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Assessing the suitability and psychometric properties of the Spanish version of the YP-CORE for adolescents in Latin America: a study in Ecuador

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Abstract

Background This study had two main objectives: firstly, to assess the suitability of the Spanish translation of the Young Person's Clinical Outcome in Routine Evaluation (YP-CORE) for use in Latin America, and secondly, to investigate its psychometric properties specifically with Ecuadorian adolescents.

Methods The research consisted of two phases. In Phase 1, insights were gathered from 19 adolescents and 12 experts regarding their comprehension of the YP-CORE. Based on the feedback received during this phase, a revised version of the YP-CORE was developed. In Phase 2, a psychometric assessment of this modified version was conducted with 298 adolescents in Ecuador, aged 11 to 17 years.

Results The psychometric analysis revealed that this adapted version of the YP-CORE demonstrated satisfactory levels of acceptability, internal consistency, and test-retest reliability. The factor analysis favored a two-factor model over a single factor, yet the minimal substantive distinctions between these two factors do not justify the use of subscale scoring. Furthermore, the scores indicated age-related differences, with older adolescents (aged 14 to 17 years) obtaining higher scores, and gender-related variations, with females scoring higher.

Conclusions This study addresses the need for, and provides, a Spanish-adapted YP-CORE tailored for use in Latin America. This freely available version has the potential to offer valuable insights into interventions for adolescents in the region and to enhance our understanding of their psychological distress.

Keywords Psychological distress, Mental health, Linguistic adaptation, Measurement, Assessment

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Introduction

Adolescence is a stage marked by significant changes in physical, cognitive, and psychosocial development, which can exert a profound influence on emotions, decisions, and social interactions [1]. Like any developmental stage, there are risk factors that can affect mental health and produce psychological distress, which is defined as an emotional state of affliction marked by symptoms of depression (such as loss of energy and interests, sadness, and hopelessness) and anxiety (such as uneasiness and a sense of tension) [2]. Globally, around 14% of adolescents experience psychological distress [1].

In line with global estimates, the prevalence of mental disorders among adolescents in Latin America (LA) falls between 12.1 and 16.5%, with Ecuador reporting a prevalence of 15.4% [3]. Investment in psychological interventions and mental health research for these specific disorders in all LA countries amounts to approximately \$30 million, underscoring the need for data-driven decision-making to assess the efficacy of treatments and to address the general psychological distress experienced by this population. However, there are few available measures to cover these aims in the region which hinders these efforts.

In Mexico, the *Inventario Autodescriptivo del Adolescente* [Teenager Self-Descriptive Inventory] has been used to measure psychological distress of adolescents [4]. Although it is not a specific scale of psychological distress, its goal is to explore different areas of adolescent life [5]. Other studies have used the Kessler Psychological Distress Scale (K10) to identify psychological distress on Mexican adolescents [6]. Additionally, an Ecuadorian Spanish version of the K10 scale has been used with participants aged 11 to 20 years old [7].

Another measure that can address these objectives is the Young Person's Clinical Outcomes in Routine Evaluation (YP-CORE), which is part of the Clinical Outcomes in Routine Evaluation (CORE) system [8, 9]. The CORE system comprises a variety of measures —with the Clinical Outcomes in Routine Evaluation-Outcome Measure (CORE-OM) being the first one— that have been developed to support the monitoring of change and outcomes in routine psychological interventions [10, 11]. All the measures that are part of the CORE system are copyleft, which means that they are free to use and reproduce, but they cannot be changed [12].

Previous studies have explored the psychometric properties of the CORE-OM including adolescents or used it to monitor treatment outcomes [e.g., 13–16]; however, since 1998, when the CORE-OM was introduced, several short and population-specific CORE measures have been developed, based on the original CORE-OM; the YP-CORE is one of those measures and it was devised as a more appropriate CORE measure for adolescents aged 11 to 16 years old than previous CORE measures [8]. It has also been used with adolescents who are 17 and 18 years old [17]. The YP-CORE aims to measure psychological distress by assessing risk, subjective well-being, general functioning, and problems/symptoms [8, 9].

