Salud, Ciencia y Tecnología. 2025; 5:1376
doi: 10.56294/saludcyt20251376

ORIGINAL

Psychometric Properties of the Trait Meta-Mood Scale (TMMS-24) in the Chilean Child and Adolescent Population

Propiedades Psicométricas de la Escala Trait Meta-Mood (TMMS-24) en Población Infantojuvenil Chilena

Jonathan Martínez-Líbano[1], María-Mercedes Yeomans-Cabrera[2] ✉, Axel Koch Serey[1], Nicolás Santander Ramírez[3], Valentina Cortés Silva[2], Roberto Iturra Lara[4]

[1]Universidad Andrés Bello, Facultad de Educación y Ciencias Sociales, Santiago, Chile.
[2]Universidad de Las Américas, Escuela de Psicología, Facultad de Salud y Ciencias Sociales, Santiago, Chile.
[3]Academia Digital de Psicología y Aprendizaje (ADIPA).
[4]Universidad San Sebastián, Facultad de Ciencias para el Cuidado de la Salud, Concepción, Chile.

Cite as: Martínez-Líbano J, Yeomans-Cabrera M-M, Koch Serey A, Santander Ramírez N, Cortés Silva V, Iturra Lara R. Psychometric Properties of the Trait Meta-Mood Scale (TMMS-24) in the Chilean Child and Adolescent Population. Salud, Ciencia y Tecnología. 2025; 5:1376. https://doi.org/10.56294/saludcyt20251376

Submitted: 20-06-2024 **Revised:** 08-10-2024 **Accepted:** 06-02-2025 **Published:** 07-02-2025

Editor: Prof. Dr. William Castillo-González

Corresponding author: María-Mercedes Yeomans-Cabrera ✉

ABSTRACT

Introduction: the Chilean child and adolescent population have serious mental health problems. Therefore, the ability to regulate emotions becomes a critical skill.
Objective: This study aimed to estimate the psychometric properties of the Trait Meta-Mood Scale (TMMS-24) in its abbreviated version in a Chilean child and adolescent population.
Method: cross-sectional validation was carried out on 636 Chilean children and adolescents. Exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were performed to examine the scale's factor structure in this population.
Results: internal consistency showed robust results (α = 0,931; ω = 0,932) indicating high reliability. Using a Varimax rotation, exploratory factor analysis (EFA) identified three significant factors explaining 57,95 % of the total variance. The results of the CFA suggested a good model fit with an RMSEA (0,061), CFI (0,934), and TLI (0,923). Parsimony indices indicated adequate fit PCFI (0,802) and PNFI (0,781). Convergent validity was also supported by significant correlations between the TMMS-24 dimensions and depression, anxiety, and stress factors measured with the DASS-21.
Conclusion: these findings suggest that the TMMS-24 has adequate and validated psychometric properties, allowing its use as a reliable tool to assess the most relevant variables of emotional intelligence such as Emotional Attention (EA), Emotional Clarity (EC), and Emotional Regulation (ER) in Chilean children and adolescents in educational and mental health contexts.

Keywords: Emotional Intelligence; Emotional Attention; Emotional Clarity; Emotional Regulation; Children and Adolescents.

RESUMEN

Introducción: la población infantil y adolescente chilena presenta serios problemas de salud mental. Por lo tanto, la capacidad de regular las emociones se convierte en una habilidad crítica.
Objetivo: Este estudio tuvo como objetivo estimar las propiedades psicométricas de la Escala de Meta-modo Rasgo (TMMS-24) en su versión abreviada en población infanto-juvenil chilena.
Método: se realizó una validación transversal en 636 niños y adolescentes chilenos. Se realizó un análisis

factorial exploratorio (AFE) y un análisis factorial confirmatorio (AFC) para examinar la estructura factorial de la escala en esta población.
Resultados: la consistencia interna mostró resultados robustos (α = 0,931; ω = 0,932) indicando una alta fiabilidad. Utilizando una rotación Varimax, el análisis factorial exploratorio (AFE) identificó tres factores significativos que explicaban el 57,95 % de la varianza total. Los resultados del AFC indicaron un buen ajuste del modelo, con un RMSEA (0,061), un CFI (0,934) y un TLI (0,923). Los índices de parsimonia indicaron un ajuste adecuado PCFI (0,802) y PNFI (0,781). La validez convergente también se vio respaldada por correlaciones significativas entre las dimensiones del TMMS-24 y los factores de depresión, ansiedad y estrés medidos con el DASS-21.
Conclusiones: estos hallazgos sugieren que el TMMS-24 posee propiedades psicométricas adecuadas y validadas, permitiendo su uso como instrumento confiable para evaluar las variables más relevantes de la inteligencia emocional como Atención Emocional (AE), Claridad Emocional (CE) y Regulación Emocional (RE) en niños y adolescentes chilenos en contextos educativos y de salud mental.

Palabras clave: Inteligencia Emocional; Atención Emocional; Claridad Emocional; Regulación Emocional; Niños y Adolescentes.

