

The Turkish Version of Mindful Attention Awareness Scale: Preliminary Findings

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Abstract The Mindful Attention Awareness Scale (MAAS) is the most frequently utilized self-report measure of mindfulness. The present study sought to investigate the psychometric properties of MAAS among non-clinical Turkish participants as well as to explore the relationships between mindfulness and well-being, experiential avoidance, cognitive reappraisal, and impulsivity. One hundred participants from two samples were recruited for the study. After the translation of MAAS into Turkish, a test battery including MAAS Turkish form, a demographic information form, General Health Questionnaire, Emotion Regulation Questionnaire, White Bear Suppression Inventory, and MMPI Impulsivity Subscale was administered to participants. After a 3-week interval, the second administration of MAAS was carried out in the same samples. Cronbach's alpha method was used to determine the internal consistency and Pearson correlation was utilized to assess test-retest reliability of the scale while factor analysis was employed to investigate the internal structure of the scale. The relations between mindfulness and convergent measures were examined using Pearson correlation. The study provided preliminary results indicating that the Turkish version of MAAS possesses good psychometric qualities. The single factor structure of the original scale was confirmed. Significant relationships in the expected directions were found between mindfulness and well-being, experiential avoidance, and impulsivity. The Turkish version of MAAS is an internally consistent and temporally reliable assessment tool for measuring mindfulness in Turkish population.

Keywords Mindfulness · MAAS · Well-being · Experiential avoidance · Suppression · Impulsivity

Introduction

Mindfulness originates from Buddhist insight practices and it refers to a state of mind which can be cultivated by practicing mindfulness meditation. While mindfulness is rooted in eastern spiritual traditions, continuous efforts to operationalize mindfulness as a psychological process are also present (Bishop et al. 2004; Shapiro et al. 2006). Recent conceptualizations define mindfulness as the awareness of the present experience with acceptance (Germer et al. 2005). According to another definition, mindfulness is the awareness of the present moment experiences which emerges through paying attention on purpose and non-judgmentally (Kabat-Zinn 2003). The presence of these different definitions suggests that mindfulness is a multidimensional construct, and each definition emphasizes some dimensions more strongly than the others.

A number of different self-report instruments have been developed for the assessment of mindfulness (Baer et al. 2004; Brown and Ryan 2003; Walach et al. 2006). Structural qualities of these self-report measures vary to the extent that conceptual approaches to mindfulness differ. For example, according to Walach et al. (2006), although nonjudgment, acceptance, or insight reflects different facets of mindfulness, these facets are highly interrelated, thus dividing mindfulness into its components may not be useful. Therefore, Walach et al. (2006) developed Freiburg Mindfulness Inventory which assesses mindfulness as a unidimensional construct. Based on different formulations of mindfulness, multidimensional measures of mindfulness have also been

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developed (Baer et al. 2004; Cardaciotto et al. 2008; Lau et al. 2006).

The Mindful Attention Awareness Scale is a commonly used unidimensional measure of mindfulness developed by Brown and Ryan (2003). Brown and Ryan (2003) define mindfulness as the open or receptive attention to and awareness of present events and experience. This enhanced form of attention is uniquely oriented to present moment and promotes a sustained consciousness of internal or external experiences. According to their conceptualization, mindfulness is the opposite of being on “automatic pilot” which is a state of mind where thoughts, emotions, and sensations are experienced without much awareness (Segal et al. 2002). Accordingly, mindfulness can be measured by assessing to what degree one can be mindful with regard to one’s daily activities. Mindful Attention Awareness Scale (MAAS) includes items like “I rush through activities without being really attentive to them.”, or “I find it difficult to stay focused on what’s happening in the present.” These statements give descriptions of “mindlessness” in which the mind is on autopilot and internal and external experiences occur without intentional attention being paid to them.

MAAS has been validated in different populations and demonstrated to possess good psychometric qualities (Carlson and Brown 2005; Jerman et al. 2009; MacKillop and Anderson 2007; Michalak et al. 2008). Previous studies examining the psychometric properties of the MAAS tend to be based on western populations. In a recent study by Ghorbani et al. (2009), the psychometric properties of MAAS was examined in a non-Western population using an Iranian sample, and the findings of this study provided evidence regarding the cross-cultural assessment of mindfulness. The main difference between aforementioned Western and non-Western cultures may be their differential emphasis on individualism and collectivism. Individualism and collectivism has been conceptualized as different “syndromes” which have implications for the attitudes, beliefs, or self-definitions of individuals constituting the societies (Triandis 1993). Mindfulness stems from Buddhist thought, where the path to the end of the suffering involves the individuals’ self-transcendence. This path is achieved through continuous performance of various contemplative practices (i.e., mindfulness meditation) in which the experiences of the self are the main focus of the practice. The self-focus included in mindfulness may have more overlapping implications with individualism in which the centrality of the autonomous individual is emphasized (Triandis 1993). However, the findings of Ghorbani et al. (2009) suggest that mindfulness as measured by MAAS shows a pattern of measurement invariance. Therefore, one aim of the present study was to investigate the psychometric properties of MAAS in a non-Western collectivist

culture. If the Turkish MAAS would display similar psychometric characteristics, then the universality of the mindfulness construct would be able to be supported.

