

Validity Evidence of the Portuguese Version of the Five Facet Mindfulness Questionnaire

**Alexandre Ramos ¹, António Rosado ¹, Sidónio Serpa ¹, Adolfo Cangas ²,
José Gallego ², Luís Ramos ³**

KEYWORDS: Mindfulness, Yoga, FFMQ, Confirmatory factor analysis, MIMIC model

ABSTRACT: There were three aims of the present study. The first was to examine the validity based on the internal structure of the Portuguese version of the Five Facet Mindfulness Questionnaire (FFMQ) using a first and a second-order confirmatory factor analysis (CFA). The second was to investigate the predictive validity of the FFMQ through a multiple indicators and multiple causes model (MIMIC). The third was to evaluate the concurrent validity of the FFMQ by computing correlations between FFMQ scores and trait Mindful Attention Awareness Scale (trait MAAS) score. The sample used in this study was composed of 164 yoga practitioners (132 women, 32 men) and 87 non-practitioners (39 women, 48 men). The first-order CFA revealed that only a FFMQ with a modified four-factor structure of Nonjudge, Observe, Act Aware, and Describe, and only 26 items, met criteria for a good fit to data, a good construct reliability, a good convergent validity between the indicators of the constructs, and a good discriminant validity of the constructs. The second-order CFA model without the Nonreact factor also fitted the data well, but not so well as the first-order model. The MIMIC model of the effect of gender and to be or not a yoga practitioner in four facets of mindfulness fitted the data well, but only the variable to be or not a yoga practitioner was a statistically significant predictor of the scores on the facets of mindfulness, except Nonjudge. Statistically significant positive Pearson correlations were found between scores on the FFMQ subscales, FFMQ, and trait MAAS.

Correspondence: Alexandre Ramos. Email: alexandreros@campus.ul.pt

¹ Faculty of Human Kinetics, University of Lisbon, Portugal

² University of Almeria, Spain

³ Doctoral Student at Fielding Graduate University, California, United States of America

Mindfulness is a form of meditation originally developed in the Buddhist traditions of Asia (Baer, 2003; Kabat-Zinn, 1990), but it is most commonly defined as the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experiencing moment by moment (Brown and Ryan, 2003; Kabat-Zinn, 2003).

Mindfulness has been discovered as a psychologically relevant dimension within the last 25 to 30 years (Malinowski, 2008). Mindfulness has become the focus of considerable attention from a large community of clinicians and of empirical psychology, though to a lesser extent (Bishop et al., 2004). Additionally, it is included within the repertoire of so-called mind-body interventions (Smith et al., 2008). There are also applications of mindfulness in other areas like the practice of sports (e.g., Kee and Wang, 2008) and academic performance (e.g., Franco, Mañas, Cangas and Gallego, 2011).

The two most popular forms of mindfulness-based interventions (MBIs) are Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1990) and Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams and Teasdale, 2012). These interventions are closely related and evidence-based, delivered in weekly sessions over eight weeks but with distinct curricula and teaching processes (Crane et al., 2013).

Several self-report measures of mindfulness have been developed in recent years (Baer, Samuel and Lykins, 2011). The published measures of mindfulness include the Freiburg Mindfulness Inventory (FMI 30-item; Buchheld, Grossman and Walach, 2001), the trait

Scale (trait MAAS; Brown and Ryan, 2003), the state Mindfulness Attention and Awareness Scale (state MAAS; Brown and Ryan, 2003), the Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith and Allen, 2004), the Freiburg Mindfulness Inventory (FMI 14-item; Walach, Buchheld, Buttenmüller, Kleinknecht and Schmidt, 2006), the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer and Toney, 2006), the Toronto Mindfulness Scale (TMS state version; Lau et al., 2006), the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R; Feldman, Hayes, Kumar, Greeson and Laurenceau, 2007), the Developmental Mindfulness Survey (DMS; Solloway and Fisher Jr., 2007), the Southampton Mindfulness Questionnaire (SMQ; Chadwick et al., 2008), the Philadelphia Mindfulness Questionnaire (PMQ; Cardaciottò, Herbert, Forman, Moitra and Farrow, 2008), the Toronto Mindfulness Scale (TMS trait version; Davis, Lau and Cairns, 2009), the Carolina Empirically-Derived Mindfulness Inventory (CEDMI; Coffey, Hartman and Fredrickson, 2010), the Langer Mindfulness/Mindlessness Scale (MMS; Haigh, Moore, Kashdan and Fresco, 2011), the Child and Adolescent Mindfulness Measure (CAMM; Greco, Baer and Smith, 2011), the 24-item short form of the Five-Facet Mindfulness Questionnaire (FFMQ-SF; Bohlmeijer, ten Klooster, Fledderus, Veehof and Baer, 2011), the Langer Mindfulness Scale (LMS; Pirson, Langer, Bodner and Zilcha-Mano, 2012), and the State Mindfulness Scale (SMS; Tanay and Bernstein, 2013).