The psychometric properties of the YP-CORE have been explored in many European countries, such as Finland, Italy, Croatia and Spain [18–21]. It is noticeable that there is a significant variation in the number of participants across studies reporting psychometric properties of the YP-CORE, ranging from 104 in Finland [18] to 1328 in the United Kingdom (UK) [9]. However, across all countries and samples, the YP-CORE has demonstrated good acceptability, with the Italian version showing the highest acceptability rate at 97.8%, and the Spanish version showing the lowest at 94.8%. All studies indicated significant gender differences in YP-CORE scores, with females scoring higher than males. Therefore, it is generally recommended to consider gender-specific cutoffs and norms. Two studies in the UK have also demonstrated statistically significant differences in YP-CORE scores between older patients (14-16 years old) and younger patients (11-13 years old), with older patients presenting significantly higher scores [8, 9]. A similar pattern of results was observed in the psychometric evaluation of the YP-CORE in Italy, where patients aged 14-16 had higher scores than their younger counterparts [19]. However, in the study conducted in Finland, no significant differences were found between different age groups [18].

In line with all CORE measures, the YP-CORE was developed to combine brevity with coverage and to include positively keyed items to avoid a relentlessly negative impact on people completing it (see e.g., Blount et al. [22]). These design aims were privileged overachieving any neat factor structure. As with other CORE measures, when factor analysis has been applied to the YP-CORE results have varied with Twigg et al. [8] reporting an exploratory factor analysis showing two oblique factors for the seven negatively cued items on the first factor and the three positively cued items on the second factor with a factor intercorrelation of just 0.35. By contrast O'Reilly et al. [23], in English language YP-CORE data, reported good fit to a single factor model but do not report any test of a two-factor model.

The YP-CORE has been routinely used to generate Practice-Based Evidence (PBE), which involves integrating clinical experience and service delivery characteristics with the best available evidence from rigorous research conducted in routine clinical settings [24]. PBE using the YP-CORE has been implemented in several countries. For instance, in the UK, the YP-CORE has been used to track changes produced by counselling in different contexts, such as community services and educational settings [25]. Despite this work, the YP-CORE has not been used in other continents such as Latin America. So, we conducted a study with two objectives: firstly, to verify whether the existing Spanish translation of the YP-CORE was suitable for use in LA, and secondly, to explore its psychometric properties in adolescents in Ecuador.

Methods

This study was conducted between November 2021 and February 2023 and consisted of two consecutive phases: the first phase involved exploring the need for adaptation of the Spanish version of the measure, which was previously translated in Spain. The second phase involved exploring the psychometric properties of the measure among adolescents in Ecuador. Prior to participating in the study, informed consent was obtained from the parent/legal guardian and from the adolescents, who signed assent forms.

Phase 1: Verifying the need for adaptation of the Spanish version of the YP-CORE

The procedures used in this study drew on those used in Evans et al. [26] but somewhat simplified to get the inputs needed from adolescents. The process was approved by the CORE System Trust (CST), which holds the copyright of the CORE instruments and was supervised by Prof. Chris Evans, one of the trustees of the CST.

The first task was to conduct translations of the original version of YP-CORE by people who know the Ecuadorian context. The inclusion criteria were being an Ecuadorian bilingual adult or adolescent who had the experience of living in an Anglo-Saxon/English-speaking country for at least a month or have experiences with Anglo-Saxon culture. For the adults involved, they also indicated that they had direct contact with adolescents, working with them or being a parent or relative. All the participants were told to translate the main textual elements of the measure: the instructions, the response anchors and each item. They were also asked to translate each element as a whole, not word by word. In total, we collected 12 translations (four from adolescents and eight from adults). These translations were organized to identify differences with the existing Spanish translation. This information was used to generate a semi-structured interview to gather adolescents' perceptions, understandings and preferences for the different translations.

We interviewed 19 adolescents aged 11 to 17 years old. The original version of the interview in Spanish, based on what Evans et al. [26] proposed, and the translated version in English are presented in the supplementary materials [see Additional file 1]. We asked the adolescents to read each element of the measure and then inquired whether they understood it, whether it was easy to understand, and whether they thought that an adolescent experiencing distress would understand it. For items where more than one translation had emerged from phase 1, we asked the adolescents which versions they preferred, considering its ease of understanding in the Ecuadorian context. The interviews were audio recorded and then transcribed to be analysed.

