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Ruth A. Baer
Gregory T. Smith
Emily Lykins
Daniel Button
Jennifer Krietemeyer
Shannon Sauer
Erin Walsh
University of Kentucky

Danielle Duggan
J. Mark G. Williams
University of Oxford

Previous research on assessment of mindfulness by self-report suggests that it may include five component skills: observing, describing, acting with awareness, nonjudging of inner experience, and nonreactivity to inner experience. These elements of mindfulness can be measured with the Five Facet Mindfulness Questionnaire (FFMQ). The authors investigated several aspects of the construct validity of the FFMQ in experienced meditators and nonmeditating comparison groups. Consistent with predictions, most mindfulness facets were significantly related to meditation experience and to psychological symptoms and well-being. As expected, relationships between the observing facet and psychological adjustment varied with meditation experience. Regression and mediation analyses showed that several of the facets contributed independently to the prediction of well-being and significantly mediated the relationship between meditation experience and well-being. Findings support the construct validity of the FFMQ in a combination of samples not previously investigated.

Keywords: self-report assessment; mindfulness; meditation; psychological well-being

The development of tools for the assessment of mindfulness is critically important for several reasons. Although the empirical literature on the efficacy of mindfulness-based interventions has been growing rapidly (Baer, 2003; Grossman, Neimann, Schmidt, & Walach, 2004; Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004; Robins &

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Chapman, 2004; Salmon et al., 2004), fewer studies have examined the mechanisms or processes by which the practice of mindfulness leads to beneficial outcomes. Several authors have suggested that clarifying these processes requires psychometrically sound methods for assessing mindfulness (Baer, Smith, & Allen, 2004; Bishop et al., 2004; Brown & Ryan, 2004; Dimidjian & Linehan, 2003a). Such measures are necessary for examining whether individuals who practice mindfulness become more mindful over time and whether these changes mediate the effects of mindfulness training on psychological health.

Recently developed measures of mindfulness include the Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2001), the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003), the Kentucky Inventory of Mindfulness Skills (KIMS; Baer et al., 2004), the Cognitive and Affective Mindfulness Scale (CAMS; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), and the Mindfulness Questionnaire (MQ; Chadwick, Hember, Mead, Lilley, & Dagnan, 2005). All use self-report methods to assess a general tendency to be mindful in daily life and have shown promising psychometric characteristics. However, differences in their content and structure suggest a lack of consensus among researchers about whether mindfulness should be conceptualized as a multifaceted construct, and if so, how the facets should be defined and operationalized. For example, Brown and Ryan's (2003, 2004) work suggests that mindfulness consists of a single factor, which they describe as awareness of and attention to present events and experiences. Accordingly, the MAAS is a unidimensional instrument yielding a single total score. In contrast, the KIMS (Baer et al., 2004) is based largely on dialectical behavioral therapy (DBT) in which mindfulness is conceptualized as a set of interrelated skills (Dimidjian & Linehan, 2003b). The KIMS provides subscale scores for each of four mindfulness skills (observing, describing, acting with awareness, and accepting without judgment). The other instruments are designed to capture multiple components of mindfulness (including attention, awareness, openness, letting go, nonjudging, acceptance, and nonaversion) but do not measure them separately and yield only a total score.

Several authors have argued that assessment of complex constructs at the facet level is essential for clarifying their relationships with other variables (Schneider, Hough, & Dunnette, 1996; Smith et al., 2007; Smith, Fischer, & Fister, 2003; Smith & McCarthy, 1995). Investigating facets of mindfulness is likely to improve our understanding of the specific skills that are cultivated through the practice of mindfulness and how these are related to psychological adjustment. In a recent study of facets of mindfulness, Baer, Smith, Hopkins, Krietemeyer, and Toney (2006) conducted exploratory factor analysis in a large sample ($N = 613$) of students, who had completed all five of the mindfulness questionnaires just described. This analysis allowed items from different instruments to combine to form factors, providing an empirical integration of these independent attempts to operationalize mindfulness. Findings suggested a five-factor solution. *Observing* includes noticing or attending to internal and external experiences, such as sensations, cognitions, emotions, sights, sounds, and smells. *Describing* refers to labeling internal experiences with words. *Acting with awareness* includes attending to one's activities of the moment and can be contrasted with behaving mechanically while attention is focused elsewhere (often called *automatic pilot*). *Nonjudging of inner experience* refers to taking a nonevaluative stance toward thoughts and feelings. *Nonreactivity to inner experience* is the tendency to allow thoughts and feelings to come and go, without getting caught up in or carried away by them. Scales for each of these five factors were created by selecting the seven or eight items with the highest loadings on their respective factors (and low loadings on all other factors). These were combined to form the 39-item Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006). Example items can be seen in Table 1. The five facet scales demonstrated adequate to good internal consistency, with alpha coefficients ranging from .75 to .91, and relationships between the facet scales and other variables were consistent with predictions in most cases.

TABLE 1
Example Items for Mindfulness Facets

Facet	*Example Item*
Observing	I notice the smells and aromas of things.
Describing	I am good at finding words to describe my feelings.
Acting with awareness	I find myself doing things without paying attention. (R)
Nonjudging of inner experience	I think some of my emotions are bad or inappropriate and I should not feel them. (R)
Nonreactivity to inner experience	I perceive my feelings and emotions without having to react to them.

NOTE: R = reverse-scored item (higher scores represent higher levels of mindfulness).

However, some unexpected findings for the observing facet were noted. For example, hierarchical confirmatory factor analysis (CFA) examined whether the five facets should be viewed as elements of a general mindfulness construct or are better understood as five separate constructs. Four of the facets were found to be clear indicators of an overarching mindfulness construct. However, the observing facet did not fit this model. This finding was surprising, because observing is typically described

as a central element of mindfulness. In addition, because mindfulness training consistently yields positive outcomes, mindfulness facets were expected to be positively correlated with adaptive characteristics (e.g., openness to experience, emotional intelligence) and negatively correlated with maladaptive variables (e.g., thought suppression, experiential avoidance). Although this was true in most cases, the observing facet was unexpectedly found to be modestly but positively correlated with several maladaptive constructs, including dissociation, absentmindedness, psychological symptoms, and thought suppression.

