# Using Self-Report Assessment Methods to Explore Facets of Mindfulness

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*The authors examine the facet structure of mindfulness using five recently developed mindfulness questionnaires. Two large samples of undergraduate students completed mindfulness questionnaires and measures of other constructs. Psychometric properties of the mindfulness questionnaires were examined, including internal consistency and convergent and discriminant relationships with other variables. Factor analyses of the combined pool of items from the mindfulness questionnaires suggested that collectively they contain five clear, interpretable facets of mindfulness. Hierarchical confirmatory factor analyses suggested that at least four of the identified factors are components of an overall mindfulness construct and that the factor structure of mindfulness may vary with meditation experience. Mindfulness facets were shown to be differentially correlated in expected ways with several other constructs and to have incremental validity in the prediction of psychological symptoms. Findings suggest that conceptualizing mindfulness as a multifaceted construct is helpful in understanding its components and its relationships with other variables.*

*Keywords:* mindfulness; questionnaires; self-report assessment; factor structure; facets; meditation

Mindfulness is usually defined to include bringing one's complete attention to the experiences occurring in the present moment, in a nonjudgmental or accepting way (Brown & Ryan, 2003; Kabat-Zinn, 1990; Linehan, 1993a; Marlatt & Kristeller, 1999). Descriptions of mindfulness and methods for cultivating it originate in eastern spiritual traditions, which suggest that mindfulness can be developed through the regular practice of meditation, and that increases in positive qualities such as awareness, insight, wisdom, compassion, and equanimity are likely to result (Goldstein, 2002; Kabat-Zinn, 2000). In recent decades, traditional mindfulness meditation practices have been adapted for secular use and incorporated into several interventions that are now widely available in medical and mental health settings. These interventions include dialectical behavior therapy (DBT; Linehan, 1993a, 1993b), mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1982, 1990), mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002), acceptance and commitment therapy (ACT; S. C. Hayes, Strosahl, & Wilson, 1999), and relapse prevention for substance abuse (Marlatt & Gordon, 1985; Parks, Anderson, & Marlatt, 2001) as well as variations on these approaches. These interventions conceptualize mindfulness as a set of skills that can be learned and practiced in order to reduce psychological symptoms and increase health and well-being. MBSR and MBCT rely heavily on formal meditation practices, in which participants spend up to 45 minutes each day directing their attention in specific ways. In contrast, DBT and ACT rely on a wide variety of shorter exercises in which mindfulness-related skills can be practiced without necessarily engaging in meditation.

The empirical literature increasingly supports the efficacy of mindfulness-based interventions. Reductions in

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symptoms have been reported across a wide range of populations and disorders (Baer, 2003; S. C. Hayes, Masuda, Bissett, Luoma, & Guerrero, 2004; Robins & Chapman, 2004). Until very recently, however, the assessment of mindfulness has received much less empirical attention. Dimidjian and Linehan (2003a) noted that psychometrically sound measures of mindfulness are necessary for understanding the nature of mindfulness and its components and the mechanisms by which mindfulness training exerts its beneficial effects. Brown and Ryan (2004) and Bishop et al. (2004) made similar points, arguing that operational definitions of mindfulness are essential for the development of valid instruments, which in turn are necessary for investigating the psychological processes involved in mindfulness training.

Within the past few years, self-report questionnaires for the assessment of mindfulness have begun to appear in the literature. The development of these questionnaires is an important advance in the study of mindfulness because it provides new opportunities for empirical investigations of the nature of mindfulness and its relationships with other psychological constructs. As the process of writing items for any self-report questionnaire requires authors to define or conceptualize the construct they are attempting to measure (Clark & Watson, 1995), each available mindfulness questionnaire represents an attempt to operationalize mindfulness by writing self-report items that capture its essence. Empirical examination of these questionnaires could provide important information about how mindfulness should be defined and described.

