# Psychometric properties of the Attitudes towards Medical Communication Scale in nursing students

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## Abstract

**Background**: Adequate communication skills in healthcare professionals are one of the key elements required for achieving high-quality healthcare. Thus, measurement instruments able to assess the dimensions related to these skills, including attitudes towards communication, are useful and convenient tools.

**Objectives:** to (a) cross-culturally adapt and validate a scale to measure attitudes towards communication in a sample of nursing students in the Spanish environment; (b) describe the perceived attitudes of nursing degree students towards communication.

**Methods**: We conducted an instrumental study. First, we adapted the scale by applying a standardised linguistic validation procedure. After that, we determined its structural equivalence and evaluated its psychometric properties.

**Participants:** A total of 255 students participated; their average age was 22.66 years ($SD$ = 4.75) and 82% were female.

Results: The internal consistency of the scale was adequate (0.78), and the data fit well with the model (CFI = 0.99; TLI = 0.99; RMSEA = .01 [95% CI = .00, .05]). The overall instrument score poorly correlated with the self-efficacy in communication skills variable.

**Conclusions:** The attitudes towards communication scores for these nursing students were high. The Spanish version of the Attitudes Towards Health Communication scale had adequate psychometric properties and this tool could quickly and easily be applied to assess the attitudes of health profession students.

**Keywords**: attitudes; evidence-based practice, health communication; nursing students; psychometrics.

## Introduction

Changes in health systems have resulted in an increased focus on providing quality, patient-centred care, which must consider the transmission of information, participation in decision-making, and the respectful and responsible treatment of patients (Mata et al., 2019). This process prioritises the needs of patients and tries to improve the quality of their health and well-being as well as their satisfaction and the quality of their healthcare.

The literature identifies effective professional-patient communication as a key factor in obtaining positive results in terms of patient physical and emotional health (Shorey et al., 2018). Good communication improves patient-perceived satisfaction in healthcare processes and therefore also in the quality of their healthcare (Kourkouta & Papathanasiou, 2014); it also helps achieve greater adherence to prescribed treatments and compliance with recommended preventive activities (Holzinger et al., 2019). In contrast, inadequate communication is linked not only with lower satisfaction levels, but also with adverse events secondary to clinical errors (Guetterman et al., 2019).

Therefore, the acquisition of communication skills should be of special relevance in the training of health care professionals (Mata et al., 2019). However, the literature shows that extraordinarily little specific content on communication skills is currently included in their curricula (Ferrández-Antón et al., 2020; Ferreira-Padilla, Ferrández-Antón, Baleriola-Júlvez, & Almeida-Cabrera, 2015). Rather, the education of healthcare professionals tends to place a strong emphasis on the acquisition of technical skills to the detriment of nontechnical skills such as communication skills (Jepsen, Østergaard, & Dieckmann, 2014). These factors could explain the reports by nursing professionals that they do not feel sufficiently prepared in terms of communication skills (Foà et al., 2016), even though they perceive the learning of communication skills as an important and useful factor in professional practice (Coleman & McLaughlin, 2019).

**Background**

66 **Background**
67 Communication skills can be acquired and improved through training (Cannity et al., 2020).
68 Indeed, the European Higher Education Area (European Commission, 2005) is currently focusing
69 its education on learning competencies which involve studying and integrating conceptual,
70 attitudinal, and procedural dimensions into teaching (Tejada-Fernández & Ruiz-Well, 2016).
71 Therefore, nursing curricula should not only include communication skills with an emphasis on
72 theoretical content and skills acquisition but should also promote positive attitudes towards using
73 these skills (Woloschuk, Harasym, & Temple, 2004). As suggested in the literature, attitudes are
74 a key component in the promotion of future behaviours (Sheeran et al., 2016). However,
75 implementing a skills-based learning approach involves incorporating and developing new
76 evaluation methodologies and resources and requires valid tools that are objective and reliable
77 (MacLean et al., 2017) to assess attitudes towards communication skills in educational plans
78 (Molinuevo & Torrubia, 2011).
79 Several instruments are available to assess attitudes towards communication in clinical practice.
80 For example, the *Nurses' Attitudes Towards Communication with Patients Scale* (ACO in its
81 Spanish initialism; Espert & del Carmen, 2016) was developed to evaluate the attitudes of
82 nursing students in terms of their behavioural, cognitive, and affective dimensions. However, the
83 content of its items focused on hospitalisation situations applicable to certain specific nursing
84 contexts; for example, the item "Information must be provided to the patient and/or their family
85 about the nursing care being provided". Another instrument, the *Communication Skills Attitude*
86 *Scale* (CSAS; Rees et al., 2002), is widely used internationally. The items included in this two-
87 dimensional scale address situations commonly encountered by medical students, with items such
88 as "In order to be a good doctor I must have good communication skills" or "Nobody is going to
89 fail their medical degree for having poor communication skills".
90 Finally, the *Attitudes Towards Medical Communication Scale* (Langille et al., 2001), is a short,
91 one-dimensional scale which has been shown to have adequate psychometric properties. This
92 instrument has several advantages compared to the other two: it is the shortest, a total construct
93 score can be obtained from it, and the item content addresses general aspects of clinical
94 communication skills that could be universally applicable to different health professionals.
95 However, it has not yet been translated into Spanish or validated for use in this language.
96 Therefore, the objectives of this present study were to: (a) cross-culturally adapt and validate a
97 scale to measure attitudes towards communication in a sample of nursing students in the Spanish
98 environment; (b) describe the perceived attitudes of fourth-year nursing degree students towards
99 communication.
100