Earlier findings reported by Baer et al. (2004) in the development of the KIMS had suggested that the observing facet may operate differently in samples with and without meditation experience. To examine this possibility, Baer et al. (2006) selected from their student samples those participants reporting some degree of experience with meditation ($N = 190$). In this subsample, CFA showed good fit for a hierarchical model in which all five facets are elements of mindfulness. In addition, correlations between observing and maladaptive constructs were no longer unexpectedly positive but were nonsignificant. The observing facet was the only facet to show a different pattern of findings in the meditating subsample compared to the total sample.

These results suggested that the observing facet may be sensitive to changes with meditation practice that alter its relationships with other variables. This idea is plausible in light of the literature on self-focused attention, which has been defined as the awareness of internally generated stimuli such as sensations, cognitions, and emotions (Ingram, 1990). Recent reviews suggest that self-focused attention can be maladaptive. It has been associated with negative emotion in clinical and nonclinical samples (Mor & Winquist, 2002) and is common in many psychological disorders (Harvey, Watkins, Mansell, & Shafran, 2004). Mindfulness training includes close observation of internal stimuli, but teaches participants to observe them with an accepting, nonjudging, and nonreactive stance, even if they are unpleasant. Responding in these ways to negative thoughts and feelings appears to be uncommon in Western culture (Hayes, Strosahl, & Wilson, 1999; Segal, Williams, & Teasdale, 2002). Thus, close observation of internal experience may be maladaptive in the general population but adaptive when it is done mindfully. Because learning to observe internal stimuli mindfully may require more meditation experience than is typically found in student samples, individuals with more extensive histories of meditation practice should be studied.

The purpose of this project, therefore, was to investigate several important aspects of the construct validity of the FFMQ that previous work (Baer et al., 2006) could not address because of its reliance on student samples with little meditation experience. In the Buddhist traditions from which current mindfulness practices originate, it is widely believed that the long-term practice of meditation cultivates mindfulness skills and that these skills promote psychological well-being (PWB; Goldstein & Kornfield, 1987; Kabat-Zinn, 2003; Walsh & Shapiro, 2006). We tested this general idea by examining relationships between meditation experience, FFMQ scores, and psychological adjustment in experienced meditators and comparison groups of nonmeditating individuals. Several hypotheses were tested. We predicted that mindfulness facet scores would be positively correlated with meditation experience and that meditators would score higher than nonmeditators. We also predicted that in general, mindfulness facet scores would be negatively associated with psychological symptoms and positively associated with well-being. However, based on previous findings (Baer et al., 2004, 2006), we also expected that correlations for the observing facet would vary with meditation experience. In addition, we predicted that the hierarchical five-factor structure of mindfulness facets reported by Baer et al. (2006) for individuals with meditation experience would be replicated. Finally, we expected that mindfulness facets would show incremental validity in the prediction of PWB and that increases in mindfulness skills would mediate a positive relationship between meditation experience and well-being.

METHOD

Participants and Procedures

We collected data from four samples of participants, including regular meditators, demographically similar nonmeditators, a general community sample, and a student sample.

Regular meditators. A sample of individuals with a currently ongoing regular meditation practice were recruited in several ways. All individuals ($N = 278$) who had attended an international conference on mindfulness at the University of Massachusetts Medical School in 2005 were mailed a packet containing a cover letter inviting them to participate in a study of mindfulness, meditation, and psychological functioning, a demographic form, the FFMQ, measures of several other constructs (some described later, others for a separate project), and a return envelope. No compensation was offered, other than a teabag included as a token of appreciation. A total of 132 packets were completed and returned, for a response rate of 48%. Of these, 119 reported a currently ongoing

regular meditation practice (at least once or twice per week) and therefore were included in data analyses. The others were excluded because they did not respond to this question ($N = 2$), had never meditated regularly ($N = 3$), or had discontinued a regular meditation practice ($N = 8$). Potential differences between individuals who have maintained or discontinued a regular meditation practice were beyond the scope of this project.

An additional 61 regular meditators with an ongoing practice were recruited using announcements or flyers that were posted to listservs and other Internet-based groups focused on mindfulness or meditation, distributed in mindfulness meditation and yoga centers in Lexington, KY, and other cities in the Midwest, or posted in the Lexington community. Interested individuals were asked to contact one of the experimenters to request a packet. Approximately 60% of those who expressed interest and were sent a packet completed and returned it. These participants also were offered only a teabag (included in the packet) as compensation.

As described in the following paragraphs, additional regular meditators were identified through recruitment of the other groups and added to the meditating sample.

Demographically similar nonmeditators. Many of the experienced meditators just described held graduate degrees and some reported working in a mental health field. We used several strategies to recruit a group of nonmeditating individuals who were demographically similar to the meditating sample. Some of these participants were offered no compensation and were asked to complete only the FFMQ and a demographic questionnaire. These forms were mailed, along with a cover letter, to all individuals listed in the University of Kentucky telephone directory under several departments chosen to represent a broad range of fields, including mental health disciplines (counseling, psychiatry, social work) and other fields (natural sciences, humanities, journalism, law, and music). These listings include faculty and professional or administrative staff (but not students), ensuring that most respondents are highly educated. Responses were returned by 197 (35%) individuals, 54 (27%) of whom worked in mental health fields. Of these 197, 174 reported never having engaged in regular meditation. The remaining 23 (12%) respondents reported currently engaging in a regular meditation practice and therefore were coded as regular meditators and added to the previously described meditating group.

