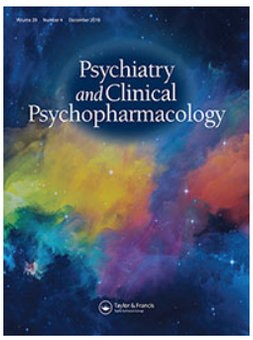

Taylor & Francis
Taylor & Francis Group

Psychiatry and Clinical Psychopharmacology

ISSN: 2475-0573 (Print) 2475-0581 (Online) Journal homepage: https://www.tandfonline.com/loi/tbcp21

Reliability, validity, and factorial structure of the Turkish version of the Freiburg Mindfulness Inventory (Turkish FMI)

Hasan Turan Karatepe & Kaasım Fatih Yavuz

To cite this article: Hasan Turan Karatepe & Kaasım Fatih Yavuz (2019) Reliability, validity, and factorial structure of the Turkish version of the Freiburg Mindfulness Inventory (Turkish FMI), Psychiatry and Clinical Psychopharmacology, 29:4, 472-478, DOI: 10.1080/24750573.2019.1663582

To link to this article: https://doi.org/10.1080/24750573.2019.1663582

Published online: 13 Sep 2019.

PSYCHIATRY AND CLINICAL PSYCHOPHARMACOLOGY
2019, VOL. 29, NO. 4, 472–478
https://doi.org/10.1080/24750573.2019.1663582

Reliability, validity, and factorial structure of the Turkish version of the Freiburg Mindfulness Inventory (Turkish FMI)

Hasan Turan Karatepe [a] and Kaasım Fatih Yavuz [b]

[a]Psychiatry Department, Istanbul Medeniyet University, Bakırköy, Istanbul, Turkey; [b]Psychology Department, Medipol University, Istanbul, Turkey

ABSTRACT

OBJECTIVES: Mindfulness is the awareness that emerges through paying attention on purpose, in the present moment, and nonjudgementally to the unfolding of experience moment to moment. Mindfulness-based interventions are frequently used in clinical situations and in establishing psychological well-being in a non-clinical sample as psychological techniques. Therefore, many mindfulness measures have been developed for use in clinical settings and for research purposes. Freiburg Mindfulness Inventory (FMI) is a self-report questionnaire that was developed to measure the trait mindfulness. In this study, we aimed to examine the validity, reliability, and factor structure of the FMI in a Turkish sample.

METHODS: Participants were mostly college students (113 female, 93 male) and civil servants. Sociodemographic information, the Turkish version of the FMI, Acceptance and Action Questionnaire-II (AAQ-II), Five Facets Mindfulness Questionnaire (FFMQ) – All statistical analyses were performed by using SPSS version 20 and AMOS 23 version.

RESULTS: The Cronbach's alpha coefficient for the scale was 0.823, Guttman's split-half reliability coefficient was 0.828, and test–retest reliability coefficient was 0.895. A positive and statistically significant correlation was found between the Turkish FMI and FFMQ ($r = 0.566$, $p = .000$). We found negative and statistically significant results between FMI and AAQ-II scores ($r = -0.519$ $p = .000$). We found strong statistical fit indices that can be acceptable for one-factor solution confirmatory factor analysis.

CONCLUSIONS: The Turkish version of the FMI has satisfactory convergent and divergent validity, good internal and test–retest reliability with one-factor structure to use in a Turkish sample. We hope that Turkish form of FMI, which is known to be effective in assessing the mindfulness especially in a population that is familiar with the mindfulness practices, will be a useful alternative instrument for Turkish clinicians and researchers.

ARTICLE HISTORY
Received 10 July 2019
Accepted 26 August 2019

KEYWORDS
Mindfulness measurement; acceptance; validity measurement; acceptance and commitment therapy; mindfulness; factorial analyses