## Materials & Methods

101 **Materials & Methods**
102 **Design**
103 We conducted an instrumental study designed to develop an evaluation tool, which also included
104 the generation or adaptation of new items and the examination of their psychometric properties
105 (Carretero-Dios & Pérez, 2007). First, we adapted the scale into the Spanish context by applying
106 a standardised linguistic validation procedure. After that, we determined the structural
107 equivalence between the Spanish version and the original instrument and evaluated its
108 psychometric properties.
109

110 **Linguistic validation**
111 We used a standard linguistic validation process (Acquadro et al., 2005) to obtain the Spanish
112 version of the scale. First, two bilingual philologist translators whose mother tongue was Spanish,

113    who were not linked to the project or study subject, and with experience in the field of health
114    sciences translations/adaptations, translated the original English version into Spanish. Using both
115    these direct translations, and after a consensus committee meeting, a first draft of the Spanish
116    version was approved. The committee comprised two nurses with experience in adapting and
117    validating scales in the healthcare context and a linguist who specialised in cross-cultural
118    adaptation procedures.
119    Subsequently, two bilingual philologist translators whose mother tongue was English (one British
120    and one American), who had no connection to the project or the subject of study and did not
121    know the original English version of this questionnaire, independently translated the first Spanish
122    consensus translation back into English in a blinded back-translation process. The committee
123    reconvened to compare the two back-translations with the original English version and agreed
124    upon a preliminary version in Spanish. This version was subsequently used to conduct the
125    cognitive interviews.
126    The four translators were asked to assess the degree of difficulty of the direct and reverse
127    translations of the items (on a scale of 1 to 10) and to classify the changes they had made into
128    three categories (A, B, C). Type A changes were when no translation changes had been required
129    and the sentence retained the same syntactic structure. Type B changes−morphosyntactic (B1),
130    lexical-semantic (B2), or sociocultural (B3)− were changes that had been implemented to
131    maintain equivalence. Items with type C changes were those where some of the items were not
132    applicable in the context of the language into which it had been translated.
133    To examine the interpretability of the questionnaire, 8 cognitive interviews were carried out with
134    nursing students; all of them were women and their mean age was 19.88 years ($SD$ = 1.25); 4
135    (50%) were first-year students and 4 were fourth-year students. All the participants completed the
136    final translation back-translation consensus version of the questionnaire. The interviews were
137    carried out by two trained nurses who were experts in conducting these types of interviews.
138    Participants were asked to read the questionnaire aloud and to answer it while also indicating if
139    they had understood the meaning of each item or if there were any unclear concepts. In addition,
140    these participants were asked if they had understood the response alternatives and instructions,
141    they had received prior to completing the questionnaire. Finally, they assessed the scale and they
142    considered if any important items had been omitted.
143

144    **Setting and sample**
145    The data was collected between June and October 2019. The inclusion criteria were: (1)
146    enrolment in a nursing course at the University of Alicante ;(2) taking any fourth-year course;
147    and (3) a fluent understanding of written and spoken Spanish. Students who had an Erasmus
148    agreement who did not have an adequate knowledge of Spanish were excluded from the study.
149    All the nursing students enrolled in a fourth-year nursing course subject at one of the
150    abovenamed universities were invited to participate.
151    Of the total eligible participants ($n$ = 400), a total of 255 students completed the questionnaire;
152    thus, the response rate was 63.75%. Of the total sample, 52 students (20.39%) belonged to the
153    2018/19 academic year and a total of 203 students came from the 2019/20 academic year
154    (79.61%).

