Journal of Psychopathology and Clinical Psychology / Revista de Psicopatología y Psicología Clínica, 30 **(3), 257-266, 2025**
https://doi.org/10.5944/rppc.42092
https://revistas.uned.es/index.php/rppc
J. Psychopathol. Clin. Psychol. / Rev. Psicopatol. Psicol. Clin.
ISSN 1136-5420

Mental Health Continuum–Short Form scale: Validation in a sample of Peruvian university students

Lizley Tantalean-Terrones, Marivel Aguirre-Morales, Ingrid Cirilo-Acero, Manuel Mayanga-Aliaga, María Carbajal-Ríos and José Livia-Segovia

Federico Villarreal National University, Lima, Peru

ABSTRACT

Objective: This study examined the psychometric properties of the Mental Health Continuum–Short Form (MHC-SF) scale in students at a public university in Lima, Peru. **Method:** A sample of 1066 students from aged 18 to 30 years (M = 20.17, SD = 1.92). Its divergent validity was contrasted with the DASS-21 Scale; in addition, we performed construct validity, invariance and reliability analyses. **Results:** The instrument showed an adequate fit for the three-factor model (emotional, psychological and social wellbeing), with the following indices: $\chi^2(74) = 404.38$, $p < .01$; TLI = .99, CFI = .99, RMSEA = .08, SRMR = .05, GFI = .099, and $\chi^2/df = 5.4$. Interdimensional correlations ranged from .76 to .87, and the scale met gender invariance criteria. Divergent validity was moderate (-.37 to -.61), convergent validity was confirmed (AVE > .50), and discriminant validity was acceptable (HTMT < .85). Finally, reliability coefficients (alpha, omega, and composite) all exceeded .83. **Conclusions:** These findings support the use of the instrument in the Peruvian university population.

Keywords: Continuous mental health; positive mental health; wellbeing; factorial validity; MHC-SF.

Escala Mental Health Continuum–Short Form: Validación en una muestra de estudiantes universitarios peruanos

RESUMEN

Objetivo: Se examinaron las propiedades psicométricas de la escala Mental Health Continuum–Short Form (MHC-SF) en estudiantes de una universidad pública de Lima-Perú. **Método:** Participaron 1066 estudiantes de 18 a 30 años (M = 20.17, DT = 1.92), se contrastó su validez convergente con la Escala DASS-21. Asimismo, se realizaron análisis de validez de constructo, invarianza y fiabilidad. **Resultados:** El instrumento mostró ajuste adecuado para el modelo de tres factores (bienestar emocional, psicológico y social) con valores $\chi 2(74) = 404.38$, $p < .01$; TLI = .99, CFI = .99, RMSEA = .08, SRMR = .05, GFI = .099 y χ^2/df = 5.4. Correlaciones entre dimensiones de .76 a .87; criterios de invariancia según género; validez divergente moderada de -,37 a -,61; validez convergente AVE > .50 y validez discriminante HTMT < .85; finalmente, coeficientes alfa, omega y compuesto > .83. **Conclusiones:** Las propiedades del instrumento permiten su uso en la población universitaria peruana.

Palabras clave: Salud mental continua; salud mental positiva; bienestar; validez factorial; MHC-SF.

Introduction

Mental health is a pluralistic concept that includes theoretical and practical approaches to mental disorders, psychosocial challenges, and well-being (Restrepo & Jaramillo, 2012). Due to its complex biopsychosocial

Received: September 1, 2024; accepted: October 11, 2025.
Corresponding author: Lizley Tantalean-Terrones, Faculty of Psychology, Federico Villarreal National University, 15088 Lima (Peru). E-mail: ltantalean@unfv.edu.pe
Acknowledgements: To the Central Institute for Research Management at the Federico Villarreal National University, for monitoring this research since its inception as a project.

nature, a broad, multidisciplinary approach is required. Despite this, mental health has traditionally been linked to disabling indicators such as anxiety and depressive disorders, which serve as its primary reference points worldwide (Pan American Health Organization [PHAO], 2020). In contrast, positive mental health (PMH) emphasizes an individual's capacity for self-care, self-affirmation, and empathy, fostering both personal and collective well-being. This approach enhances an individual's ability to cope constructively with daily challenges (Ministry of Health, 2020).

PMH is closely related to the concept of mental health, as both emphasize an individual's overall well-being. Over time, PMH has incorporated various principles, including the absence of illness, Jahoda's model of positive mental health, Lluch's multifactorial evaluation framework, well-being itself, and an advanced measurement approach (Muñoz et al., 2016). Therefore, a person with PMH actively cultivates their mental health across various life contexts by strengthening their psychological resources and fostering personal development (Teixeira et al., 2021).