Mindfulness as measured by MAAS has been found inversely related to many measures of psychopathology, and positively related to measures of well-being. Brown and Ryan (2003) have found that higher MAAS scores were related to lower levels of depression, anxiety, negative affectivity and higher levels of positive affectivity, vitality, life satisfaction, self-esteem, optimism, and self-actualization. The scale has demonstrated convergent and discriminant validity with various psychological constructs like well-being, experiential avoidance, emotion regulation, and impulsivity (Baer et al. 2006; Brown and Ryan 2003). Therefore, another aim of the present study was to examine the relationships between mindfulness as measured by MAAS and other related psychological constructs.

Methods

Participants

Two adult samples consisting a total of 100 participants were chosen for the present study. The ethnic background of all participants was Caucasian. The first sample consisted of elementary school teachers which constituted 74% of the participants. The second sample which constituted the 26% of the sample consisted of white collar municipal employees who worked as architects, engineers, and lawyers. The mean age of the participants was 36.1 (SD=9.06), and the ages of the participants varied between 23 and 64. 49% of the whole sample consisted of women. Other demographic characteristics of the participants are shown in Table 1.

Table 1 Characteristics of the sample ($N=100$)

Characteristics	<i>N</i>	%
Gender		
Female	49	49
Male	51	51
Marital status		
Married	52	52.5
Single	47	47.5
Level of education		
High school graduate	3	3.1
College graduate	95	96.9
Workplace		
Elementary school	74	74
Municipality	26	26

Measures and Variables

MAAS The original Mindful Attention and Awareness Scale consist of 15 items which are rated on a six-point Likert scale from 1 (almost always) to 6 (always never). The total score of the MAAS is obtained by calculating the mean of the responses from the 15 items. Higher scores on the scale suggest higher levels of mindfulness. Good internal consistency was found for the original MAAS in a student sample ($\alpha=0.82$, $n=327$) and in a general adult sample ($\alpha=0.87$, $n=239$). Test–retest reliability of the MAAS was also good ($r=0.81$; Brown and Ryan 2003).

General Health Questionnaire 12-item Version (GHQ-12), Well-being It has been suggested that mindfulness is a key component of subjective well-being and mindfulness promotes well-being and positive affectivity in a direct way (Brown and Ryan 2003) and MAAS has been validated as an appropriate measurement tool for examining the relationship between mindfulness and well-being (Carlson and Brown 2005). In an undergraduate sample, Howell et al. (2008) found that mindfulness was a direct predictor of well-being. On the basis of these findings, we predicted that higher levels of mindfulness as measured by MAAS would be associated with better subjective well-being. In the present study, 12-item GHQ (Goldberg 1972) was used to measure well-being. GHQ-12 is a frequently used measure of general subjective well-being and higher scores on GHQ-12 suggests the probability of psychological disturbance. The Turkish version of GHQ-12 used in the present study possesses good internal consistency ($\alpha=0.78$) and good test–retest reliability ($r=0.84$, Kılıç 1996).

MMPI Impulsivity Scale, Impulsivity It has been proposed that by providing heightened awareness and acceptance mindfulness decreases impulsive reactions (Witkiewitz et al. 2005). Through cultivation of mindfulness, impulsive internal experiences are observed without being reacted upon and impulsive reactions diminish as they are allowed to let go. Therefore, we predicted that mindfulness as measured by MAAS would be associated with lower levels of impulsivity. The 21-item Minnesota Multiphasic Personality Inventory (MMPI)-Impulsivity adapted from MMPI by Gough in 1957 was used to assess impulsivity. The Turkish version of the scale used in the present study has been validated in Turkish population and showed to possess adequate internal consistency ($\alpha=0.73$; Batıgün and Şahin 2003).