Other highly educated but nonmeditating individuals (some in mental health fields) were offered $50 to complete a longer packet of questionnaires containing many additional measures (some described later and others for a separate project). To recruit nonmeditating mental health professionals, letters were mailed to clinicians listed in the local telephone directory and distributed to professional staff mail boxes in mental health clinics and hospitals. Letters stated that individuals who had never practiced meditation on a regular basis were eligible to participate (although those who had tried it once or a few times were eligible). We also stipulated that those using DBT or acceptance and commitment therapy (ACT) in their professional work were not eligible to participate. Although DBT and ACT do not require a regular meditation practice, mindfulness-related concepts and exercises are central to these interventions. Whether the effects of working with these are similar to the effects of regular meditation practice is unknown. To recruit nonmeditating non–mental health professionals, similar letters (also offering $50 for completion of a packet of questionnaires) were sent to faculty and staff (excluding psychology and social work departments) of a local college. Individuals with undergraduate or graduate degrees in disciplines other than mental health, and who had never engaged in a regular meditation practice or worked in a mental health field, were eligible to participate. In response to these recruitment letters, 50 mental health professionals and 48 individuals in other fields requested and were sent packets. Completed packets were returned by 40 mental health professionals (80%) and 41 others (85%). Of these 81 participants, 2 (both mental health professionals) unexpectedly reported currently engaging in a regular meditation practice and therefore were coded as regular meditators. Another respondent reported using DBT in her work, and her data were excluded from analyses. This left 78 paid participants who were combined with the 174 unpaid participants previously described, bringing the total for the highly educated nonmeditating group to 252. Data from all 252 of these participants were used for analyses of relationships between mindfulness and demographic variables and for group comparisons of mindfulness scores. Data from the 78 paid participants, who had completed the full packet of measures, were used in analyses involving symptoms and well-being.

Nonmeditating community sample. Adults with a level of education more typical of the general population were recruited from a community sample of volunteers in the United Kingdom, who had participated in a previous questionnaire study and had given permission to be contacted again for participation in other research. Packets containing a brief measure of psychological symptoms (described later) and the FFMQ (demographic data had been obtained previously) were mailed to 659 individuals. No compensation was offered. Completed packets were returned by 313 individuals, for a response rate of 47.5%. Of these, 293 reported never having engaged in a regular meditation practice and were therefore included

TABLE 2
Demographic Characteristics of Four Samples of Participants

	Students[a]	*Community*[a]	*Highly Educated*[a]	*Meditators*
N	259	293	252	213
Age in years				
M (*SD*)	18.9 (3.2)	49.5 (6.7)	44.2 (11.9)	48.8 (12.9)
Range	18-53	34-66	22-71	18-83
% Male	22	40	42	32
% White	92	—	91	94
Years of education				
M (*SD*)	13.4 (0.8)	12.9 (3.2)	18.2 (2.1)	18.3 (1.8)
% MH profl	0	—	34	63

NOTE: *M* = mean; *SD* = standard deviation; MH profl = mental health professional.
a. nonmeditating.

in data analyses. The others were excluded for having discontinued a regular meditation practice ($N = 14$), for providing an unclear response or no response to this question ($N = 5$), or for engaging in transcendental rather than mindfulness meditation ($N = 1$; this distinction is discussed later).

Nonmeditating student sample. Undergraduate students in psychology classes at the University of Kentucky were recruited using an online registration system for participation in research. Data from this sample have also been reported in Baer et al. (2006). They received credit in their classes in exchange for participation. In 1-hour group sessions in a university classroom, 269 students completed the FFMQ, a demographic form, and a packet of other measures. Eight reported engaging in the regular practice of mindfulness meditation and were added to the meditating group. Two others reported practicing transcendental meditation and were not included in analyses, leaving 259 to make up the nonmeditating student sample reported here.

With the additional meditators identified in recruiting the other groups, the final meditating sample included 213 individuals (119 from the mindfulness conference, 61 from listservs and flyers, 25 from university faculty and other professionals, and 8 students). All these had been asked to exclude practices such as yoga, tai chi, chi gong, and prayer when describing their experience with meditation. The more traditional forms of meditation often are divided into two general categories (Kabat-Zinn, 1982): concentration-based practices (such as transcendental meditation) and Buddhist-based approaches. According to Kabat-Zinn (2003), mindfulness is "the fundamental stance underlying all streams of Buddhist meditative practice" (p. 146) and is the core teaching in the many variations of the Buddhist tradition. Thus, Buddhist-based practices are more likely to cultivate mindfulness skills. In our meditating sample, 86% identified their primary practice as Buddhist-based, whereas 14% inadvertently had not been asked to discriminate between concentrative and Buddhist-based and therefore could have been engaged in either type. Most of this subgroup came from the university faculty recruits and had completed only the FFMQ and demographic form. Analyses involving these variables (described later) were conducted both with and without this subgroup, and the pattern of findings was identical. Therefore, to increase both the size and the diversity of sources for the meditating sample, these participants were retained.

Participants' demographic characteristics can be seen in Table 2. All samples were largely White (race was not reported in the community sample) and included more females than males. The student sample had a significantly lower proportion of males and were significantly younger than in the other samples. Mean education levels for the student and community samples were similar (about 13 years or slightly more than a high school education). Education levels for the other two samples were significantly higher. The meditating sample had a significantly higher proportion of mental health professionals. Of the experienced meditators, 80% resided in the United States and 20% in other countries—primarily Canada, the United Kingdom, or other Western European countries. Among the meditators, there were no significant differences in mindfulness scores between residents of the United States and residents of other countries. When controlling for demographic variables, there were no significant differences in mindfulness scores between meditators recruited from the conference and those recruited in other ways. Among the highly educated nonmeditators, there were no significant differences in mindfulness scores related to receipt of monetary compensation for participating in the study. Other relationships between mindfulness scores and demographic variables are described later.