To obtain a wider perspective across LA, we also requested the opinions regarding the Spanish translation and the alternative items created in the first task from 12 experts (psychotherapists and researchers) from different Spanish-Speaking LA countries (4 from Chile, 3 from Argentina, 2 from Cuba, 1 from Colombia, 1 from Uruguay and 1 from Peru). Each participant had had experience working with adolescents. The information gathered from the interviews and the experts was reviewed by the research team (six Ecuador-based researchers and one person representing the CORE System Trust) and a new version of the YP-CORE was created. The psychometric properties of this version were then explored in phase 2 of the study.

Phase 2: Exploring the psychometric properties of the YP-CORE

Participants

Participants were adolescents (11–17 years) living in Ecuador and having enough ability to communicate in Spanish. We excluded adolescents presenting cognitive problems that could limit the understanding of the questionnaire.

Measures

Sociodemographic information

We designed a concise data collection form to gather information on relevant sociodemographic characteristics of the sample regarding gender, age, educational level, psychological diagnosis and treatment.

Young Person's Clinical Outcomes in Routine Evaluation

This is a 10-item self-report questionnaire designed to assess the outcomes of psychotherapeutic interventions employing the evaluation of psychological distress. The Spanish version, translated and used in Spain has shown acceptable psychometric properties [21], comparable to those found for the original English version [8, 9]. We used the Spanish version of the questionnaire that was generated in phase 1 of the present study and which was approved by the CST.

Life Satisfaction (LS)

This is a single-item to be scored using a 10-point scale to measure the individual's present life satisfaction level. Despite the availability of multi-item scales designed to evaluate this particular construct, we selected this concise and consistent single-item scale due to its efficiency compared with more elaborate formats [27, 28]. Singleitem life satisfaction measures perform similarly to longer measures such as the Satisfaction with Life Scale (SWLS) in terms of convergent and criterion-related validity, with strong correlations with the SWLS across different samples and similar patterns of statistical significance with theoretically relevant variables across different samples [29, 30]. For example, this individual item has demonstrated convergent validity with measures of depression, anxiety, stress, and both negative and positive affect [31].

Procedure

Participants for the study were recruited through a combination of public, partially state-funded and private schools, an outpatient psychotherapy service, as well as via social media platforms. Contact with legal guardians was established through school authorities, who relayed relevant study information and helped get consent from their students. Legal guardians provided their children's data, enabling us to share a questionnaire link with the adolescents. These adolescents provided informed consent and completed the questionnaires. Participants were requested to complete the retest on two separate occasions, each two weeks apart. Adolescents participated voluntarily and they did not receive any reward to be part of the study.

Psychometric analyses

The analyses were framed in the Problem, Plan, Data, Analysis, Conclusions and communication (PPDAC) approach [32, 33]. The Problem (aim) was to assess the psychometric properties of the YP-CORE and its suitability as a measure of psychological distress for adolescents in Ecuador. The Plan was to collect and analyse test and retest data, and the Data were consisting of item level data from the YP-CORE and the LS. Analyses were pre-planned and designed (1) to explore YP-CORE utility for adolescents in Ecuador and (2) to explore the psychometric comparability of the findings from this study with those from other countries. The overall statistical approach was exploratory and generally using estimation reporting bootstrap 95% confidence intervals (CIs) with 1,000 bootstrap replications, following the percentile method, hereafter shown as .xx[.xx, .xx]. Mean differences and effect sizes were reported for relationships between YP-CORE scores, school type, gender and age. We reported mean differences with 95% CIs rather than hypothesis tests for group comparisons. By doing this, we provide a range of plausible values for the difference and the effect size, considering uncertainty. This approach focuses on practical significance rather than just statistical significance and is assumption-free, making it an appropriate approach considering the exploratory nature of the present study. Acceptability is indicated by item omission rates. Internal consistency was evaluated using Cronbach's alpha and McDonald's Omega (ω) coefficient for one-factor models (unidimensional measures with continuous items) [34, 35].

In view of the different findings of the two reported factor analyses of English language YP-CORE data, we explored this issue.

