

Assessing Mindfulness on a Sample of Catalan-Speaking Spanish Adolescents: Validation of the Catalan Version of the Child and Adolescent Mindfulness Measure

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Abstract. Background: Interest in mindfulness has increased over the last decade, resulting in several mindfulness-based interventions being developed and their efficacy empirically demonstrated. The practice of mindfulness has been associated with low levels of anxiety or depression and improved quality of life or personal well-being. The aim of this study is to translate the Child and Adolescent Mindfulness Measure (CAMM) and adapt it to Catalan so as to analyze its internal consistency and construct and convergent validity. Method: The CAMM was administered to a sample of secondary school students ranging in age from 11 to 16 years old. Results: The Catalan version of the CAMM shows a good fit with the unidimensional model and internal consistency similar to the original version ($\alpha = .80$). Furthermore, CAMM scores correlated positively with subjective well-being, temperamental dimensions of effortful control and self-esteem. Conclusions: The Catalan Version of CAMM is a valid and reliable measure of mindfulness skills.

Received 24 April 2014; Revised 12 December 2014; Accepted 13 January 2015

Keywords: mindfulness, assessment, well-being, self-esteem, psychometric properties.

In recent decades there has been increased interest in programs and psychological interventions based on mindfulness (Eberth & Sedlmeier, 2012). A search of the PsycInfo database using the keyword “mindfulness” gives us a total of 485 items – if the search is restricted to the period 1965 (the year the first indexed article appears in PsycInfo with this keyword) to 2004. However, the same search between January 2005 and December 2010 provides us with 1,842 items. One reason for this dramatic increase in scientific production related to mindfulness is the effect psychological techniques based on mindfulness have had on a variety of psychological variables, such as brain activity, in both clinical and non-clinical contexts. Thus, for example, in the clinical context, a meta-analysis by Grossman, Niemann, Schmidt and Walach (2004) found mean weighted effect sizes of .50 for mental health problems (depression, anxiety, sleep disorders etc.) and .42 for physical health problems (medical symptoms, physical pain or physical disability). In the non-clinical population, Sedlmeier et al. (2012) found a mean weighted effect size of .28. In another similar study, also conducted on a non-clinical population, Eberth and Sedlmeier (2012)

found mean weighted effect sizes ranging from .21 to .40. The categories of the dependent variables evaluated in these studies include aspects as diverse as anxiety, attention, memory, regulating emotion, verbal fluency, emotional stability, self-fulfillment and personal well-being.

With respect to changes in brain activity, studies incorporating neuroimaging techniques by means of functional Magnetic Resonance Imaging (MRI) show that the practice of mindfulness produces greater activation of brain regions involved in sustained attention, response inhibition and attention to distracting sounds and less brain activation in regions related to emotions and discursive thought (Brefczynski-Lewis, Lutz, Schaefer, Levinson, & Davidson, 2007), as well as changes in grey matter concentration in brain regions related to learning, regulating emotions and self-referential processing (Hölzel et al., 2011). The correlation between these changes and the cumulative amount of hours of meditation suggests a possible plasticity of such mechanisms (Brefczynski-Lewis et al., 2007). It has also been observed that mental training in cultivating positive emotions through compassion meditation alters the activation of circuits related to empathy and theory of mind in response to stimulation. That is, it improves empathic responses to social stimuli (Lutz, Brefczynski-Lewis, Johnstone, & Davidson, 2008). In addition to this, meditation increases the activity of the Anterior Cingulate Cortex (ACC)

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involved in the development of the self (Tang et al., 2010) and has a positive effect on the neuro-endocrine and immune system in the face of stressful situations (Davidson et al., 2003, Pace et al., 2009). Studies conducted with children and adolescents show similar results to those observed in adults, including reduced anxiety, improved care, reduced behavioral problems, etc. (Meiklejohn et al., 2012). In addition, mindfulness-based interventions in the school context favour increased cognitive ability in paying attention and learning, coping and resilience (Zenner, Herrnleben-Kurz, & Walach, 2014).

Mindfulness or “full attention” is defined as a state of consciousness that involves paying conscious attention to experience, moment by moment (Brown & Ryan, 2003). It involves focusing one’s attention in a particular way, with intention, on the present moment, and without judgment (Kabat-Zinn, 1994). This definition implies the presence of three axioms: a purpose or intention, paying attention and an attitude (Shapiro, Carlson, Astin, & Freedman, 2006). The practice of mindfulness has its origins in Eastern contemplative traditions, being most explicitly and systematically articulated and developed within the Buddhist tradition, which dates back over 2,500 years (Kabat-Zinn, 2003). From a psychological point of view, it has also come to be regarded as a personality construct (Vallejo, 2006). In this respect, when the practice of mindfulness, which results in a transient state of mindfulness, is maintained repeatedly over time it can lead to a trait, or dispositional mindfulness (Garland, Gaylord, & Fredrickson, 2011). However, as noted by Barnhofer, Duggan, and Griffith (2011), people may also differ in their natural tendency to be aware from moment to moment in an open and non-judgmental way. These levels of mindfulness, in the absence of training, remain relatively stable over time (Baer, Smith, & Allen, 2004), and can therefore be regarded as dispositional mindfulness skills. We understand then, that dispositional mindfulness refers to the skills of mindfulness, both natural and those acquired through practice, that remain stable over time.