TABLE 3
Characteristics of Meditation Practice in Regularly Meditating Individuals

Duration of regular practice ($N = 213$)	
Less than 1 year	8%
1-5 years	28%
6-10 years	18%
More than 10 years	45%
Frequency of meditation sessions ($N = 180$)	
1-2 per week	14%
3-4 per week	39%
5-6 per week	30%
7 or more per week	17%
Length of typical meditation session ($N = 180$)	
<10 minutes	1%
10-20 minutes	18%
21-30 minutes	44%
31-45 minutes	28%
46-60 minutes	8%
>60 minutes	2%
Total number of days on meditation retreats ($N = 180$)	
None	7%
1-4 days	8%
5-10 days	16%
11-30 days	24%
31-90 days	24%
>90 days	20%

For participants in the meditating sample, characteristics of their meditation practice are shown in Table 3. Most of these participants ($N = 180$) were asked how long they had meditated regularly, how many times per week and for how many minutes each time they typically meditate, and how many days they had spent on meditation retreats. Participants recruited from sources expected to be primarily nonmeditating were asked whether they had ever meditated and, if regularly, for how long they had done so. These data show that the participants in the meditating sample had extensive experience. Nearly half (45%) had meditated regularly for more than 10 years and only 8% had done so for less than 1 year. Substantial majorities reported meditating between three and six times per week, for 21-45 minutes each time. More than 60% had spent more than 10 total days on meditation retreats, with 44% reporting over 30 such days.

Measures

Mindfulness. All participants completed the FFMQ (Baer et al., 2006), which 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*).

Symptoms. The student sample completed the Brief Symptom Inventory (BSI; Derogatis, 1992), which includes 53 items and measures a range of psychological symptoms and somatic complaints. The community sample completed a version of the Profile of Mood States (POMS; McNair, Lorr, & Droppelman, 1971) containing 24 items measuring several types of negative affect and bodily symptoms. The highly educated nonmeditators who had been paid to complete the longer packet ($N = 78$) completed the Depression Anxiety Stress Scales (DASS; Lovibond & Lovibond, 1995), as did 61 of the regular meditators. (To reduce response burden for the meditators who were not compensated, some measures were included in only a subset of packets.) The DASS includes 42 items measuring negative affect and bodily symptoms. For all three of these instruments, participants provide Likert-type scale ratings of their symptoms over the last week. We used the total score for all instruments (on the POMS, vigor items were reverse-scored). These measures are widely used and have good psychometric properties (Crawford & Henry, 2003; Derogatis, 1992; Lovibond & Lovibond, 1995; Nulty, Wilkins, & Williams, 1987).

PWB. Meditation traditions suggest that, in addition to the reduction of symptoms, the practice of mindfulness cultivates positive qualities such as wisdom and compassion (Shapiro, Schwartz, & Santerre, 2002). Similarly, much current thinking in psychology suggests that psychological health is broader than the absence of symptoms (Hayes et al., 1999; Keyes, 2007; Snyder & Lopez, 2002). After reviewing many theories of psychological health, Ryff (1989) conceptualized PWB as having six elements: self-acceptance (positive attitude toward one's self, life, and past, including good and bad qualities), positive relations with others (warm, satisfying, trusting relationships), autonomy (independence, ability to resist social pressures and follow own standards), environmental mastery (competence in managing life's demands), purpose in life (goals and direction, sense of meaning in life), and personal growth (view of self as growing and developing, openness to new experiences). The scales of PWB measure these elements and are available in several lengths. We used the 54-item version, which includes 9 items per scale and has good psychometric properties (Ryff, 1989). We used a total score, summing the six elements of well-being. Most of the meditators and demographically similar nonmeditators completed this measure. Because the student sample described earlier had not completed it, we used a different student sample ($N = 175$) that had completed both the PWB and the FFMQ for these analyses only. The demographic characteristics of this student sample are indistinguishable from those shown in Table 2. The community sample did not complete this measure.

RESULTS

Analyses tested a series of important questions about the construct validity of the FFMQ. After verifying adequate-to-good internal consistency across all samples, we examined the FFMQ's factor structure in the meditating sample. If the five subscales measure facets of an overarching mindfulness construct, they should be significantly intercorrelated, and a hierarchical factor structure should be confirmed. Because this question has already been studied in nonmeditators (Baer et al., 2006), we examined factor structure in the regular meditators only. The remaining analyses tested whether FFMQ findings are consistent with a central claim of Buddhist-based meditation traditions: that meditation cultivates the tendency to be mindful in daily life, which enhances PWB. If this is true, and if the FFMQ measures mindfulness, then several patterns should be observed. Meditation experience should be positively associated with mindfulness facets and with PWB, and meditators should score higher than nonmeditators. If the facets measure important and distinct elements of mindfulness, they should show incremental validity over other facets in predicting well-being. Finally, mindfulness facets should mediate the relationship between meditation experience and well-being.

Internal Consistency of Mindfulness Facets

Alpha coefficients for all facets in all samples were adequate-to-good (range .72 to .92), with the exception of the nonreactivity to internal experience facet in the student sample, for which alpha was .67. For this facet, alpha coefficients in the other three samples were good, ranging from .81 to .86.

Facet Intercorrelations and Factor Structure in the Meditating Sample

Intercorrelations of the five mindfulness facets and factor structure of the FFMQ were examined in the experienced meditators only. Intercorrelations of the facets are shown in Table 4. Correlations range from .32 to .56 (all $p < .01$), suggesting that the facets represent related but distinct constructs. Their factor structure in the meditating sample was examined using CFA. In the few cases of missing data from participants' responses to the FFMQ, values were imputed using the expectation maximization method (Allison, 2003). In CFA, fit indices indicate the extent to which the covariances among the items are accounted for by the hypothesized factor model. We used four fit indices for these analyses: the comparative fit index (CFI; Bentler, 1990), the Tucker-Lewis Index (TLI; Tucker & Lewis, 1973), the root mean square error of approximation (RMSEA; Marsh, Balla, & Hau, 1996), and the maximum likelihood (ML)–based standardized root mean squared residual (SRMR; Hu & Bentler, 1999). By rule of thumb, CFI and TLI values greater than .90 are thought to indicate good fit between a model and the data; for the RMSEA, a value of .05 is thought to indicate close fit, .08 a fair fit, and .10 a marginal fit (Browne & Cudeck, 1993); for the SRMR, values less than .08 indicate good fit (Hu & Bentler, 1999).

