item discriminations can be considered as proxies for the factor loadings obtained in the unidimensional solution, so (a) their value profiles agree, and (b) their substantial values again suggest a high internal consistency, which allows items to be reliably combined in a single scale.

4.2. Convergent validity

To assess the convergent validity of our scale adaptation we calculated Pearson's correlation between the total score of the AHSS and the scores on the support seeking subscale of the A-CEA, which shares some conceptual similarities with the construct of academic help-seeking, as we have pointed out above. As hypothesized, we found a significant positive correlation of .42 ($p < .001$), with a medium effect size.

4.3. Gender differences and relationships with academic outcome

As hypothesized, female participants reported higher academic-help seeking ($M = 31.00$, $SD = 4.98$) than male participants ($M = 28.83$, $SD = 5.75$) with a medium effect size, $t(530) = -4.033$, $p < .001$, $d = -0.42$. For academic outcome, we performed Spearman's rho and found a significant relationship ($r = 0.12$, $p < .01$) with the AHSS scores, with a small effect size.

5. Discussion

Considering the lack of instruments for evaluating academic help-seeking in adults in the Spanish context, the main aim of the current study was to adapt and validate the Academic Help Seeking Scale (AHSS) to the Spanish adult population, and provide evidence about its factor structure, reliability and validity. It should be considered that previous studies have not provided enough evidence about the dimensionality of this questionnaire even though it is widely used to assess academic help-seeking. Furthermore, each subscale described by Karabenick [4] contains too few items to properly define a factor. In fact, factors with only two or three items may be artifactual, a double or triple item that shares specific content [34]. For this reason, the assessment of the dimensionality of this adaptation was especially relevant in this case. As the EFA analyses showed that five items functioned poorly, we removed them, so the final version has 8 items. In fact, three of these poorly functioning items (4, 9 and 13) gave rise to a "triplet", artifactual factor, as the

Table 4

Means, standard deviations and discrimination indices of the items.

Item	Mean	Standard deviation	Correlation between the item and the total scale
2	2.03	1.09	.62
3	3.74	1.03	.37
5	3.80	0.85	.32
6	1.80	0.92	.66
7	1.87	1.07	.63
8	2.24	1.10	.56
11	1.91	1.06	.57
12	1.80	0.94	.40

content and wording were very similar. Although we expected to find at least two factors, the results suggest that there is only one factor underlying the data of the remaining 8 items. This unidimensional solution was replicated in a different subsample. Therefore, the results suggest that this solution is generalizable to different samples drawn from the target population. Furthermore, the results obtained in the overall sample also showed an acceptable fit to this unidimensional solution and an acceptable reliability of the factor scores. The dimensionality of this adaptation, as we anticipated, is different from the dimensionality described in the original study with university students from the United States [32] and also from the Greek adaptation in adolescents [17], both of which found a five-factor structure.

As we expected, we found a significant positive correlation between the overall AHSS scores and the A-CEA subscale scores that assess support seeking, so this result provides evidence about the convergent validity of AHSS. The correlation has a medium effect size, because the constructs are similar but not identical. In fact, the A-CEA subscale includes items about seeking support to solve problems, but it also includes items related to the need for support to face the emotional consequences of these problems, which is not relevant for the academic help-seeking construct. Furthermore, the relationships found with the variables gender and academic outcome are also the expected ones, in line with the literature, which provides further evidence about AHSS validity. More specifically women showed higher levels of academic help-seeking than men, which is consistent with previous studies [12,18–20]. In fact, a review by Bornschlegl [49] reported that, in most studies, female university students were more likely to seek help than male university students. As we also expected, we found a positive relationship between academic outcome and academic help-seeking. Previous studies have shown a positive correlation between academic achievement and the intention to seek help [18], and between academic achievement and help-seeking [9,21]. In all these cases the correlations had a small effect size, as in the current study.

5.1. Limitations of this study

This study has some limitations that should be addressed in future research. For instance, the sample consists mostly of women (72%) and university students (75.8%). It should be considered that in Spain there are more adult female than male students in many academic fields and educational levels (bachelor's degrees, master's degrees, etc.), so it is not surprising that women are more represented than men in our sample. However, further studies are needed with more heterogenous samples, and with a better balance of genders, in order to determine if the results are the same. Furthermore, it should be taken into account that the current study focuses on adults. As children and adolescents also have academic help-seeking needs, further studies should be done to determine if this adaptation could also be used in ages under 18, or if some items have to be adapted to these students. Moreover, the current study does not include an estimation of the test-retest reliability, because the sample was collected online and the survey was anonymous, so it was not possible to contact participants again for the retest. Therefore, further studies are needed that estimate test-retest reliability. Other future studies should also determine the extent to which academic-help seeking tends to change over time, so, acting as a relatively persistent trait, or, instead, if it should be considered as a state, being therefore more susceptible to change through interventions. Another limitation of this study is that academic achievement is assessed using a Likert item, which is not as objective as the academic qualifications obtained by the students. However, we decided on this option because participants had different academic backgrounds and they may have been taking courses with different levels of difficulty, so the differences between their qualifications would have been difficult to interpret. For this reason, further studies using a more objective measure of academic achievement (i.e. course qualifications) are needed. But it should be taken into account that the current study is the first one to make an appropriate assessment of the dimensionality of the questionnaire, and to analyze the functioning of the items.

6. Conclusion

With this study we aimed to develop a tool to specifically assess academic help-seeking in the adult Spanish population, because there are no instruments to measure this construct in Spain to date. The results suggest that this 8-item Spanish adaptation for adults has adequate psychometric properties, reliability and validity. However, further studies on the dimensionality of the questionnaire are needed in different countries and cultures to replicate the unidimensional solution found in the current study.

As mentioned above, academic help-seeking has implications for several variables in the academic context such as academic outcome [16,18], college adjustment [26] or emotional loneliness [22]. Furthermore, it is a learning strategy [5,6] that may be useful for improving the learning process in Spanish adult students. Therefore, this measure of academic help-seeking may be useful for professional educators so that they can monitor and encourage this adaptive behavior. It may also be helpful for educational psychologists who aim to design intervention programs to improve academic outcomes. From a more theoretical perspective, this study also adds evidence about the construct of academic help-seeking and its components. In fact, the dimensionality found using a more suitable methodology than in previous studies is different from the structure proposed by other authors [4,17]. The insights from this study may help to improve the understanding of the self-regulated learning paradigm, as it provides valuable information about academic help-seeking, one of its components [2,7]. Finally, it is also an opportunity to boost research about academic help-seeking in the Spanish context, and improve understanding of this strategy and its relationship with other variables in the Spanish adult population.

Author contribution statement

Sergi Martín-Arbós: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper. </p>

Jorge-Manuel Dueñas; Fabia Morales-Vives; Elena Castarlenas: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data. </p>

Data availability statement

Data will be made available on request.

Additional information

No additional information is available for this paper.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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