White Bear Suppression Inventory (WBSI) and the Suppression Subscale of the Emotion Regulation Questionnaire, Experiential Avoidance Experiential avoidance (Hayes et al. 1996) refers to implicit or explicit avoidance attempts to

reduce the awareness of unwanted subjective experiences like thoughts, emotions or bodily sensations. Thought suppression is a cognitive form of experiential avoidance which involves cognitive efforts aimed at reducing the awareness of unpleasant thoughts by trying to suppress them. Expressive suppression (Gross 1998) which involves the suppression of the expressive aspects of emotional experience, has also been associated with experiential avoidance (Feldner et al. 2003; Karekla et al. 2004). In mindfulness emotional experiences as well as thoughts, are observed as the impermanent events of subjective experience, and allowed to come and go. Therefore we predicted that mindfulness would be negatively correlated with both forms of experiential avoidance. Thought suppression was measured by 15-item White Bear Suppression Inventory which was designed to measure the tendency to suppress thoughts (Wegner and Zanakos 1994). The original form of WBSI has good internal consistency ($\alpha=0.89$) and adequate test–retest correlation ($r=0.80$). The psychometric properties of Turkish version of WBSI employed in the present study are also good ($\alpha=0.92$, $r=0.92$, Ağargün et al. 2004). Expressive suppression was measured by four-item Suppression subscale of Emotion Regulation Questionnaire (ERQ, Gross and John 2003) which assesses the tendency to suppress expressive features of emotional experiences. The original Suppression subscale of ERQ has good internal consistency ($\alpha=0.82$). The internal consistency of the Turkish version of the Suppression subscale of ERQ which was employed in the present study is also high ($\alpha=0.93$, Yurtsever 2008).

The Reappraisal Subscale of the Emotion Regulation Questionnaire, Reappraisal Mindfulness is associated with the cultivation of cognitive reappraisal which is an adaptive form of emotional regulation (Gross and John 2003; Mauss et al. 2007; Ray et al. 2010). It has been suggested that mindfulness facilitates the reappraisal of emotional cues and promotes adaptive regulation of emotions (Linehan et al. 2007). The results of a recent study have yielded that increases in mindfulness was associated with appraisal change (Garland et al. 2009). On the basis of these findings, we predicted that mindfulness as measured by MAAS would be positively correlated with cognitive reappraisal. In the present study, cognitive reappraisal was measured by the Turkish version of Reappraisal Subscale of Emotion Regulation Questionnaire (Gross and John 2003). The six-item Reappraisal subscale of ERQ assesses the ability to regulate emotions by changing the appraisals of emotional experiences. The Cronbach alphas for the original subscale and the Turkish version are $\alpha=0.84$ and $\alpha=0.89$ respectively indicating good internal consistency for both versions of the scale (Gross and John 2003; Yurtsever 2008).

Procedure

Prior to the beginning of the study, the first author of the development study of the original Mindful Attention Awareness Scale was contacted via e-mail and his consent was taken regarding the adaptation of the original scale into Turkish. The scale then was translated into Turkish independently by two clinical psychologists and a psychiatrist. Later, independent translations were assessed jointly by the same professionals according to the accuracy, clarity, and comprehensibility of the translation. After a mutual agreement was reached on the translation of the items, an independent board of three mental health professionals assessed the translation according to the accuracy between the English and Turkish forms of the scale. With respect to recommendations, appropriate corrections were made in the translation of the items and a final version of the scale was formed.

The first sample constituted of elementary school teachers who had participated into a project related to preventing absenteeism in elementary schools in Turkey. The project has been supervised by one of the colleagues of the author, who accepted to offer help for the recruitment of the subjects. An invitation for participation to this study was made during project meetings, and the teachers who indicated their wish to participate were recruited as subjects. The subjects were asked for their presence on the date determined for the administration of the forms, and 74 teachers attended to the group setting where the forms were administered by the author herself. Prior to administration of research forms, the subjects submitted written consent indicating that their participation into the study was on voluntary basis. After the completion of the battery tests, the research forms were collected from the participants. The second sample constituted of the employees of the municipality which governed the district where the author herself resided. The officials of the municipality were contacted by the author along with a petition indicating a request of assistance for the recruitment of the subjects. After one and a half month, the municipality officials contacted the author stating their affirmative response for assistance. Later, the municipality officials were contacted in person, and the procedure of recruitment was discussed. Following this discussion, the officials made a written announcement to four directorates of the municipality about participation to the study and requested that the voluntary employees indicate their names to the Human Resources (HR) department. Thirty employees applied to HR department, and those who applied were asked to attend to administration procedure, which was going to be held in the conference hall in 1 week. On the day of administration, 26 employees were present at the conference hall. HR department officials stated that the four employees who

did not attend had taken leave of absence for personal reasons. Prior to the administration of research forms, all subjects submitted written consent of participation on voluntary basis. The research forms were administered by the author herself, and following the completion of the battery tests, the research forms were collected from the participants. The test battery consisted of a short demographic form, MAAS, and questionnaires measuring the variables in question with regard to their relations with mindfulness. The participants were expected to use aliases and were not expected to specify their names on the questionnaires. Following the completion of the battery tests, the research forms were collected from the participants. By the help of municipal officials and Prevention of Absentism Project supervisor, the subjects from both samples were contacted via e-mail for the second administration of MAAS and expected to be present in the same group settings. Three weeks after the initial completion of research forms, second administration of MAAS was carried out in the same samples. The second battery test consisted of MAAS only. The MAAS forms were administered by the author herself and were collected after completion.