Introduction

Mindfulness – which is the central concept of Buddhist teaching – emphasizes the importance of self-consciousness. It includes a non-judgemental approach in a friendly attitude towards these products of the mind, which indicates an increased state of awareness to the understanding of all of the mental contents (cognition, perception, physical sensation, etc.) [1]. Mindfulness is a type of attention: self-regulation. It involves immediate experience, thereby allowing for increased recognition of mental events in the present moment with an accepting, non-judgemental, and curiosity stance towards these experiences [2]. In the last 30 years, mindfulness has become the focus of considerable attention for a large community in the fields of psychology and psychiatry. Kabat-Zinn, one of the first names to use mindfulness as a psychological intervention instrument, describes mindfulness as a process of bringing a certain quality of attention to a moment-by-moment experience [3]. After the first mindfulness-based intervention (MBI) program (Mindfulness-Based Stress Reduction – MBSR) was released by Kabat-Zinn, research in the field has increased and has found a place in the cognitive–behavioural therapy area. One example of this broadening can be found in the Mindfulness-Based Cognitive Therapy (MBCT) developed by Zindel Segal and colleagues [4]. In addition to therapy interventions based on mindfulness, many therapies have deployed mindfulness as a therapeutic technique, like Dialectical Behaviour Therapy (DBT) and Acceptance and Commitment Therapy (ACT) [5,6]. Mindfulness, in contemporary psychology, has been adopted as an approach for increasing awareness and responding skilfully to mental processes that contribute to emotional distress and maladaptive behaviour. An alternative short and stripped-down definition of "therapeutic mindfulness" is awareness of the present experience with acceptance [7].

CONTACT Hasan Turan Karatepe htkaratepe@yahoo.com Psychiatry Department, Istanbul Medeniyet University, Osmaniye Mah. Fabrikalar Sok. No:8/1 Daire 13, Bakırköy, Istanbul 34146, Turkey

The need for a practical tool to assess mindfulness has generated an important volume of knowledge production in the studies of therapeutic efficacy of MBIs [8]. The various scales in the literature assess mindfulness processes against different aspects. For example, Toronto Mindfulness Scale (TMS) specifically assesses the capacity to invoke a mindful state during meditation practice, whereas the majority of mindfulness scales were designed to measure trait mindfulness [8–10]. Another instrument called Mindful Attention Awareness Scale (MAAS) focuses on the attention component of mindfulness, and other scales like Kentucky Inventory of Mindfulness Scale (KIMS), the Five Facet Mindfulness Questionnaire (FFMQ), and Freiburg Mindfulness Inventory were designed to measure mindfulness as a multidimensional construct [8,11,12]. However, FFMQ and Philadelphia Mindfulness Scale (PHLMS) assess the aspects of mindfulness as distinct facets, some scales like Freiburg Mindfulness Inventory (FMI) and Cognitive and Affective Mindfulness Scale-Revised (CAMS-R) favour a more holistic conceptualization of mindfulness as entailing interconnected aspects that cannot be meaningfully disentangled [13–15]. In a comprehensive study, it was determined that the FMI 30-item (the first published form of FMI) assesses the mindfulness through different facets [14]. These facets of mindfulness are nonreactivity to experience, openness to experience, self-acceptance or non-judgemental acceptance of experience, and mindful presence [8,14,16]. This long version of FMI is criticized that individuals without meditation experience systematically misunderstood some items of FMI [8]. The short (14-item) version of the FMI was studied in a general population with no meditation history and it was shown that FMI 14-item assesses mindfulness as one-dimensional construct and inventory had a one common factor with good statistical features [13,14]. In the present study, we aimed to translate to Turkish and establish psychometric properties and factorial validity of the FMI in Turkish population.

Methods

Participants

The total number of participants was 206 (113 female 93 male). The majority of the group were college students and healthy visitors accompanying patients at the research and training hospital of Istanbul Medeniyet University located in Istanbul, Turkey. The study was approved by the Istanbul Medeniyet University School of Medicine's Göztepe Research and Training Hospital Ethics Review Board. Written informed consents were obtained from the participants and thereafter the study protocol was thoroughly explained. All participants were between 18 and 60 years. Exclusion criteria included being diagnosed with psychiatric disorders, using psychotropic drugs, at that moment being under the influence of alcohol or a similar substance that would affect mental processes.

Psychometric measurements

Sociodemographic data form

This form includes demographic variables including gender, age, marital status, education, location, occupation, employment status, household members, the number of siblings, place of birth, and tobacco use attitudes.