155

**Measures**

156 **Measures**
157 An ad hoc questionnaire was developed to assess the sociodemographic variables of the
158 participants, which included age, gender, nationality (Spanish or 'other'), and marital status
159 (single, married/cohabiting, separated/divorced, or widowed). In addition, these students were
160 asked about any training in communication they had received during their nursing degree or in
161 any other context.
162 To assess nursing students' attitudes towards communication, linguistic validation of the
163 *Attitudes Towards Medical Communication Scale* was used (Langille et al., 2001). This one-
164 dimensional measurement instrument contains 12 items with a Likert-type response scale with 5
165 response options—from 'strongly disagree' (1) to 'strongly agree' (5). The total score ranges
166 from 12 to 60 points, where the higher the score, the more positive the participants' attitude
167 towards communication. In its original version, this scale had an adequate internal consistency of
168 0.74.
169 To assess communication self-efficacy, we used the Spanish version (manuscript in progress) of
170 the *Self-Efficacy Questionnaire* (SE-12; Axboe Christensen et al., 2016). This one-dimensional
171 scale contains 12 items with a Likert-type response scale and 11 response options ranging from
172 'very insecure' (1) to 'very confident' (10); we also added the element 'not relevant'. This scale
173 was developed to assess the level of self-efficacy for the clinical communication skills acquired
174 during nursing training courses. The total score ranges from 12 to 120 points, where the higher
175 the score, the higher the students' confidence in the communication skills they used with patients.
176 The original version has a high internal consistency ($\acute{\alpha}$ = 0.95) and an adequate test-retest score
177 (*ICC* = 0.71).

178

**Procedure**

179 **Procedure**
180 Details of this work were presented along with the request for informed consent to participation
181 in this study. Participants were invited to participate through the internal communications system
182 of the university institution (Virtual Campus). To maximise the response rate, we followed a
183 standardised methodology and sent three reminders, sent one week apart from each other, which
184 encouraged participation and provided the link to the questionnaire.

185

**Data analysis**

186 **Data analysis**
187 R software (version 3.4.0, R Core Team, 2017, 2014) was used in the confirmatory factor
188 analysis (CFA) and internal consistency analysis. Scale performance, including floor and ceiling
189 effects, was also analysed. The literature considers a floor or ceiling effect to have been reached
190 when more than 15% of the participants in the lower and upper range, respectively, responded
191 (Lim et al., 2015). Following the criteria published by Rhemtulla et al. (2012), we considered our
192 data to be ordinal. The robust weighted least squares means and variance (WLSMV) estimation
193 method from the Lavaan package was used for the analysis of the ordinal data (Rhemtulla et al.,
194 2012).
195 Three indices were considered in the analysis of the data fit to the model: the comparative fit
196 index (CFI), Tucker–Lewis index (TLI), and root mean square error of approximation (RMSEA).