Statistical Analysis

Prior to statistical analysis, continuous and noncontinuous variables were examined for their skewness, kurtosis, and missing data. Educational level was negatively skewed due to relatively higher educational background of the present samples. All other demographic variables were normally distributed. Continuous variables were not skewed and met the assumptions of normality. Out of 7,300 answers given to 73 questions by 100 participants, 129 answers were missing which constituted 1.77% of the complete data. Limited missing data from the continuous variables were assumed to be at random, and the expectation–maximization algorithm was employed for the generation of missing data from MAAS items using SPSS Missing Value Analysis software. The data then were analyzed using factor analysis, one-way ANOVA, correlational analysis, reliability analysis, and *t* test.

Results

The mean score of the whole MAAS was 4.1 (SD=0.77), and the means of the items varied between 3.43 (SD=1.40) and 4.87 (SD=1.32). Means and standard deviations of MAAS items are presented in Table 2. An independent samples *t* test was calculated to assess whether the scores obtained by the MAAS varied according to gender. No significant differences were found between the MAAS scores of men and women indicating that measured

Table 2 Means and standard deviations for Turkish version of the Mindful Attention Awareness Scale ($N=100$)

No.	Items	<i>M</i>	<i>SD</i>
1	Bazı duygular yaşıyor ve bir süre bunun farkına varmamış olabiliyorum. I could be experiencing some emotion and not be conscious of it until sometime later.	4.28	1.38
2	İtina etmediğimden, dikkatsizlikten ya da o sırada başka bir şey düşündüğümden eşyaları kırdığım ya da etrafa saçtığım olur. I break or spill things because of carelessness, not paying attention, or thinking of something else.	4.69	1.30
3	Bir şey olurken, o anda olanlara odaklanmakta güçlük çekerim. I find it difficult to stay focused on what's happening in the present.	4.22	1.20
4	Gideceğim yere, yol boyunca yaşadıklarına dikkat etmeden, hızlıca yürümeye meyilliyimdir. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.	3.43	1.40
5	Gerçekten dikkatimi çekmediği sürece, fiziksel gerginlik veya rahatsızlık hislerinin farkına varmam. I tend not to notice feelings of physical tension or discomfort until they really grab my attention.	3.80	1.35
6	Birinin adını neredeyse bana ilk söylediği anda unuturum. I forget a person's name almost as soon as I've been told it for the first time.	3.84	1.38
7	Ne yaptığının pek farkında olmadan otomatik yaşıyor gibiyim. It seems I am "running on automatic" without much awareness of what I'm doing.	4.40	1.23
8	Ne yaptığının farkında olmadan günlük işlere koştururum. I rush through activities without being really attentive to them.	4.17	1.29
9	Başarmak istediğim hedefe öyle odaklanırım ki, ona ulaşmak için o an ne yaptığının farkına bile varmam. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.	4.11	1.33
10	İşleri veya görevleri, otomatik olarak, ne yaptığının farkına varmadan yaparım. I do jobs or tasks automatically, without being aware of what I'm doing.	4.38	1.40
11	Kendimi, bir kulağımla karşımdakini dinleyip, aynı anda başka bir şey yaparken bulurum. I find myself listening to someone with one ear, doing something else at the same time.	3.86	1.36
12	Arabayı bir yerlere otomatik pilota gibi sürer, sonra oraya neden gittiğime şaşırırım. I drive places on "automatic pilot" and then wonder why I went there.	4.87	1.32
13	Kendimi, gelecek ya da geçmişle uğraşırken bulurum. I find myself preoccupied with the future or the past.	3.52	1.42
14	Kendimi dikkatimi vermeden bir şeyler yaparken bulurum. I find myself doing things without paying attention.	4.24	1.28
15	Ne yediğimin farkında olmadan atıştırırım. I snack without being aware that I'm eating.	4.68	1.39

Mindful Attention Awareness Scale, Brown and Ryan 2003

mindfulness levels were independent of gender. To assess whether MAAS scores varied according to age, we conducted a between-subjects ANOVA on MAAS scores with different age groups as independent variables (<25, 26–40, 41–55, and 55+). Although the participants aged between 41 and 55 tend to have higher mean MAAS scores. This difference did not reach statistical significance, and no significant differences were found between the MAAS scores of different age groups indicating that mindfulness levels assessed by MAAS were independent of age.