Ryff and Keyes (1995) proposed an explanatory model of PMH based on self-acceptance, interpersonal relationship quality, self-determination, life purpose, continuous personal development, and the ability to influence one's environment. Keyes (2002) expanded the concept of PMH by considering the contextual and situational aspects of human experience, integrating interpersonal, intrapersonal, and social factors to facilitate personal growth through relational experiences. In this framework, individuals would have continuous opportunities to reach their potential (flourish), although their mental health may sometimes be affected (languish). However, experiencing mental health fluctuations does not necessarily mean receiving a clinical diagnosis.

The explanatory model of the *mental health continuum* (MHC) has been both theoretically and empirically validated, based on a three-factor structure that includes emotional well-being, psychological well-being, and social well-being (Keyes et al., 2008). The MHC is a dynamic process in which an individual either flourishes or languishes based on the three factors of well-being. Fluctuations in mental health allow individuals to recognize early signs of decline and take measures to restore their well-being. This process will contribute to reducing the stigma associated with mental illness by emphasizing the role of personal well-being in mental health management.

The Mental Health Continuum–Short Form (MHC-SF) has been evaluated for its psychometric properties in diverse cultural and educational contexts. A study involving 5,399 Chinese students from urban schools found that the instrument demonstrated strong internal consistency (α and $\omega > 0.80$) and confirmed the three-factor structure through confirmatory factor analysis (CFA). The scale also showed measurement invariance across gender and age and demonstrated convergent and divergent validity with the Quality of Life Instrument (Minneapolis-Manchester) and the Hospital Anxiety and Depression Scale (Guo et al., 2015). Likewise, in a cross-cultural study in the countries of Algeria, Armenia, Azerbaijan, Belgium, Brazil, Bulgaria and Chile, it presents a favorable three-factor adjustment with greater emphasis on the Chilean population (Żemojtel-Piotrowska et al., 2018).

The instrument was also assessed in 1.484 secondary school graduates of French-Canadian origin, aged 16 to 40, highlighting the three-factor model as the primary structure (Doré et al., 2017). Similarly, in a study of 1.024 Mexican youth aged 18 to 24, the same model was supported (Toribio & Andrade, 2023). Additionally, the dominance of this model was confirmed in a study of 1.300 Argentinian adults, as demonstrated through divergent validity with the Negative PANAS and convergent validity with the Positive PANAS (Lupano et al., 2017). These findings have remained consistent, even in a study that evaluated both Portuguese children and adolescents (De Carvalho et al., 2016).

In contrast, three studies found that the bifactor model demonstrated a better fit, as observed among young Hungarians (Melinda et al., 2020), Singaporean and Australian residents over 18 years of age (Yeo & Suarez, 2022), as well as in individuals aged 16 to 95 from Canadian, Danish, and Dutch backgrounds (Santini et al., 2020). These studies suggest cross-cultural differences in the interpretation of the scale, particularly regarding the social well-being factor. The reviewed studies support the instrument's strong psychometric properties and have also provided evidence among Hispanic populations. However, no studies have specifically examined Peruvians. Although similar studies exist among Spanish-speaking populations, research involving the Peruvian population remains necessary. Scientific and methodological literature emphasizes adherence to specific standards that promote solid practices to ensure the quality of the instruments used (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 2018). These standards consider not only linguistic equivalence but also contextual and cultural differences among Latin American countries.

Therefore, this research advances psychometric research by assessing the properties of the MHC-SF

in Peruvian students at a public university through the analysis of internal structure, discriminant validity, consistency, and gender invariance. It also examines empirical evidence focused on the positive psychology paradigm in a new sociocultural context (Keyes, 2002), aimed at developing targeted interventions to improve individual quality of life by enhancing their ability to sustain well-being, in parallel to the attention to mental health disorders or problems and preventive actions of their main predictors (Andrades-Tobar et al., 2021).

Method

Participants

Participants were selected using a non-probabilistic snowball sampling technique. Recruitment was promoted through social networks and resulted in the voluntary participation of 1066 students. Participants met the criteria of being enrolled in a public higher education institution and belonging to one of its 18 faculties.

Participants ranged in age from 18 to 30 years (M = 20.17, SD = 1.92). Of the total sample, 67.9% (n = 724) were women and 32.1% (n = 342) were men. Regarding marital status, 95.8% were single, while 4.2% (n = 45) were married or cohabiting. In terms of academic disciplines, 64.5% (n = 688) were enrolled in health sciences, 15.1% (n = 161) in social and human sciences, 10.8% (n = 115) in engineering and natural sciences, and 9.6% (n = 102) in business sciences. Concerning occupation, 59.8% (n = 637) were exclusively dedicated to their studies, while 40.2% (n = 429) were engaged in work or pre-professional development activities.

Instruments

The sociodemographic survey consisted of 16 questions covering variables such as sex, age, field of study, academic level, marital status, educational background, and current occupational status.