While there are several instruments for measuring the construct of mindfulness in adults, until the appearance of the CAMM, developed by Greco, Baer and Smith (2011), no instrument had been specifically designed to measure mindfulness in children and adolescents. This type of tool is essential in understanding the nature of mindfulness and its components (Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006, Dimidjan & Linehan, 2003), conducting empirical research into how mindfulness influences health (Bergoni, Tschacher, & Kupper, 2013), reducing symptoms and increasing well-being (Baer, 2007) and understanding its relationship with other psychological constructs (Baer et al., 2006).

The CAMM was developed using the Kentucky Inventory of Mindfulness Skills (KIMS, Baer et al., 2004). Of the 4 dimensions (observation, conscious action, acceptance and description) evaluated by the KIMS, only the first three were used. The fourth, which relates to the ability to put internal experiences into words (Baer et al., 2004), is not included due to the probable impact of the participants’ developmental level on their responses to such items (Greco et al., 2011). Cognitive and verbal abilities vary widely among young people and continue to evolve during adolescence. Therefore, as Greco et al. (2011) point out, items asking about the ability to label or covertly apply words to internal phenomena are likely confounded with the current level of verbal-cognitive abilities and language development. This gave rise to a first version of 25 items, which were eventually reduced to 10 evaluating a single factor. Items on the CAMM are reverse scored and reflect present-moment awareness and nonjudgmental acceptance of thoughts and feelings.

The aim of this study is to translate the CAMM and adapt it to Catalan so as to analyze its internal consistency and construct and convergent validity using measures of well-being, self-esteem and effortful control on a sample of secondary school students who had not followed a prior training programme in the practice of mindfulness.

In accordance with the empirical evidence, the Catalan version of the CAMM is expected to correlate positively with subjective well-being (Eberth & Sedlmeier, 2012, Greco et al., 2011), self-esteem (Brown & Ryan, 2003, Thompson & Waltz, 2008) and effortful control (Eberth & Sedlmeier, 2012) and no differences are expected to be observed by sex or age (Cunha, Galhardo, & Pinto-Gouveia, 2013, Greco et al., 2011).

Method

Participants

This study involved 696 Secondary Education students, aged 11 to 16, of whom 56.5% were girls (see Table 1). Students were randomly selected by means of random cluster sampling, in which the classroom was the cluster, stratified by schools (state and subsidized) and academic years. A total of 12 schools located in the province of Girona (Catalonia, north-east Spain) took part, all of them with students from mixed socioeconomic backgrounds.

The sample was randomly divided into two subsamples of 348 participants each. The first comprised 149 boys and 199 girls with a mean age of 12.96 years ($Sd = 1.09$) and the second 154 boys and 194 girls with a mean age of 12.91 years ($Sd = .98$). The two

Table 1. Sociodemographic characteristics of the sample

Characteristics		<i>n</i>	%
Sex	Male	303	43.5
	Female	393	56.5
Age	11	34	4.9
	12	245	35.2
	13	198	28.4
	14	178	25.6
	15	35	5.0
	16	6	0.9
School types	State	386	55.5
	Private	310	44.5
School year	Year 1 secondary	258	37.1
	Year 2 secondary	205	29.5
	Year 3 secondary	233	33.5

subsamples are similar in age, $t(694) = .693$, *ns*, and sex, $\chi^2(1, N = 696) = .15$, *ns*.

Instruments

Child and Adolescent Mindfulness Measure (CAMM) (Greco et al., 2011). Self-reported questionnaire consisting of 10 items, rated on a Likert scale of 0–4 points, measuring mindfulness skills in children and adolescents. The authors found an internal consistency of .81 (Cronbach's alpha) and correlations with quality of life, social skills and academic performance. To obtain the total score for the scale, values should be inverted and all items summed together. The questionnaire was translated into Catalan and then back-translated to assess the degree of semantic and conceptual equivalence of the two versions.

