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Psychometric properties of the Spanish validation of the Five Facets of Mindfulness Questionnaire (FFMQ)

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ABSTRACT – Background and Objectives: Mindfulness-based therapies have demonstrated effectiveness in many clinical contexts. Various therapies that train mindfulness skills have proliferated in recent years. There is increasing interest in mindfulness-based therapies and in incorporating instruments that measure mindfulness in order to understand its role in clinical and basic research. The Five Facets of Mindfulness Questionnaire (FFMQ) is a questionnaire for measuring mindfulness; it was derived from a factor analysis of five different questionnaires that measure a trait-like general tendency to be mindful in daily life. The objective of this study is to validate the FFMQ in a Spanish sample.

Methods: The FFMQ was administered to a sample of 462 subjects ranging from 18 to 63 years ($X = 27.9$; $SD = 9.75$). The sample was composed by clinical ($n = 146$) and non-clinical ($n = 226$) subsamples.

Results: The internal reliability of the scales ranged from acceptable to very good. Convergent analysis was conducted by computing Pearson's correlations, showing high correlations. The factorial structure is the same as that proposed by Baer *et al.*

Conclusions: The FFMQ proved to be an effective instrument for measuring mindfulness in clinical and non-clinical Spanish samples.

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Introduction

Mindfulness is defined as “focusing attention in an intentional way: on an object, on the present moment, and without judging”¹. Humans are normally scarcely aware of their experiences from moment to moment, and therefore usually act on “automatic pilot”². In recent years there has been an increase in the number of studies on the efficacy of therapies that apply mindfulness techniques to a wide variety of disorders and symptoms²⁻⁵. There are important differences between therapies that employ mindfulness, but they share the role of accepting experiences, whether pleasant or unpleasant, as one of the routes to improving both mental and physical health⁶, in addition, they all depend on the stimulation and learning of mindfulness skills to achieve their aims.

There is great interest in mindfulness-based therapies in incorporating instruments that measure mindfulness⁷ in order to conduct clinical and basic research and to understand the mechanisms that underlie the process of change. Mindfulness and acceptance therapies assume that mindfulness is an intrinsic state that all humans can cultivate through a variety of techniques. Hence, there will be within-subject differences (subjects' mindfulness skills might change depending on the time or the context), and between-subject differences (subjects will have varying levels of these skills).

The Five Facets of Mindfulness Questionnaire (FFMQ)⁸ is a questionnaire for measuring mindfulness, and was derived from a factor analysis of previous questionnaires measuring a trait-like general tendency to be mindful in daily life. The scales that were used in the factorization of the FFMQ were the Kentucky Inventory Mindfulness Skills (KIMS)⁹, Freiburg Mindfulness In-

ventory (FMI)¹⁰, Mindfulness Questionnaire (MQ)¹¹, Mindfulness Attention Awareness Scale (MAAS)¹² and the Cognitive and Affective Mindfulness Scale (CAMS)¹³. The FFMQ has shown to have good internal consistency and significant relationships in the predicted directions with a variety of constructs related to mindfulness⁸. The FFMQ correlates positively with openness to experience, emotional intelligence, and negatively with psychological distress⁸. Previous research has indicated that the FFMQ is sensitive to differences between practicing mindfulness and non-practicing^{14,15}, and are directly related to improvements in symptomatology after a mindfulness-based therapy¹⁶. It has been validated into Dutch¹⁷ and Chinese¹⁸ showing excellent psychometric properties in both validations.

The objective of this study is to validate the FFMQ in a Spanish sample. The reasons for selecting the FFMQ to be validated include that it is sensitive to intervention^{16,19,20}, and that it has five factors, thus it identifies which skills are the most important predictors of symptom reduction and increased well-being, and the mechanisms through which these beneficial effects occur²¹.