The Mental Health Continuum–Short Form (MHC-SF; Corey Keyes, 2008) is a self-report measure designed to assess positive mental health based on indicators of positive affect, self-development, and social connectivity. It is structured according to the framework of Ryff and Keyes (Ryff & Keyes, 1995; Keyes, 2002) and has been compared with other mental health models (Keyes, 2005; Keyes, 2006). The scale includes 14 items rated on a six-point scale from 0 to 5, yielding a total score between 14 and 70. It is composed of three factors: (a) *emotional well-being* (three items), which measures satisfaction and a predisposition to experience events positively; (c) *social well-being* (five items), which evaluates social acceptance, contribution, and integration; and (b) *psychological well-being* (six items), which assesses autonomy, environmental mastery, personal growth, purpose in life, and self-acceptance; (See Appendix 1).

In terms of psychometric properties, the MHC-SF has been evaluated using exploratory and confirmatory factor analysis; the two-factor model have demonstrated to have the best fit (GFI = .96, AGFI = .94, AIC = 345.9, and RMSEA = .06). It also have exhibited moderate to strong inter-factor correlations and adequate reliability for the scale and its dimensions (Keyes et al., 2008). In this study, validity and reliability were re-evaluated, identifying Cronbach's alpha (α) coefficients greater than .91 and corrected item-total correlations above .56. Reliability was confirmed with α and ω scores exceeding .84 for the scale and its subscales.

The Depression Anxiety Stress Scale–21 (DASS-21; Daza et al., 2002; Lovibond & Lovibond, 1995) briefly measures and distinguishes the absence, presence, or severity of emotional symptoms related to depression, anxiety, and stress. Both in the original language and in the Spanish version the instrument (Daza et al., 2002) consisting of 21 items equally distributed across three dimensions, the scale includes four response options ranging from 0 to 3. The scale is assessed based on its dimensions, with a severe classification defined as depression > 14, anxiety > 10, and stress > 17. The scale have demonstrated adequate goodness-of-fit, with an adjusted index of .76, $\chi^2(816) = 3.55$, $p < .05$, and factor correlations of $\varphi = .61$ for depression-anxiety, $\varphi = .76$ for anxiety-stress, and $\varphi = .62$ for depression-stress. Factor loadings for each subscale on the common factor were $\gamma = .71$ for depression, $\gamma = .86$ for anxiety, and $\gamma = .88$ for stress (Lovibond & Lovibond, 1995). Also, an adequate internal consistency and quality in item functioning with coefficients $\alpha = .90$ and ordinal alpha of .95 for the total scale, and $\alpha > .93$ and ordinal alpha > .88 for its three factors (Areas et al., 2023). In this study, reliability was re-evaluated, identifying a corrected item-total correlation greater than .40 for each item in the item-test analysis. Reliability was further confirmed with α and ω scores exceeding .854 for the scale and its dimensions.

Procedure

Permission was obtained from the author of the Continuous Mental Health Scale–Short Form (Keyes, 2008). Then, the scale was translated from English to Spanish and subsequently back-translated into English.

This final version was compared with the original to determine whether the instrument underwent any modifications due to the translation into Spanish, see Appendix 1. This multi-stage methodology ensures accuracy in the drafting of documents subject to cross-cultural adaptation and supports faithful interpretation (Furukawa et al., 2014). This process included forming a focus group with university students and an expert review based on established criteria. Additionally, it was confirmed that the DASS-21 Scale is freely available for research purposes. Both instruments were administered via a virtual Outlook form, which included informed consent and instructions, allowing participants to decide whether to participate and respond easily. Data collection was conducted during the social confinement period prior to COVID-19. Student participation was encouraged through institutional email, the university's official Facebook page, and WhatsApp groups of students enrolled in the current academic year. Students who voluntarily chose to participate were included in the sample. The study was approved by the Ethics Committee of Federico Villarreal National University.

Statistical analysis

To control statistical bias, repeated responses and outliers were identified. Outliers were detected using the Mahalanobis-robust method and subsequently removed. Given that the study's scale consists of items representing an ordinal variable, the unweighted least squares (ULS) estimator was used for confirmatory factor analysis, as it does not require a specific distribution and is well-suited for analyzing Likert-type scales (Muthén & Muthén, 2017). One-factor, two-factor, and three-factor dimensional models were evaluated based on previous findings in Spanish-speaking populations. A bifactor model was not considered because three previous studies reported low reliability for some items of the social well-being factor, likely due to cross-cultural differences (Melinda et al., 2020; Santini et al., 2020; Yeo & Suarez, 2022).

Model fit was assessed using the comparative fit index (CFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR). CFI values greater than .90 indicate good model fit (Bentler, 1990), as do RMSEA values below .080 (MacCallum et al., 1996) and SRMR values below .080 (Browne & Cudeck, 1992). For the invariance analysis, the incremental fit of CFI, RMSEA, and SRMR were evaluated using chi-square tests, along with residual and parameter analysis at the configural, metric, scalar, and strict stages. Additionally, polychoric correlations were used to model thresholds that define the latent categories of ordinal items. Changes within the established limits of CFI < .010, RMSEA < .015, or SRMR < .005 were considered acceptable (Chen, 2007).