197   Values exceeding 0.90 were considered adequate for the CFI and TLI indicators (Bentler, 1990;
198   Hu & Bentler, 1999). For the RMSEA index, values less than 0.5 indicated an adequate fit
199   (Brownie, 1993; Green & Yang, 2009).
200   The ordinal alpha coefficient, considering the estimated model, was used to analyse the internal
201   consistency of the instrument, and was considered more accurate for the categorical response
202   scales (Zumbo et al., 2007). This measure is considered an unbiased estimator of internal
203   consistency as long as the essentially tau-equivalent model fits the data (McDonald, 1999). The
204   self-efficacy in communication skills variable was used to assess the construct validity of the
205   instrument using the Pearson correlation coefficient ($r$). We required our results to meet the
206   consensus-based standards for the selection of health measurement instruments (COSMIN;
207   Mokkink et al., 2017) recommended correlations (between 0.3 and 0.5) because these instruments
208   measured different but related constructs. Finally, a descriptive analysis (means and *SD*s) was
209   performed for the scale for the perceived attitude towards communication in nursing students.
210
211   **Ethical issues**
212   This study followed the criteria established by the Declaration of Helsinki and the European
213   Union Standards of Good Clinical Practice and obtained approval by the Bioethics Committee at
214   the University of Alicante (reference number: UA-2018-10-24). All the participants received
215   information about the voluntary nature of their participation, the possibility of withdrawal of their
216   consent at any time, and the planned treatment of the collected data. All the data obtained was
217   treated confidentially and used exclusively for research purposes.
218
219   **Results**
220   **Linguistic validation**
221   *Translation-back-translation process*
222   The average degree of difficulty of the translation ranged from 2 (item 5) to 6 (item 1) on a scale
223   of 1 to 8. The average difficulty of the back-translation ranged from 1.5 (items 1 and item 5) to
224   8.5 (item 8) on a scale of 1 to 9. In both the translation and back-translation, most of the changes
225   required were of the morphosyntactic (B1) or lexical-semantic (B2) type. No item required type
226   C changes. Of note, the translators did not agree on the difficulty level of items 3 and 6 in the
227   translation or in the back-translation.
228
229   *Cognitive interviews*
230
231   Participants experienced comprehension difficulties for items 3, 6, 9, and 10. Item 3 was
232   exceedingly long and difficult to understand and so, it required morphosyntactic (B1) and lexical-
233   semantic (B2) modifications. The difficulty for the remaining items (which also required B1 and
234   B2 changes) was associated with the use of specific expressions. For item 6 we solved this by
235   changing "...the patient experience..." to "...the patients' experience of their disease". In the case
236   of item 9, we clarified the term "...psychosocial problems..." by adding some examples,
237   "...psychosocial problems (for example, family or economic problems, etc.)". For item 10, the

238  expression "...health results..." was made clearer by changing it to "...health results (for example,
239  readmissions, quality of life, etc.)".
240

241  **Evaluation of psychometric properties**
242  *Sample sociodemographic data*
243  Table 1 shows the sociodemographic data for the 255 participants, of which, 82% were women
244  ($n$ = 209). The mean age of the cohort was 22.66 years ($SD$ = 4.75), with an age range between
245  18 and 48 years.
246

247  *Scale performance and psychometric properties*
248  The scale performance results are shown in table 2; ceiling effects were observed for all the items
249  included in the scale. The CFA showed that the data fit adequately to the original structure (CFI =
250  0.96; TLI = 0.95; RMSEA = 0.03 [95% CI = 0.00–0.05]) (Table 3). The estimated factor loads
251  for most of the items varied from 0.24 to 0.72, except for item 3, which showed a factor load of
252  0.04. Elimination of item 3, "In healthcare provision teams, cohesion is desirable, but one
253  professional alone can do little to promote it", improved the data fit (CFI = 0.99; TLI = 0.99;
254  RMSEA = 0.01 [95% CI = 0.00–0.05]). The estimated factor loads of the items varied from 0.24
255  to 0.72 (Figure 1). Lastly, because the measures were essentially tau-equivalent (i.e., all the items
256  had the same factor load), we tested a more restricted estimation model and found that the data
257  continued to fit the model, although with a slightly poorer parameter results (CFI = 0.93; TLI =
258  0.93; RMSEA = 0.04 [95% CI = 0.004–0.06]).
259  The internal consistency, calculated with the alpha ordinal, and considering the specified model
260  after eliminating item 3, was 0.75. Furthermore, to assess the construct validity, the total scores
261  obtained from the attitude and self-efficacy towards communication poorly correlated but were
262  statistically significant ($r$ = 0.21, $p$ = .003; $n$ =203).
263

264  **Descriptive data for the participants' attitudes towards communication skills**
265  The overall scale score ranged between 43 and 55, with a mean of 52.62 ($SD$ = 2.42). Statistically
266  significant differences according to gender were found in the overall scores, where women
267  obtained a higher mean score ($M$ = 52.89; $SD$ = 2.13) compared to men ($M$ = 51.35; $SD$ = 3.16;
268  Mann–Whitney U = 3.453, $p$ = 0.002). No significant differences were found between the
269  2018/2019 and 2019/2010 cohorts (Mann–Whitney U = 4.861; $p$ = 0.37).
270

271  # Discussion
272  The purpose of this present study was to validate the Spanish translation of the *Attitudes Towards*
273  *Medical Communication Scale* (Langille et al., 2001) in a sample of nursing students in the
274  Spanish setting and to describe the attitudes perceived by nursing-degree students. Our findings
275  indicated that the Spanish version of the scale, *Attitude Towards Health Communication (AHC-*
276  *S)*, called the '*Actitudes de la Comunicación Sanitaria*' scale in Spanish (see Supplemental Files)
277  is a valid and reliable instrument to assess the attitudes of nursing-degree students towards
278  communication. In addition, this scale has also been validated in a health context different from
279  the one in which it was originally developed (for use in medical students). Therefore, we
280  concluded that this is a valid scale for the extensive analysis of attitudes towards communication
281  in other professional healthcare contexts.