For a direct comparison with the previous studies we conducted a confirmatory factor analysis of the item data using diagonally weighted least squares (DWLS) estimation testing a single factor and a two-factor (positively versus negatively cued items) with lavaan [36]. We report scaled Tucker-Lewis Index (TLI), treating a value above 0.90 as supporting fit to the model, and the root mean squared residual error (RMSEA) where a value below 0.08 is often seen as supporting fit. The test of the difference in statistical misfit calculated with lavaan is a scaled chi squared that adjusts for non-normality in the data.

Mean difference of scores and 95% CIs are presented in relation to gender and the eta square value for the comparison between the mean scores of each type of school. For describing the relationship between age and the score in the YP-CORE, correlation tests were conducted. For correlation tests, we reported both Pearson's *r* and Spearman's *rho* correlations with bootstrap 95% CIs using the CECPfuns package for comparability with the reporting in previous studies [9, 21, 37]. We reported the distribution of scores split by gender and age, providing the first completion minimum and maximum score and several percentiles. Finally, we compared the findings in relation to reliability with findings from the UK and Spain. All quantitative Analyses were performed with R [38] in RStudio [39].

Results

Phase 1: Verifying the need for adaptation of the Spanish version of the YP-CORE

In the light of feedback, changes included modifying the wording "In the last week" to "During the last seven days" [Durante los últimos siete días] and we divided the initial instruction into three sentences to enhance readability. Our modified instruction stated: "These questions are about how you have felt DURING THE LAST SEVEN DAYS. Please read each question carefully. Think about how many times you have felt this way in the last week. Then select the option that you think best fits for you [Estas preguntas son sobre cómo te has sentido DURANTE LOS ÚLTIMOS SIETE DÍAS. Por favor lee cada pregunta con atención. Piensa cuántas veces te has sentido así en la última semana. A continuación, selecciona la opción que creas que se ajusta mejor]".

Regarding the response anchors, we reached an agreement to replace "Occasionally" [Ocasionalmente] from

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| Item | English | Spanish | Spanish - Latin America |
|------|---|---|--|
| 1 | I've felt edgy or nervous | Me he sentido inquieto/a o nervioso/a | Me he sentido ansioso/a o nervioso/a |
| 2 | I haven't felt like talking to anyone | No me ha apetecido hablar con nadie | No he tenido ganas de hablar con nadie |
| 3 | I've felt able to cope when things go wrong | Me he sentido capaz de enfrentarme a las cosas cuando iban mal | Me he sentido capaz de enfrentar mis problemas |
| 4 | I've thought of hurting myself | He pensado en hacerme daño a mí mismo/a | He pensado en hacerme daño a mí mismo/a |
| 5 | There's been someone I felt able to ask for help | Ha habido alguien a quien he sentido que podría pedir ayuda | He sentido que tengo a alguien a quién podría pedir ayuda |
| 6 | My thoughts and feelings distressed me | Mis pensamientos y sentimientos me han alterado | Mis pensamientos y sentimientos me han molestado |
| 7 | My problems have felt too much for me | Mis problemas han sido demasiado para mí | Mis problemas han sido demasiado para mí |
| 8 | It's been hard to go to sleep or stay asleep | He tenido problemas para dormirme o para dormir toda la noche | He tenido problemas para quedarme dormido/a o para dormir toda la noche |
| 9 | l've felt unhappy | Me he sentido infeliz | Me he sentido triste |
| 10 | I've done all the things I wanted to | He hecho todo lo que me había propuesto | He hecho todas las cosas que quería hacer |



Fig. 1 Sample attrition chart

the Spanish translation from Spain with "Sometimes" [A veces] to enhance understanding, as some adolescents and experts suggested, that *ocasionalmente* is not commonly used by adolescents in the region.

Moving to the items, the feedback from both the adolescents and the experts was quite complex but clear that changes to many of the items would be needed to improve comprehension of the measure in LA. Changes were agreed for the wording of eight items (1, 2, 3, 5, 6, 8, 9 and 10), see Table 1 for details.

Phase 2: Exploring the psychometric properties of the YP-CORE

In total, 298 participants were included in the study (see Fig. 1), of whom 173 (58.10%) identified as female, 119

(39.90%) as male, 4 (1.30%) as non-binary, and 2 (0.70%) identified as other.