Nevertheless, only the trait Mindfulness Attention and Awareness Scale (trait MAAS; see Gregório and Pinto-Gouveia, 2013) and the Five Facet

Mindfulness Questionnaire (FFMQ; see Gregório and Pinto-Gouveia, 2011) were adapted for Portuguese populations, but a confirmatory factor analysis of scores from the Portuguese translation of FFMQ was not performed and further analysis is needed.

Some studies analysed the relationship between yoga practice and the level of mindfulness. Hewett, Ransdell, Gao, Petlichkoff and Lucas (2011) conducted a study designed to assess changes in levels of mindfulness, perceived stress, and physical fitness after participation in an 8-week Bikram yoga programme. Changes in mindfulness (Five Facet Mindfulness Questionnaire), perceived stress (Perceived Stress Scale), and physical fitness, were measured. Eight weeks of Bikram yoga improved mindfulness, perceived stress, cardiorespiratory endurance, flexibility and balance. Mindfulness was negatively correlated with perceived stress and resting heart rate. Neves (2011) found significantly higher scores in FFMQ Observe and FFMQ Nonreact subscales, in Portuguese yoga and meditation practitioners compared with non-practitioners.

There were three aims of the present study. The first was to examine the validity based on the internal structure of the Portuguese version of the Five Facet Mindfulness Questionnaire (FFMQ) using a first and a second-order confirmatory factor analysis (CFA). The second was to investigate the predictive validity of the FFMQ through a multiple indicators and multiple causes (MIMIC) model. The third was to evaluate the concurrent validity of the FFMQ by computing correlations between FFMQ scores and trait Mindful

Attention Awareness Scale (trait MAAS) score.

Method

Participants

The sample was composed of 251 Portuguese adult volunteers (171 women, 80 men, $M_{age} = 37.09$ years, age range: 18-73 years), residents in the districts of Lisboa and Setúbal. A first group consisted of 164 yoga practitioners (132 women, 32 men, $M_{age} = 42.90$ years, age range: 18-73 years). The yoga practitioners have done yoga for 77.28 months, on three sessions per week, and each session had one hour duration. A second group consisted of 87 non-practitioners (39 women, 48 men, $M_{age} = 26.34$ years, age range: 18-72 years). The response rate was 78.43%.

Measures

Portuguese version (Gregório and Pinto-Gouveia, 2011) of the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). This 39-item instrument assesses five facets of a general tendency to be mindful in daily life: observing, describing, acting with awareness, nonreactivity to inner experience, and nonjudging of inner experience. Items are rated on a 5-point Likert-type scale ranging from 1 (*never or very rarely true*) to 5 (*very often or always true*; Baer et al., 2008). The Items 3, 5, 8, 10, 12, 13, 14, 16, 17, 18, 22, 23, 25, 28, 30, 34, 35, 38 and 39 must be reversed (Baer et al., 2011). The following alpha values were obtained in the original study: Nonreact = .75, Observe = .83, Act Aware = .87, Describe = .91, and Nonjudge = .87 (Baer et al., 2006).

Portuguese version (Gregório and Pinto-Gouveia, 2013) of the trait Mindful Attention Awareness Scale (trait MAAS; Brown and Ryan, 2003). Evidence of

validity based on internal structure of the scale through confirmatory factor analysis was reported by the authors of the Portuguese version (see Gregório and Pinto-Gouveia, 2013). This 15-item scale measures the frequency of mindful states in day-to-day life, using both general and situation-specific statements (Carlson and Brown, 2005). The MAAS is one of the most frequently applied mindfulness measures, apart from its unidimensional nature (Gregório and Pinto-Gouveia, 2013). MAAS respondents indicate how frequently they have the experience described in each statement using a 6-point Likert scale from 1 (*almost always*) to 6 (*almost never*). In the original study the alphas were .86 and .87 for Samples 1 and 2, respectively (Brown and Ryan, 2003).