INTRODUCTION

Mental health in children and adolescents has become a critical issue in recent decades due to an increase in diagnoses of mental health disorders, such as anxiety, depression, and stress.[1,2,3] During adolescence, several relevant changes that affect psychological well-being are experienced;[4,5,6] it is a crucial period for emotional development characterized by a high emotional intensity.[7] After the COVID-19 pandemic, in a period in which we are experiencing the consequences of significant changes and adaptations, the prevalence of mental disorders in the child and adolescent population has increased alarmingly in Chilean children and adolescents.[8]

Before the pandemic, studies mentioned that one in five Chilean adolescents presented symptoms of mental health disorders.[1] The situation worsened after the COVID-19 pandemic mainly due to drastic changes in the daily routine and socialization of young people, as well as the critical impact of social isolation and the transition to online education on emotional and social skills.[9] Loneliness and school demotivation rates increased during the pandemic, as well as anxiety, depression, and stress.[10,11] These global effects mentioned above are reflected and intensified in risk factors that affect the mental health of young Chileans that generate an environment of constant stress and affect emotional and social well-being, such as school climate, bullying, high academic pressure, instability in the family environment, early exposure to violence and discrimination, social networks,[12] and also the increase of other risk behaviors such as substance use, self-harm and behaviors related to suicide.[8,13]

Emotional intelligence (EI) and emotional regulation (ER) are fundamental aspects of psychological well-being.[2,14,15] Higher EI is significantly associated with lower levels of depression and anxiety and better mental health.[16,17] Different emotional regulation strategies impact mental health, with a prominent role in cognitive reappraisal and emotional suppression skills in various contexts.[18] For adolescents, regulating and managing emotions optimally facilitates academic performance and social adaptation, facilitating well-being.[15] In addition, it has been shown that fostering positive beliefs about the ability to change emotions can improve emotional health and well-being.[5]

There is an increasing interest in measuring intelligence and emotional regulation in recent times,[19] in addition to the relationships that both perceived emotional intelligence and emotional regulation have with well-being.[5] The use of instruments to assess emotional intelligence in the child and adolescent population [20] is crucial at this stage of life [21] to elucidate the elements to be improved by the emotional development of this population. The availability of measurement instruments adapted and validated in different cultural contexts highlights the importance of considering cultural particularities in assessing emotional intelligence and emotional regulation.[18] The TMMS-24 is a scale that measures perceived emotional intelligence in three dimensions: attention, clarity, and regulation.[22] This scale, initially developed in English, has been translated and validated in various countries and contexts, adapting it to each place's linguistic and cultural reality to apply measurements accurately in each population. Some examples of validation in Latin America are Spain,[23] Mexico,[24] Argentina,[25] and Brazil,[26] among others.

Due to the high prevalence of mental health disorders in children and adolescents in Chile and the evidence on the benefits of emotional intelligence and emotional regulation, it is crucial to have reliable and validated measurement instruments to measure emotional intelligence and emotional regulation in the Chilean child and adolescent population. Although there have been previous validation studies of the TMMS-24 instrument in Chile, adolescents and teenagers have been the most frequently used in the field.[8] The present study focused on a broader range of children and adolescents, from 10 to 18 years of age, in addition to the current need

to study the effects after the pandemic, especially the effects of COVID on the mental health of children and adolescents due to increased feelings of loneliness, anguish, anxiety, depression and stress [8,27] and also the critical impact of social isolation and the transition to online education on emotional and social skills.[9] During this complex time, there is, to this day, an essential discussion about the changes in the emotional experiences of children and adolescents after confinement.[28] Finally, it is crucial to point out the relevance of the use of instruments to assess emotional intelligence in children and adolescents [20] because of the importance of this stage [21] and how important it is to elucidate the elements to be improved in the future in the emotional development of this population.

METHOD

This study aimed to estimate the psychometric properties of the abbreviated version of the TMMS-24 [22] in Chilean children and adolescents. The present study is framed within an instrumental design to analyze a measurement instrument's psychometric properties in a specific context.[29] This methodological approach is relevant to ensure that the measurements performed are valid and reliable in the Chilean child and adolescent population. The cross-sectional design allowed for data collection at a single time point, obtaining a representative snapshot of the psychometric characteristics of the TMMS-24 in this population. The choice of an instrumental and cross-sectional design was based on the need to validate and adapt measurement tools for specific cultural contexts, especially considering the implications of the post-pandemic context on the mental health of children and adolescents. Thus, we sought not only to evaluate the instrument's psychometric properties but also to identify possible particularities in the factorial structure and internal consistency that reflect the emotional characteristics of this population.

Participants

The present study was conducted in a non-probabilistic sample of 636 children and adolescents with a mean age of 12,92 (SD 1,80). 267 (42 %) corresponded to females, 359 (56,4 %) to males, and 10 (1,6 %) did not identify with the previous options. Inclusion criteria included being students in the Chilean educational system, having signed consent from their guardians, and accepting informed assent from the children and adolescents. All questionnaires that did not contain the informed consent and/or were incomplete were excluded.

Instruments

The present study contemplated the use of the following questionnaires and scales.

TMMS-24:[22] It evaluates perceived emotional intelligence. It contains 24 items assessed on a 5-point Likert scale ranging from 1 (completely disagree) to 5 (completely agree) and is organized into three factors: attention to feelings, clarity of feelings, and mood regulation. The dimension "emotional attention" evaluates the perception of one's own emotions, i.e., the ability to feel and express emotions appropriately, and is composed of eight items (e.g., "I pay a lot of attention to feelings"). The dimension "emotional clarity" evaluates the perception one has about the understanding of one's emotional states and includes eight items (e.g., "I can understand my feelings"). The dimension "emotional regulation" measures the perceived ability to regulate one's emotional states correctly and consists of eight items (e.g., "When I am sad, I think about all the pleasures of life").