Finally, average variance extracted (AVE) was used to assess the proportion of variance captured by the construct relative to total variance, including measurement error, with values above .50 suggesting convergent validity. The heterotrait-monotrait ratio (HTMT) was also calculated to evaluate discriminant validity, with values below .85 indicating that the constructs are distinctive. For reliability analysis, internal consistency was assessed using omega (ω) and alpha (α) coefficients.

Confirmatory factor analysis was conducted using R (version 4.2.3) with the Lavaan package (version 0.6-13; Rosseel, 2012). Gender invariance was assessed using the JASP statistical package (version 0.19.3.0).

Results

Factor Analysis

Table 1 presents factorial fit indices for the three possible models of the MHC-SF scale, as analyzed in the original study (Keyes, 2008). The one-factor and two-factor models exhibit high chi-squared fit indices relative to degrees of freedom and exceed the RMSEA cut-off point. Table 2 presents a three-factor structure with moderate to high factor loadings. Additionally, it indicates factor correlations above .85*.3.2.*

Invariance analysis

Table 3 presents the measurement invariance analysis. Initially, the model demonstrated a good fit for the two gender groups. Afterward, the groups were combined to estimate and evaluate the first level of invariance. At the proposed invariance levels, changes in CFI, RMSEA, and SRMR (Chen, 2007) met the established criteria up to the strict level.

Divergent, convergent and discriminant validity

Table 4 displays the correlations between continuous mental health dimensions and stress, anxiety, and depression (EAD) dimensions of DASS-21, providing evidence of validity through its relationship with other variables. The results show negative correlations at moderate and high levels (Cohen, 1988). Additionally, the three factors present AVE and HTMT scores within the expected limits.

Table 1. Estimation of confirmatory factor models of the latent structure of the MHC-SF items

Latent model	χ^2	*df*	CFI	TLI	RMSEA	SRMR	GFI	χ^2/df
Single factor	879.444	77	.98	.97	0.12	.07	.98	11.4
Two factors†	777.213	76	.98	.97	0.11	.07	.98	10.2
Three factors	404.386	74	.99	.99	.08	.05	.99	5.4

Note. †Measure of emotional well-being load on one factor, and measure of psychological and social well-being load on the second factor. CFI = comparative fit index, TLI = Tucker-Lewis index, RAMSEA = root mean square error of approximation, SRMR = standardized root mean-square, GFI = goodness of fit index.

Table 2. Factor loadings of the standardized solution of the confirmatory factor analysis for the three-correlated factor model of the MHC-SF

No. item	Item	F1	F2	F3
01	Have you felt happy?	.78		
02	Have you felt interested in life?	.82		
03	Have you felt satisfied?	.84		
04	Have you felt that you contribute in a meaningful way to society?		.75	
05	Have you felt a sense of belonging to a community (such as a social or neighborhood group)?		.66	
06	Have you felt that society has become a better place for you?		.77	
07	Have you felt that people are generally good?		.69	
08	Have you felt that society's functioning makes sense to you?		.79	
09	Have you felt that you like your personality?			.78
10	Have you felt capable of managing your daily responsibilities well?			.72
11	Have you felt that you have affectionate and trusting relationships with others?			.71
12	Have you felt that your experiences challenged you to grow and become a better person?			.68
13	Have you felt confident in thinking or expressing your ideas and opinions?			.80
14	Have you felt that your life has a sense of purpose and meaning?			.84
	Correlations between factors			
	F1. Emotional well-being	(.85)		
	F2. Social well-being	.76	(.85)	
	F3. Psychological well-being	.87	.76	(.89)

Table 3. Measurement invariance of the MHC-SF by gender

Model invariance	*χ2 (df)*	CFI	RMSEA	SRMR	ΔCFI	ΔRMSEA	ΔSRMR
Configural	953.3 (148)	0.957	0.101	0.045	-	-	-
Metric	714.5 (159)	0.971	0.081	0.048	0.014	-0.020	0.003
Scale	355.5 (212)	0.992	0.036	0.049	0.021	-0.045	0.001
Strict	355.5 (212)	0.992	0.036	0.049	0	0	0

Note. CFI = comparative fit index, TLI = Tucker-Lewis index, RAMSEA = root mean square error of approximation, SRMR = standardized root mean-square, ΔCFI = CFI delta, ΔRMSEA = RAMSEA delta, ΔSRMR = SRMR delta.

Table 4. Divergent, convergent and discriminant validity scores

Measurements	Stress	Anxiety	Depression	AVE	Heterotrait-monotrait ratio		
					Factor 1	Factor 2	Factor 3
Emotional well-being	-.48***	-.46***	-.61***	0.694	1.000		
Social welfare	-.42***	-.37***	-.49***	0.588	0.744	1.000	
Psychological well-being	-.48***	-.46***	-.60***	0.600	0.853	0.743	1.000

Note. AVE = average variance extracted. *** $p < .001$.