Early Adolescent Temperament Questionnaire (EATQ-R) (Ellis & Rothbart, 2001). Self-reported questionnaire consisting of 64 items, rated on a 5-point Likert scale, which assesses 10 temperamental and two behavioral dimensions. Of the 10 dimensions, only the three relating to effortful control were adopted: activity control, attention and inhibitory control. Scores for the EATQ-R dimensions represent the mean of all items for each dimension. Compared with the original version, the Catalan version used in this study presents minor differences in the structure of temperament (Ellis, González, & Viñas, 2009). The internal consistency found for each of the assessed dimensions is as follows: activity control ($\alpha = .65$), attention ($\alpha = .55$) and inhibitory control ($\alpha = .34$). Internal consistency for the Effortful Control scale in this study is adequate ($\alpha = .70$).

In studies carried out on adult populations, it has been observed that the dimensions of inhibitory control and attention predict enhanced performance on the Stroop color interference task (Yamagata, Takahashi, Shigemasu, Ono, & Kijima, 2005).

Personal Wellbeing Index (PWI; Cummins, Eckersley, van Pallant, Vugt, & Misajon, 2003). Participants were asked to what extent they felt satisfied with different aspects of their lives included in the Personal Wellbeing Index (PWI). The PWI comprises 7 items relating to satisfaction with the following life domains: standard of living, health, life achievements, relationships with other people, present security, relationships with the community and future security. Items are scored on a 0 (Completely dissatisfied) to 10 (Completely satisfied) scale, in accordance with Cummins and Gullone's (2000) recommendations. The final score is obtained by calculating the mean score for items and adjusting this to a scale of 0 to 100. The authors report good psychometric properties for the instrument (Cummins et al., 2004). The translation of the original version of the domains included in the PWI into Catalan and its back-translation from Catalan to English was the work of Casas et al. (2008). Internal consistency of the PWI in the present study was good ($\alpha = .81$).

Multidimensional Self-Concept Scale, AF-5 (García & Musitu, 2001). 30-item scale that evaluates five dimensions related to self-concept within the following contexts: social (perception of own sociability, such as the ability to make and keep friends), academic (perception of own ability to work, speed and efficiency in the workplace, liking school, image with teachers and similar other aspects), emotional (perception of own emotional stability and self-control), family (perception of how your family sees you and ability to control oneself in situations where you have a lot of confidence) and physical (perception of own appearance and physical condition). It consists of 6 items for each dimension and is designed for ages 10–16. We used the Catalan version created by Malo, Bataller, Casas, Gras, and González (2011), whose psychometric properties are very good and similar to the original version. The internal consistency found in this study ranges from .64 (social) to .90 (academic). With the exception of the social dimension, all dimensions have a Cronbach's alpha greater than .77.

Procedure

After requesting permission from the authors, the English to Catalan translation was done by the research team. The CAMM was then applied to a small group of pupils to check their level of understanding of each item. The Catalan version was back-translated into English by an independent, native English professional

translator with a good knowledge of Catalan. The back-translated version was then compared to the original, assessing the degree of conceptual and semantic equivalence of the two versions in English, and a satisfactory level of equivalence was found. After translating the CAMM into Catalan, it was administered to the sample. After the corresponding permission was requested from school heads and the Autonomous Government of Catalonia's Department of Education, participants were informed of the general aims of the research and that the confidentiality of their data was guaranteed. The protocol for administering the questionnaire was submitted to schools and parents for their approval. Once consent had been obtained, questionnaires were administered to groups of students in the classroom during class time. After reading the items on the questionnaire carefully, all children received standardized instructions on how to respond to them. The adolescents were accompanied by researchers during the questionnaire administration process in case they needed help or clarification.

Data analysis

The statistical analysis was performed using version 19.0 of the SPSS and version 18.0 of AMOS. With a first half of the sample ($n = 348$), which was randomly selected, an exploratory factor analysis (EFA) was conducted using the principal axis extraction method. To extract the number of factors, we applied Kaiser's (1958) criteria (eigenvalues greater than 1), a sedimentation test (Cattell's Scree-test, 1966) and parallel analysis (Horn, 1965) using O'Connor's syntax program for SPSS (2000). We calculated Cronbach's alpha coefficients to analyze the internal consistency of the factors. Confirmatory factor analysis (CFA) was performed on the second half of the sample ($n = 348$), using the method for estimating maximum likelihood (ML). To test the fit of the model, we used the χ^2 index and its associated level of likelihood, the ratio χ^2/df (degrees of freedom) and the following indices: CFI (Comparative Fit Index), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index) and RMSEA (Root Mean Square Error of Approximation). In line with the objective of the study, we calculated the internal consistency of the CAMM and analyzed CAMM scores by age and sex. Of the 696 adolescents initially evaluated, it was possible to make contact with 531 of them after one year to obtain a second CAMM score. In addition, linear correlations were calculated between the CAMM scores and the scores for the PWI, AF-5 and the EATQ-R effortful control scale.