Methods

Participants

The sample was composed by 462 participants (232 men and 231 women), with a mean age of 27.4 (SD = 8.3), ranging from 16 to 63 years. The sample was composed of clinical (n = 146) and non-clinical samples (n = 316). The non-clinical sample included 316 participants (198 men and 104 women), who were recruited among undergraduates and postgraduates enrolled in Psy-

chology studies at the University of Valencia and Castellón (Spain), and the general community. The mean age for the non-clinical sample was 26.1 (SD = 8.4). The clinical sample included 146 participants (25 men and 120 women) who were recruited from two mental health units, PREVI (n = 46, Valencia, Spain) and the Hospital de la Santa Creu i Sant Pau (n = 100; Barcelona, Spain). The clinical sample was diagnosed with several mental disorders including borderline personality disorder (n = 44), cluster C personality disorder (n = 16), major depression (n = 10), eating disorder (n = 37) and cocaine addiction (n = 24). The mean age was 30.5 (SD = 8.3).

Procedure

The clinical group completed all measures during an outpatient clinic visit at the hospital. The diagnosis was conducted by staff from the clinical centers (clinical psychologists and psychiatrists), according to DSM-IV-TR²². The non-clinical sample filled out the questionnaires in a classroom. They were informed about the purpose of the study and that their answers were to be treated confidentially. Before filling out the questionnaires, all participants were asked to sign an informed consent. Participation was completely voluntary, with no economic or academic incentives. The FFMQ (forward translation) was translated by mindfulness experts and then revised by a bilingual psychologist from the USA (backward translation). The discrepancies between both translations were resolved by a professional English translator²³.

Instruments

Five Facets of Mindfulness Questionnaire⁸: This questionnaire consists of 39 items that assess five facets of mindfulness. Items are

rated on a Lickert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). The factors include: *Observing*, including noticing or attending to internal and external experiences such as sensations, thoughts, or emotions. *Describing* refers to labeling internal experiences with words. *Acting with awareness* includes focusing on one's activities in the moment as opposed to behaving mechanically. *Non-judging of inner experience* refers to taking a non-evaluative stance toward thoughts and feelings. Finally, *non-reactivity to inner experience* is allowing thoughts and feelings to come and go, without getting caught up in or carried away by them¹⁴.

Acceptance and Action Questionnaire²⁴. This scale includes nine items organized in one category, and was developed for measuring acceptance and avoidance. Items are rated on a Lickert scale ranging from 1 (never true) to 7 (always true). A version validated in the Spanish population was used²⁵.

Brief Symptom Questionnaire-49 items²⁶. This is a scale of 49 items developed by Derogatis²⁷ to assess symptoms of psychological disorders. It includes six factors: depression, phobic anxiety, paranoia, obsession, somatization and hostility. Each item is rated on a five-point scale (0 to 4) according to manifestations of symptoms in the last 30 days (ranging from "not at all" to "extremely"). A Global Severity Index (GSI) is also calculated, as a measure of global discomfort. The Spanish version of this scale was used in this study²⁸.

Mindfulness and Awareness Scale (MAAS)¹². This 15-item scale measures the frequency of mindfulness states in daily life. Based on a mean of all items, MAAS scores can range from 1 (almost always) to 6 (almost never). This questionnaire is not validated into Spanish language. It was translated according to standard recommendations²³.

Results

All five scales demonstrated good internal consistency (Table 1). Computation of internal consistency for the present data showed an alpha coefficient of 0.88 for the

FFMQ total score. The scale's alpha values of each factor of the Spanish and English version are shown in table 1. In the correlational analysis among FFMQ scales, results indicated a significant correlation among all of the scales (Table 2).

Table 1
Descriptives and Cronbach's α for each factor of the Spanish and English versions of the FFMQ

	M	SD	Cronbach α for Spanish version	Cronbach α for English version
Observing	23.6	5.6	0.81	0.83
Describing	28.7	6.5	0.91	0.91
Acting Aware	27	6.6	0.89	0.87
Non-judging	26.8	7.4	0.91	0.87
Non-reacting	20.6	4.5	0.80	0.75

Table 2
Correlations between mindfulness factors and related constructs

	Observing	Describing	Acting Aware	Non-judging	Non-reacting
AAQ	0.02	0.35**	0.45**	0.64**	0.59**
BSI-48					
Depression	0.04	-0.36**	-0.44**	-0.60**	-0.48**
Anxiety	0.15	-0.20*	-0.29**	-0.50**	-0.37**
Paranoia	0.07	-0.42**	-0.44**	-0.59**	-0.41**
Obsession	0.10	-0.37**	-0.50**	-0.63**	-0.40**
Somatization	0.14	-0.24**	-0.41**	-0.51**	-0.32**
Hostility	0.10	-0.20*	-0.32**	-0.49**	-0.25**
IGS	0.10	-0.037**	-0.50**	-0.64**	-0.43**
MAAS	-0.03	0.27**	0.64**	0.41**	0.25**
Observe		0.18**	-0.13*	-0.20**	0.19**
Describe			0.38**	0.26**	0.31**
Act with Awareness				0.44**	0.21**
Accept without judgement					0.33**