DASS-21: The Depression Anxiety Stress Scale-21 is a psychological instrument widely used to measure levels of depression, anxiety, and stress in individuals.[30] It is an abbreviated version of the original 42-item DASS. The DASS-21 consists of 21 items, divided into three subscales of 7 items each. In depression, it assesses symptoms such as dysphoria, disinterest in life, lack of energy, and sadness. In anxiety, it measures symptoms such as autonomic response, nervous system arousal, and feelings of fear, and in stress, it assesses symptoms such as difficulty relaxing, irritability, and persistent tension.

Sociodemographic Variables: This questionnaire section asked questions to determine the main variables, such as age, gender, cohabitants, and educational level.

Data collection procedure

The sample was purposive since the questionnaires were collected in schools in the Chilean educational system. First, the school administrators requested the corresponding permissions, and then the approval to participate was sent to the parents/guardians of the students. Subsequently, the students were taken to the school to answer the questionnaire through a link provided by the research team.

Statistical Analysis

For the present study, the total sample of 636 participants was randomly divided into two equal subsamples (n ≈ 318) for conducting factor analyses. This division was performed to carry out an Exploratory Factor Analysis (EFA) on the first subsample and a Confirmatory Factor Analysis (CFA) on the second. Random assignment was performed using a simple random sampling process to ensure that both subsamples were representative

of the total sample and to minimize bias. The data were analyzed with SPSS version 25 [31] for Windows. The instrument's reliability was estimated by calculating Cronbach's alpha internal consistency.[32] Exploratory factor analysis was performed, extracting principal components and Varimax rotation. SPSS AMOS was used for the confirmatory factor analysis,[33] including the Kaiser Meyer Olkin (KMO) sample adequacy measure and Barlett's test of sphericity.[34]

Ethical Considerations

The Central Bioethics Committee of the Faculty of Education and Social Sciences of Universidad Andrés Bello approved this project on August 11th, 2023, under the Act of Approval 024/2022. It is important to note that no sensitive information was requested that could reveal the identity of the students who participated in the study. Finally, informed consent was given by all participants' parents and/or guardians before applying the questionnaire, and all participants provided their signature as the agreement in an informed assent. No person was paid for their participation.

RESULTS

The participants in the study were all children and adolescents between 10 and 18 years of age, with a mean age of 12,92 (SD 1,80). Forty-two percent were female, 56,4 % were male, and 1,6 % did not identify with the other two options mentioned above.

A matrix of correlations between different items of the TMMS-24 is shown in annex 1. The Pearson correlation between the items shows a significant correlation.

Reliability of the instrument

The instrument's Cronbach's Alpha was α = 0,931, and the Omega Coefficient was also measured, ω = 0,932 for all the items. This corroborates its excellent reliability (see table 1).

Table 1. Corrected item correlation and Cronbach's alpha if the item is removed

Item-Total Statistics	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
TMMS1	68,31	368,728	0,533	0,928
TMMS2	68,55	365,854	0,575	0,928
TMMS3	68,88	365,837	0,559	0,928
TMMS4	68,53	363,261	0,623	0,927
TMMS5	68,68	386,881	0,125	0,935
TMMS6	68,72	367,573	0,520	0,929
TMMS7	68,80	366,434	0,548	0,928
TMMS8	68,81	362,712	0,662	0,927
TMMS9	68,44	359,201	0,637	0,927
TMMS10	68,59	360,677	0,662	0,926
TMMS11	68,36	360,092	0,625	0,927
TMMS12	68,34	364,062	0,605	0,927
TMMS13	68,43	360,910	0,684	0,926
TMMS14	68,88	364,850	0,581	0,928
TMMS15	68,78	364,198	0,628	0,927
TMMS16	68,44	358,975	0,713	0,926
TMMS17	68,43	362,173	0,617	0,927
TMMS18	68,42	361,391	0,616	0,927
TMMS19	68,70	364,231	0,579	0,928
TMMS20	68,36	362,101	0,601	0,927
TMMS21	68,48	363,198	0,598	0,927
TMMS22	68,28	361,962	0,657	0,927
TMMS23	67,47	372,734	0,465	0,929
TMMS24	68,34	368,846	0,492	0,929

Factor analysis of the scale

An exploratory factor analysis was performed to estimate the validity of the TMMS-24. The KMO sample adequacy measure resulted in a value of 0,936. Likewise, Bartlett's test of sphericity is significant (x^2 = 8666,212; $p \leq ,001$). These results indicate that the necessary conditions are met for the factor analysis. Table 2 shows the factors obtained from the principal component analysis, the percentage of individual variance of

each factor, and the percentage of accumulated variance. Consistent with the original authors,[22] three factors were extracted: Emotional Attention (EA), Emotional Clarity (EC), and Emotional Regulation (ER). Figure 1 of the present study graphically represents the result of the exploratory factor analysis.

Table 2. Eigen values and percentage of variance explained by each factor

Factor	Total	% of Variance	Cumulative %
1	9,596	39,984	39,984
2	2,685	11,188	51,171
3	1,628	6,785	57,956
4	1,113	4,639	62,595
5	0,938	3,910	66,505
6	0,745	3,104	69,609
7	0,695	2,896	72,505
8	0,645	2,689	75,194
9	0,597	2,489	77,683
10	0,580	2,416	80,099
11	0,498	2,074	82,173
12	0,451	1,881	84,054
13	0,440	1,831	85,886
14	0,406	1,693	87,579
15	0,396	1,650	89,230
16	0,367	1,527	90,757
17	0,314	1,309	92,066
18	0,313	1,303	93,369
19	0,294	1,226	94,595
20	0,289	1,202	95,797
21	0,280	1,166	96,963
22	0,271	1,128	98,091
23	0,245	1,021	99,112
24	0,213	0,888	100,000

Note: Extraction Method: Maximum Likelihood.