The minimum required level of significance in all statistical tests was $p < .05$.

Results

Structural validity

Exploratory Factor Analysis (EFA)

Both the Kaiser-Meyer-Olkin measure of sampling adequacy, with a value of .849, and Bartlett's test of sphericity indicate the suitability of the data for the EFA, $\chi^2(45) = 806.78$, $p < .001$. While the Kaiser criterion extracted two factors, the Scree plot and parallel analysis point to extraction of a single factor (see Figure 1). This single factor explains 36.95% of the variance.

Table 2 shows the saturation matrix with the weight of each of the items. With the exception of item 5, whose weight on the scale is .25, the other items obtain weights ranging from .53 to .77. Internal consistency, Cronbach's alpha, is .80. Corrected correlations range from .44 (item 10) to .65 (item 8), except for item 5, whose corrected correlation is .20. If said item is removed, the internal consistency remains virtually unchanged ($\alpha = .81$).

Confirmatory Factor Analysis (CFA)

Table 3 shows the goodness of fit indices for four models. In the first and second models, all 10 items are considered, with and without error covariances, respectively, and in the third and fourth without item 5, with and without error covariances, respectively. Of the four models, the one with the best fit is model 2 (see Figure 2).

Convergent validity

The Mindfulness scale correlated positively with the PWI ($r = .23$, $p < .001$), activation control ($r = .35$, $p < .001$), attention ($r = .36$, $p < .001$) and inhibitory control ($r = .37$, $p < .001$), and with the overall score for effortful control (.46). It also correlated positively with PWI scores and the dimensions of social, family, academic and emotional self-concept on the AF-5 (see Table 4).

Reliability

Internal consistency, Cronbach's alpha, has a value of .80 and the test-retest correlation, one year later, a value of .47 ($n = 531$). The second time the CAMM was administered, the Cronbach's alpha had the same value.

Descriptive data

Table 5 gives the mean values for the CAMM according to sociodemographic variables. No differences were observed by sex, $t(694) = -.93$, *ns*, age, $F(5, 690) = .81$, *ns*, or school type, $t(694) = .72$, *ns*. Also, when comparing

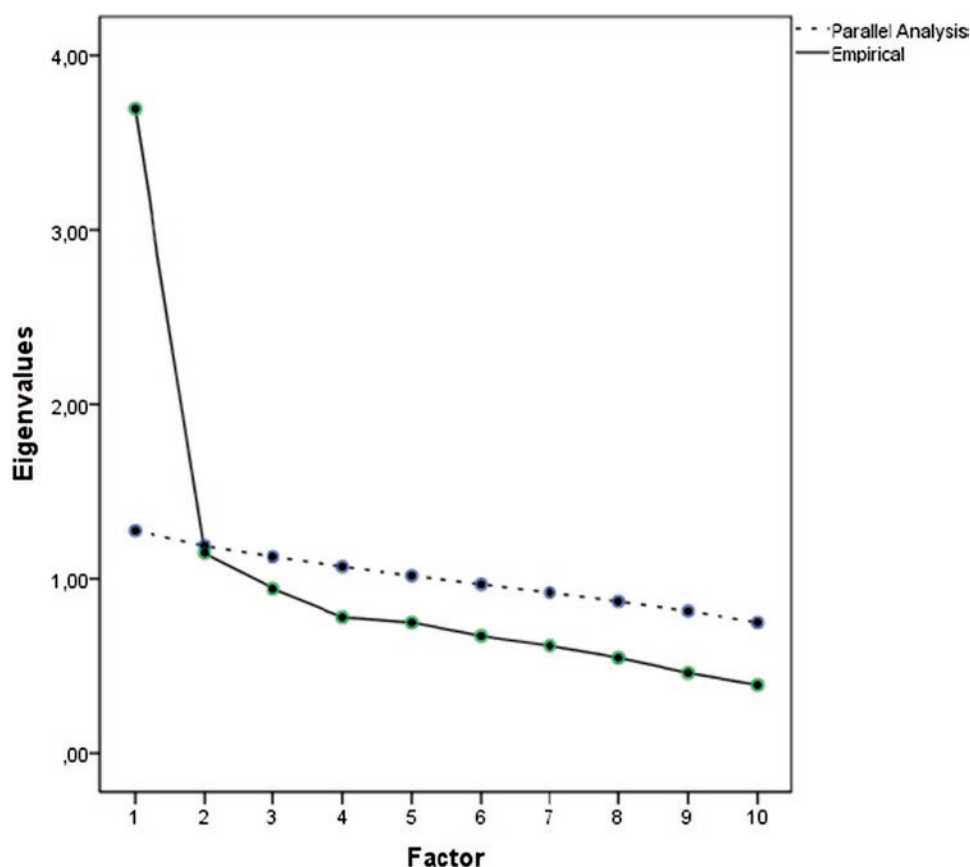


Figure 1. Scree plot and parallel analysis.