TABLE 4
Intercorrelations of Five Mindfulness Facets in Experienced Meditators

Facet	*Describe*	*Act Aware*	*Nonjudge*	*Nonreact*
Observe	.40**	.43**	.49**	.56**
Describe	—	.32**	.38**	.36**
Act aware	—	—	.39**	.49**
Nonjudge	—	—	—	.52**

**$p < .01$.

For several reasons, the following CFAs were conducted using item parcels (groups of items) rather than individual items. For each facet, items were assigned sequentially to parcels in the order that they appear on the instrument (first item to Parcel 1, next item to Parcel 2, etc.). Item responses within each parcel then were averaged. This yielded a total of 15 parcels (3 per facet), each the average of two or three items. Little, Cunningham, Shahar, and Widamon (2002) and Rushton, Brainerd, and Pressley (1983) have described several advantages of item parceling. First, the reliability of a parcel of items is greater than that of a single item, so parcels can serve as more stable indicators of a latent construct. Second, as combinations of items, parcels provide more scale points, thereby more closely approximating continuous measurement of the latent construct. Third, risk of spurious correlations are reduced, both because fewer correlations are being estimated and because each estimate is based on more stable indicators. Fourth, parcels have been shown to provide more efficient estimates of latent parameters than do items. Fifth, the object of investigation is not the performance of specific items but rather the relations among the scales.

First, we tested a nonhierarchical five-factor model in which the five factors were allowed to intercorrelate. Although this model fit the data well (CFI = .97, TLI = .95, RMSEA = .07 [90% confidence interval: .05 to .08], SRMR = .05), it does not test whether the five factors are elements of an overall mindfulness construct. To examine this question, we tested a hierarchical model in which the five factors are indicators of an overarching mindfulness

TABLE 5
Partial Correlations Between Mindfulness Facets and Three Participant Characteristics (Controlling for the Other Two) in all Samples Combined

		Mindfulness Facets				
IV	*Control Variables*	*Observe*	*Describe*	*Act Aware*	*Nonjudge*	*Nonreact*
Meditation experience	Age, education	.35**	.14**	.04	.22**	.31**
Age	Education, meditation experience	.07	.02	.12**	–.03	.08
Education	Age, meditation experience	.17**	.29**	.13**	.18**	.20**

NOTE: IV = independent variable.
**$p < .01$.

factor. No loss of fit was seen with this more parsimonious model (CFI = .97, TLI = .96, RMSEA = .06 [90% confidence interval: .05 to .08], and SRMR = .05). Loadings of the five factors on the overall mindfulness construct were: observing = .82, describing = .53, acting with awareness = .63, nonjudging = .69, and nonreactivity = .84. Thus, the hypothesis that the hierarchical, five-factor model described by Baer et al. (2006) would be replicated in the sample of experienced meditators was supported by the model's good fit to the data.

Finally, the extent to which the five facets are nonoverlapping was examined using a regression analysis for each facet in which all four of the other facets were entered as predictors. The obtained value for adjusted R^2 represents the variance in each facet accounted for by its relationships with the other four facets. These values ranged from .24 to .41, suggesting that, although the facets are intercorrelated elements of a general mindfulness construct, a substantial portion of the variance in each facet is distinct from the other four.

Relationships Between Mindfulness Facets, Meditation Experience, and Demographic Variables

If meditation cultivates mindfulness skills and the facet scores measure these skills, then positive correlations between meditation experience and each of the facets should be observed. In addition, regular meditators should obtain higher mean scores than nonmeditators. Given the wide range of demographic characteristics in our combination of samples, it also seemed important to explore whether mindfulness facet scores are related to demographic variables. For the following analyses, we combined the four samples shown in Table 2 into a single data set (total $N = 1{,}017$). Meditation experience was coded as the number of months of regular practice. Sex and mental health work were coded dichotomously (*male* or *female* and *no* or *yes*, respectively). Race was not examined because very few participants were non-White.

One-way analysis of variance showed no significant differences between males and females for any of the mindfulness facets. Because meditation experience was significantly intercorrelated with age and education, partial correlations of each of these three variables (controlling for the other two) with the mindfulness facets were computed and can be seen in Table 5. Results show that meditation experience is significantly and positively correlated with four of the mindfulness facets (all but acting with awareness) when the effects of age and education are controlled. Findings also show that age alone is modestly correlated with acting with awareness and that education alone is modestly correlated with all facets.

Mental health professionals comprised large proportions of our two highly educated samples. Effects of mental health work on levels of mindfulness have not been previously reported. Therefore, we combined the two highly educated samples and computed partial correlations between mental health work and mindfulness facets, controlling for age, education, and meditation experience. Small but significant relationships were found for four of the facets, with mental health professionals scoring slightly higher than others. The following partial *r*s were obtained: observing = .12, describing = .13, nonjudging = .16, nonreactivity = .21 (all $p < .01$) and acting with awareness = –.02 (*ns*). However, additional partial correlations showed that meditation experience is significantly related to the same four mindfulness facets when age, education, and mental health work are controlled: observing = .38, describing = .15, nonjudging = .22, nonreactivity = .34 (all $p < .01$) and acting with awareness = .05 (*ns*). Because meditation experience is significantly related to these facets even when mental health work is controlled, all remaining analyses were conducted with mental health professionals and others combined, within groups.