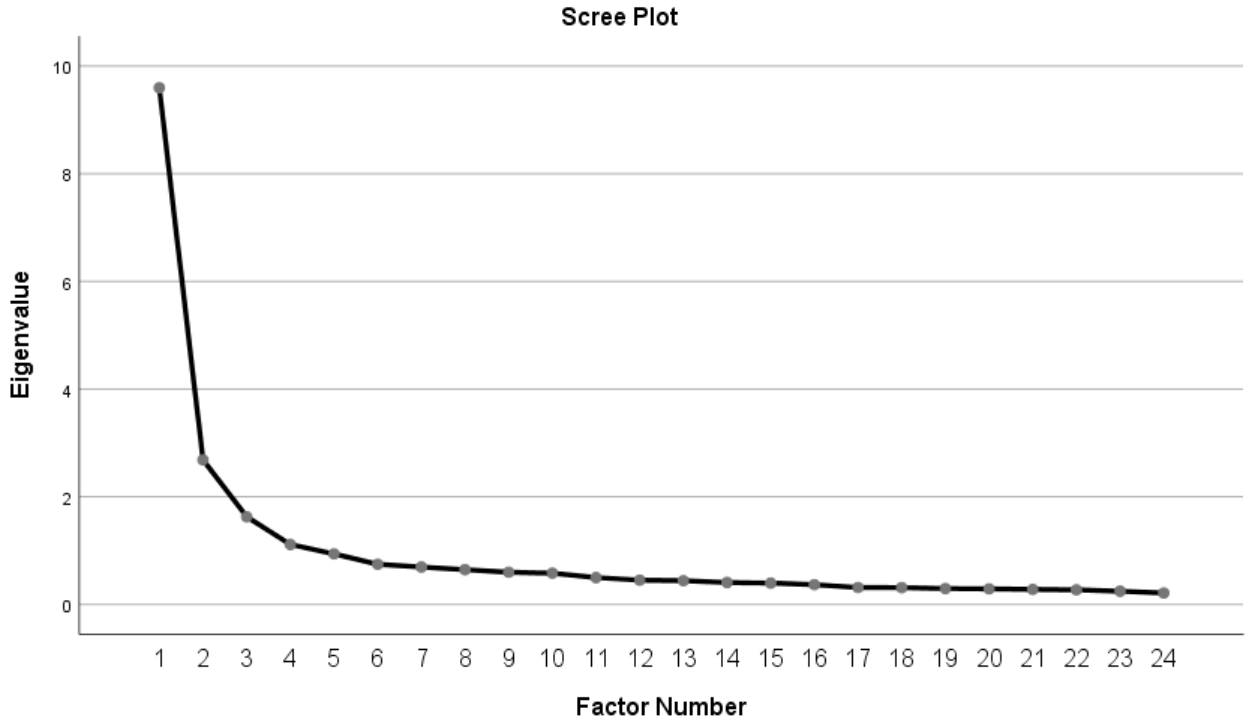

Figure 1. TMMS-24 Sedimentation Graph

Confirmatory Factor Analysis

Table 3 and figure 2 of this article presents the confirmatory factor analysis (CFA). The CFA was performed to evaluate the structure of the TMMS-24 scale. The fit indices obtained suggest that the model is adequate and represents well the underlying structure of the scale (x^2 = 799,207, gl = 237, p < ,001, x^2/gl = 3,372). The overall fit indicators showed a Goodness of Fit Index (GFI) of ,902 (exceeding the recommended minimum threshold of 0,90) and an Adjusted Goodness of Fit Index (AGFI) of ,876, suggesting a reasonable fit. The comparative fit indices, such as the Normed Fit Index (NFI) of ,909, the Incremental Fit Index (IFI) of ,934, the Tucker-Lewis Index (TLI) of ,923, and the Comparative Fit Index (CFI) of ,934, are all above the recommended value of ,90, indicating excellent model fit compared to a null model. The Root Mean Square Error of Approximation (RMSEA) was ,061, with a 90 % confidence interval between ,056 and ,066, indicating an adequate fit, as it is close to the criterion of ≤ ,06, although still acceptable within the range of ,05 to ,08. The Standardized Root Mean Square Residual (SRMR) was ,097, which is considered moderate and suggests an acceptable fit. Finally, the parsimony criteria, such as the Akaike Information Criterion (AIC) and the Expected Cross-Validation Index (ECVI), also support the adequacy of the model, with values of 925,207 and 1,457, respectively, showing a significant improvement compared to previous models. Hoelter's index was 218 at the ,05 significance level, indicating that the model is adequate for samples of this size or larger.