Table 2. Factor structure of the CAMM (Catalan Version)

CAMM items	Component 1
1. Em sento malament per tenir sentiments que no tenen sentit	.60
2. A l'escola vaig de classe en classe sense adonar-me del que faig	.57
3. Miro d'estar sempre ocupat/da, així no m'adono dels meus pensaments	.66
4. Em dic a mi mateix/a que no hauria de sentir-me de la manera que em sento	.68
5. Allunyo pensaments que no m'agraden	.25
6. Em resulta molt difícil parar atenció només a una cosa a la vegada	.63
7. Penso en coses del passat enlloc de pensar en coses que estan passant ara	.63
8. Em sento malament amb mi mateix/a per tenir certs pensaments	.77
9. Crec que alguns dels meus sentiments són dolents i que no els hauria de tenir	.62
10. Em nego a tenir sentiments que no m'agraden	.53

the two occasions when the CAMM was administered, a year apart, no differences were detected between the two means, $t(530) = -1.01$, *ns*.

Discussion

The results obtained using the Catalan version are very similar to those obtained by Greco et al. (2011) with the original version and Portuguese versions (Cunha, Galhardo, & Pinto-Gouveia, 2013), both in terms of

psychometric properties (internal consistency and construct validity) and the distribution of scores when considering sociodemographic characteristics. Also, the average levels of mindfulness found in the sample are almost identical to those observed by Greco et al. (2011) and Cunha et al. (2013). Confirmatory factor analysis indicates the existence of one single factor, although one of the items, namely item 5, does not perform very well given that its standardized loadings are very low. A similar result was observed for this item in

Table 3. Fit indices for factors of the CAMM

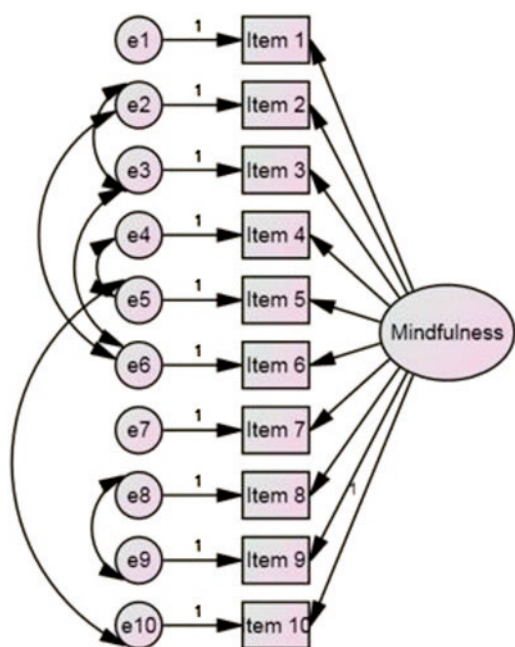
Model	χ^2	df	χ^2/df	RMSEA	GFI	AGFI	CFI	NFI
Model 1	125.68	35	3.59	.086	.93	.89	.88	.85
Model 2	32.03	29	1.11	.017	.98	.97	.99	.96
Model 3	70.01	27	2.59	.068	.95	.92	.94	.91
Model 4	35.62	25	1.43	.035	.98	.96	.99	.95

Model 1: 10 items without error covariances

Model 2: 10 items with error covariances

Model 3: 9 items without error covariances

Model 4: 9 items with error covariances

**Figure 2.** Confirmatory factor analysis for the 10-item CAMM.

the Portuguese version of the CAMM (Cunha et al., 2013). However, when said item is retained, goodness of fit indices indicate a good fit of the model to the data, meaning its removal is not necessary.

It should be noted that the CAMM was designed for the same purpose as other tools developed for adults, namely, to measure the impact of programs and interventions based on the practice of mindfulness. From this perspective, the mindfulness skills evaluated by the CAMM are the result of training based on the practice of meditation. As previously mentioned, however, these skills may be present in the general population to a greater or lesser degree as a trait or disposition. In the present study, we have evaluated the latter aspect, as the adolescents who participated in the study had not followed a prior training program in the practice of mindfulness. The correlation between the two occasions on which the CAMM was administered, a year apart,

Table 4. CAMM correlations with measures of validity

Variables	CAMM Scores
- PWI	.23**
- EATQ-R Effortful Control	.46**
- Activation control	.35**
- Attention	.36**
- Inhibitory control	.37**
- AF-5	
- Academic self-concept	.27**
- Social self-concept	.21**
- Family self-concept	.29**
- Physical self-concept	.14**
- Emotional self-concept	.35**

Note: ** $p < .001$.