The age range was 11-17 years, with a mean age of 14.61 [14.40, 14.84], SD=1.97, and a median age of 15. Among the participants, 198 (66%) were enrolled in private schools, 70 (24%) in public schools, and 30 (10%) in schools that received partial support from the government and other organizations. With respect to academic year, 77 (25.80%) participants were in the second year of high school, 63 (21.10%) were in the third year of middle school, 54 (18.10%) were in the second year of middle school, 42 (14.10%) were in the first year of middle school, 42 (14.10%) were in the first year of high school, 19 (6.40%) were in their last year of elementary education, and one was in the last year of high school (0.30%). Twenty-eight adolescents (9.40%) declared that they were receiving psychological treatment when they filled out the questionnaires.

Acceptability

Initially 308 adolescents were invited to complete the YP-CORE, 10 of them (3%) did not complete any of the 10 items. Out of the remaining 298 participants who filled out the measure, 263 (88.3%) completed all 10 items during the initial assessment. A further 23 only omitted one item leaving 286 (96%) participants, allowing for the calculation of a prorated score. Among the individual items, item 4 (English "I've thought of hurting myself") was the most frequently omitted, with an omission rate of 6.2% (See Supplementary Materials for a more detailed breakdown of the omission rates per item).

Assessment of floor and ceiling effects

The examination of the data distribution demonstrated a robust range of variability across the scores of the items (except for Item 4, which showed floor effects), ensuring that responses were well-distributed. In most items, there was no indication of a concentration of scores at the lower or upper limits, which confirms that neither floor nor ceiling effects were present. This balanced spread of responses suggests that the items captured a wide spectrum of participant input without bias toward extreme scores (for more details see Supplementary Materials).

Internal consistency

The alpha coefficient was 0.85 [0.82, 0.87] for the whole sample, 0.83 [0.78, 0.86] for females and 0.85 [0.80, 0.88] for males. The Omega coefficient was 0.86 for the YP-CORE total score, 0.83 for females and 0.86 for males. Figure 2 shows a comparison of alpha coefficients for the total YP-CORE score in Ecuador, UK, and Spain.

Test-retest stability

The test-retest stability was evaluated across three time points: Time 1 (T1) with 286 valid forms, Time 2 (T2) after two weeks with 97 valid forms, and Time 3 (T3) after four weeks from the first assessment with 62 valid forms. Table 2 presents Pearson's r and Spearman's *rho* correlation coefficients, showing strong correlations between the first, second and third completions of the measure. Stability was also assessed by calculating the mean difference and bootstrapped CI between each assessment point. There was a small but significant fall in the mean score from T1 to T2 and from T1 and T3, but no significant difference in the mean score between T3 and T2.

Convergent validity

The YP-CORE total score convergent validity with LS was assessed, and it showed a significant moderate negative correlation (Pearson correlation of -0.69 [-0.75, -0.62] and Spearman correlation of -0.72 [-0.78, -0.65]).

Gender, age, type of school and being in psychological treatment effects

Regarding gender the mean difference was 5.06 [3.16, 6.84] with a Hedges' g effect size of 0.69 [0.44, 0.94]. When comparing between age ranges (11–13 vs. 14–17) the difference was 3.41 [1.40, 5.35] with an effect size of 0.45 [0.19, 0.72]. Further analysis of the continuous age variable revealed significant positive low correlations with the Total score 0.25 [0.13, 0.36] (See Supplementary Materials).

When comparing type of school, there was no significant difference and the effect size of school type was negligible ($\eta^2 = 0.001$ [0.00, 0.01]) between the means of the three groups (Private=19.67 [18.54, 20.85], Public=19.39 [17.56, 21.16], Partially state-funded=18.87 [15.66, 22.11]). In relation to having psychological treatment, there was a small difference in mean scores between participants that indicated to be receiving psychological treatment (n=28) and those who were not 1.67 [-1.83, 4.79], the effect size (η^2) was 0.21 [-0.20, 0.65].