Procedure

Data were collected between November 2013 and April 2014. The first author and fifteen research assistants delivered and collected questionnaires in several yoga schools of the districts of Lisbon and Setúbal, in Portugal. Participants were asked to complete the questionnaires on their own time and return them to the research assistant. The survey consisted of three sections. The first section asked for demographic information. The second and third sections consisted on the MAAS and the FFMQ. Respondents were guaranteed anonymity and confidentiality of individual responses. The data protection rules of the country were respected.

Data Analysis

Means, standard deviations and ranges were computed to explore participant characteristics, using IBM® SPSS® Statistics (Version 20) software.

First and second-order confirmatory factor analysis (CFA) and MIMIC (multiple indicators and multiple causes)

models (also known as CFA with covariates) were conducted with IBM® SPSS® Amos™ (Version 20) software, using maximum likelihood estimation (MLE) and performing parametric bootstrap (2000 bootstrap samples), because the observed variables did not meet the multivariate normality assumption (Mardia's value = 34.44). The missing data were replaced by the average score of the persons who reported scores on the item.

The fit of the hypothesized models to data was evaluated through the chi-square value (significance level $\alpha = .05$), and the approximate fit indices: CFI (comparative fit index), TLI (Tucker-Lewis index), RMSEA (root mean square error of approximation) with the 90% confidence interval (CI), and SRMR (standardized root mean square residual). The chi-square difference statistic ($\Delta\chi^2$) was used for assessing the statistical significance of the difference in overall model fit between two models. A multiple-group factor analysis was conducted in order to test the hypothesis of measurement invariance of all model parameters across levels of the categorical variable to be or not a yoga practitioner.

The construct reliability (CR) and average variance extracted (AVE) were computed according the formulas suggested by Fornell and Larcker (1981). CR should be .7 or higher to indicate adequate internal consistency (Hair Jr., Black, Babin and Anderson, 2010). AVE should be .5 or greater to suggest adequate convergent validity of the individual indicators and the construct. AVE estimates for two factors (constructs) should be greater than the square of the correlation between the two factors to

provide discriminant validity (Fornell and Larcker, 1981; Hair Jr. et al., 2010).

Pearson product-moment correlations with bootstrapping (2000 bootstrap samples) between scores on the FFMQ subscales, FFMQ and MAAS were calculated using IBM® SPSS® Statistics (Version 20) software.

Results

The hypothesized five-factor model of the Portuguese version of the FFMQ (Model 1) fitted the data poorly (Hair Jr. et al., 2010; see Table 1). In addition, this model showed a convergent validity unacceptable ($AVE_{Nonjudge} = .45$, $AVE_{Observe} = .38$, and $AVE_{Nonreact} = .27$).

Loading estimates can be statistically significant, but still be too low to qualify as a good item (standardized loadings below $|.5|$); in CFA, items with low loadings become candidates for deletion (Hair Jr. et al., 2010). So, in order to improve model fit to data, we decided to delete Items 3, 4, 9 and 24. To assist us in pinpointing possible areas of misfit, we examined the modification indices. The resulting model (Model 2), that includes correlated errors, fitted the data better (see Table 1), but revealed a construct reliability problem ($CR_{Nonreact} = .67$) and convergent validity problems ($AVE_{Nonjudge} = .49$, $AVE_{Observe} = .38$, and $AVE_{Nonreact} = .34$). In order to eliminate the problems encountered, we decided to remove 36 multivariate outliers. This new model (Model 3) fitted the data well (see Table 1), but as the previous revealed a construct reliability problem ($CR_{Nonreact} = .66$) and convergent validity problems ($AVE_{Observe} = .43$; $AVE_{Nonreact} = .32$). For this reason, we decided to eliminate the Factor Nonreact and delete the Items 1, 6, 11 and 20 of the Factor Observe. The final model (Model 4)

fitted the data well (see Table 1), showed good construct reliability ($CR_{Observe} = .75$, $CR_{Nonjudge} = .87$, $CR_{Describe} = .92$, and $CR_{Act Aware} = .91$), good convergence between the indicators of the constructs ($AVE_{Observe} = .50$, $AVE_{Nonjudge} = .51$, $AVE_{Describe} = .59$, and $AVE_{Act Aware} = .56$), and good discriminant validity of the constructs.

Table 1

Table 2 show squared multiple correlations, and standardized and unstandardized coefficients for first-order CFA (Model 4).