Internal consistency and factor structure

The Cronbach's alpha coefficient and split-half reliability were calculated to examine the internal consistency of MAAS. Cronbach's alpha coefficient for the whole scale was 0.85. The Guttman split-half reliability for the whole scale was 0.70. The first half, which consisted of eight items, had a Cronbach's alpha coefficient of 0.79, whereas

it was 0.78 for the second half which consisted of seven items. The corrected item–total coefficients varied between 0.17 and 0.64. The item deleted Cronbach's alpha values, and corrected item–total coefficients are presented in Table 3.

The internal structure of the MAAS was examined first by exploratory factor analysis using maximum likelihood method and promax rotation. Kaiser–Meyer–Olkin index was 0.78, which indicated that the data were suitable for factor analysis. The results of the initial analysis yielded six factors with eigenvalues over 1 explaining 60.7% of the variance. The first factor had an eigenvalue of 5.04 and explained 33% of the variance. Subsequent five factors had eigenvalues between 1.01 and 1.60. Items 6, 7, and 8 loaded on first factor, items 10, 12, 14, and 15 loaded on second factor, items 2, 3, 4, and 5 loaded on the third factor, items 11 and 13 loaded on the fourth factor, item 1 loaded on fifth factor, and item 9 loaded on the sixth factor. Then, the item groupings examined for their content. It was seen that clustering of the items under factors did not follow a

Table 3 Item deleted Cronbach's alpha values, factor loadings, and item–total correlations for the Turkish version of the Mindful Attention Awareness Scale ($N=100$)

Item no.	CD	F	IC
1	0.85	0.48	0.39
2	0.84	0.54	0.54
3	0.84	0.56	0.63
4	0.84	0.40	0.52
5	0.85	0.36	0.39
6	0.86	0.21	0.17
7	0.83	0.73	0.63
8	0.83	0.71	0.62
9	0.85	0.35	0.39
10	0.84	0.53	0.54
11	0.85	0.30	0.37
12	0.84	0.39	0.45
13	0.84	0.41	0.49
14	0.83	0.59	0.64
15	0.84	0.49	0.55

CD Cronbach's alpha if item was deleted, F factor loading, IC item total correlation

meaningful and coherent pattern, and separate factors could not be identified based on an analysis of content. According to Zwick and Velicer (1986), using the Kaiser–Guttman criteria while determining the factors to retain may lead to the overestimation of the factors. Previous studies examining the psychometric properties of MAAS have consistently reported a unidimensional structure (Carlson and Brown 2005; MacKillop and Anderson 2007; Jerman et al. 2009). Therefore, at the second step, a confirmatory factor analytic procedure was employed by using maximum likelihood method with promax rotation and setting the number of factors to be extracted to 1. At the end of this procedure, the factor loadings of all items on a single factor were 0.30 and above, except for item 6. The relatively lower factor loading found for item 6 is consistent with previous studies, which reported similar pattern for this item (MacKillop and Anderson 2007; Jerman et al. 2009). On the basis of the consistent pattern of item 6 and adequate to high factor loadings found in the present analysis for other items, we decided to retain the single factor structure of MAAS. Factor loadings of items are presented in Table 3.

Test–retest reliability

To assess test–retest reliability, a second administration of MAAS was carried out in the same sample after a 3-week interval. Data from 22 participants (22%) could not be obtained due to unwillingness of the participants to complete the questionnaire or a mismatch between the aliases that were used by the participants during the first and the second administrations of the scale. Pearson correlation was calculated using the data from 78 participants. The retest coefficient for the total scale was 0.83 ($p<0.001$).

Relationships between mindfulness and other related constructs

Correlations between MAAS scores and other psychological constructs are presented in Table 4. All correlations were significant in expected directions except reappraisal which was uncorrelated with MAAS scores. As predicted, the MAAS scores significantly negatively correlated with scores on GHQ-12 suggesting that higher levels of mindfulness is associated with lower levels of psychological disturbance. MAAS significantly negatively correlated with both measures of experiential avoidance. Both WBSI and ERQ-Suppression scores were significantly negatively correlated with MAAS suggesting that individuals with higher levels of mindfulness also adopt less experientially avoidant strategies. Impulsivity scores were significantly negatively correlated with MAAS suggesting that more mindful individuals also tend to act less impulsively.