Table 5. Reliability of the MHC-SF

Coefficient	Emotional wellbeing	Social welfare	Psychological well-being
α Cronbach	.857	.843	.885
ω McDonald´s	.859	.844	.887
Compound reliability	.83	.85	.87

Reliability Analysis

Table 5 presents Cronbach's alpha coefficients, McDonald's omega, and composite reliability values, which show values above .83. The internal consistency for the entire scale is .928 (95% CI = .56–.77).

Discussion

This study aimed to analyze the evidence of validity of the internal structure, as well as divergent, convergent, and discriminant validity, measurement invariance by gender, and the reliability of the MHC-SF. The CFA confirmed model fits the one-dimensional, two-dimensional, and three-dimensional models, favoring the latter for consistency with its original version (Keyes, 2006). This finding aligns with similar studies conducted in Mexico (Toribio & Andrade, 2023) and China (Guo et al., 2015), as well as among Argentine adults (Lupano et al., 2017) and Iranians from East Azerbaijan (Rafiey et al., 2017).

However, differences emerged in studies reporting a second-order structure, where a three-factor model was integrated into a higher-order unidimensional structure. This was observed in studies from Canada (Doré et al., 2017), Chile (Żemojtel-Piotrowska et al., 2018), and Hungary (Melinda et al., 2020), as well as in the general populations of Denmark (Santini et al., 2020) and Singapore (Yeo & Suárez, 2022). Thus, the number of factors extracted for the scale may depend on the diversity of population groups and their conceptualization of mental health in relation to well-being. This highlights the importance of research exploring different ethnographic and cultural contexts (Lui, 2015; Vaillant, 2012). Even though variations exist, a latent three-dimensional structure remains the standard for the MHC-SF in most reviewed studies.

The factor loadings found for the emotional well-being, psychological well-being, and social well-being subscales are moderate to high (Costello, 2005), indicating that each item significantly contributes to the instrument and helps explain variability in its factorial structure (Lara-Hormigo, 2014). Evidence from the internal structure analysis showed that the goodness-of-fit indices in this study closely resemble those found in the Iranian sample (Rafiey et al., 2017). The relationship between the MHC-SF factors and the DASS-21 scales presented a moderate inverse relationship. This suggests that the MHC construct differs from stress, anxiety, and depression factors, supporting divergent validity (AERA, APA, & NCME, 2018). Convergent validity is supported by AVE values, which exceed the expected minimum across its three dimensions, similar to findings in Iranian adolescents (Khazaei et al., 2023) and Bangladeshi adults (Hiramoni & Ahmed, 2022). Discriminant validity is supported by findings in French-Canadian youth (Doré, 2017) and in populations from Australia and Singapore (Yeo & Suárez, 2022).

Gender invariance complied with the CFI, RMSEA, and SRMR adjustment criteria (Chen, 2007) and is similar to results obtained by Doré et al. (2017) in the Canadian population, as well as findings from a cross-cultural study in adults from Asian, European, and Latin American countries (Żemojtel-Piotrowska et al., 2018). A similar result was observed in Portuguese children and young people, where age invariance was also reported

(De Carvalho et al., 2016). The consistency of these findings is supported by the universal applicability of age and gender criteria for underlying psychological traits measured by the instrument (Gopalkrishnan & Babacan, 2015; Keyes, 2006; Keyes et al., 2008).

Finally, the findings revealed adequate reliability indices, with α and ω coefficients greater than .84, which were validated in adolescents (De Carvalho et al., 2016) and are very similar to those found in Mexico and China (Guo et al., 2015; Toribio & Andrade, 2023). Composite reliability was also observed among Iranian adolescents (Afrashteh & Janjani, 2022). This result suggests high internal consistency for the MHC construct, reinforcing findings reported in Spanish-speaking populations.

The present research provides evidence of the instrument's robustness and contributes to its cross-cultural validity, as it accounts for contextual differences among users (Luengo et al., 2021; Ones et al., 2012). However, despite the observed consistency, subtle differences in how individuals interpret and respond to items may still exist, which may affect the accuracy of measurement (Bieda et al., 2017; Schönfeld et al., 2017). This is an important aspect for future research to ensure accurate and meaningful application of the variable (Lui, 2015).

One of the main limitations concerns the sampling method, due to challenges in obtaining a probabilistic-stratified sample. Since the inclusion of volunteer participants prevents generalization to the population, this limits the broader applicability of the findings. Furthermore, the use of an online form does not ensure full participant engagement, due to variations in participants' physical environments. This includes limited access or internet connectivity issues, as well as the lack of immediate clarification when participants have doubts about item meanings.

The study context during social confinement due to COVID-19 may have influenced participant behavior and may have led them to favor socially desirable or distress-related responses. This effect could be more pronounced in those who experienced a sudden COVID-19 infection, a significant loss, family problems, or the impact of distressing news. The sample consisted of university students rather than individuals with physical or psychological diagnoses, as indicated in the sociodemographic survey.