Next, we compared mean scores for the mindfulness facets across samples using one-way analysis of variance. Meditators were expected to score higher than nonmeditators on all facets. *M*, *SD*s, and *F* tests can be seen in the

TABLE 6
Means, SD's, Univariate *F* Tests, and Planned Contrasts for Mindfulness Facets in Four Samples

	Group 1 Students		*Group 2 Community*		*Group 3 Highly Educated*		*Group 4 Meditators*		*F*	*Planned Contrasts (t)*	
Facet	M	SD	M	SD	M	SD	M	SD	*(3, 987)*	*Meditators vs. All Others*	*Meditators vs. Group 3*
Observe	24.32	4.84	24.32	5.48	27.04	5.63	31.96	4.16	114.07†	16.99†	10.27†
Describe	26.46	6.01	24.63	7.06	30.01	5.63	31.84	5.30	71.78†	10.18†	3.21***
Act aware	25.31	5.77	24.57	6.57	28.32	5.21	28.08	5.10	28.00†	4.52†	–.45 (ns)
Nonjudge	27.75	5.90	23.85	7.33	29.13	5.79	32.44	5.63	79.72†	11.34†	5.62†
Nonreact	20.50	3.82	19.53	4.88	22.82	4.19	25.70	4.01	97.04†	14.24†	7.11†

NOTE: For the nonreact facet, possible range of scores is 7-35. For all other facets, possible range is 8-40. Groups 1-3 are nonmeditating.
***$p < .001$. †$p < .0001$.

first few columns of Table 6. For all facets, higher scores represent higher levels of mindfulness. The *F* tests indicate significant differences between groups for all five mindfulness facets. We conducted two sets of planned contrasts to investigate differences between meditators and nonmeditators. The first set compared meditators to all nonmeditators combined. Significant differences, with meditators scoring higher, were seen for all facets. The second set of planned contrasts compared meditators only to the demographically similar nonmeditators. Meditators scored higher on four of the five facets. However, for acting with awareness the comparison was nonsignificant.

In combination with the partial correlations presented earlier, these findings suggest that meditation experience has significant effects on observing, describing, nonjudging, and nonreactivity, even with other demographic variables controlled. For acting with awareness, we found no significant effect of meditation experience, but small effects for age and education.

Relationships Between Mindfulness Facets and Psychological Symptoms and Well-Being

A growing literature shows that mindfulness-based interventions consistently have positive outcomes, suggesting that increased mindfulness is related to decreases in psychological symptoms. In general, therefore, mindfulness facets were expected to be negatively correlated with symptoms. Based on previous findings (Baer et al., 2004, 2006), we also predicted that correlations for the observing facet would vary with level of meditation experience. Table 7 shows correlations between mindfulness facets and symptom measures for all four samples. (Because preliminary analyses within each of the two highly educated groups showed no significant differences between mental health professionals and others for either symptoms or well-being, mental health professionals are not examined separately.) As expected, most correlations between mindfulness facets and symptoms were negative. However, for the observing facet this was true only in the meditating sample. In the student sample, this correlation was positive, and in the other two samples it was nonsignificant. This pattern suggests that the tendency to notice internal and external stimuli is associated with lower symptom levels in meditators but not in others. This finding is consistent with the hypothesis of Baer et al. (2006) that the observing facet may function differently in individuals with meditation experience.

TABLE 7
Correlations Between Mindfulness Facets and Psychological Symptoms in Four Samples

	Sample			
Facet	*Students*	*Community*	*Highly Educated*	*Meditators*
Observe	.21**	.07	.12	–.48**
Describe	–.22**	–.35**	–.30**	–.14
Act aware	–.50**	–.63**	–.29**	–.30*
Nonjudge	–.53**	–.58**	–.47**	–.58**
Nonreact	–.22**	–.46**	–.26*	–.43**

NOTE: Students ($N = 253$) completed the Brief Symptom Inventory, the community sample ($N = 267$) completed the Profile of Mood States, highly educated participants ($N = 78$) and meditators ($N = 61$) completed the Depression Anxiety Stress Scales.
*$p < .05$. **$p < .01$.

Relationships between mindfulness facets and PWB, using total scores from the PWB scale, can be seen in Table 8. (The community sample did not complete the PWB.) As expected, most of these correlations were significant and positive. However, the correlation for the observing facet was significant only in the meditating sample, again suggesting that the tendency to notice internal and external stimuli is strongly related to well-being in meditators but not in others.

TABLE 8
Correlations Between Mindfulness Facets and Psychological Well-Being (PWB) in Three Samples

	Sample		
Facet	*Students*[a]	*Highly Educated*[b]	*Meditators*[c]
Observe	.08	.08	.45**
Describe	.34**	.50**	.36**
Act aware	.34**	.40**	.51**
Nonjudge	.52**	.48**	.50**
Nonreact	.44**	.51**	.44**

NOTE: For all participants, the measure of well-being is the total score from the scales of PWB.
a. $n = 175$.
b. $n = 75$.
c. $n = 169$.
**$p < .01$.

TABLE 9
Regression Analysis Showing Prediction of PWB by Mindfulness Facets in Meditators and Demographically Similar Nonmeditators

Predictor	B	SE	*Beta*	p
Observe	–.02	.06	–.02	.77
Describe	.17	.05	.20	.002
Act aware	.18	.06	.19	.002
Nonjudge	.22	.05	.26	.000
Nonreact	.21	.08	.18	.011

NOTE: PWB = psychological well-being. Predictor variables entered simultaneously into a single regression equation. R^2 for model = .39.

Incremental Validity of Mindfulness Facets in Predicting PWB

Next, we conducted a regression analysis to examine whether mindfulness facets contribute independently to the prediction of PWB as measured by the total score on the PWB. To increase the range of variability for mindfulness facets and well-being, we combined the meditating sample (169 of whom had completed the PWB) with the demographically similar nonmeditators (75 of whom had completed the PWB) for a total sample size of 244. All five mindfulness facets were made available simultaneously as predictors. Results can be seen in Table 9. All facets except observing were significant predictors, jointly accounting for 39% of the variance. Observing had no incremental validity over the other four facets. This may not be surprising, because observing is related to well-being in the experienced meditators but not in the demographically similar nonmeditators. These findings suggest that, at least in a highly educated sample, four of the five mindfulness facets have incremental validity over the others in accounting for PWB.