Freiburg Mindfulness Inventory

FMI is a Likert-type self-report scale consisting of 14 items with a rating between 1 (rarely) and 4 (always). The first 30-item form of scale was developed in 2001 and the 14-item final form of FMI was developed in 2006 by Walach and colleagues [13,15]. The 14-item form of the scale was developed as a one-factor unidimensional scale. Items construction and selection were based on an extensive review of mindfulness and insight meditation literature, interviews with experts (i.e. mindfulness meditation teachers and long-time meditators), and finally, on validation analysis in a sample of Buddhist meditators. The Turkish form of FMI has been translated into Turkish by two psychiatrists, and back-translated into English by a translator who has a background on medical publications and was blinded to the original items. After establishing the semantic equivalence of the FMI items no items were excluded as being irrelevant to Turkish culture. The final version was approved by Harald Walach and his Turkish-speaking colleagues.

Acceptance and Action Questionnaire-II

Acceptance and Action Questionnaire-II (AAQ-II) is a common ACT measure that was created primarily as a measure of avoidance versus acceptance although it is ultimately meant to encompass different aspects of psychological flexibility [17]. AAQ-II is a seven-item one-factor structure with 7-point Likert-style scale and respondents rate items from 1 ("never true") to 7 ("Always true"). AAQ-II was developed by Bond and colleagues and Turkish validity and reliability study of the scale was conducted by Yavuz et al. [18,19].

Five Facets Mindfulness Questionnaire

The FFMQ is a 39-item multifaceted scale covering five aspects of mindfulness: nonreactivity to inner experience (nonreact), observing/noticing/attending to sensations/perceptions/thoughts/feelings (observe), acting with awareness/automatic pilot/concentration/nondistraction (actaware), describing/labelling with words (describe), and nonjudging of experience (nonjudge) [11]. This scale and its facets resulted from an exploratory factor analysis of the combined pool of 112 items

collected from the KIMS, the FMI, the MAAS, the CAMS, and the Southampton Mindfulness Questionnaire (SMQ). 5-point Likert-type scale (1 = *never or very rarely true*, 5 = *very often or always true*) was translated, validated, and psychometric properties of the Turkish version by Kınay [12] were studied.

Statistical analysis

All variables were screened for the accuracy of data entry, missing values, and homoscedasticity using SPSS 20. The data had less than 5% of missing items, and no pattern was detected. The descriptive statistic was reported using means and standard deviations for continuous variables and frequencies and percentages for categorical variables. SPSS AMOS 23 version has been applied for confirmatory factor analysis (CFA) for testing the construct validity of FMI Turkish form [20]. Pearson's correlation coefficients were used for the correlation analyses between FMI, AAQ-II, and FFMQ. The internal consistency of the Turkish form of FMI was estimated using Cronbach's alpha coefficients and split-half reliability test. Test–retest reliability of the FKI Turkish form was performed using Pearson's correlation coefficients. The alpha level of 0.05 was set up to indicate statistical significance.

Results

Socio-demographic characteristics of sample

The sample consisted of 113 female participants (54.9%) and 93 male participants (45.1%). The average age of 206 participants in the study was 29.8 with a standard deviation of 11.6. The majority of the participants in the study were single (64.1%), and 69 (33.5%) were married, three participants were divorced and two of them live in a common marriage. 54.4% of participants were students, 40.8% of participants had a job, and 4.9% of participants were unemployed. Sociodemographic characteristics of the sample are shown in detail in Table 1. Mean FMI score was 37.11 (SD = 6.94) in our study and the results revealed that there was no statistically significant difference between male and female participants regarding the FMI scores [$t(206) = -2.126$ $p = .035$] in the independent samples t-test. Also, no significant difference was observed in FMI scores for age, education level (chi-square $p > .05$), and marital status (t-test $p > .05$)

Table 1. Socio-demographic characteristics.