In conclusion, the MHC-SF demonstrates adequate psychometric properties and is a useful tool for assessing mental health using a positive approach in a non-probabilistic sample of university students. The instrument retains the original three-factor model, demonstrates measurement invariance by gender, and exhibits discriminant validity with respect to anxiety, depression, and stress.

The study contributes to the development of psychometric research by incorporating a new cultural and ethnographic context to enhance understanding and reaffirm the continuous mental health model. Therefore, future research should further examine the psychometric properties of the instrument while addressing sampling limitations identified in this study. This would reinforce a positive mental health perspective and promote protective factors in populations.

Conflict of interest

The authors have no conflicts of interest to disclose.

References

Afrashteh, M. Y., & Janjani, P. (2022). Psychometric properties of the mental health continuum-short form (MHC-SF) in Iranian adolescents [Preprint]. *Research Square*. https://doi.org/10.21203/rs.3.rs-1236021/v4

Andrades-Tobar, M., García, F. E., Concha-Ponce, P., Valiente, C., & Lucero, C. (2021). Predictors of anxiety, depression and stress symptoms from the COVID-19 epidemic outbreak. *Revista de Psicopatología y Psicología Clínica*, *26*(1), 13–22. https://doi.org/10.5944/rppc.28090

Areas, M., Khoury, T., Gómez-Penedo, J. M., & Roussos, A. (2023). Psychometric properties of the DASS-21 in Argentine adolescents. *Revista de Psicopatología y Psicología Clínica*, *28*(2), 139–150. https://doi.org/10.5944/rppc.36925.

American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (2018). *Standards for educational and psychological testing* (1st ed.). American Educational Research Association. https://doi.org/10.2307/j.ctvr43hg2

Bentler, P. M. (1990). Comparative fit indices in structural models. *Psychological Bulletin, 107*, 238–246. https://doi.org/10.1037/0033-2909.107.2.238

Bieda, A., Hirschfeld, G., Schönfeld, P., Brailovskaia, J., Zhang, X. C., & Margraf, J. (2017). Universal happiness? Cross-cultural measurement invariance of scales assessing positive mental health. *Psychological Assessment, 29*, 408–421. https://doi.org/10.1037/pas0000353

Browne, M. W., & Cudeck, R. (1992). Alternative ways of assessing model fit. *Sociological Methods & Research, 21*, 230–258. https://doi.org/10.1177/0049124192021002005

Chen, F. F. (2007). Sensitivity of goodness of fit indices to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 14*, 464–504. https://doi.org/10.1080/10705510701301834

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum. https://doi.org/10.4324/9780203771587

Costello, A. B., & Osborne, J. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most

from your analysis. *Practical Assessment, Research, and Evaluation, 10*, 7. https://doi.org/10.7275/jyj1-4868

Daza, P., Novy, D. M., Stanley, M. A., & Averill, P. (2002). The Depression Anxiety Stress Scale-21: Spanish translation and validation with a Hispanic sample. *Journal of Psychopathology and Behavioral Assessment, 24*, 195–205. https://doi.org/10.1023/A:1016014818163

De Carvalho, J. S., Pereira, N. S., Pinto, A. M., & Marôco, J. (2016). Psychometric properties of the Mental Health Continuum-Short Form: A study of Portuguese speaking children/youths. *Journal of Child and Family Studies, 25*, 2141–2154. https://doi.org/10.1007/s10826-016-0396-7

Doré, I., O'Loughlin, J. L., Sabiston, C. M., & Fournier, L. (2017). Psychometric evaluation of the Mental Health Continuum-Short Form in French Canadian young adults. *Canadian Journal of Psychiatry, 62*, 286–294. https://doi.org/10.1177/0706743716675855

Furukawa, R., Driessnack, M., & Colclough, Y. (2014). A committee approach maintaining cultural originality in translation. *Applied Nursing Research, 27*, 144–146. https://doi.org/10.1016/j.apnr.2013.11.011

Gopalkrishnan, N., & Babacan, H. (2015). Cultural diversity and mental health. *Australasian Psychiatry, 23*, 6–8. https://doi.org/10.1177/1039856215609769

Guo, C., Tomson, G., Guo, J., Li, X., Keller, C., & Soderqvist, F. (2015). Psychometric evaluation of the Mental Health Continuum-Short Form (MHC-SF) in Chinese adolescents - A methodological study. *Health and Quality of Life Outcomes, 13*, 198. https://doi.org/10.1186/s12955-015-0394-2

Hiramoni, F. A., & Ahmed, O. (2022). Reliability and validity assessment of the Mental Health Continuum–Short Form for Bangladeshi adults. *Heliyon, 8*. https://doi.org/10.1016/j.heliyon.2022.e08814