AAQ: Acceptance and Action Questionnaire; BSI-48: Brief Symptom Inventory-48; IGS: Global Severity Index; MAAS: Mindfulness and Awareness Scale;

* < 0.05; ** < 0.001.

The convergent and divergent validity of the FFMQ (Table 2) were calculated using Pearson's product-moment correlations with other relevant measures of psychopathology, other mindfulness and acceptance measures. All of the FFMQ scales correlated negatively with all of the psychopathological factors, except *observing*. The mindfulness scale that shows higher correlations with psychopathology measures is the *non-judging of inner experience* factor.

Among the mindfulness scales, the correlational analyses showed significant positive relationships, unless the correlation of the *observing* scale with *acting with awareness* scale ($p = 0.003$) and the *non-judging of inner experience* scale ($p < 0.001$). The strongest positive relations are between *acting with awareness* and *non-judging of inner experience* ($p < 0.001$) factors.

Confirmatory factor analysis

Several Confirmatory Factor Analyses (CFAs) were applied to explore the goodness of fit indices for the factorial model of the FFMQ. Maximum likelihood CFAs were conducted using the EQS 6.1 program²⁹. Prior to the CFA, an item parcels (groups of items) was used rather than individual items, as were used in the original validation made by Baer⁸. For each factor, items were assigned sequentially to item groups in the order in which they appear on the instrument (first item to Group 1, next item to Group 2, etc.). An average of these items was used. This yielded a total of 15 groups (3 items per factor), each being the average of two or three items (Table 3).

Parceling is a measurement practice that is used in multivariate approaches to psy-

Table 3
Factor saturations for each parcel from FFMQ

	Observing	Describing	Acting Aware	Non-judging	Non-reacting
Parcel 1	0.973				
Parcel 2	0.587				
Parcel 3	0.769				
Parcel 4		0.910			
Parcel 5		0.904			
Parcel 6		0.870			
Parcel 7			0.944		
Parcel 8			0.824		
Parcel 9			0.851		
Parcel 10				0.828	
Parcel 11				0.917	
Parcel 12				0.855	
Parcel 13					0.784
Parcel 14					0.749
Parcel 15					0.701

chometrics, particularly for use with latent-variable analysis techniques. It is used for a variety of data problems, like small sample sizes, non-normality, or unstable parameter estimates³⁰. Several benefits of this methodology have been previously described. Firstly, the reliability of a group of items is greater than that of single items; hence, groups can serve as more stable indicators of a latent construct. Furthermore, groups provide more scale points, thereby more closely approximating continuous measurement of latent constructs and provide more efficient estimates of latent parameters than items do^{31,32}.

Assessment of model fit was performed using the goodness-of-fit χ^2 test statistic. Another index used to assess the adequacy of each model was the comparative fit index (CFI), which compares the fit of the model to a null model and establishes the absence of relationships among the variables. The GFI and AGFI fit indices were also used, to measure the proportion of variance-covariance accounted for by the proposed model. The standardized root mean square residual (SRMS) and the root mean squared error of approximation (RMSEA) penalize the models that are not parsimonious, and they are sensitive to mis-specified factor covariance.

The following criteria were used to indicate the fit of the CFA models to the data: CFI and GFI > 0.90 and RMSEA < 0.08. Values for CFI and GFI ranged from 0 to 1³². These fit statistics and the chi-square were selected because previous research has demonstrated their performance and stability^{33,34}.

Three models were considered in analyzing the structure of the FFMQ. The first model tested was the monofactorial structure, including all of the items⁸. The second model was a hierarchical one in which the five factors are indicators of an overarching mindfulness factor, with all of the factors intercorrelated. Finally, was tested the original model proposed by Baer⁸, which is a model where the factors *describing, non-judging of inner experience*, acting with *awareness* and *non reactivity to inner experience* are correlated with a second order factor, whereas the factor *observing* remained isolated. The third model showed the best fit indices (Table 4). According to the fit indices, the five-factor model solution with the *observe* scale isolated was the model that best represented the observed data. The five-factor model was the one with the smallest χ^2 , while CFI and GFI indexes had the highest.