	$N = 206$	%
Gender		
Female	113	54.9
Male	93	45.1
Marital status		
Single	132	64.1
Married	69	33.5
Divorced	3	1.5
Common M	2	1
Occupation		
Student	112	54.4
Civil servants	54	26.2
Worker	23	11.2
Unemployed	10	4.9

Factor structure of the Turkish FMI

For factor analysis of scale data Kaiser–Meyer–Olkin Measure of Sampling Adequacy (KMO) value must be .6 or above and the Barlett's Test of Sphericity value should be significant (i.e. the Sig. value should be .05 or smaller) [21]. In our study, the KMO value is .843, and the Bartlett's test of sphericity statistic is 713,293 ([91df], $p = .000$); therefore, our data are appropriate for factor analysis. CFA was performed to test the single-factor model of the FMI-Turkish form as the original scale. In CFA, the validity of the models can be evaluated by the goodness-of-fit indices of data [22]. The fit indices used in the CFA are the comparative fit index (CFI), the general fit index (GFI), the adjusted goodness of fit index (AGFI), the root mean square error of approximation (RMSEA), and the relative chi-square (χ^2/df) fit indices [23–25]. CFI, GFI, and AGFI > 0.900, $\chi^2/df < 5$ and RMSEA <0.0854 values can be acceptable for the fit criteria of data [26–29]. Factor loadings of FMI items were found to be significant at $p < .05$ level. It was determined that the fit indices were not incompatible and the presence of high covariance-related measurement errors between items 5 and 8 was determined and these errors were corrected (Figure 1). According to the final fix index analysis, the 14-item adjusted model was found to be superior to the previous model (RMSEA = 0.064, CFI = 0.890, GFI = 0.890, AGFI = 0.908 ve $\chi^2/df = 2.750$). Standard regression values for FMI (between 0.22 and 0.69, $p < .001$) are shown in Figure 1.

Convergent and divergent validity

Convergent validity was examined by correlations between the FMI scores and FFMQ is a 39-item multifaceted scale, covering the five aspects of mindfulness. Positive and statistically significant correlations were found between the Turkish FMI and FFMQ-total scores ($r = 0.566$, $p = .000$) When we look at the facets of FFMQ, we saw that FMI scores show sufficient positive correlations with statistically significant results except the nonjudging facet of FFMQ (Table 2).

In divergent validity, we examine correlations between FMI and AAQ-II scores. Correlations analyses show a negative and statistically significant results between FMI and AAQ-II scores ($r = -0{,}519$ $p = .000$) (Table 3).

Internal reliability

Cronbach's alpha correlation analysis was used to determine the internal consistency of FMI and the