Table 2

The second-order confirmatory factor analysis model (Model 5) fitted the data well (Hair Jr. et al., 2010; see Table 1). The regression weights of Nonjudge, Observe, Act Aware and Describe were all significant ($p < .001$). The second-order factor was named Mindfulness. However, a statistically significant difference was found between Model 4 and Model 5, $\Delta\chi^2(4, N = 215) = 21.69, p < .001$. Model 4 was in fact the best model (see Figure 1).

Figure 1

The MIMIC model of the effect of gender and to be or not a yoga practitioner in four facets of mindfulness fitted the data well (Schumacker and Lomax, 2010), $\chi^2(323, N = 215) = 495.99, p < .001$, CFI = .94, TLI = .93, RMSEA = .05, 90% CI [.04, .05], SRMR = .15, but only the variable to be or not a yoga practitioner was a statistically significant predictor ($p < .05$) of three facets of mindfulness: Describe, Observe, and Act Aware. Given the yoga practitioners respondents are

coded 0 in the nominal binary variable to be or not a yoga practitioner, as a group they scored higher on those facets of mindfulness (Figure 2).

Figure 2

A multiple-group factor analysis allowed accepting the hypothesis of measurement invariance of all model parameters across levels of the categorical variable to be or not a yoga practitioner (see Table 3).

Table 3

The majority of yoga practitioners of the sample were women ($n = 113$). So, a statistically significant negative correlation was found between sex/gender (0 = man, 1 = woman) and to be or not a yoga practitioner (0 = yes, 1 = no; see Figure 2).

Statistically significant positive Pearson correlations were found between all the scores on the FFMQ and trait MAAS (see Table 4). The strongest correlation observed was between the scores on FFMQ Act Aware and trait MAAS, $r(231) = .73, p < .001$.

Table 4

Discussion

We examined the validity based on the internal structure of the Portuguese version of the Five Facet Mindfulness Questionnaire (FFMQ) using a first and a second-order confirmatory factor analysis (CFA). The first-order CFA revealed that only a FFMQ with a modified four-factor structure of Nonjudge, Observe, Act Aware, and Describe, and only 26 items, met criteria for a good fit to data, a good construct (latent variable) reliability, a

good convergent validity between the indicators of the constructs, and a good discriminant validity of the constructs.

Findings for the Nonreact factor were not totally unexpected, because Deng, Liu, Rodriguez and Xia (2011) found that Cronbach's alpha (.44) and split-half (.43) reliability coefficients of the Nonreact subscale of the Chinese version of the FFMQ were lower than the others. Tran, Glück and I. W. Nader (2013) also found that the Nonreact subscale of the German version of the FFMQ was a weak indicator of its intended construct in an Austrian community and student samples. The authors concluded that a low item discrimination and construct-irrelevant item contents compromised the psychometric properties of the Nonreact subscale and its factorial and external validity. In another study, Radon (2014) confirmed the reliability of the Polish version of the FFMQ (Cronbach's $\alpha = .73-.86$), except in the case of the Nonreact subscale ($\alpha = .65-.66$). Finally, Anchorena, Gighlione and M. Nader (2017), suggested that the Nonreact subscale is not a significant part of the overall self-reported mindfulness structure in an Argentine population with little meditation experience.

Reasons for these findings are not entirely clear. It is possible that the content of the Nonreact items used does not adequately capture the quality of nonreacting to inner experience that is characteristic of mindfulness. Another possibility is the excessive content heterogeneity of Nonreact subscale items. In fact, some items refer to the reaction when distressing thoughts or images are displayed, and others are related to the reaction to emotions and feelings. It is likely that Nonreact factor is a complex

construct involving several orthogonal dimensions, which may not have been theoretically discussed and operationalized in items. Despite poor psychometric characteristics, nonreactivity to inner experience remains an important theoretical dimension and we have to make subsequent efforts to effectively measure this dimension.

The second-order CFA model without the Nonreact factor also fitted the data well. The second-order factor named Mindfulness seems to explain the covariances among the four first-order factors. However, the second-order model did not fit the data so well as the first-order model.