Table 5. Means and standard deviation (in parentheses) of the CAMM scores by sex, age and school type

Variables	CAMM	
Sex	Male	22.21 (8.99)
	Female	22.84 (8.58)
Age	11	21.53 (8.04)
	12	23.12 (9.09)
	13	22.89 (8.99)
	14	21.92 (8.00)
	15	21.91 (9.71)
	16	18.67 (7.42)
School types	State	22.67 (8.90)
	Private	22.44 (8.61)

indicates the relative stability of mindfulness skills over time and consequently its dispositional nature. Compared to the average correlation coefficient when analyzing the stability of personality traits, which stands at around .58 (Bermudez, 2011, Costa & McCrae, 1997), the correlation obtained in this study is below average, but within normal intervals (between .34 and .77), and practically identical (.46) to that obtained in the Portuguese version with a one month interval (Cunha et al., 2013).

Various studies have shown a relationship between mindfulness and attention or the set of cognitive processes grouped under the term executive functions (see, for example, Chambers, Lo, & Allen, 2008, or Eberth & Sedlmeier, 2012). Consequently, and as one would expect, the CAMM correlated with the Effortful Control dimension, which evaluates aspects related to the executive functions such as attention, activation control or inhibitory control (Yamagata et al., 2005).

Furthermore, as several studies have shown (Eberth & Seldmeier, 2012), mindfulness is also associated with greater subjective well-being and a better self-concept. In this regard, the correlations found between the CAMM and the PWI are similar to those obtained by Greco et al. 2011 with the Youth Quality of Life-Revised (YQOL-R; Edwards, Huebner, Connell, & Patrick, 2002; Patrick, Edwards, & Topolski, 2002).

Similarly, the observed association between mindfulness and self-esteem is consistent with results from other studies when analyzing the relationship between the two constructs (Brown & Ryan, 2003, Thompson & Waltz, 2008). The five dimensions evaluated (academic, social, family, physical and emotional self-concept) are associated with a higher degree of mindfulness skills, although the correlation with physical self-concept is very low. It is worth highlighting the correlation with the dimension of emotional self-concept, which indicates an association between increased positive perception of one's ability to control fear or anxiety or the perceived absence of emotional disturbance and greater mindfulness skills.

Studies conducted on the adolescent population in the context of the school classroom have the advantage of reaching a higher number of subjects, but the limitation, despite the best efforts of researchers, of not guaranteeing a reliable and valid response from subjects. However, results obtained using the Catalan version of the CAMM indicate that it has some acceptable psychometric properties, which make it a useful tool for evaluating mindfulness skills in adolescents in the Catalan context.