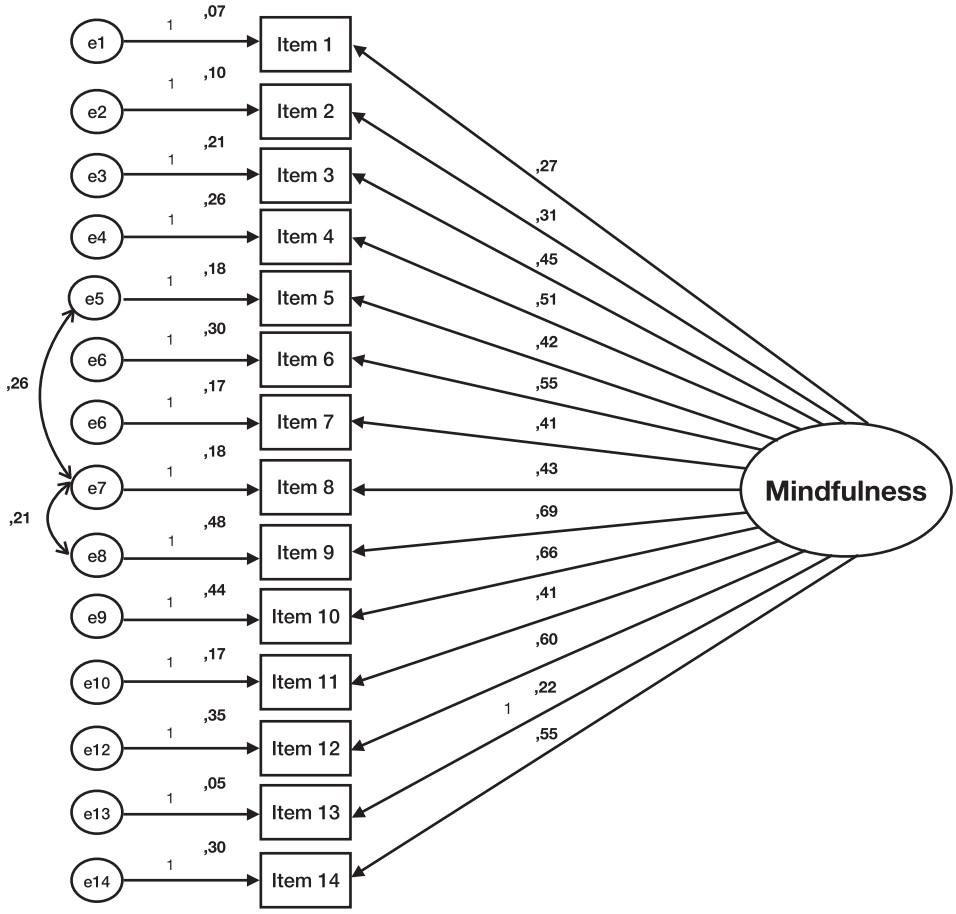

Figure 1. CFA for Turkish FMI with revised one-factor model ($N = 206$).

alpha coefficient was 0.823, with mean inter-item correlation is 0.251. In another reliability analysis, we examined Guttman split-half reliability and found the coefficient value 0.828.

Test–retest reliability

Between test and retest administration, there was a period of three weeks and 58 participants participated in this process. The FMI scores were highly correlated with retest FMI scores ($r = 0.895$, $p = .000$).

Discussion

In this study, we aimed to examine the validity, reliability, and factor structure of the FMI in a Turkish sample. The mean scores of FMI in our study (M = 37.11/SD = 6.94) showed explicit similarity with the original FMI study (M = 37.24/SD = 5.63) [14]. We found no significant difference in FMI scores between age, gender, marital status, and education levels, and these results were consistent with French, Chinese, and original FMI versions [14,30,31].

In the factor analysis of the FMI 14-item short version, Walach et al. reported that FMI measures the mindfulness state in a holistic single construct includes some interrelated facets called; *mindful presence, acceptance, openness to experience and insight* [14]. However, the scale was investigated in two studies and through the principal component analysis method, two intercorrelated subfactors (*presence* and *acceptance*) were found [32,33]. In our study, we also investigated the factor structure of FMI Turkish form with CFA and obtained strong statistical fit indices that can be acceptable for one-factor solution (Figure 1)

CFA allows us to detect the measurement errors of scale's factor structure. These correlated errors stem from methodological effects, which are similarly worded items, content overlaps, demand characteristics, acquiescence, reading difficulty, etc. [34]. According to our results, CFA agreed with the one-factor structure of Turkish FMI 14-item. This

Table 2. Convergent validity of FMI.

		FFMQ-Tot	Nonreact	Observ	Act with aware	Describe	Nonjudg
Frei	Pearson Cor.	.566**	.587**	.409**	.354**	.405**	.016
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.815
	N	206	206	206	206	206	206

**Correlation is significant at the 0.01 level (2-tailed).

Table 3. Divergent validity of FMI.

		AAQ-II
Frei	Pearson correlation	–.519**
	Sig. (2-tailed)	.000
	N	206

**Correlation is significant at the 0.01 level (2-tailed).

one-factor result is similar to the original FMI study and Chinese version of FMI study [14,31]. However, we found two correlated measurement errors specified by CFA. Similarly worded items as "inner experiences" and overlapping of items' content may explain this two measurement errors between items 5–7 and 7–8. In order to make the items more understandable, we had to choose the same Turkish word pattern for the translation of "inner/private experience" concept mentioned in the items 5, 7, and 8 that was expressed with different words in English. Items 5 and 7 try to assess the inner experience just before any action and the inner experience of the present moment. Items 7 and 8 seem to evaluate the inner experience of the present moment and acceptance of unpleasant inner experience in here and now. Focuses on the inner experience in these three items may explain these two correlated errors.

Cronbach's alpha coefficients of the Turkish form of FMI were 0.82 and the mean inter-item correlations are 0.251. These values are enough and similar to the original FMI ($\alpha = 0.86$, mean inter-item cor. = 0.21). Our internal reliability scores are stronger than those of other two FMI validation studies (French form of FMI $\alpha = 0.74$ and Chinese form of FMI $\alpha = 0.76$) [30,31]. In the other reliability analysis (Guttman split-half reliability), we found the coefficient value is 0.828. Higher than 0.70 at the Guttman split-half coefficient indicates that the scale has a high internal consistency [35]. Our study also confirmed that the Turkish FMI has good test–retest reliability due to the fact that similar correlations were observed across a three-week interval ($r = 0.895$). In the light of this finding, we can say that Turkish form of FMI shows good internal consistency.