Table 3. Goodness-of-fit index of the TMMS-24 Confirmatory Factor Analysis

Absolute Adjustment Measures		Incremental Adjustment Measures				Parsimony Adjustment Measures			
Chi-square	RMSEA	CFI	TLI	IFI	NFI	PRATIO	PCFI	PNFI	AIC
0,000	,061	,934	,923	,934	,909	,859	,802	,781	925,207

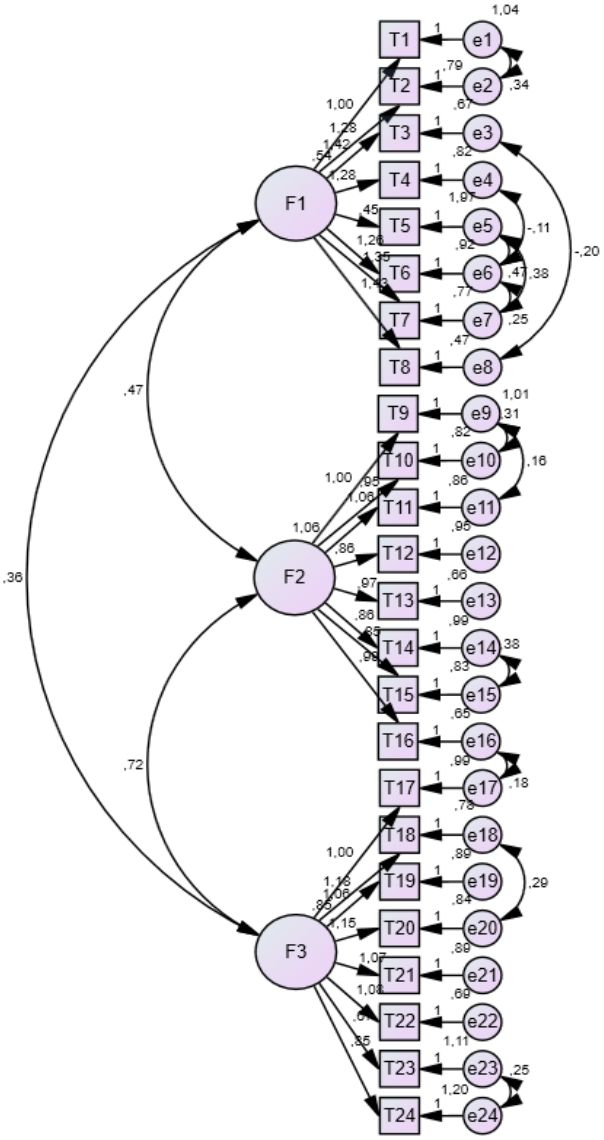

Figure 2. Confirmatory Factor Analysis of the TMMS-24

https://doi.org/10.56294/saludcyt20251376

Validation by Convergence of TMMS-24

In the convergent validity, the DASS-21 scale was used (see table 4), where the Emotional Clarity (EC) and Emotional Regulation (ER) dimensions show negative correlations with symptoms of depression, anxiety, and stress, which is consistent with the concept that greater understanding and regulation of emotions helps to reduce these symptoms. Emotional Attention (EA) positively correlates with negative emotional symptoms, which can be interpreted as a relationship that reflects an excess of attention or preoccupation with emotions, which in some cases can be associated with greater emotional vulnerability.

Table 4. Validation by Convergence

Instrument	Variables	Emotional Attention	Emotional Clarity	Emotional Regulation	Depression	Anxiety	Stress
TMMS-24	Emotional Attention	1	,509**	,425**	,140**	,205**	,209**
	Emotional Clarity	,509**	1	,659**	-,238**	-,170**	-,175**
	Emotional Regulation	,425**	,659**	1	-,251**	-,110**	-,178**
DASS-21	Depression	,140**	-,238**	-,251**	1	,727**	,808**
	Anxiety	,205**	-,170**	-,110**	,727**	1	,831**
	Stress	,209**	-,175**	-,178**	,808**	,831**	1

Note: *. Correlation is significant at the 0,01 level (2-tailed).

DISCUSSION

The objective of this study was to estimate the psychometric properties of the TMMS-24.[22] Its abbreviated version for Chilean children and adolescents measures relevant aspects of emotional intelligence, such as attention, clarity, and regulation. The scale's internal consistency was excellent, with a Cronbach's Alpha of 0,931 and an Omega Coefficient of 0,932 for all the items. This corroborates its excellent reliability. This psychometric property is relevant since the instrument is consistent and stable in its measurements.[35] In other words, it will produce the same results in different applications and at different times in the Chilean population of children and adolescents. The TMMS-24 scale has a good psychometric performance, presenting excellent evidence of factorial validity and good reliability indicators. If we add that the scale is relatively short, only 24 items, and easy to administer and score, the TMMS-24 scale is suitable for measuring the relevant components of emotional intelligence. The AFE analysis, with Varimax rotation, identified three significant factors that explain a relevant 57,95 percent of the total variance. The AFC results suggested a good model fit with an RMSEA (0,061), CFI (0,934), and TLI (0,923). Parsimony indices indicated an adequate fit PCFI (0,802) and PNFI (0,781).