Factor structure

Fit to the single factor model was statistically imperfect (χ^2 =81.9, df=35, p<.005) as it was for the two-factor model (χ^2 =54.4, df=34, p<.012). However, global fit to both models was good: single factor robust (TLI=0.94, RMSEA=0.072), two-factor model (TLI=0.96, RMSEA=0.058). The factor intercorrelation in the two-factor model was 0.72 and fit of that model was statistically significantly better than for the single factor model as shown by the chi squared difference (11.6, df=1, p=.0007). See Fig. 3 for more details on the two-factor model.



Fig. 2 Cronbach's alpha reliability comparison of the YP-CORE with UK and Spain findings. The horizontal line corresponds to the observed alpha score for the whole sample in Ecuador. The bars represent the 95% CIs around the observed alpha. Feixas et al. [21] only provided alpha coefficients split by gender, not an overall alpha for all participants together

Table 2 Test-retest stability between first, second and third completion of the YP-CORE showing mean differences, standard deviations and correlations between assessment times

| Time | n | Mean difference [95% CI] ^a | SD | Pearson's r | Spearman's rho |
|-------|----|---------------------------------------|------|-------------------|-------------------|
| T2-T1 | 97 | -1.03 [-1.95, -0.12] | 4.61 | 0.82 [0.73, 0.88] | 0.76 [0.63, 0.85] |
| T3-T2 | 60 | -0.24 [-1.64, 1.06] | 5.28 | 0.77 [0.61, 0.89] | 0.74 [0.55, 0.89] |
| T3-T1 | 62 | -1.51 [-2.77, -0.23] | 5.13 | 0.77 [0.66, 0.86] | 0.79 [0.64, 0.88] |

^aBootstrap Cl used the percentile method with 1,000 bootstrap replications. n = sample size, Cl = confidence interval, SD = Standard Deviation

All three factor scores (single factor and both factors in the two-factor model) showed linear and very strong relationships (R^2 =1.0 [0.78, 0.75]) for regression of the negative factor scores on the single factor scores, the positive on the single and the positive on the negative. The residuals of the positive on negative factor scores showed no statistically significant associations with any demographic variables and Cronbach alpha for the positive factor if treated as a scale would be 0.52 [0.39, 0.61].

Score distributions by gender and age

To provide referential information, we present distribution statistics for the YP-CORE scores for gender and age groups in Table 3.

Discussion

This is the first study to explore the appropriateness of the Spanish version of the YP-CORE for use in LA and the first exploration of the measure's psychometric properties with adolescents residing in one country within the region, Ecuador.

The acceptability of the measure was good. These figures compare well with those rates for the YP-CORE in the UK, Spain and in other translations and suggest that the YP-CORE is a suitable tool for use with adolescents in Ecuador. The rate of omitted items on the YP-CORE was generally low. Item 4 had the highest omission rate. Previous studies of the YP-CORE have noted similar rates of omission for this item but have retained it due to its clinical significance as indicator of potential harm [17].

In terms of internal consistency, the measure showed good consistency. Our values were comparable with the



Fig. 3 Two-factor model of the YP-CORE items with Ecuador data. PF = Positive factor, NF = Negative factor

| Table 3 | First completion | percentiles split by gender and by age groups |
|---------|------------------|---|

| Percentile | Gender | | Age groups | |
|-------------------------------|----------------------|-------------------------|---------------------|----------------------|
| | Females | Males | 11–13 | 14–17 |
| | n=165 | n=115 | <i>n</i> =100 | n=186 |
| 5th | 10.00 | 5.70 | 5.95 | 8.25 |
| [95% CI] ^a | [4.70,11.00] | [3.00, 7.00] | [2.89, 7.08] | [4.16, 10.00] |
| 20th | 15.00 | 9.80 | 10.00 | 13.00 |
| [95% CI] ^a | [13.00, 16.00] | [8.00, 11.00] | [8.00, 11.00] | [12.00, 16.00] |
| 35th | 19.00 | 13.00 | 13.65 | 18.00 |
| [95% CI] ^a | [17.44, 21.00] | [11.00, 14.00] | [11.00, 15.00] | [16.00, 20.00] |
| 50th | 22.00 | 16.00 | 16.50 | 21.00 |
| [95% CI] ^a | [21.00, 23.18] | [13.00, 18.00] | [15.00, 19.24] | [20.00, 23.00] |
| 65th | 24.00 | 19.00 | 20.00 | 24.00 |
| [95% CI] ^a | [23.22, 26.37] | [17.00, 21.00] | [18.00, 23.00] | [23.00, 26.00] |
| 80th | 28.00 | 23.00 | 24.09 | 27.78 |
| [95% CI] ^a | [27.00, 29.00] | [20.86, 26.52] | [22.00, 28.00] | [26.38, 29.00] |
| 95th | 32.00 | 29.30 | 31.00 | 32.00 |
| [95% CI] ^a | [31.00, 34.07] | [27.85, 31.89] | [28.9, 34.61] | [31.00, 33.42] |
| 95th [95% CI] ^a | 32.00 [31.00, 34.07] | 29.30 [27.85, 31.89] | 31.00 [28.9, 34.61] | 32.00 [31.00, 33. |