Because FFMQ was developed through the factor analyses of five mindfulness measures include FMI, we expected positive correlations between FFMQ and the FMI in the convergent validity analyses. In our study, FMI scores showed positive correlations between FFMQ total and facets scores (*act with awareness, non-reaction, observation* and *description* facets) in a statistically significant level except *Nonjudgement of experience* facet of FFMQ. *Nonjudgement of experience* scores did not show a positive correlation with FMI in our study, similar to two other studies. In one study, performed by Baer and colleagues, it was found that none of the FMI items loaded on the *nonjudgement of experience* factor [11]. In another study, eight mindfulness questionnaires were analysed for the development of a comprehensive mindfulness scale and found that *nonjudgement of experience* dimension was included in FFMQ, CAMS, SMQ, and KIMS but not in FMI [15]. Our findings of correlations analyses between FMI and dimensions of FFMQ are compatible with previous studies and support the validity of FMI.

We decided to use AAQ-II scales for the divergent validity of FMI. Because AAQ-II mainly measures the *experiential avoidance* that refers to behaviours aimed at altering the form and frequency of particular private experiences (e.g. memories, thoughts, bodily sensations, emotions) in order to avoid them. As pointed out by Bishop et al. mindfulness is characterized by openness and curiosity that can be called in one word; *acceptance* – in other words, willingness and readiness to expose oneself to (pleasant and unpleasant) experiences (i.e. the opposite of experiential avoidance) [2]. *Acceptance* is a main aspect measured in FMI that underlines as an interrelated aspect of one-factor construct in the original study and the one of the distinct factors of two-factor solution studies [14,32,33]. A negative correlation was found in the divergent validity analysis of FMI and AAQ-II scores in our analyses, suggesting that higher scores on FMI show a decrease in experiential avoidance and a higher level of acceptance.

Recently, there is a bit confusion in the translation of mindfulness in Turkish language. Turkish words preferred in mindfulness translation vary in different studies. "Farkındalık," "Bilinçli farkındalık," and "Bilgece farkındalık" are some of the terms that were preferred for the translation of mindfulness in Turkish [10,12,36]. "Mindulness" is translated from Pali (ancient language of Buddha teachings) word; *Sati*, which connotates *awareness, attention*, and *remembering*, was first used in a Pali-English dictionary in 1921 [7,37]. That means the authors of this dictionary created a new English word for *Sati*. Some researchers suggest thinking the opposite meaning of mindfulness in order to understand the mindfulness statement; *Mindless.* Even casual self-examination reveals that our typical mental state is remarkably mindless. We spend most of our time lost in memories of the past and fantasies of the future. More often than not, we operate on "autopilot," where our minds are in one place and our bodies are in another. Mindfulness is the opposite of this mindless statement. According to the popular definition by Kabat-Zinn, nonjudgement of experiences and self is a central aspect of a mindful orientation [15]. In Turkish culture, when a person is in a mindless state, he/she is often told to "turn to yourself, check yourself or behave yourself." According to Bishop and Kabat-Zinn's definition of mindfulness – recognition of mental events in the present moment – and the usage of the word which is the opposite of mindless in Turkish verbal culture we prefer the

word "*Kendindelik*" for the translation of mindfulness in Turkish [2,15].

Conclusion

Statistical findings of FMI Turkish form confirmed sufficient stability and reliability, including its internal consistency, test–retest reliability, convergent and divergent validity with the one-factor structure.

The FMI scale, which is known to be superior to other mindfulness scales in those familiar with mindfulness experiences, can be a useful measurement for Turkish population who practises mindfulness meditations. Another advantageous aspect of the scale is that it can measure the trait mindfulness in a holistic way by combining inter-related facets of mindfulness in a single-factor structure [38].

Limitations

The main limitation of the study is the selection of the group. We performed the study in a non-clinical sample. Although there are clinical studies – such as treatment-resistant depression, fibromyalgia, anxiety, and depressive disorders in cancer patients and substance abuse – with FMI in the literature [13,39–41], in a large mindfulness scales review study, it was emphasized that FMI was developed in non-clinical samples and psychometric properties were tested in healthy samples [33]. We hope the repetition of the FMI psychometric properties at a clinical level in the further studies will give more information about the psychometric properties of the scale.