References

- Baer R. A.** (2007). Mindfulness, assessment, and transdiagnostic processes. *Psychological Inquiry: An International Journal for the Advancement of Psychological Theory*, 18, 238–242. <http://dx.doi.org/10.1080/10478400701598306>
- Baer R. A., Smith G. T., & Allen K. B.** (2004). Assessment of mindfulness by self-report: The Kentucky inventory of mindfulness skills. *Assessment*, 11, 191–206. <http://dx.doi.org/10.1177/1073191104268029>
- Baer R. A., Smith G. T., Hopkins J., Krietemeyer J., & Toney L.** (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment*, 13, 27–45. <http://dx.doi.org/10.1177/1073191105283504>
- Barnhofer T., Duggan D. S., & Griffith J. W.** (2011). Dispositional mindfulness moderates the relation between neuroticism and depressive symptoms. *Personality and Individual Differences*, 51, 958–962. <http://dx.doi.org/10.1016/j.paid.2011.07.032>
- Bergoni C., Tschacher W., & Kupper Z.** (2013). The assessment of mindfulness with self-report measures: Existing scales and open issues. *Mindfulness*, 4, 191–202. <http://dx.doi.org/10.1007/s12671-012-0110-9>
- Bermúdez J.** (2011). Estabilidad de la personalidad [The stability of personality]. In J. Bermúdez, A. M. Pérez-García, J. A. Ruiz, P. Sanjuán, & B Rueda (Eds.), *Psicología de la personalidad* [Psychology of personality] (pp. 157–200). Madrid, Spain: Universidad Nacional de Educación a Distancia.
- Brefczynski-Lewis J. A., Lutz A., Schaefer H. S., Levinson D. B., & Davidson R. J.** (2007). Neural correlates of attentional expertise in long-term meditation practitioners. *Proceedings of the National Academy of Sciences of the United States of America*, 104, 11483–11488. <http://dx.doi.org/10.1073/pnas.0606552104>
- Brown K. W., & Ryan R. M.** (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84, 822–848. <http://dx.doi.org/10.1037/0022-3514.84.4.822>
- Casas F., Coenders G., Cummins R. A., González M., Figuer C., & Malo S.** (2008). Does subjective wellbeing show a relationship between parents and their children? *Journal of Happiness Studies*, 9, 197–205. <http://dx.doi.org/10.1007/s10902-007-9044-7>
- Cattell R. B.** (1966). The scree test for the number of factors. *Multivariate Behavioral Research*, 1, 245–276. http://dx.doi.org/10.1207/s15327906mbr0102_10
- Chambers R., Lo B. C. Y., & Allen N. B.** (2008). The impact of intensive mindfulness training on attentional control, cognitive style, and affect. *Cognitive Therapy and Research*, 32, 303–322. <http://dx.doi.org/10.1007/s10608-007-9119-0>
- Costa P. T. Jr., & McCrae R. R.** (1997). Longitudinal stability of adult personality. In R. Hogan, J. Johnson, & S. Briggs (Eds.), *Handbook of personality psychology* (pp. 269–290). New York, NY: Academic Press.
- Cummins R. A., Eckersley R., Lo S. K., Okerstrom E., Hunter B., & Davern M.** (2004). *Australian unity wellbeing index: Cumulative psychometric record*. Melbourne, Australia: Australian Centre on Quality of Life, School of Psychology, Deakin University.
- Cummins R. A., Eckersley R., Pallant J., van Vugt J., & Misajon R.** (2003). Developing a national index of subjective well-being: The Australian unity well-being index. *Social Indicators Research*, 64, 159–190. <http://dx.doi.org/10.1023/A:1024704320683>
- Cummins R. A., & Gullone E.** (2000). Why we should not use 5-point Likert scales: The case for subjective quality of life measurement. *Proceedings, Second International Conference on Quality of Life in Cities* (pp. 74–93). Singapore, Asia: National University of Singapore.
- Cunha M., Galhardo A., & Pinto-Gouveia J.** (2013). Child and Adolescent Mindfulness Measure (CAMM): Estudo das características psicométricas da versão portuguesa. *Psicologia: Reflexão e Crítica*, 26, 459–468. <http://dx.doi.org/10.1590/S0102-79722013000300005>
- Davidson R. J., Kabat-Zinn J., Schumacher J., Rosenkranz M., Muller D., Santorelli S. F., ... Sheridan J. F.** (2003). Alterations in brain and immune function produced by mindfulness meditation. *Psychosomatic Medicine*, 65, 564–570. <http://dx.doi.org/10.1097/01.PSY.0000077505.67574.E3>