Regarding the convergence validity with the DASS 21, the Emotional Clarity and Emotional Regulation dimensions showed negative correlations with symptoms of depression, anxiety, and stress. This can be explained by the fact that several studies indicate that greater emotional clarity allows individuals to know their emotional states better, contributing positively to managing negative emotions.[17] On the other hand, greater emotional clarity is associated with lower levels of anxiety, depression, and stress, which contributes to well-being.[36] In line with the above, and regarding emotional regulation, we can observe a concordance with the existing literature that mentions that there is a negative correlation with symptoms of depression, anxiety, and perceived stress.[37] This is because people with a high capacity for emotional regulation can manage their intense emotional reactions and prevent the rumination effect.[38]

Emotional Attention presented a positive correlation with negative emotional symptoms, which can be explained by the fact that, unlike emotional clarity and emotional regulation, it presents a sensitivity to emotional states, which, combined with a deficient emotional clarity and regulation, can worsen the symptoms of depression, stress, and anxiety.[39] Constant focus on discomfort can intensify negative emotions and generate hypervigilance, rumination, and catastrophizing.[40]

There are undoubtedly several implications and projections regarding the validation of this instrument in the Chilean reality; it is essential to highlight the measurement of emotional intelligence since such measurement can contribute to diagnosing how emotions are managed, which in turn can influence well-being, academic performance, and interpersonal relationships.[41] In addition, it can contribute to enriching educational interventions to improve the well-being of Chilean adolescents. Some projections of this validation are the contribution to the development of educational programs that incorporate emotional intelligence as a central element, as well as the validation of this instrument allowing the opportunity to make longitudinal measurements in the Chilean context that would enable observing the emotional development of young people over time.

Appropriate standardization of this instrument in the Chilean juvenile population makes it possible to develop

national norms for the valid interpretation of the meaning of a given individual's scores on the standardized test. [42] Emotional intelligence, with the relevant variables measured by the TMMS-24, such as Emotional Attention, Emotional Clarity, and Emotional Regulation, is a construct that should continue to be studied in the context of children and adolescents, given that recent studies have correlated high rates of depression, anxiety, and stress in the Chilean school population,[8] which could affect the normative development of the lives of Chilean children and adolescents.

In summary, the TMMS-24 has characteristics that make it a scale with very good psychometric properties for evaluating the most relevant variables of emotional intelligence in the Chilean child and adolescent population, given that it is a self-report instrument with excellent psychometric properties.

This instrument can help students, teachers, school welfare/coexistence coordinators, and school authorities detect and prevent possible variables of emotional intelligence and, therefore, directly impact socio-emotional strategies and psychological disorders in school students.

REFERENCES

1. Gaete J, Montero-Marin J, Valenzuela D, Rojas-Barahona CA, Olivares E, Araya R. Mental health among children and adolescents: Construct validity, reliability, and parent-adolescent agreement on the 'Strengths and Difficulties Questionnaire'in Chile. PLoS One. 2018;13(2):e0191809.

2. Viejo C, Gómez-López M, Ortega-Ruiz R. Adolescents' psychological well-being: A multidimensional measure. Int J Environ Res Public Health. 2018;15(10):2325.

3. World Health Organization. International Code of Conduct on Pesticide Management. Guidance on use of pesticide regulation to prevent suicide. World Health Organization; 2023.

4. Young KS, Sandman CF, Craske MG. Positive and negative emotion regulation in adolescence: links to anxiety and depression. Brain Sci. 2019;9(4):76.

5. Džida M, Babarović T, Brajša-Žganec A. The factor structure of different subjective well-being measures and its correlates in the Croatian sample of children and adolescents. Child Indic Res. 2023;16(5):1871–88.

6. Fonseca-Pedrero E, Díez-Gómez A, de la Barrera U, Sebastian-Enesco C, Ortuño-Sierra J, Montoya-Castilla I, et al. Suicidal behaviour in adolescents: A network analysis. Spanish Journal of Psychiatry and Mental Health. 2024;17(1):3–10.

7. Herd T, Kim-Spoon J. A systematic review of associations between adverse peer experiences and emotion regulation in adolescence. Clin Child Fam Psychol Rev. 2021;24(1):141–63.

8. Martínez-Líbano J, Yeomans-Cabrera MM. Depression, anxiety, and stress in the Chilean Educational System: children and adolescents post-pandemic prevalence and variables. Front Educ (Lausanne) [Internet]. 2024 Oct 18;9. Available from: https://www.frontiersin.org/articles/10.3389/feduc.2024.1407021/full

9. Singh S, Roy D, Sinha K, Parveen S, Sharma G, Joshi G. Impact of COVID-19 and lockdown on mental health of children and adolescents: A narrative review with recommendations. Psychiatry Res. 2020;293:113429.

10. Ellis WE, Dumas TM, Forbes LM. Physically isolated but socially connected: Psychological adjustment and stress among adolescents during the initial COVID-19 crisis. Canadian Journal of Behavioural Science. 2020;52(3):177–87.

11. Martínez-Líbano J, Torres-Vallejos J, Oyanedel JC, González-Campusano N, Calderón-Herrera G, Yeomans-Cabrera MM. Prevalence and variables associated with depression, anxiety, and stress among Chilean higher education students, post-pandemic. Front Psychiatry. 2023;14.

12. Varela JJ, Sánchez PA, González C, Oriol X, Valenzuela P, Cabrera T. Subjective well-being, bullying, and school climate among Chilean adolescents over time. School Ment Health. 2021;13(3):616–30.

13. Valdés JM, Díaz FJ, Christiansen PM, Lorca GA, Solorza FJ, Alvear M, et al. Mental health and related factors among undergraduate students during SARS-COV-2 pandemic: A cross-sectional study. Front Psychiatry. 2022;13:833263.

14. Gómez-López M, Viejo C, Ortega-Ruiz R. Well-being and romantic relationships: A systematic review in adolescence and emerging adulthood. Int J Environ Res Public Health. 2019;16(13):2415.

15. Tejada-Gallardo C, Blasco-Belled A, Torrelles-Nadal C, Alsinet C. How does emotional intelligence predict happiness, optimism, and pessimism in adolescence? Investigating the relationship from the bifactor model. Current Psychology. 2022;41(8):5470–80.