Ethical committee approval

This study was performed with the permission of Istanbul Medeniyet University Göztepe training and research hospital ethic committee's Institutional Review Board (IRB) (IRB approval date; 21/03/2018 IRB approval number; 2018/0064).

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Hasan Turan Karatepe http://orcid.org/0000-0002-6394-8312
Kaasım Fatih Yavuz http://orcid.org/0000-0003-3862-2705

References

[1] Hayes RP. Classical Buddhist model of a healthy mind. In: Dudley KH, Dockett GR, Grant CPB, editors. Psychology and Buddhism: from individual to global community. New York: Kluwer Academic/Plenum Press; 2003. p. 161–170.
[2] Bishop SR, Lau M, Shapiro S, et al. Mindfulness: a proposed operational definition. Clin Psychol: Sci Pract. 2004;11:230–241.
[3] Kabat-Zinn J. Full catastrophe living: using the wisdom of your mind to face stress, pain and illness. New York (NY): Dell; 1990.
[4] Segal ZV, Williams JMG, Teasdale JD. Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse. New York (NY): Guilford; 2002.
[5] Linehan MM. Skills training manual for treating borderline personality disorder. New York (NY): Guilford; 1993.
[6] Hayes AF, Strosahl KD, Wilson KG. Acceptance and commitment therapy: an experiential approach to behavior change. New York (NY): Guilford Press; 1999.
[7] Siegel RD, Germer CK, Olendzki A. Mindfulness: what is it? Where did it come from? In: Didonna F, editor. Clinical handbook of mindfulness. New York (NY): Springer; 2009; p. 17–35.
[8] Bergomi C, Tschacher W, Kupper Z. The assessment of mindfulness with self-report measures: Existing scales and open issues. Mindfulness (N Y). 2013;4(3):191–202.
[9] Lau M, Bishop SR, Segal ZV, et al. The Toronto mindfulness scale: development and validation. J Clin Psychol. 2006;62:1445–1467.
[10] Şahin NH, Yeniçeri Z. "Farkındalık" Üzerine Üç Araç: Psikolojik Farkındalık, Bütünleyici Kendilik Farkındalığı ve Toronto Bilgece Farkındalık Ölçekleri. Turk Psikoloji Dergisi. 2016;30(76):48–64.
[11] Baer RA, Smith GT, Hopkins J, et al. Using self-report assessment methods to explore facets of mindfulness. Assessment. 2006;13(1):27–45.
[12] Kınay F. Beş boyutlu bilinçli farkındalık ölçeği'ni Türkçe'ye uyarlama, geçerlik ve güvenirlik çalışması [master's thesis]. İstanbul Bilim Üniversitesi, Sosyal Bilimler Enstitüsü; 2013.
[13] Leigh J, Bowen S, Marlatt GA. Spirituality, mindfulness and substance abuse. Addict Behav. 2005;30(7):1335–1341.
[14] Walach H, Buchheld N, Buttenmüller V, et al. Measuring mindfulness – the Freiburg Mindfulness Inventory (FMI). Pers Individ Dif. 2006;40(8):1543–1555.
[15] Bergomi C, Tschacher W, Kupper Z. Measuring mindfulness: first steps towards the development of a comprehensive mindfulness scale. Mindfulness (N Y). 2013;4(1):18–32.
[16] Buchheld N, Grossman P, Walach H. Measuring mindfulness in insight meditation (Vipassana) and meditation based psychotherapy: The development of the Freiburg mindfulness Inventory (FMI). J Medit Medit Res. 2001;1:11–34.
[17] Hayes SC, Luoma JB, Bond FW, et al. Acceptance and commitment therapy: model, processes and outcomes. Behav Res Ther. 2006;44(1):1–25.
[18] Bond FW, Hayes SC, Baer RA, et al. Preliminary psychometric properties of the acceptance and action questionnaire–II: a revised measure of psychological inflexibility and experiential avoidance. Behav Ther. 2011;42(4):676–688.
[19] Yavuz F, Ulusoy S, Iskin M, et al. Turkish version of Acceptance and Action Questionnaire-II (AAQ-II): a reliability and validity analysis in clinical and non-clinical samples. Klinik Psikofarmakoloji Bülteni-Bull Clin Psychopharmacol. 2016;26(4):397–408.