282  The CFA showed that the scale maintained its original structure and had adequate adjustment
283  indices when used to assess Spanish nursing students. However, given the difficulty in
284  understanding item 3 in the cognitive interviews we performed, as well as the low factor loading
285  of this item in the CFA, we omitted item 3 and modified the final Spanish version of the scale to
286  contain only 11 items. Future research will be needed to check the adjustment of the data in other
287  contexts to confirm the original structure and the operation of item 3.Following recommendations
288  based on current evidence (Black et al., 2014; Yang & Green, 2011), the internal consistency was
289  initially adjusted based on the specifications in the structural equation modelling. The internal
290  consistency was adequate (> 0.70; George & Mallery, 2003) and was similar to that obtained in
291  the original version of the scale (Langille et al., 2001).
292  In terms of construct validity, we found a weak positive correlation (Cohen, 1992) between the
293  attitudes towards communication score and the SE-12 scale (Axboe et al., 2016), although this
294  factor was not evaluated in the original version (Langille et al., 2001). The literature indicates
295  that there is a relationship between these two variables in the educational field and that they are
296  both relevant in professional practice (Sung, Huang, & Lin, 2015) and future behaviour (Sheeran
297  et al., 2016). However, a recent study by our team (Juliá-Sanchís et al., 2020) observed only
298  moderate correlations ($r = 0.35$) between perceived abilities in communication skills and scores
299  on the *Attitudes Towards Communication Scale*, including on the 12 items in the original version.
300  Thus, we recommend continuing the analysis of the construct validity of this scale in future lines
301  of research.
302  Our results showed that the items on this scale had a ceiling effect (Lim et al., 2015), which
303  suggests that it might not evaluate a wide range of the potential variability among students who
304  have positive attitudes towards communication, at least for samples with similar characteristics to
305  the cohort considered in this study. However, it should be noted that the previous communication
306  training of these students was mostly received as part of their formal compulsory training. Thus,
307  the fact that previous studies highlight specific training as an influencing factor in attitudinal
308  improvement (Lichtenstein et al. 2018) could explain their high scores in attitudes towards
309  communication.
310  In terms of a general description of the attitudes of nursing students towards communication, our
311  results showed that high scores were as high as those shown in other national studies in students
312  of other health professions (Molinuevo et al., 2016), and specifically among those in nursing
313  contexts (Molinuevo & Torralba, 2011). Similar results were also found in international studies in
314  medical students (Langille et al., 2001) and among nursing professionals (Cronin & Finn, 2017;
315  Panczyk et al., 2019). Therefore, it seems that students have positive attitudes towards
316  communication, regardless of the type of healthcare profession they work in and the environment
317  in which they live. Nonetheless, much less work has been done in nursing students compared to
318  similar studies in medical or dental students (Abdrbo, 2017). Hence, this current study helps to
319  increase and update our knowledge about this issue in nursing students. Furthermore, these
320  results have important implications within the European Higher Education Area given the
321  emphasis this body places on the acquisition and evaluation of attitudinal competences in the
322  learning-teaching process (European Commission, 2005).

323    Regarding the sociodemographic factors of this cohort, as reported elsewhere in the literature
324    (Molinuevo & Torrubia, 2011; Koponen et al., 2012), we also detected gender-related differences
325    in our cohort. Previous studies have revealed that male students had greater difficulty in learning
326    communication skills and that this may be because the acquisition of these skills requires
327    emotional exposure, which can be more characteristic of women (Loffler-Stastka et al., 2016).
328    Thus, according to this previous work, nursing schools face a major challenge when trying to
329    improve attitudes towards better acquisition of communication skills among male students (Gude
330    et al., 2020). However, more studies with a gender perspective (Lichtenstein et al. 2018) will be
331    needed to fully assess whether there are indeed currently gender-based differences in nursing, and
332    to analyse what factors influence attitudes towards communication so that these can be
333    considered when providing student training.
334