Discussion

The present study aimed to investigate the psychometric properties of the MAAS in Turkish population and explore the relationships of mindfulness with other related psychological constructs. The results showed that the Turkish version of MAAS possesses good psychometric qualities. Mean MAAS scores obtained in the present study was comparable to previous studies (Brown and Kasser 2005; MacKillop and Anderson 2007; Schroevers et al. 2008). Also, consistent with previous studies, no gender differences were found between the total MAAS scores for men

Table 4 The relationships between mindfulness, well-being, impulsivity, reappraisal, and experiential avoidance ($N=100$)

Variable	Mindfulness (MAAS)
Well-being	
GHQ-12	-.43 ^a
Impulsivity	
MMPI-Impulsivity	-.43 ^a
Cognitive reappraisal	
ERQ-R	0.04
Experiential avoidance	
ERQ-S	-.35 ^a
WBSI	-.37 ^a

^a Correlation is significant at the 0.01 level (two-tailed)

GHQ-12 General Health Questionnaire 12-item version, MMPI Minnesota Multiphasic Personality Inventory, ERQ-S Emotion Regulation Questionnaire-Suppression Subscale, WBSI White Bear Suppression Inventory; ERQ-R Emotion Regulation Questionnaire-Reappraisal Subscale

and women. Internal consistency and split-half reliability analysis showed that the Turkish version of MAAS has good internal consistency and the results of the analysis were comparable to previous studies that investigated the psychometric properties of the scale in different populations (Jerma n et al. 2009; MacKillop and Anderson 2007). Test–retest coefficients indicated that Turkish MAAS possesses good test–retest reliability and thus the temporal reliability of the scale was confirmed.

The Turkish version of the MAAS has demonstrated a single factor structure and the unidimensional structure of the original MAAS reported by Brown and Ryan (2003) was, thus confirmed. Items 7, 8, and 14 had the highest factor loadings and this pattern was in line with previous studies which reported relatively higher loadings for these items (Jerma n et al. 2009; MacKillop and Anderson 2007). Item 6 had the lowest factor loading and internal consistency of the whole scale increased when this item was deleted. Item 6 describes being forgetful with regard to daily communication thus the content of this item might reflect a reduced retrieval capacity of memory, rather than an inability direct attention to present moment experiences. Examination of the relationship between this item and other measures of memory retrieval may provide clarification to this issue.

Predictions regarding the relationships of mindfulness with other related psychological constructs were largely supported. Higher mindfulness as measured by MAAS had a significant relationship with well-being. This finding is consistent with previous studies that have reported similar findings regarding the relationship between mindfulness and increased well-being (Carlson and Brown 2005; Nyklíček and Kuijpers 2008). Taken together with the previous findings, present results suggest that increased awareness resulting from focusing attention to daily actions as well as internal experiences such as emotions, thoughts, or bodily sensations has an incremental effect on well-being.

We found support for the prediction regarding the relationship between mindfulness and experiential avoidance. Mindfulness as measured by MAAS was significantly negatively correlated with experiential avoidance. Although the magnitude of the correlations was not high, the strength of the correlations was comparable to previous findings which have demonstrated negative correlations with similar magnitudes between measures of experiential avoidance and mindfulness as measured by MAAS (Baer et al. 2006). Together with previous findings present results provide further support for beneficial effects of mindfulness in reducing experiential avoidance. It must be noted that experiential avoidance embodies different avoidance strategies on cognitive or emotional levels and the present findings are limited to thought suppression and emotional suppression. The relationships between mindfulness and

different experientially avoidant strategies still need further investigation.

We had predicted that mindfulness would be negatively correlated with impulsivity and this prediction was supported. MAAS-measured mindfulness had a significant negative correlation with impulsivity. Some mindfulness-based therapy approaches target specific disorders characterized by impulsive behaviors like substance abuse disorders or borderline personality disorder (Linehan 1993; Witkiewitz et al. 2005). Results of these interventions indicate the benefits of mindfulness in reducing impulsive behaviors (Bowen et al. 2009; Van den Bosch et al. 2005) and the present findings also add further support to the contributing role of mindfulness training in the alleviation of impulsivity.

Contradictory to the predictions, the relationship between mindfulness as measured by MAAS and cognitive reappraisal was nonsignificant. One possible explanation for this unanticipated finding might stem from the theoretical basis of MAAS. According to Brown and Ryan (2003), only present-centered attention and awareness are fundamental to mindfulness. Therefore, the items of MAAS reflect these fundamental aspects of mindfulness, and other proposed qualities of mindfulness such as acceptance or nonjudgment (Baer et al. 2006) are not included in MAAS as dimensions. Acceptance and nonjudgment are reflective qualities of mindfulness which involve shifts in preconceptions; therefore these facets of mindfulness might be more strongly related with cognitive reappraisal. Another reason for this unexpected finding may be related with the quality of reappraisal measured in the present study. Results of the previous studies had demonstrated that mindfulness is associated with a certain type of reappraisal namely positive reappraisal which involves giving positive meanings to events (Walach et al. 2008; Garland et al. 2009). The reappraisal measured in the present study reflected the ability to reconstrue an emotion eliciting experience but not necessarily in a way to reach to a positive inference. Therefore, the unique relationship between mindfulness and positive reappraisal might explain the null finding in the study.