Khazaei, M., Holder, M. D., Sirois, F. M., Oades, L. G., & Gallagher, M. W. (2023). Evaluating the psychometric properties of the Mental Health Continuum Short Form (MHC-SF) in Iranian adolescents. *Current Psychology, 42*, 17995–18009. https://doi.org/10.1007/s12144-022-02970-x

Kakemam, E., Navvabi, E., Albelbeisi, A. H., Saeedikia, F., Rouhi, A., & Majidi, S. (2022). Psychometric properties of the Persian version of Depression Anxiety Stress Scale-21 Items (DASS-21) in a sample of health professionals: A cross-sectional study. *BMC Health Services Research, 22*. https://doi.org/10.1186/s12913-022-07514-4

Keyes, C. L. (2002). The mental health continuum: From languishing to flourishing in life. *Journal of Health and Social Behavior, 43*, 207–222. https://doi.org/10.2307/3090197

Keyes, C. L. M. (2005). Mental illness and/or mental health? Investigating axioms of the complete state model of health. *Journal of Consulting and Clinical Psychology, 73*, 539–548. https://doi.org/10.1037/0022-006X.73.3.539

Keyes, C. L. (2006). Mental health in adolescence: Is America's youth flourishing? *American Journal of Orthopsychiatry, 76*, 395–402. https://doi.org/10.1037/0002-9432.76.3.395

Keyes, C. L., Wissing, M. P., Potgieter, J. P., Temane, M., Kruger, A., & Rooy, S. V. (2008). Evaluation of the Mental Health Continuum-Short Form (MHC-SF) in Setswana-speaking South Africans. *Clinical Psychology and Psychotherapy, 15*, 181–192. https://doi.org/10.1002/cpp.572

Lara-Hormigo, A. (2014). *Introduction to structural equations in AMOS and R*. Mastery. Universidad del Valle de México (UVM). https://www.docsity.com/es/introduccion-a-las-ecuaciones-estructurales-en-amos-y-r/4687751/

Lovibond, P. H., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the stress anxiety of depression scales (DASS) with the depression of Beck and anxiety inventories. *Pergamon, 33*, 335–343. https://doi.org/10.1016/0005-7967(94)00075-u

Luengo, B. P., Eisenberg, N., Tramontano, C., Zuffianò, A., Caprara, M. G., Regner, E., Zhu, L., Pastorelli, C., & Caprara, G. V. (2021). Measuring prosocial behaviors: Psychometric properties and cross-national validation of the prosociality scale in five countries. *Frontiers in Psychology, 12*, 674 - 693. https://doi.org/10.3389/fpsyg.2021.693174

Lui, P. P. (2015). Intergenerational cultural conflict, mental health, and educational outcomes among Asian and Latin Americans: Qualitative and meta-analytic review. *Psychological Bulletin, 141*(2), 404–446. https://doi.org/10.1037/a0038449

Lupano, M. L., De la Iglesia, G., Castro, A., & Keyes, C. L. (2017). The Mental Health Continuum–Short Form (MHC–SF) in the Argentinean context: Confirmatory factor analysis and measurement invariance. *Europe's Journal of Psychology, 13*(1), 93–108. https://doi.org/10.5964/ejop.v13i1.1163

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling of fit involving a particular measure of the model. *Psychological Methods, 13(2)*, 130–149. https://doi.org/10.1037/1082-989X.1.2.130

Melinda, R., Zsolt, H., László, T., & Gyöngyi, K. (2020). Validation of the Hungarian Mental Health Continuum–Short Form. *Magyar Pszichológiai Szemle, 75*(2), 217–246. https://doi.org/10.1556/0016.2020.00014

Ministry of Health (2020, June). *Ministerial Resolution No. 363-2020-MINSA*. https://www.gob.pe/institucion/minsa/normas-legales/649886-363-2020-minsa

Muñoz, C. O., Restrepo, D., & Cardona, D. (2016). Evolution of the concept of positive mental health: A systematic review. *Revista Panamericana de Salud Pública, 39*(3), 166–173. https://doi.org/10.26633/RPSP.2016.39

Muthén, L. K., & Muthén, B. O. (2017). *Mplus user's guide* (8th ed.). https://www.statmodel.com/download/usersguide/MplusUserGuideVer_8.pdf

Ones, D. S., Dilchert, S., Deller, J., Albrecht, A.-G., Duehr, E. E., & Paulus, F. M. (2012). Cross-cultural generalization: Using meta-analysis to test hypotheses about cultural variability. In A. M. Ryan, F. T. L. Leong, & F. L. Oswald (Eds.), *Conducting multinational research: Applying organizational psychology in the workplace* (pp. 91–122). American Psychological Association. https://doi.org/10.1037/13743-004

Pan American Health Organization (2020, October 8). *There is no health without mental health*. https://www.paho.org/es/noticias/8-10-2020-no-hay-salud-sin-salud-mental