335    **Limitations**
336    Firstly, we used the natural opportunity presented by the enrolment of nursing students into their
337    courses to obtain a convenience sample. Although participation was always voluntary and did not
338    influence their evaluation outcomes, this may have compromised the external validity of our
339    results. Therefore, the structure of this scale should be confirmed with representative and
340    randomised nursing student samples at the national level to guarantee the that these results can be
341    generalised. Furthermore, the validity of the Spanish version of this scale only applies to
342    undergraduate nursing students. Therefore, if it is to be used in other sample cohorts such as
343    postgraduate students or clinical healthcare professionals, including nursing professionals,
344    evidence for the validity of this scale must first be obtained for these groups.
345    Finally, the overall participation rate in this work was moderate, and specifically, was low in the
346    2018/2019 cohort and so future research should aim to increase these participation levels. One
347    reason for this may have been the timing of our data collection, which was preferable in the
348    2019/2020 cohort because these students were starting the academic year. Therefore, the timing
349    of the data collection for the 2019/2020 period corresponded to the time in which the theoretical
350    part of the course was taught, and when the students were more strongly linked to the university.
351    In contrast, in the 2018/2019 cohort, the students were surveyed at the end of the academic year
352    when they were already engaged in their clinical practices in hospitals and had a weaker
353    association with the university. Nevertheless, this characteristic had no impact on the internal
354    validity of the study because no differences were found in the attitude towards communication
355    scores variable that we were specifically focusing on in this current validation study.
356

357

358    ## Conclusions
359    The AHC-S is valid and reliable tool for assessing the attitudes of nursing degree students; it
360    represents a useful tool for university professors in the assessment of health professions given
361    that it is self-administered, quick and easy to complete, and helps provide useful data for deciding
362    whether improvements or changes in training programs are required when low levels of certain
363    attitudes are identified. Future lines of research should be aware of the ceiling effect of the scale
364    and should aim to validate this tool with students and health professionals in other contexts.

365

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# Figure 1

Figure 1. Confirmatory factor analysis

Confirmatory factor analysis without item 3 graph extracted via the Lavaan package in the R freeware; AHC = Attitudes towards Health Communication, Spanish version of Attitudes towards Medical Communication Scale (Langille et al., 2001).
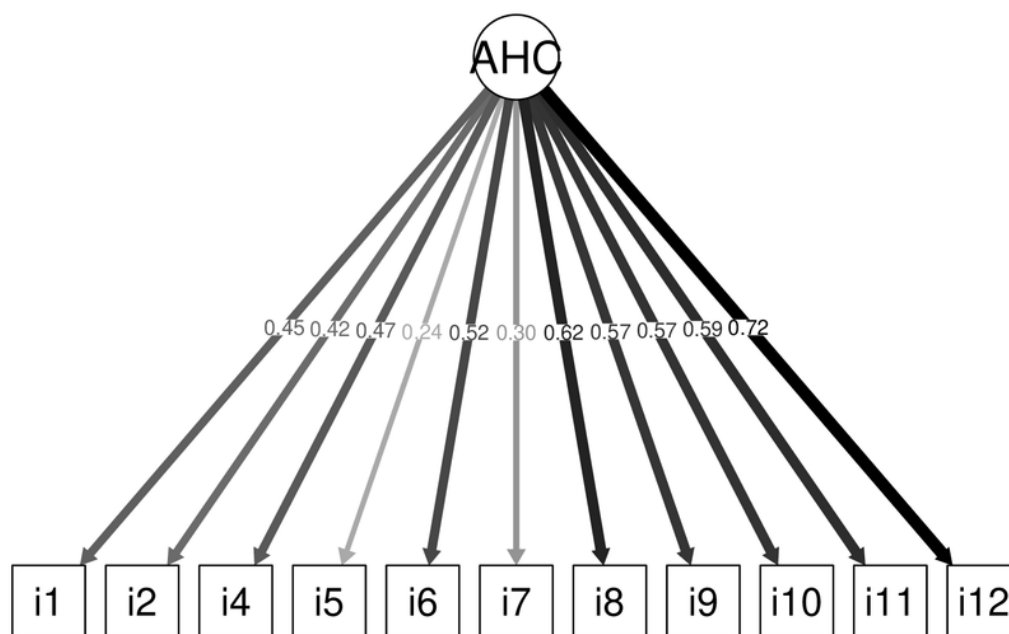
Table 1. Socio-demographic characteristics of participants (N = 255)

M = Mean; SD = Standard deviation; [a] This analysis was performed with 203 participants.