^aBootstrap Cl used the percentile method with 1,000 bootstrap replications. *n*=sample size, Cl=confidence interval

first study in the UK [8], higher than those reported from a more recent UK study by Twigg et al. [9], a bit lower for females and higher for males in comparison to those from Spain by Feixas et al. [21] and a bit lower than the value from the Finnish version [18]. The test-retest stability was also good, with moderate to high positive correlations between the scores of each of the three assessment times. When checking for the mean shift between scores we identified a significant mean shift from T1 to T2, indicating that scores were lower at T2, but the difference when comparing T2 to T3 was not significant. These findings are similar to those found in a study of the CORE-OM for adults conducted in Ecuador [40]. Likewise, Feixas et al. [21] found statistically significant differences between the T1 and T2 completions. In contrast with our findings, Twigg et al. [8] found a non-significant mean difference between T1 and T2. This mean shift from T1 to T2, which has also been found

in previous studies employing repeated administrations of the YP-CORE may be due the effect of repeated test administration, as reported by Durham et al. [41], thus changes explained with only two administrations of the measures should be interpreted with caution. A solution can be to include more than one pre-intervention completion to have a baseline that is less affected by the mentioned effect. However, another issue is to accurately track changes across an intervention; for that purpose, we recommend using repeated assessments on at least three occasions, as part of routine outcome monitoring for generating PBE [42].

Factor analysis supported a two-factor model over a single factor but with negligible substantive differences between the two-factors, the findings do not support creating two scale scores, one with low reliability and with high intercorrelations. The factor intercorrelation of 0.72 in the two-factor analysis is much higher than that of 0.35 reported in Twigg et al. [8] and more in line with the support for a single factor structure in O'Reilly et al. [23] (n=700, TLI=0.99, RMSEA=0.026) than with that very oblique structure. There seems no rationale for subscale scoring of the YP-CORE.

In relation to age effects, our findings are consistent with those found in the studies conducted in the UK and Italy, which showed that older adolescents (14–17 years old) had significantly higher scores of psychological distress than younger adolescents (11–13 years old). That differs from findings from Finland where age was not found to have a significant effect. In relation to gender, our findings showed a significant difference, with females presenting higher scores than males, as reported previously in several studies [8, 9, 18, 19, 21]. This consistent finding might suggest that gender roles in Western countries may have a significant influence on how men and women report how they feel [43].

As an exploratory endeavour, we compared the scores of those who declared to be receiving a psychological treatment against those who were not. The small mean difference between those two groups might suggest that the interventions that the participants were undergoing had some useful effect, but that effect was not statistically significant.

Strengths and weaknesses

As a result of phase 1 we generated, via a user-centred approach and with the input of experts from different countries in the region, a suitable Spanish version of the YP-CORE for use with LA adolescents. However, the inputs from the adolescents were only collected in Ecuador due to ethics committee restrictions. A significant strength of this study is that it encompasses a comprehensive approach in assessing the suitability and psychometric properties of the YP-CORE. Our contribution goes beyond a linguistic translation which was not conducted in this study; however, we undertook the task of adapting the Spanish translated version of the questionnaire to ensure its comprehension and relevance in our specific region. This thorough adaptation process allowed to capture the nuances and intricacies of our target population, enhancing the usefulness and applicability of the questionnaire in many ways: for our study, for further research and for future clinical practice in LA. By taking these steps, a solid foundation for exploring the psychometric properties of the instrument was stablished. Further exploration is needed in other LA countries to compare with our findings.