Among the important questions that can be studied using these instruments is whether mindfulness should be described as a multifaceted construct and, if so, how the facets should be defined. Several current descriptions of mindfulness suggest a multidimensional nature. For example, in DBT (Dimidjian & Linehan, 2003b) mindfulness is conceptualized as having six elements: three related to what one does when being mindful (observing, describing, and participating) and three related to how one does it (nonjudgmentally, one-mindfully, and effectively). Segal et al. (2002) summarized the nature of mindfulness by stating,

> In mindfulness practice, the focus of a person's attention is opened to admit whatever enters experience, while at the same time, a stance of kindly curiosity allows the person to investigate whatever appears, without falling prey to automatic judgments or reactivity. (pp. 322-323)

This description suggests several elements, including observation of present-moment experience, acceptance, nonjudging, and nonreactivity. On the other hand, Brown and Ryan (2004) argued that mindfulness consists of a single factor described as attention to and awareness of what is taking place in the present. They argued that acceptance is important to mindfulness but that it is subsumed within the capacity to pay full attention to the present moment.

The primary purpose of the project described here was to examine the facet structure of the mindfulness construct, because it has been operationalized in several independently developed self-report questionnaires. First, Part 1 examined the psychometric characteristics of the available mindfulness questionnaires, including internal consistency, correlations with each other, and convergent and discriminant relationships with a variety of other constructs. With the psychometric soundness of these questionnaires reasonably well established, Part 2 then combined all items from the available questionnaires into a single data set and used exploratory factor analysis to examine the facet structure of this combined item pool. A five-facet structure was derived. Part 3 used confirmatory factor analysis to examine the validity of this facet structure in an independent sample. In Part 4, differential relationships between identified facets and several measures of conceptually related constructs were explored. In Part 5, incremental validity of mindfulness facets in the prediction of psychological symptoms was examined. Methods and findings are described following a brief overview of the available mindfulness questionnaires.

## Available Mindfulness Questionnaires

The Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) is a 15-item instrument measuring the general tendency to be attentive to and aware of present-moment experience in daily life. It has a single-factor structure and yields a single total score. Using a 6-point Likert-type scale (*almost always* to *almost never*), respondents rate how often they have experiences of acting on automatic pilot, being preoccupied, and not paying attention to the present moment. Items include, "I find myself doing things without paying attention," and "I break or spill things because of carelessness, not paying attention, or thinking of something else." The authors reported internal consistency (coefficient alpha) of .82 and expected convergent and discriminant validity correlations. For example, the MAAS was significantly positively correlated with openness to experience, emotional intelligence, and well-being; negatively correlated with rumination and social anxiety; and unrelated to self-monitoring. MAAS scores also were significantly higher in mindfulness practitioners than in matched community controls. In a group of cancer patients who completed an MBSR course, increases in MAAS scores were associated with decreases in mood disturbance and symptoms of stress.

The Freiburg Mindfulness Inventory (FMI; Buchheld, Grossman, & Walach, 2001) is a 30-item instrument as-

sessing nonjudgmental present-moment observation and openness to negative experience. It was developed with participants in mindfulness meditation retreats and is designed for use with experienced meditators. Items are rated on a 4-point Likert-type scale (*rarely* to *almost always*). Items include, "I watch my feelings without becoming lost in them," and "I am open to the experience of the present moment." The authors reported internal consistencies of .93 and .94 in individuals who completed the inventory at the beginning and end of intensive meditation retreats lasting from 3 to 14 days. Mean score increased by about 1 standard deviation from preretreat to postretreat. Correlations with measures of other constructs were not reported. Although exploratory factor analyses suggested a four factor solution, the solution was somewhat unstable from preretreat to postretreat, and many items loaded on more than one factor. The authors suggested that the scale should be interpreted unidimensionally and recommend use of a single total score.

The Kentucky Inventory of Mindfulness Skills (KIMS; Baer, Smith, & Allen, 2004) is a 39-item instrument designed to measure four elements of mindfulness: observing, describing, acting with awareness, and accepting without judgment. Items include, "I notice when my moods begin to change" (observe); "I'm good at finding words to describe my feelings" (describe); "When I do things, my mind wanders off and I'm easily distracted" (act with awareness); and "I tell myself that I shouldn't be feeling the way I'm feeling" (accept without judgment). Items are rated on a 5-point Likert-type scale (*never or very rarely true* to *always or almost always true*). The KIMS is based largely on the DBT conceptualization of mindfulness skills. It measures a general tendency to be mindful in daily life and does not require experience with meditation. Internal consistencies range from .76 to .91 for the four subscales. Exploratory and confirmatory factor analyses clearly support the proposed four-factor structure, and expected correlations with a variety of other constructs were obtained. Scores were found to be significantly lower in a sample of individuals with borderline personality disorder than in a student sample for three of the four scales (Baer et al., 2004).