Rafiey, H., Alipour, F., LeBeau, R., Amini, M., Salimi, Y., & Ahmadi, S. (2017). Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF) in Iranian earthquake survivors. *International Journal of Mental Health, 46*(3), 243–251. https://doi.org/10.1080/00207411.2017.1308295

Restrepo, D. A., & Jaramillo, J. C. (2012). Conceptions of mental health in the field of public health. *Revista de la Facultad Nacional de Salud Pública, 30*(2), 202–211. https://www.redalyc.org/articulo.oa?id=12023918009

Rosseel, Y. (2012). Lavaan: An R Package for Structural Equation Modeling. *Journal of Statistical Software, 48*(2), 1–36. https://doi.org/10.18637/jss.v048.i02

Ryff, C. D., & Keyes, C. L. M. (1995). The structure of psychological well-being revisited. *Journal of Personality and Social Psychology, 69*(4), 719–727. https://doi.org/10.1037/0022-3514.69.4.719

Santini, Z. I., Torres-Sahli, M., Hinrichsen, C., Meilstrup, C., Madsen, K. R., Rayce, S. B., ... & Koushede, V. (2020). Measuring positive mental health and flourishing in Denmark: Validation of the Mental Health Continuum-Short Form (MHC-SF) and cross-cultural comparison across three countries. *Health and Quality of Life Outcomes, 18*(1), Article 297. https://doi.org/10.1186/s12955-020-01546-2

Schönfeld, P., Brailovskaia, J., & Margraf, J. (2017). Positive and negative mental health across the lifespan: A cross-cultural comparison. *International Journal of Clinical and Health Psychology, 17*(3), 197–206. https://doi.org/10.1016/j.ijchp.2017.06.003

Teixeira, S., Sequeira, C., & Lluch, T. (2021). *Program to promote positive mental health for adults (Mentis Plus+): Support manual*. University of Barcelona. https://diposit.ub.edu/dspace/bitstream/2445/173986/1/Programa%20de%20Salud%20Mental%20Positiva%20MENTIS%20PLUS%2B.pdf

Toribio, L., & Andrade, P. (2023). Psychometric properties of the Mental Health Continuum (MHC-SF) in Mexican youth. *Revista Iberoamericana de Diagnóstico y Evaluación Psicológica, 68*(2), 151–164. https://doi.org/10.21865/RIDEP68.2.11

Vaillant, G. E. (2012). Positive mental health: Is there a cross-cultural definition? *World Psychiatry, 11*(2), 93–99. https://doi.org/10.1016/j.wpsyc.2012.05.006

Yeo, Z., & Suárez, L. (2022). Validation of the mental health continuum-short form: The bifactor model of emotional, social, and psychological well-being. *PlosOne, 17*(3). https://doi.org/10.1371/journal.pone.0268232

Żemojtel-Piotrowska, M., Piotrowski, J. P., Osin, E. N., Cieciuch, J., Adams, B. G., Ardi, R., ... & Maltby, J. (2018). The Mental Health Continuum-Short Form: The structure and application for cross-cultural studies: a 38-nation study. *Journal of Clinical Psychology, 74*(6), 1034–1052. https://doi.org/10.1002/jclp.22570

Appendix 1
Spanish version of the Mental Health Continuum–Short Form (MHC-SF)

A continuación encontrará una serie de preguntas relacionadas con su forma de sentir durante el último mes. Por favor, lea cada enunciado con atención y seleccione la opción que mejor describa la frecuencia de dicha experiencia, según la siguiente escala de respuesta:

0 = Nunca.
1 = Una o dos veces al mes.
2 = Una vez por semana.
3 = Dos o tres veces por semana.
4 = Casi todos los días.
5 = Todos los días.

No.	Ítems	0	1	2	3	4	5
01	¿Se ha sentido feliz?						
02	¿Se ha sentido interesado por la vida?						
03	¿Se ha sentido satisfecho?						
04	¿Ha sentido que contribuye de forma significativa a la sociedad?						
05	¿Ha sentido que pertenece a una comunidad (como un grupo social o vecinal)?						
06	¿Ha sentido que la sociedad se ha convertido en un lugar mejor para usted?						
07	¿Ha sentido que la gente es buena en general?						
08	¿Ha sentido que el funcionamiento de la sociedad tiene sentido para usted?						
09	¿Ha sentido que le gusta su personalidad?						
10	¿Se ha sentido capaz de gestionar bien sus responsabilidades cotidianas?						
11	¿Ha sentido que tiene relaciones afectuosas y de confianza con los demás?						
12	¿Has sentido que tus experiencias te retaban a crecer y a ser mejor persona?						
13	¿Se ha sentido seguro a la hora de pensar o expresar tus ideas y opiniones?						
14	¿Ha sentido que su vida tiene un propósito y un significado?						

Note. Items 1, 2, and 3 correspond to the emotional well-being dimension; items 4, 5, 6, 7, and 8 correspond to the social well-being dimension; and items 9, 10, 11, 12, 13, and 14 correspond to the psychological well-being dimension.