16. Megías-Robles A, Gutiérrez-Cobo MJ, Gómez-Leal R, Cabello R, Gross JJ, Fernández-Berrocal P. Emotionally intelligent people reappraise rather than suppress their emotions. PLoS One. 2019;14(8):e0220688.

17. Guerra-Bustamante J, León-del-Barco B, Yuste-Tosina R, López-Ramos VM, Mendo-Lázaro S. Emotional intelligence and psychological well-being in adolescents. Int J Environ Res Public Health. 2019;16(10):1720.

18. Jiang L, Yuan K, Hart CH, Liang L, Yang C, Wang Z, et al. Longitudinal associations between emotion regulation strategies and subjective well-being in migrant and non-migrant adolescents in urban China. International Journal of Psychology. 2023;58(3):187–95.

19. Bru-Luna LM, Martí-Vilar M, Merino-Soto C, Cervera-Santiago JL. Emotional intelligence measures: A systematic review. In: Healthcare. MDPI; 2021. p. 1696.

20. Trigueros R, Aguilar-Parra JM, Cangas AJ, Bermejo R, Ferrandiz C, López-Liria R. Influence of emotional intelligence, motivation and resilience on academic performance and the adoption of healthy lifestyle habits among adolescents. Int J Environ Res Public Health. 2019;16(16):2810.

21. Bailen NH, Green LM, Thompson RJ. Understanding emotion in adolescents: A review of emotional frequency, intensity, instability, and clarity. Emotion Review. 2019;11(1):63–73.

22. Salovey P, Mayer JD, Goldman SL, Turvey C, Palfai TP. Emotional attention, clarity, and repair: Exploring emotional intelligence using the Trait Meta-Mood Scale. 1995;

23. Fernández-Berrocal P, Extremera N, Ramos N. Validity and reliability of the Spanish modified version of the Trait Meta-Mood Scale. Psychol Rep. 2004;94(3):751–5.

24. Valdivia Vazquez JA, Rubio Sosa JCA, French BF. Examination of the Spanish trait meta-mood scale–24 factor structure in a Mexican setting. J Psychoeduc Assess. 2015;33(5):473–82.

25. Calero A. VersiÃ3n Argentina del TMMS para adolescentes: Una medida de la inteligencia emocional percibida. Cuadernos de Neuropsicología/Panamerican Journal of Neuropsychology. 2013;7(1).

26. Vaquero-Diego M, Torrijos-Fincias P, Rodriguez-Conde MJ. Relation between perceived emotional intelligence and social factors in the educational context of Brazilian adolescents. Psicologia: Reflexão e Crítica. 2020;33:1.

27. Ravens-Sieberer U, Kaman A, Erhart M, Devine J, Schlack R, Otto C. Impact of the COVID-19 pandemic on quality of life and mental health in children and adolescents in Germany. Eur Child Adolesc Psychiatry. 2022;31(6):879–89.

28. Orgilés Amorós M, Espada Sánchez JP, Delvecchio E, Francisco R, Mazzeschi C, Pedro M, et al. Anxiety and depressive symptoms in children and adolescents during COVID-19 pandemic: A transcultural approach. Psicothema. 2021;

29. Ato M, López-García JJ, Benavente A. Un sistema de clasificación de los diseños de investigación en psicología. Anales de Psicología/Annals of Psychology [Internet]. 2013 [cited 2022 Aug 7];29(3):1038–59. Available from: https://doi.org/10.6018/analesps.29.3.178511

30. Lovibond P, Lovibond S. The Structure of Negative Emotional States: Scales (DASS) [Internet]. Vol. 33, Behaviour research and therapy. 1995 [cited 2022 Aug 8]. p. 335–43. Available from: https://doi.org/10.1016/0005-7967(94)00075-U

31. IBM C. IBM SPSS Statistics for Windows [Internet]. NY; 2017. Available from: http://www-01.ibm.com/support/docview.wss?uid=swg21476197

32. Rodríguez-rodríguez J, Reguant-álvarez M. el coeficiente alfa de Cronbach. REIRE Revista d'Innovació i Recerca en Educació. 2020;3:1–13.

33. Arbuckle JL. Amos. Chicago: IBM SPSS; 2014. p. version 23.

34. Lloret-segura S, Ferreres-traver A, Hernández-baeza A, Tomás-marco I. Exploratory Item Factor Analysis: A practical guide revised and updated. Anales de Psicología [Internet]. 2014 [cited 2025 Jan 14];30:1151–69. Available from: http://dx.doi.org/10.6018/analesps.30.3.199361

35. Souza AC de, Alexandre NMC, Guirardello E de B. Psychometric properties in instruments evaluation of reliability and validity. Epidemiologia e servicos de saude [Internet]. 2017 [cited 2025 Jan 14];26:649–59. Available from: https://doi.org/10.5123/S1679-49742017000300022

36. Matud MP, López-Curbelo M, Fortes D. Gender and psychological well-being. Int J Environ Res Public Health. 2019;16(19):3531.

37. Extremera N, Fernández-Berrocal P. Emotional intelligence as predictor of mental, social, and physical health in university students. Span J Psychol. 2006;9(1):45–51.

38. Fuentes AMM, Kahn JH, Lannin DG. Emotional disclosure and emotion change during an expressive-writing task: Do pronouns matter? Current Psychology. 2021;40(4):1672–9.