We also investigated the predictive validity of the FFMQ through a multiple indicators and multiple causes (MIMIC) model. The MIMIC model of the effect of gender and to be or not a yoga practitioner in four facets of mindfulness fitted the data well, but only the second covariate was a statistically significant predictor of the scores on the facets of mindfulness, except Nonjudge. A multiple-group factor analysis allowed us to accept the hypothesis of measurement invariance. That was an important finding, because without equal intercepts and equal regression weights (scalar invariance), it would be unclear that the factors have the same meaning for yoga practitioners as for non-practitioners and so there would be no interest in comparing their means (Arbuckle, 2016). The fact of yoga practice did not predict Nonjudge scores was unexpected, because Hewett et al. (2011) discovered that eight weeks of Bikram yoga practice improved significantly all the FFMQ scores in a sample of 51 participants recruited from a large university located in the

Northwestern United States. Maybe the Portuguese population have more difficulty on the acceptance of events and experiences.

We also evaluated the concurrent validity of the FFMQ by computing correlations between FFMQ scores and trait Mindful Attention Awareness Scale (trait MAAS) score. We found statistically significant positive Pearson correlations between all the FFMQ scores and trait MAAS score. Two correlations exceeded the Cohen's (1988) benchmark of $r = .50$ for a large effect size. The strongest correlation observed was among the scores on FFMQ Act Aware and trait MAAS. These findings are consistent with the results obtained by Gregório and Pinto-Gouveia (2013), who found statistically significant positive Pearson correlations between the level of mindfulness as measured through trait MAAS and through FFMQ, specifically: Describe, Act Aware and Nonjudge.

These findings, showing good psychometric properties of the Portuguese version of the FFMQ, allow for testing new research hypothesis and allow for more rigorous evaluations of mindfulness development programmes. We also propose a short version of the scale, with practical importance in the context of application.

Future research may seek to validate the instrument in other Portuguese speaking countries with different cultural features and to introduce more variables in the analysis (personality characteristics and traits, socioeconomic status, education level, etc.) accounting for the study of mindfulness determinants. Since psychometric differences were found between the Portuguese version of the FFMQ and the original version, we also

suggest a replication of the study with actual structure.
other samples to test the invariance of the

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EVIDENCIA DE VALIDEZ DE LA VERSIÓN PORTUGUESA DEL CUESTIONARIO DE ATENCIÓN A CINCO FACETAS

PALABRAS CLAVE: Mindfulness, Yoga, FFMQ, Análisis factorial confirmatorio, Modelo MIMIC

RESUMEN: Tres han sido los objetivos de este estudio. El primero, consistió en examinar la validez basada en la estructura interna de la versión en portugués del Five Facet Mindfulness Questionnaire (FFMQ), utilizando un análisis factorial confirmatorio (AFC) de primer y segundo orden. El segundo, fue investigar la validez predictiva del FFMQ a través de un modelo de múltiples indicadores y múltiples causas (MIMIC). Y el tercero, fue evaluar la validez concurrente del FFMQ calculando las correlaciones entre las puntuaciones del FFMQ y del trait Mindful Attention Awareness Scale (trait MAAS). La muestra utilizada en este estudio fue compuesta por 164 practicantes de yoga (132 mujeres, 32 hombres) y 87 no practicantes (39 mujeres, 48 hombres). El AFC de primer orden, reveló para el FFMQ una estructura de cuatro factores (No Juzgar, Observación, Actuando con Consciencia y Descripción) y 26 ítems, como la que mejor cumplía con los criterios para un buen ajuste a los datos, una buena fiabilidad del constructo, una buena validez convergente entre los indicadores de los constructos, y una buena validez discriminante de los mismos. El modelo AFC de segundo orden, sin el factor de No Reactividad a la Experiencia Interna, también se ajustó adecuadamente a los datos, pero no tan bien como el modelo de primer orden. El modelo MIMIC del efecto del género y ser o no un practicante de yoga en cuatro facetas de mindfulness obtuvo un buen ajuste respecto a los datos, pero sólo la variable ser o no un practicante de yoga fue un predictor estadísticamente significativo de las puntuaciones en las facetas de mindfulness, excepto No Juzgar. Así mismo, se encontraron correlaciones de Pearson positivas y estadísticamente significativas entre las puntuaciones de las sub-escalas del FFMQ, FFMQ y trait MAAS.