Table 4
Fit indices for confirmatory factor analytic models of the FFMQ

	CFI	GFI	SRMR	RMSEA	$_{sb}X^2$	p
First model (1 factor)	0.387	0.511	0.182	0.254 [0.245-0.262]	1995.6043	p < 0.001
Second model (5 factors intercorrelated)	0.942	0.900	0.106	0.060 [0.050-0.071]	263.3217	p < 0.001
Third model (4 factors intercorrelated with Observing isolated)	0.960	0.926	0.069	0.071 [0.061-0.080]	204.6924	p < 0.001

CFI = Comparative fit index; GFI = goodness of fit index; RMSEA = root mean square error of approximation (the 90% confidence interval is shown in parentheses); $_{sb}X^2$ = Satorra-Bentler Chi Square.

Discussion

The aim of this study was to analyze the psychometric properties of the FFMQ in a Spanish sample. The CFA results supported the factorial structure reported by Baer *et al.*⁸, with five factors. Thus, the Spanish translation of the FFMQ appears to measure the same five constructs as the original version.

According to factorial structure, the CFA data suggested that, as Baer *et al.*⁸ demonstrated, the factors *describing*, *acting with awareness*, *non-judging of inner experience*, and *non-reactivity to inner experience* are elements of an overarching mindfulness construct, and the fit indices are better when the *observing* scale is isolated. As Baer indicated, although *observing* is a component of the mindfulness definition, it is only significant, and only correlates with the other factors, for experienced mindfulness practicing⁸. Furthermore, the sample recruited for this study included a significant percentage of people with various mental disorders. This is significant, since our results show differences from Baer's results⁸.

The FFMQ scales reflected adequate internal consistency, similar to those reported by Baer *et al.*⁸ (alphas from 0.75 to 0.91). In the correlations with other scales, the FFMQ showed an expected and significant relationship with almost every scale, except *observing*. The *observing* factor includes attention to both internal stimuli and external stimuli¹⁴. As previously mentioned, *observing* correlates significantly with psychological adjustment in experienced mindfulness practice who notice a wide range of stimuli, which is therapeutic when accompanied by a non-judgmental style. However, in clinical samples, *observing* might be related to focusing on threats or unpleasant experiences. As Watkins and Teasdale³⁵ noted, there are

different kinds of self-focus, each with different functional properties. Ruminative, analytical self-focus is maladaptive and related to psychopathology, while experiential, non-analytical self-focus (mindfulness) is adaptive. The suitability of keeping *observing* in the FFMQ when it is used to measure clinical samples or non-clinical populations should be considered, since it is only sensitive to and measures the correct constructs in samples of experienced mindfulness practicing.

Contrary to the original validation⁸, in the present study the *observing* scale presented a slightly negative relationship with the other mindfulness scales. *Observing* and *acting with awareness* had a positive relationship in the original validation, while in the present study this relation is slightly negative. This different relation might be explained by sample characteristics, given that in the present study almost 40% of the participants were recruited from a clinical context and were diagnosed with serious mental disorders. The remaining scales are positively correlated as predicted, given that they are considered different factors of the same construct.

Our study has several notable limitations. Firstly, our sample size is moderate, and inter-rater and test-retest reliability were not tested. Future studies should be conducted to investigate various mindfulness patterns in different clinical samples, and also the potential differences in factorial structure and scoring in the FFMQ between clinical and non-clinical groups.

The main contribution of this work is to provide a validation of a mindfulness measure for the Spanish population. Our data support the possibility of using the FFMQ in Spanish clinical and nonclinical samples. We have available an instrument that measures mindfulness that is sensitive to intervention

and that includes five different skills. We believe this questionnaire will be useful in future research to measure the effect of mindfulness interventions in Spanish samples.

In conclusion, the primary objective of this study was to explore the psychometric properties of the Spanish translation of the FFMQ. This objective was accomplished; the FFMQ has proven to be an effective instrument for measuring mindfulness in Spanish samples.

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