In phase 2, the primary constraint was the limited final number of included participants for the psychometric exploration. It should be noted that undertaking research with adolescents is a challenging endeavour, as despite deploying various approaches to recruit participants and extending data collection timelines, the twostep consent process reduced the number of participants. After parents provided consent, some adolescents failed to complete the questionnaires, leading to further reduction in the sample size. Nonetheless, we plan to address this limitation by conducting routine outcome monitoring using the YP-CORE. This will enable us to collect more data on the help-seeking population and provide more precise comparisons between samples (general vs. help-seeking) in the future. Another constraint for the interpretation of the findings is that, although we tried to collect data from adolescents in different education settings, our sample does not fully reflect all the diversity of the adolescent population in Ecuador. Another limitation is that, due to the anticipated constraints in conducting the study and obtaining responses from adolescents, we only included the life satisfaction (LS) single-item to provide some information about the relationship between the YP-CORE score and other measures, particularly given the lack of measures adapted to the Ecuadorian context. The use of a single-item life satisfaction scale with 10 response categories raises concerns, as individuals may struggle to differentiate between more than five categories, potentially leading to reduced accuracy and reliability in the responses. Therefore, we advise readers to interpret these results with caution and view them as an initial exploration of convergent validity.

Despite these limitations, our findings support the use of the measure with adolescents in Ecuador. Nevertheless, more data from different cities and settings are needed to understand the psychological distress of adolescents in Ecuador in a more comprehensive manner. Despite these limitations, this is the first study to examine the psychometric properties of the YP-CORE in LA, and one of the few to evaluate psychological distress measures in the region.

Conclusions

As a result of this study, a new version of the YP-CORE in Spanish was developed specifically for use in LA (https:/ /www.coresystemtrust.org.uk/home/instruments/yp-cor e-information/). We anticipate that the availability of this version for use in LA has the potential to generate valuable information on treatment outcomes for adolescents and improve our understanding of their psychological distress.

Abbreviations

| LA | Latin America |
|---------|--|
| YP-CORE | Young Person's Clinical Outcomes in Routine Evaluation |
| CORE | Clinical Outcomes in Routine Evaluation |
| CORE-OM | Clinical Outcomes in Routine Evaluation-Outcome Measure |
| UK | United Kingdom |
| PBE | Practice-Based Evidence |
| CST | CORE System Trust |
| LS | Life Satisfaction |
| PPDAC | Problem, Plan, Data, Analysis, Conclusions and communication |
| Cls | confidence intervals |
| DWLS | diagonally weighted least squares |
| TLI | Tucker-Lewis Index |
| RMSEA | root mean squared residual error |
| T1 | Time 1 |
| T2 | Time 2 |
| Т3 | Time 3 |
| SD | standard deviation |
| PF | Positive factor |
| NF | Negative factor |

Supplementary Information

The online version contains supplementary material available at https://doi.or g/10.1186/s40359-024-02169-8.

Supplementary Material 1 Supplementary Material 2

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Author contributions

Conception and design: C.P., C.E., J.V-O.; Data collection: CP, J.V-O., N.O-M., G.V-A., D.E-P., A.R-L; Analysis: C.E., J.V-O.; Interpretation of data: C.P., C.E., J.V-O.; Drafting and reviewing the article: All authors drafted and reviewed the article. All authors gave approval for the final version of the article.

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Data availability

Due to ethical restrictions and privacy concerns, the data from this study, which involves adolescents, cannot be shared or made available. Consent from parents and assent from adolescents participating in this study was obtained with the understanding that the data collected would be used solely for the purposes outlined in our research project. Neither parents nor

adolescents provided consent for the data to be shared with researchers not directly involved in our study.

Declarations

Ethics approval and consent to participate

This study was performed in accordance with the ethical standards as set forth in the 1964 Declaration of Helsinki and its later amendments. The protocol of the study was approved by the Ethics Committee for Research with Human Beings of the Pontificia Universidad Católica del Ecuador (ref. PV-12-21). Informed consent was obtained from all the participants and their legal guardians.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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