PROVA DE VALIDADE DA VERSÃO EM PORTUGUÊS DO FIVE FACET MINDFULNESS QUESTIONNAIRE

PALABRAS-CHAVE: Mindfulness, Yoga, FFMQ, Análise fatorial confirmatória, Modelo MIMIC

RESUMO: Este estudo teve três objetivos. O primeiro, consistiu em examinar a validade baseada na estrutura interna da versão portuguesa do Five Facet Mindfulness Questionnaire (FFMQ), utilizando uma análise fatorial confirmatória (AFC) de primeira e segunda ordem. O segundo, foi investigar a validade preditiva do FFMQ através de um modelo de múltiplos indicadores e múltiplas causas (MIMIC). E o terceiro, foi avaliar a validade concorrente do FFMQ calculando as correlações entre as pontuações do FFMQ e do trait Mindful Attention Awareness Scale (trait MAAS). A amostra utilizada neste estudo foi composta por 164

praticantes de yoga (132 mulheres, 32 homens) e 87 não-praticantes (39 mulheres, 48 homens). A AFC de primeira ordem revelou para o FFMQ uma estrutura de quatro fatores (Não Julgar, Observar, Agir com Consciência e Descrever) e 26 itens, como a que melhor cumpria com os critérios para um bom ajuste aos dados, uma boa fiabilidade de construto, uma boa validade convergente entre os indicadores dos construtos, e uma boa validade discriminante dos mesmos. O modelo AFC de segunda ordem, sem o fator Não Reagir, também se ajustou adequadamente aos dados, mas não tão bem como o modelo de primeira ordem. O modelo MIMIC do efeito do género e ser ou não praticante de yoga em quatro facetas de mindfulness obteve um bom ajuste aos dados, mas só a variável ser ou não praticante de yoga foi um preditor estatisticamente significativo das pontuações nas facetas de mindfulness, exceto Não Julgar. Foram encontradas correlações de Pearson positivas e estatisticamente significativas entre as pontuações das subescalas do FFMQ, FFMQ e trait MAAS.

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Table 1.
 Chi-Squares Values and Approximate Fit Indices of the Portuguese Version of the Five Facet Mindfulness Questionnaire Models

Model	χ^2	df	p	CFI	TLI	RMSEA	90% CI	SRMR
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Model 1 (original five-factor model)	1145.04	655	< .001	.87	.86	.05	[.04, .06]	.06
Model 2 (five-factor model modified)	770.04	503	< .001	.93	.92	.04	[.03, .05]	.06
Model 3 (five-factor model modified)	687.99	503	< .001	.95	.94	.04	[.03, .04]	.06
Model 4 (four-factor model)	324.71	271	.014	.98	.98	.03	[.01, .04]	.05
Model 5 (second-order model)	346.40	275	.002	.97	.97	.03	[.02, .04]	.07

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; RMSEA = root mean square error of approximation; CI = confidence interval; SRMR = standardized root mean square residual.

Table 2

Squared Multiple Correlations, and Standardized and Unstandardized Coefficients for First Order CFA (Model 4)

Observed variable	Latent construct	R^2	β	B	SE
Item 10	Nonjudge	.32	.57	1.00	—
Item 14	Nonjudge	.60	.78	1.38***	.17
Item 17	Nonjudge	.51	.71	1.25***	.16
Item 25	Nonjudge	.60	.78	1.31***	.16
Item 30	Nonjudge	.65	.81	1.41***	.16
Item 35	Nonjudge	.40	.64	1.04***	.15
Item 39	Nonjudge	.46	.68	1.28***	.17
Item 15	Observe	.50	.71	1.00	—
Item 26	Observe	.51	.72	.99***	.12
Item 31	Observe	.49	.70	.95***	.11
Item 5	Act Aware	.47	.69	1.00	—
Item 8	Act Aware	.44	.67	.97***	.09
Item 13	Act Aware	.53	.73	1.08***	.09
Item 18	Act Aware	.46	.68	.96***	.11
Item 23	Act Aware	.69	.83	1.08***	.11
Item 28	Act Aware	.60	.78	1.01***	.10
Item 34	Act Aware	.61	.78	1.10***	.11
Item 38	Act Aware	.65	.81	1.15***	.11
Item 2	Describe	.74	.86	1.00	—
Item 7	Describe	.64	.80	.87***	.06
Item 12	Describe	.67	.82	.96***	.06
Item 16	Describe	.61	.78	.85***	.06
Item 22	Describe	.37	.61	.61***	.06
Item 27	Describe	.62	.79	.97***	.07
Item 32	Describe	.40	.63	.77***	.07
Item 37	Describe	.67	.82	.97***	.06

Note. CFA = confirmatory factor analysis.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3.