[20] Byrne BM. Structural equation modeling with AMOS: Basic concepts, applications, and programming. New York (NY): Routledge Academic; 2010.
[21] Pallant J. SPSS Survival manual 6. Edition. New York (NY): McGraw-Hill Education; 2016.
[22] Brown TA. Confirmatory factor analysis for applied research. New York (NY): Guilford Press; 2006.
[23] Bentler PM. Comparative fit indexes in structural models. Psychol Bull. 1990;107(2):238–246. DOI:10.1037/0033-2909.107.2.238.
[24] Maydeu-Olivares A, Shi D, Rosseel Y. Assessing fit in structural equation models: a Monte-Carlo evaluation of RMSEA versus SRMR confidence intervals and tests of close fit. Struct Equation Model: A Multidiscip J. 2018;25(3):389–402.
[25] Hu L-t, Bentler PM. Evaluating model fit. In: Hoyle RH, editor. Structural equation modeling. Concepts, issues, and applications. London: Sage; 1995. p. 76–99.
[26] Hoelter JW. The analysis of covariance structures: goodness-of-fit indices. Sociol Methods Res. 1983;11(3):325–344.
[27] Cheung GW, Rensvold RB. Evaluating goodness-of-fit indexes for testing measurement invariance. Struct Equation Model: Multidiscip Jl. 2002;9(2):233–255.
[28] Simsek OF. Yapisal esitlik modellemesine giris: Temel ilkeler ve LISREL uygulamalari. Ankara: Ekinoks Yayincilik; 2007; p. 22.
[29] Munro BH. Statistical methods for health care research (Vol. 1). Philadelphia: Lippincott Williams & Wilkins; 2005.
[30] Trousselard M, Steiler D, Raphel C, et al. Validation of a French version of the Freiburg mindfulness Inventory-short version: relationships between mindfulness and stress in an adult population. Biopsychosoc Med. 2010;4(1):8.
[31] Chen SY, Zhou RL. Validation of a Chinese version of the Freiburg mindfulness inventory – short version. Mindfulness (N Y). 2014;5(5):529–535.
[32] Kohls N, Sauer S, Walach H. Facets of mindfulness – results of an online study investigating the Freiburg mindfulness Inventory. Pers Individ Dif. 2009;46(2):224–230.
[33] Sauer S, Walach H, Schmidt S, et al. Assessment of mindfulness: review on state of the art. Mindfulness (N Y). 2013;4(1):3–17.
[34] Brown TA, Moore MT. Confirmatory factor analysis. In: Hoyle RH, editor. Handbook of structural equation modeling. New York (NY): Guilford Press; 2012. p. 361–379.
[35] Benton T. An empirical assessment of Guttman's Lambda 4 reliability coefficient. In: Millsap RE, Bolt DM, Van Der Ark LA, Wang W-C, editors. Quantitative psychology research. Switzerland: Springer; 2015. p. 301–310.
[36] Çelik H, Kocabiyik OO. Philadelphia Farkındalık Ölçeği (PFÖ)'nin Türkçe Formunun Psikometrik Özellikleri. Eğitim Bilimleri Dergisi. 2018;48:128–144.
[37] Davids T, Stede W. Pali-English dictionary. New Delhi: Munshiram Manoharlal Publishers; 1921/2001.
[38] Sauer S, Walach H, Offenbächer M, et al. Measuring mindfulness: a Rasch analysis of the Freiburg mindfulness inventory. Religions (Basel). 2011;2(4):693–706.
[39] Eisendrath SJ, Delucchi K, Bitner R, et al. Mindfulness-based cognitive therapy for treatment-resistant depression: a pilot study. Psychother Psychosom. 2008;77(5):319.
[40] Schmidt S, Grossman P, Schwarzer B, et al. Treating fibromyalgia with mindfulness-based stress reduction: results from a 3-armed randomized controlled trial. Pain. 2011;152(2):361–369.
[41] Sharplin GR, Jones SB, Hancock B, et al. Mindfulness-based cognitive therapy: an efficacious community-based group intervention for depression and anxiety in a sample of cancer patients. Med J Aust. 2010;193:79–82.