- Dimidjian S., & Linehan M. M.** (2003). Defining an agenda for future research on the clinical application of mindfulness practice. *Clinical Psychology: Science and Practice*, 10, 166–171. <http://dx.doi.org/10.1093/clipsy.bpg019>
- Eberth J., & Sedlmeier P.** (2012). The effects of mindfulness meditation: A meta-analysis. *Mindfulness*, 3, 174–189. <http://dx.doi.org/10.1007/s12671-012-0101-x>
- Edwards T. C., Huebner C. E., Connell F. A., & Patrick D. L.** (2002). Adolescent quality of life, Part I: Conceptual and measurement model. *Journal of Adolescence*, 25, 275–286. <http://dx.doi.org/10.1006/jado.2002.0470>
- Ellis L. K., González M., & Viñas F.** (2009, April). Cross-cultural differences in temperament during adolescence: The United States and Spain. *Poster presented at the 2009 Biennial meeting of the society of research in child development*. Denver, Colorado.
- Ellis L. K., & Rothbart M. K.**, (2001, April). Revision of the early adolescent temperament questionnaire. *Poster presented at the 2001 Biennial meeting of the society of research in child development*. Minneapolis, Minnesota.
- García F., & Musitu G.** (2001). *Autoconcepto Forma 5: AF5 Manual*. Madrid, Spain: TEA.
- Garland E. L., Gaylord S. A., & Fredrickson B. L.** (2011). Positive reappraisal mediates the stress-reductive effects of mindfulness: An upward spiral process. *Mindfulness*, 2, 59–67. <http://dx.doi.org/10.1007/s12671-011-0043-8>
- Greco L. A., Baer R. A., & Smith G. T.** (2011). Assessing mindfulness in children and adolescents: Development and Validation of the Child and Adolescent Mindfulness Measure (CAMM). *Psychological Assessment*, 23, 606–614. <http://dx.doi.org/10.1037/a0022819>
- Grossman P., Niemann L., Schmidt S., & Walach H.** (2004). Mindfulness-based stress reduction and health benefits. A meta-analysis. *Journal of Psychosomatic Research*, 57, 35–43. [http://dx.doi.org/10.1016/S0022-3999\(03\)00573-7](http://dx.doi.org/10.1016/S0022-3999(03)00573-7)
- Hölzel B. K., Carmody J., Vangel M., Congleton C., Yerramsetti S. M., Gard T., & Lazar S. W.** (2011). Mindfulness practice leads to increases in regional brain gray matter density. *Psychiatry Research: Neuroimaging*, 30, 36–43. <http://dx.doi.org/10.1016/j.psychres.2010.08.006>
- Horn J. L.** (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika*, 30, 179–185. <http://dx.doi.org/10.1007/BF02289447>
- Kabat-Zinn J.** (1994). *Wherever you go, there you are: Mindfulness meditation in everyday life*. New York, NY: Hyperion.
- Kabat-Zinn J.** (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10, 144–156. <http://dx.doi.org/10.1093/clipsy.bpg016>
- Kaiser H. F.** (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika*, 23, 187–200. <http://dx.doi.org/10.1007/BF02289233>
- Lutz A., Brefczynski-Lewis J., Johnstone T., & Davidson R. J.** (2008). Regulation of the neural circuitry of emotion by compassion meditation: Effects of meditative expertise. *PLoS ONE* 3, e1897. <http://dx.doi.org/10.1371/journal.pone.0001897>
- Malo S., Bataller S., Casas F., Gras M. E., & González M.** (2011). Análisis psicométrico de la escala multidimensional de autoconcepto AF5 en una muestra de adolescentes y adultos de Cataluña [Psychometric analysis of the AF5 multidimensional scale of self-concept in a sample of adolescents and adults in Catalonia]. *Psicothema*, 23, 871–878.
- Meiklejohn J., Phillips C., Freedma M. L., Griffin M. L., Biegel G., ... Saltzman A.** (2012). Integrating mindfulness training into K-12 education: Fostering the resilience of teachers and students. *Mindfulness*, 3, 291–307. <http://dx.doi.org/10.1007/s12671-012-0094-5>
- O'Connor B. P.** (2000) SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP Test. *Behavior Research Methods, Instruments and Computers*, 32, 396–402. <http://dx.doi.org/10.3758/BF03200807>
- Pace T. W. W., Negi L. T., Adame D. D., Cole S. P., Sivilli T. I., Brown, ... Raison C. L.** (2009). Effect of compassion meditation on neuroendocrine, innate immune and behavioral responses to psychosocial stress. *Psychoneuroendocrinology*, 34, 87–98. <http://dx.doi.org/10.1016/j.psyneuen.2008.08.011>
- Patrick D. L., Edwards T. C., & Topolski T. D.** (2002). Adolescent quality of life, part II: Initial validation of a new instrument. *Journal of Adolescence*, 25, 287–300. <http://dx.doi.org/10.1006/jado.2002.0471>
- Sedlmeier P., Eberth J., Schwarz M., Zimmermann D., Haarig F., Jaeger S., & Kunze S.** (2012). The psychological effects of meditation: A meta-analysis. *Psychological Bulletin*, 138, 1139–1171. <http://dx.doi.org/10.1037/a0028168.supp>
- Shapiro S. L., Carlson L. E., Astin J. A., & Freedman B.** (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, 62, 373–386. <http://dx.doi.org/10.1002/jclp.20237>
- Tang Y. Y., Lu Q., Geng X., Stein E. A., Yang Y., & Posner M. I.** (2010). Short-term meditation induces white matter changes in the anterior cingulate. *Proceedings of the National Academy of Sciences of the United States of America*, 107, 15649–15652. <http://dx.doi.org/10.1073/pnas.1011043107>
- Thompson B. L., & Waltz J. A.** (2008). Mindfulness, self-esteem, and unconditional self-acceptance. *Journal of Rational-Emotive & Cognitive-Behavior Therapy*, 26, 119–126. <http://dx.doi.org/10.1007/s10942-007-0059-0>
- Vallejo M. A.** (2006). Mindfulness. *Papeles del Psicólogo*, 27, 92–99.
- Yamagata S., Takahashi Y., Shigemasu K., Ono Y., & Kijima N.** (2005). Development and validation of Japanese Version of Effortful Control Scale for Adults. *The Japanese Journal of Personality*, 14, 30–41. <http://dx.doi.org/10.2132/personality.14.30>
- Zenner Ch., Herrnleben-Kurz S., & Walach H.** (2014). Mindfulness-based interventions in schools—a systematic review and meta-analysis. *Frontiers in Psychology*, 5, 1–20. <http://dx.doi.org/10.3389/fpsyg.2014.00603>