39. González AEM, Piqueras JA, Linares VR. Inteligencia emocional en la salud física y mental. Electronic journal of research in educational psychology. 2010;8(2):861–90.

40. PRADO-GASCO V, Villanueva L, Górriz Plumed AB. Trait emotional intelligence and subjective well-being in adolescents: The moderating role of feelings. 2018;

41. Cejudo J, Losada L, Feltrero R. Promoting social and emotional learning and subjective well-being: Impact of the "aislados" intervention program in adolescents. Int J Environ Res Public Health [Internet]. 2020;17(2). Available from: https://www.scopus.com/inward/record.uri?eid=2-s2.0-85078256226&doi=10.3390%2fijerph17020609&partnerID=40&md5=72161c4e7ac787bc91364797897a9bbf

42. Miller LJ. Developing norm-referenced standardized tests. Routledge; 2020.

FINANCING

This research was funded by the ADIPA – *Academia Digital de Psicología y Aprendizaje*, grant number A20241222.

CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

AUTHORSHIP CONTRIBUTION

Conceptualization: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera.
Data curation: Jonathan Martínez-Líbano, Valentina Cortés Silva.
Formal analysis: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera, Valentina Cortés Silva.
Research: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera, Roberto Iturra Lara.
Methodology: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera.
Project management: Jonathan Martínez-Líbano.
Resources: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera, Nicolás Santander Ramírez.
Software: Jonathan Martínez-Líbano.
Supervision: María-Mercedes Yeomans-Cabrera.
Validation: María-Mercedes Yeomans-Cabrera.
Display: María-Mercedes Yeomans-Cabrera.
Drafting - original draft: Jonathan Martínez-Líbano, María-Mercedes Yeomans-Cabrera, Axel Koch Serey, Nicolás Santander Ramírez, Valentina Cortés Silva, Roberto Iturra Lara.
Writing - proofreading and editing: María-Mercedes Yeomans-Cabrera.

ANNEX

Annex 1. Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
TMMS1	1																							
TMMS2	,636**	1																						
TMMS3	,484**	,621**	1																					
TMMS4	,438**	,531**	,539**	1																				
TMMS5	,185**	,164**	,188**	,185**	1																			
TMMS6	,424**	,512**	,546**	,440**	,401**	1																		
TMMS7	,430**	,530**	,630**	,525**	,370**	,664**	1																	
TMMS8	,453**	,576**	,542**	,615**	,205**	,594**	,630**	1																
TMMS9	,320**	,370**	,340**	,429**	-0,042	,230**	,303**	,444**	1															
TMMS10	,364**	,389**	,328**	,477**	0,026	,281**	,331**	,504**	,689**	1														
TMMS11	,320**	,327**	,224**	,319**	-,103**	,226**	,192**	,390**	,627**	,582**	1													
TMMS12	,372**	,330**	,228**	,356**	,192**	,326**	,314**	,389**	,483**	,510**	,504**	1												
TMMS13	,370**	,385**	,275**	,448**	,120**	,309**	,280**	,414**	,532**	,550**	,626**	,603**	1											
TMMS14	,263**	,286**	,256**	,339**	-0,072	,172**	,214**	,335**	,498**	,532**	,514**	,408**	,466**	1										
TMMS15	,312**	,298**	,318**	,405**	0,004	,239**	,258**	,379**	,497**	,545**	,483**	,441**	,488**	,683**	1									
TMMS16	,371**	,359**	,352**	,409**	-0,002	,333**	,304**	,456**	,553**	,534**	,605**	,493**	,610**	,540**	,586**	1								
TMMS17	,300**	,273**	,291**	,334**	,087*	,241**	,240**	,341**	,364**	,377**	,434**	,404**	,473**	,380**	,412**	,570**	1							
TMMS18	,218**	,236**	,265**	,302**	-0,026	,196**	,235**	,317**	,364**	,379**	,433**	,299**	,371**	,438**	,435**	,447**	,596**	1						
TMMS19	,178**	,195**	,275**	,358**	-0,033	,180**	,193**	,332**	,384**	,387**	,362**	,347**	,400**	,407**	,471**	,481**	,484**	,613**	1					
TMMS20	,211**	,216**	,270**	,293**	-0,012	,207**	,234**	,319**	,343**	,347**	,395**	,350**	,401**	,371**	,366**	,462**	,534**	,736**	,627**	1				
TMMS21	,247**	,281**	,312**	,305**	-0,040	,264**	,251**	,320**	,361**	,340**	,396**	,355**	,460**	,401**	,401**	,475**	,426**	,528**	,519**	,540**	1			
TMMS22	,312**	,347**	,356**	,378**	-0,028	,262**	,312**	,395**	,421**	,373**	,455**	,347**	,452**	,394**	,403**	,503**	,485**	,576**	,514**	,540**	,620**	1		
TMMS23	,229**	,233**	,179**	,236**	,109**	,205**	,197**	,228**	,306**	,302**	,334**	,330**	,376**	,223**	,266**	,349**	,399**	,363**	,271**	,324**	,349**	,452**	1	
TMMS24	,251**	,190**	,233**	,265**	0,023	,252**	,255**	,265**	,290**	,292**	,297**	,268**	,317**	,275**	,280**	,330**	,359**	,461**	,332**	,494**	,441**	,486**	,441**	1

Note: *. Correlation is significant at the 0,05 level (2-tailed).
**. Correlation is significant at the 0,01 level (2-tailed).

https://doi.org/10.56294/saludcyt20251376