Some limitations of the study should also be noted. One limitation of the study is the relatively smaller sample size which might reduce the statistical power of the present findings. Also present results are based on non-clinical participants. The nature or the strength of the relationships between mindfulness and other psychological or psychopathological constructs explored in the present research may reveal different patterns in clinical populations. Therefore, the replication of the present findings in larger samples, and also in clinical populations, is warranted. Another limitation is the cross-sectional nature of the study and thus the causality of the presented relationships cannot be concluded.

Future studies that will allow the demonstration of the changes in psychological measures as a function of changes in mindfulness will be valuable for mindfulness research.

In sum, although not without limitations, the results of the present research provide preliminary data regarding the psychometric properties of the Turkish version of MAAS. Present findings indicate that the Turkish MAAS is internally consistent and temporally stable assessment tool. These results are of particular importance since they confirm the replication of the psychometric qualities of MAAS in an eastern population which suggests that mindfulness can be assessed independent of cultural influences. On the basis of these promising findings, it can be concluded that the Turkish MAAS is a valid and reliable instrument for assessing mindfulness in Turkish population.

References

- Ağargün, M. Y., Beşiroğlu, L., Kıran, U. K., Kara, H., & Özer, A. E. (2004). The reliability and validity of the white bear suppression inventory. *Turkish Journal of Psychiatry, 15*, 282–290.
- 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.
- 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.
- Batgün, A. D., & Şahin, N. H. (2003). Testing the probability of a model to predict suicide risk in high school and university students. *Turkish Journal of Psychiatry, 18*, 37–52.
- Bishop, S. R., Lau, M., Shapiro, S., Carlson, L., Anderson, N. D., Carmody, J., et al. (2004). Mindfulness: a proposed operational definition. *Clinical Psychology: Science and Practice, 11*, 230–241.
- Bowen, S., Chawla, N., Collins, S. E., Witkiewitz, K., Hsu, S., et al. (2009). Mindfulness-based relapse prevention for substance use disorders: a pilot efficacy trial. *Substance Abuse, 30*, 295–305.
- Brown, K. W., & Kasser, T. (2005). Are psychological and ecological well-being compatible? The role of values, mindfulness, and lifestyle. *Social Indicators Research, 74*, 349–368. doi:10.1007/s11205-004-8207.
- 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.
- Cardaciotto, L., Herbert, J. D., Forman, E. M., & Farrow, V. (2008). The assessment of present-moment awareness and acceptance: the Philadelphia Mindfulness Scale. *Assessment, 15*, 204–223.
- Carlson, L. E., & Brown, K. W. (2005). Validation of the mindful attention awareness scale in a cancer population. *Journal of Psychosomatic Research, 58*, 29–33.
- Feldner, M. T., Zvolensky, M. J., Eifert, G. H., & Spira, A. P. (2003). Emotional avoidance: an experimental test of individual differences and response suppression using biological challenge. *Behaviour Research and Therapy, 41*, 403–411.
- Garland, E., Gaylord, S., & Park, J. (2009). The role of mindfulness in positive reappraisal. *Explore, 5*, 37–44.
- Germer, C., Siegel, R., & Fulton, P. (Eds.). (2005). *Mindfulness and psychotherapy*. New York: Guilford.
- Ghorbani, N., Watson, P. J., & Weathington, B. L. (2009). Mindfulness in Iran and the United States: cross-cultural structural complexity and parallel relationships with psychological adjustment. *Current Psychology, 28*, 211–224. doi:10.1007/s12144-009-9060-3.
- Goldberg, D. P. (1972). *The detection of psychiatric illness by questionnaire*. Maudsley Monograph No. 21. Oxford: Oxford University Press.
- Gross, J. J. (1998). Antecedent- and response-focused emotion regulation: divergent consequences for experience, expression, and physiology. *Journal of Personality and Social Psychology, 74*, 224–237.
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotional regulation processes: implications for affect, relationships and well-being. *Journal of Personality and Social Psychology, 85*, 348–362.
- Hayes, S. C., Wilson, K. G., Gifford, E. V., Folette, V. M., & Strosahl, K. (1996). Experiential avoidance and behavioral disorders: a functional dimensional approach. *Journal of Consulting and Clinical Psychology, 64*, 1152–1168.
- Howell, A. J., Digdon, N. L., Buro, K., & Sheptycki, A. R. (2008). Relations among mindfulness, well-being, and sleep. *Personality and Individual Differences, 45*, 773–777.
- Jerman, F., Billieux, J., Laroi, F., d'Argembeau, A., Bondolfi, G., et al. (2009). Mindful attention awareness scale (MAAS): psychometric properties of the french translation and exploration of its relations with emotion regulation strategies. *Psychological Assessment, 21*, 506–514.
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: past, present, and future. *Clinical Psychology: Science and Practice, 10*, 144–156.
- Karekla, M., Forsyth, J. P., & Kelly, M. M. (2004). Emotional avoidance and panicogenic responding to a biological challenge procedure. *Behavior Therapy, 35*, 725–746.
- Kılıç, C. (1996). The reliability and validity of general health questionnaire. *Turkish Journal of Psychiatry, 7*, 3–9.
- Lau, M. A., Bishop, S. R., Segal, Z. V., Buis, T., Anderson, N. D., Carlson, L., et al. (2006). The Toronto mindfulness scale: development and validation. *Journal of Clinical Psychology, 62*, 1445–1467.
- Linehan, M. M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York: Guilford.
- Linehan, M. M., Bohus, M., & Lynch, T. R. (2007). Dialectical behaviour therapy for pervasive emotion dysregulation theoretical and practical underpinnings. In J. J. Gross (Ed.), *Handbook of emotion regulation* (pp. 581–605). New York: Guilford.
- MacKillop, J., & Anderson, E. J. (2007). Further psychometric validation of the mindful attention awareness scale (MAAS). *Journal of Psychopathological Behaviour Assessment, 29*, 289–293.
- Mauss, I. B., Cook, C. L., Cheng, J. Y. J., & Gross, J. J. (2007). Individual differences in cognitive reappraisal: experiential and physiological responses to an anger provocation. *International Journal of Psychophysiology, 66*, 116–124.
- Michalak, J., Heidenreich, T., Ströhle, G., & Nachtigall, C. (2008). German version of the mindful attention an awareness scale. *Zeitschrift Für Klinische Psychologie Und Psychotherapie: Forschung Und Praxis, 37*, 200–208. doi:10.1026/1616-3443.37.3.200.
- Nyklíček, I., & Kuijpers, K. F. (2008). Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: is increased mindfulness indeed the mechanism? *Annals of Behavioral Medicine, 35*, 331–340.
- Ray, R. D., McRea, K., Ochsner, K. N., & Gross, J. J. (2010). Cognitive reappraisal of negative affect: converging evidence from EMG and self-report. *Emotion, 4*, 587–592.
- Schroevers, M., Nyklíček, I., & Topman, R. (2008). Validation of the dutch version of the mindful attention awareness scale (MAAS). *Gedragstherapie, 41*, 225–240.