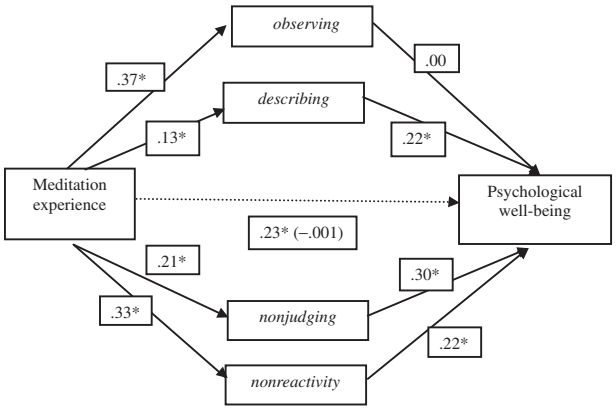
Mediation Analyses

If long-term meditation is beneficial because it cultivates mindfulness skills, then mindfulness facet scores should mediate the relationship between meditation experience and well-being. We conducted several mediation analyses to examine this question, using the regression-based methods described by Baron and Kenny (1986) in conjunction with methods described by MacKinnon, Krull, and Lockwood (2000) and MacKinnon, Lockwood, Hoffman, West, and Sheets (2002) for testing the significance of the mediation. To have an adequate range of meditation experience, for these analyses we again combined the meditating sample with the demographically similar nonmeditators. In each analysis, the independent variable (IV) was meditation experience (months of regular practice) and the dependent variable (DV) was PWB total score. Mindfulness facets served as potential mediators.

According to Baron and Kenny (1986), several conditions must be met to support a mediational hypothesis. If the data were collected at a single time point, there must be a sound theoretical basis for the ordering of the variables. The idea that we tested (that meditation cultivates mindfulness skills which in turn lead to improved well-being) is entirely consistent with the mindfulness literature. In addition, the IV, mediator, and DV must be significantly intercorrelated. When the IV and mediator are entered simultaneously into a model predicting the DV, the relationship between the IV and DV must be significantly reduced. The significance of this reduction can be examined with a *t* test described by MacKinnon et al. (2000). In addition, the significance of the mediated pathway can be tested by calculating *z'*, which MacKinnon et al. (2002) have shown to have good statistical power and accurate Type I error rates.

First, we conducted a separate test of mediation for each of the four mindfulness facets (observing, describing, nonjudging, nonreactivity) that were significantly correlated with both meditation experience and well-being. Because of the small but significant relationships shown earlier between demographic variables and mindfulness facets, these analyses controlled for age, education, and mental health work. Meditation experience was a significant predictor of well-being ($\beta = .23$, $p < .05$). For each potential mediator, this coefficient was reduced when the mediator entered the model to values ranging from .02 (*ns*) for nonreactivity to .12 (*ns*) for describing. These reductions were all significant at $p < .001$ (*t*-values ranged

FIGURE 1
Mediation by Mindfulness Facets of the Relationship Between Meditation Experience and Psychological Well-Being in the Combined Sample of Meditators and Demographically Similar Nonmeditators



NOTE: All values are beta coefficients. Values on arrows leading from meditation experience to mindfulness facets are controlled for age, education, and mental health work. Values on arrows leading from mindfulness facets to well-being show relationships between these variables when other facets and meditation experience are included in the model. The coefficient in parentheses shows the relationship between meditation experience and psychological well-being with all mediating variables included in the model.
*$p < .05$.

from 4.02 for observing to 5.93 for nonreactivity). In addition, values of z' were significant for each of the indirect pathways (for observing, $z' = 3.80$; for describing, $z' = 2.45$; for nonjudging, $z' = 4.14$; for nonreactivity, $z' = 5.17$; all $p < .01$). These findings are consistent with the hypothesis that, when considered separately, each mindfulness facet examined (all but acting with awareness) completely mediates the relationship between meditation experience and well-being.

To examine the mediational properties of these four facets in combination, we conducted a final regression analysis in which the IV (meditation experience) and all four mediators were entered simultaneously as predictors of the DV (well-being). In this combined model, which is depicted in Figure 1, the beta coefficient for the relationship between the IV and DV was reduced to .001 (*ns*). The observing facet also was a nonsignificant predictor of well-being ($\beta = .00$), whereas describing, nonjudging and nonreactivity each accounted for significant variance in well-being ($\beta = .22$, .30, and .22, respectively, $p < .05$). This finding suggests that each of these three facets contributes independently to the mediation of the relationship between meditation experience and well-being.

DISCUSSION

This project addressed several important questions about the construct validity of the FFMQ in meditating and nonmeditating samples. Results were largely consistent with predictions. Four of the facets (all but acting with awareness) were significantly correlated with meditation experience (even with other demographic variables controlled), and meditators scored significantly higher than in other samples. Expected relationships between mindfulness facets and symptoms and well-being were found in most cases, including relationships that vary with meditation experience for the observing facet. The hierarchical five-factor structure was confirmed in the meditating sample, and several of the facets significantly mediated the relationship between meditation experience and well-being. Although increased mindfulness scores in experienced meditators have been seen with the MAAS (Brown & Ryan, 2003) and the Toronto Mindfulness Scale (Lau et al., 2006), this mediational relationship has not previously been shown. Overall, results suggest that meditation cultivates several mindfulness skills, and these skills, as measured by the FFMQ, encourage positive psychological functioning in long-term practitioners.

We found no significant relationship between meditation experience and the acting with awareness facet. However, this facet was significantly correlated with the other facets and with symptoms and well-being in the expected directions. In addition, in the CFA this facet loaded significantly on the overall mindfulness construct. Our meditating sample had a high level of education and included few individuals with short-term meditation experience. It is possible that education cultivates the ability to act with awareness, or that individuals who pursue more education have higher levels of this skill, and that meditation adds little to the effects of education. The relationship between this facet and meditation experience may be significant in samples with levels of education more typical of the general population, in novice meditators, and in clinical samples. Additional investigation of this facet in these groups is warranted.