Invariance of Model Parameters of Yoga Practitioners and Non-practitioners

Model	NPAR	χ^2	df	p	χ^2 / df
Unconstrained	135	649.42	619	.192	1.04
Measurement weighs	135	649.42	619	.192	1.04
Measurement intercepts	109	649.42	645	.444	1.00
Measurement residuals	106	649.42	648	.477	1.00

Note. NPAR = number of distinct parameters estimated.

Table 4

Intercorrelations between Scores on the FFMQ Subscales, FFMQ, and Trait MAAS

Measure	1	2	3	4	5	6	7
1. FFMQ Nonjudge	—						
2. FFMQ Observe	.14*	—					
3. FFMQ Act Aware	.38***	.20**	—				
4. FFMQ Describe	.20**	.37***	.35***	—			
5. FFMQ Nonreact	.11	.45***	.27***	.42***	—		
6. FFMQ Total Score	.59***	.64***	.69***	.73***	.61***	—	
7. Trait MAAS Total Score	.34***	.32***	.73***	.37***	.34***	.66***	—

Note. FFMQ = Five Facet Mindfulness Questionnaire; trait MAAS = trait Mindful Attention Awareness Scale.

* $p < .05$. ** $p < .01$. *** $p < .001$.

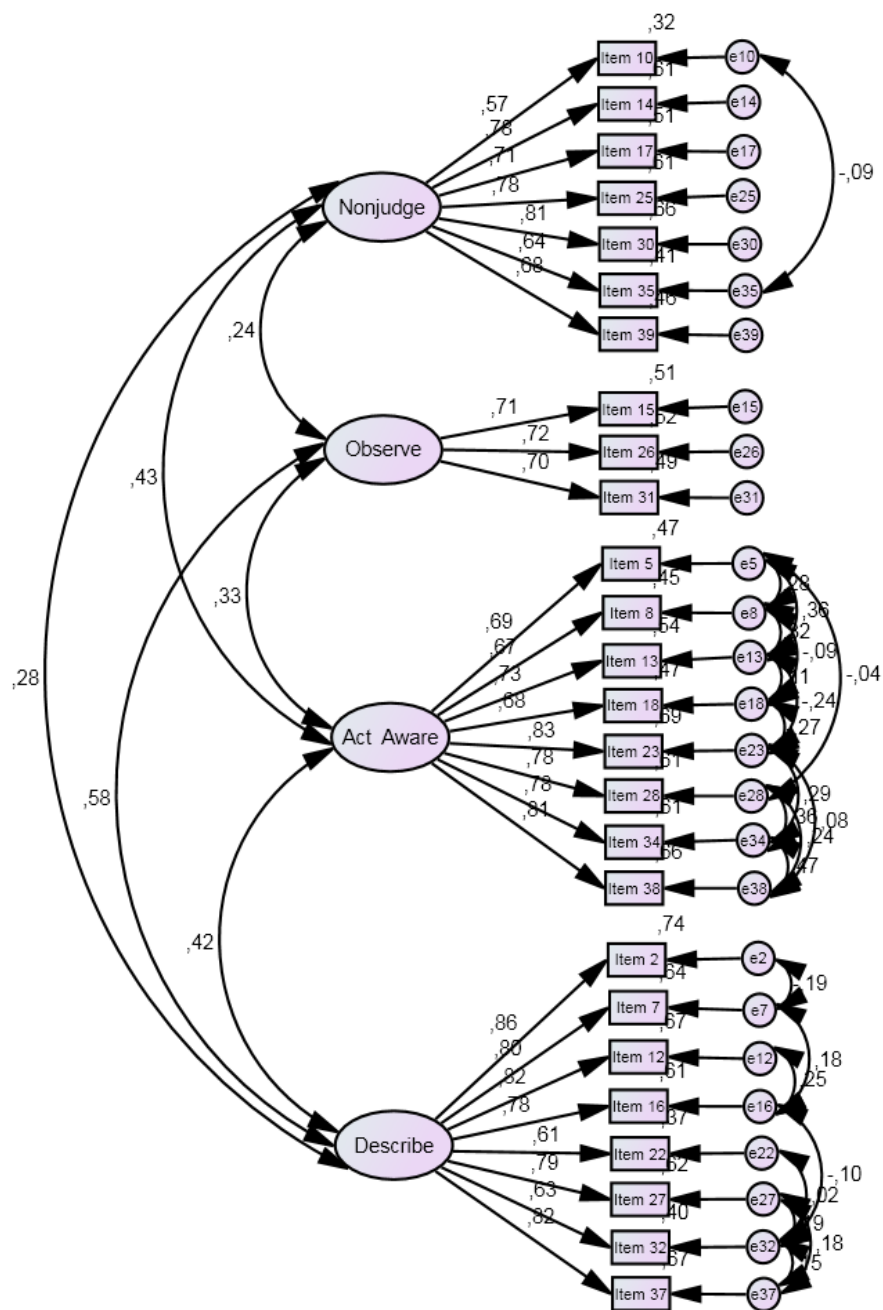


Figure 1. Confirmatory factor analysis model of four factors of the Portuguese version of the Five Facet Mindfulness Questionnaire. Standardized maximum likelihood parameter estimates.

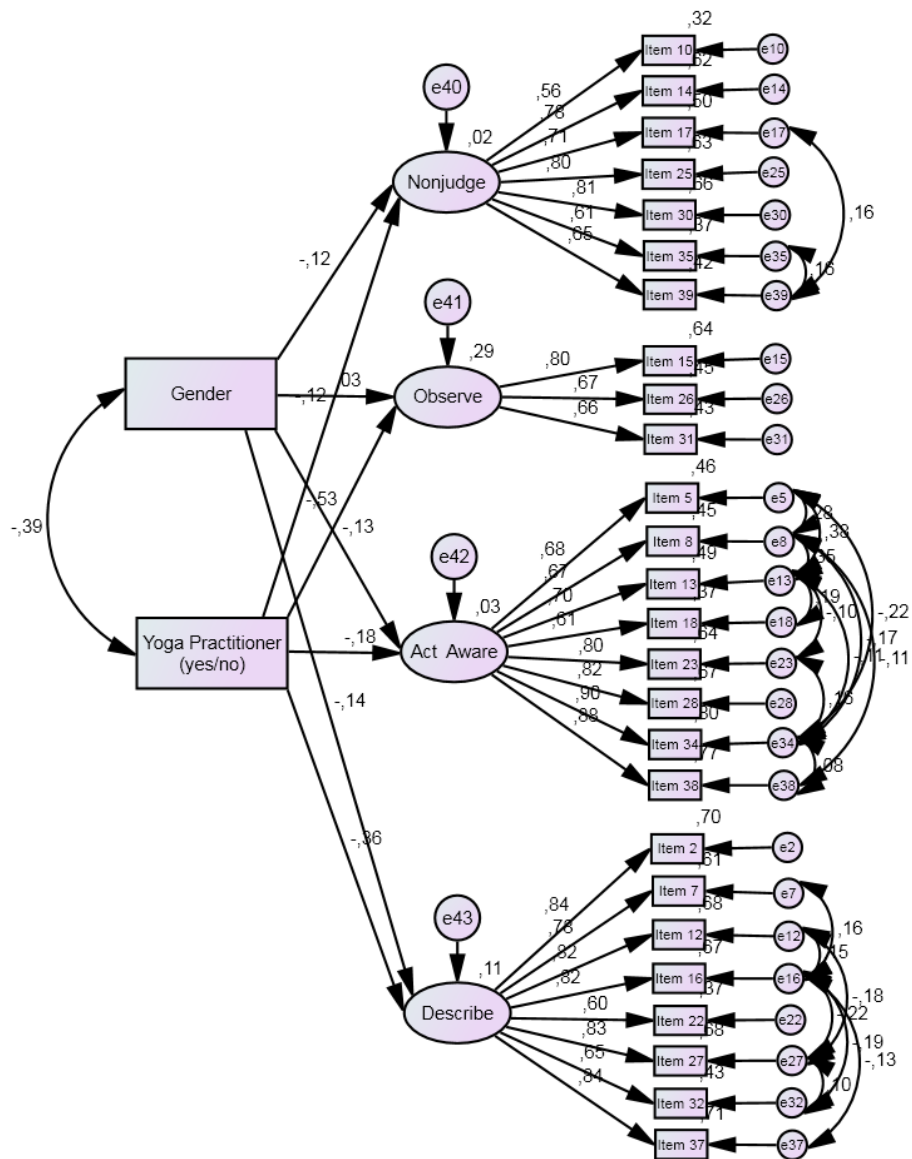


Figure 2. Multiple indicators and multiple causes (MIMIC) model of the effect of gender and to be or not a practitioner of yoga in the four factors of the Portuguese version of the Five Facet Mindfulness Questionnaire. Standardized maximum likelihood parameter estimates.