- Segal, Z. V., Williams, J. M. G., & Teasdale, J. D. (2002). *Mindfulness-based cognitive therapy for depression: a new approach to preventing relapse*. New York: Guilford.
- Shapiro, S. L., Carlson, L. E., Astin, J. A., et al. (2006). Mechanisms of mindfulness. *Journal of Clinical Psychology*, *62*, 373–386.
- Triandis, H. C. (1993). Collectivism and individualism as cultural syndromes. *Cross-Cultural Research*, *27*, 155–180.
- Van den Bosch, L. M. C., Koeter, M. W. J., Stijnen, T., Verheul, R., & van den Brink, W. (2005). Sustained efficacy of dialectical behaviour therapy for borderline personality disorder. *Behaviour Research and Therapy*, *43*, 1231–1241.
- Walach, H., Buchheld, N., Buttenmuller, V., Kleinknecht, N., & Schmidt, S. (2006). Measuring mindfulness—the Freiburg Mindfulness Inventory (FMI). *Personality and Individual Differences*, *40*, 1543–1555.
- Walach, H., Lynch, S., & Marie-Louise, G. (2008). Mindfulness-based coping with university life, (MBCUL): a randomised wait-list controlled study. *European Journal of Integrative Medicine*, *1*, 401–441.
- Wegner, D. M., & Zanakos, S. (1994). Chronic thought suppression. *Journal of Personality*, *62*, 615–640.
- Witkiewitz, K., Marlatt, A. G., & Walker, D. (2005). Mindfulness-based relapse prevention for alcohol and substance use disorders. *Journal of Cognitive Psychotherapy: An International Quarterly*, *19*, 211–228.
- Yurtsever, G. (2008). Negotiators' profit predicted by cognitive reappraisal, suppression of emotions, misrepresentation of information and tolerance of ambiguity. *Perceptual and Motor Skills*, *106*, 590–608.
- Zwack, W. R., & Velicer, W. F. (1986). A comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, *99*, 432–442.