1  **Table 1**. Socio-demographic characteristics of participants (N = 255)

| Variable | N (%) |
|---|---|
| Female | 209 (82) |
| Age (*M/SD*) | 22.66 (2.41) |
| Nationality | |
| Spanish | 248 (97.30) |
| Other | 7 (2.7) |
| Marital status | |
| Single | 241 (94.5) |
| Married/Cohabited | 12 (4.7) |
| Separated/Divorced | 2 (0.80) |
| Cohort | |
| 2018/2019 | 52 (20.39) |
| 2019/2020 | 203 (79.61) |
| Previous Grade communication skills training | |
| Yes | 239 (93.70) |
| No | 16 (6.30) |
| Previous communication skills training in other context | |
| Yes | 42 (16.50) |
| No | 213 (83.50) |
| Self.Efficacy towards communication (*M/SD*)[a] | 83.09 (13.70) |

23  **Note:** M = Mean; SD = Standard deviation; [a] This analysis was performed with 203 participants.

Table 2. Performance of the scale

**Note:** M = Mean; SD = Standard deviation; Min = Minimum; Max = Maximum.

1 **Table 2**. Performance of the scale

| Item | Min | Max | M (SD) | Skewness | Kurtosis | Floor effect n (%) | Ceiling effect n (%) |
|---|---|---|---|---|---|---|---|
| Item 1 | 3 | 5 | 4.87 (0.37) | -2.83 | 7.78 | 0 (0) | 224 (87.80) |
| Item 2 | 1 | 5 | 4.75 (0.84) | -3.80 | 13.87 | 10 (3.90) | 225 (88.20) |
| Item 3 | 1 | 5 | 3.28 (1.26) | -.30 | -.95 | 28 (11) | 48 (18.80) |
| Item 4 | 1 | 5 | 4.75 (0.51) | -3.55 | 16.91 | 1 (0.4) | 215 (84.30) |
| Item 5 | 3 | 5 | 4.95 (0.25) | -4.71 | 23.75 | 0 (0) | 242 (94.90) |
| Item 6 | 1 | 5 | 4.75 (0.60) | -3.59 | 17.11 | 3 (1.2) | 205 (80.4) |
| Item 7 | 1 | 5 | 4.65 (0.57) | -1.93 | 6.01 | 1 (0.4) | 176 (69) |
| Item 8 | 3 | 5 | 4.76 (0.46) | -1.58 | 1.39 | 0 (0) | 196 (76.9) |
| Item 9 | 3 | 5 | 4.69 (0.58) | -1.69 | 1.81 | 0 (0) | 190 (74.5) |
| Item 10 | 3 | 5 | 4.83 (0.40) | -2.11 | 3.53 | 0 (0) | 213 (83.5) |
| Item 11 | 1 | 5 | 4.77 (0.64) | -3.98 | 18.84 | 4 (1.6) | 212 (83.1) |
| Item 12 | 1 | 5 | 4.80 (0.50) | -3.51 | 17.08 | 1 (0.4) | 213 (83.5) |

4 **Note:** M = Mean; SD = Standard deviation; Min = Minimum; Max = Maximum.

Table 3. Confirmatory analysis and internal reliability consistency (N = 255)

**Note:** [a] Original proposed by Langille et al. (2001); [b] Modified = without "ítem 3"; CFI= Comparative fix index; TLI = Tucker-Lewis index; RMSEA = Root mean square error of approximation; CI = Confident interval; [c] Ordinal Alpha calculated across Structural Equation Model (SEM).

1  **Table 3**. Confirmatory analysis and internal reliability consistency (N = 255)

| Fitted Model | Chi-square | p | gl | CFI | TLI | RMSEA [95%CI] | Ordinal alpha [c] |
|---|---|---|---|---|---|---|---|
| Original [a] | 66.151 | 0.12 | 54 | 0.96 | 0.95 | 0.03 (.00-.05) | 0.72 |
| Modified [b] | 45.900 | 0.39 | 44 | 0.99 | 0.99 | 0.01 (.00-.05) | 0.75 |

**Note:** [a] Original proposed by

8  Langille et al. (2001); [b] Modified = without "ítem 3"; CFI= Comparative fix index; TLI =

9  Tucker-Lewis index; RMSEA = Root mean square error of approximation; CI = Confident

10  interval; [c] Ordinal Alpha calculated across Structural Equation Model (SEM).