Relations Between the Observing Facet and Psychological Adjustment

As expected, our findings showed that the relationships between observing and psychological adjustment (symptoms and well-being) varied with meditation experience. In meditators, higher levels of observing were strongly associated with good adjustment. This finding is striking, given the previously described literature showing that self-focused attention can be maladaptive (Harvey et al., 2004; Ingram, 1990; Mor & Winquist, 2002). In

contrast, in our nonmeditating samples, relations between observing and psychological adjustment were nonsignificant or in the opposite direction. Several factors may shed light on this pattern of findings. The observing facet includes attention to both internal stimuli (thoughts, feelings, sensations) and external stimuli (sights, sounds, smells). Both were higher in meditators. Because meditation teaches unbiased observation of all stimuli, it may reduce maladaptive forms of selective attention. Thus, high scores on the observing facet in meditators may indicate a greater tendency to notice a wide range of internal and external stimuli, rather than focusing selectively on the threatening or unpleasant ones. Meditators may be better able to shift their attention flexibly rather than becoming rigidly absorbed in any particular class of stimuli. In addition, higher scores for the describing, nonjudging, and nonreactivity facets in meditators suggest that meditators learn to respond differently to the internal stimuli they observe. In particular, they appear more likely to observe inner stimuli without judging them or reacting to them in maladaptive ways and to label observed stimuli with words. These results are consistent with recent research in depressed patients showing that mindful self-awareness can be adaptive, whereas ruminative self-awareness is not (Watkins & Teasdale, 2004). Findings for the describing facet also are consistent with recent neuroscience data suggesting that verbal labeling of affect modulates brain responses to emotional stimuli in normal volunteers (Hariri, Bookheimer, & Mazziotta, 2000; Lieberman et al., 2007).

Limitations and Future Directions

Because our purpose was to investigate in new samples the construct validity of the five mindfulness facets derived in previous research (Baer et al., 2006), we measured mindfulness using only the FFMQ. Although this instrument was derived from existing mindfulness measures, it does not duplicate them. However, in a previous sample of student participants (N = 613; Baer et al., 2006) for whom both the FFMQ facets and the original mindfulness instruments can be scored, correlations between FFMQ facets and the other mindfulness measures are very high. For example, the correlation (r) between the MAAS and the acting with awareness facet of the FFMQ (which includes five MAAS items) was .89. Similarly, the correlation between the nonreactivity facet and the MQ (from which four of the seven nonreactivity items were drawn) was .75. Thus it seems unlikely that findings would differ substantially if the original instruments from which the FFMQ was derived had been used.

Demographically, our meditating sample is not representative of the general population. However, it may be similar in many ways to the population of experienced meditators. Although we found no published data on the demographic characteristics of persons who meditate, an unpublished survey conducted in 2004 by the Insight Meditation Society in Massachusetts, where more than 2,200 individuals per year participate in meditation retreats, showed that the average age of their adult participants was 53 years, 34% were male, and 96% were White. Although data on education level were not collected, anecdotal impression was that most participants have college degrees (G. Gibson, personal communication, April 14, 2006). Thus, the primary demographic difference between our meditating sample and other experienced meditators may be the high percentage of mental health professionals. We addressed this by recruiting a demographically similar group of nonmeditators, some of whom work in mental health fields. As noted earlier, partial correlations found that mental health work was modestly related to several of the mindfulness facets but that meditation experience remained a significant predictor of these facets when mental health work was controlled. Mental health work was also unrelated to psychological symptoms or well-being. Thus, it seems unlikely that the high percentage of mental health professionals in our meditating sample has distorted our findings. However, it is important for future work to study samples of experienced meditators with a wide range of educational and work histories.

Our findings support an idea that is well established in Buddhist meditation traditions (Goldstein & Kornfield, 1987): that meditation practice leads to increased mindfulness in daily life, which in turn facilitates well-being. However, because our design was cross-sectional, conclusions about these directional pathways must be made cautiously. Alternative models (e.g., baseline levels of mindfulness or well-being may influence the likelihood of maintaining a meditation practice) cannot be ruled out without longitudinal designs. In addition, although most of the meditating sample reported that their practice was primarily or exclusively Buddhist-based, and therefore likely to involve some form of mindfulness meditation rather than concentration-based methods, specific practices can vary across Buddhist traditions (Kabat-Zinn, 2003). Even within Buddhist traditions, practice may begin with concentration-based methods before attention is expanded to include all sensations, cognitions, and emotions that arise. Therefore, in future studies it may be helpful to ask participants for more detailed descriptions of their meditation practices, to clarify specific relationships between these practices and the skills that are cultivated.

Persons with short-term meditation practice were underrepresented in our sample. Only 8% had meditated for less than 1 year, and clinical populations were not studied. In many clinical settings, meditation is taught to patients who have never meditated before and have lower levels of education, on the average, than our meditating sample. Among empirically supported interventions, the most intensive meditation training is provided by MBCT and MBSR, both of which typically are 8 weeks in duration. Our data do not address the changes in mindfulness facets that occur over 8 weeks of meditation practice, because most persons in our meditating sample had been practicing for much longer periods. Thus, it is important that future research examine effects of meditation on all five mindfulness facets in populations and settings more typical of current clinical use of mindfulness-based interventions, because the facets may function differently in these groups. Longitudinal research with frequent assessment of participants would be especially helpful for examining patterns of skill development as people new to meditation begin to practice.

Our findings provide good support for the construct validity of the FFMQ and for continued study of multiple facets of mindfulness. Measuring elements of mindfulness separately allows the investigation of differential relationships with other variables and helps clarify the specific skills that are cultivated by meditation practice and their roles in promoting PWB. It may also contribute to clarifying changes that occur over time as a meditation practice is maintained over the long term.

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