The Cognitive and Affective Mindfulness Scale (CAMS; Feldman, Hayes, Kumar, & Greeson, 2004; S. C. Hayes & Feldman, 2004) is a 12-item inventory designed to measure attention, awareness, present-focus, and acceptance/nonjudgment with respect to thoughts and feelings in general daily experience. Although it attempts to capture several elements of mindfulness, it does not measure them separately but yields a single total score. Items are rated on a 4-point Likert-type scale (*rarely/not at all* to *almost always*). Items include, "I try to notice my thoughts without judging them," "It is easy for me to concentrate on what I am doing," and "I am able to accept the thoughts and feelings I have." The authors reported internal consistencies of .74 to .80; negative correlations with experiential avoidance, thought suppression, rumination, worry, depression, and anxiety; and positive correlations with clarity of feelings, mood repair, cognitive flexibility, and well-being (Feldman et al., 2004; S. C. Hayes & Feldman, 2004). Increases in mindfulness scores were observed in a sample of individuals completing an integrative therapy for depression that includes a mindfulness component (A. M. Hayes & Harris, 2000).

The Mindfulness Questionnaire (MQ; Chadwick, Hember, Mead, Lilley, & Dagnan, 2005) is a 16-item instrument assessing a mindful approach to distressing thoughts and images. All items begin with, "Usually, when I have distressing thoughts or images" and continue with a mindfulness-related response, such as, "I am able just to notice them without reacting" and "I am able to accept the experience." Items are rated on a 7-point Likert-type scale (*agree totally* to *disagree totally*). The authors noted that items represent four aspects of mindfulness: mindful observation, letting go, nonaversion, and nonjudgment, but that a unidimensional factor structure provided the best fit to their data. Thus, the computation of subscale scores is not recommended. The authors reported good internal consistency (alpha = .89), a significant correlation with the MAAS ($r = .57$), significant differences in the expected direction between meditators and nonmeditators, a significant positive correlation with mood ratings, and a significant increase in scores for participants in an MBSR course.

## PART 1: PSYCHOMETRIC CHARACTERISTICS OF MINDFULNESS QUESTIONNAIRES

The purpose of Part 1 was to examine whether the available mindfulness questionnaires are internally consistent and correlated with each other, with meditation experience, and with measures of other constructs expected to be related or unrelated to mindfulness.

### Method

#### Participants

Participants were 613 undergraduate psychology students (Sample 1) who completed the procedures for credit in their classes. Their mean age was 20.5 years (range = 18-57), 70% were female, and 90% were Caucasian.

#### Procedures

Sessions were conducted with 20 to 25 students and lasted about 60 minutes. After signing consent forms, participants completed a packet of questionnaires, beginning

with a short demographic form, which requested their age, gender, year in school, race, and experience with meditation. The latter variable was rated on a 5-point scale ranging from 1 (*none*) to 5 (*a lot*). For all participants, the packet also included the five mindfulness questionnaires described earlier (MAAS, FMI, KIMS, CAMS, MQ). The FMI was included in spite of its authors' concerns that items' meanings may not be clear to individuals without meditation experience. Close inspection of the items suggested that nonmeditators may be able to respond to them meaningfully. Because its developers did not test the FMI with nonmeditators, its characteristics in this group are unknown. Each participant also completed several measures of psychological constructs predicted to be related or unrelated to mindfulness (described later). After the demographic form, the order of all instruments was randomized.

#### Measures and Predictions

Each participant completed a subset of the following measures. Time constraints did not allow all participants to complete all measures.

*Brief Symptom Inventory (BSI; Derogatis, 1992)*. The BSI includes 53 items and provides scores for nine psychological symptom scales and a general severity index (GSI). Only the GSI is reported here. Because the empirical literature shows that mindfulness practice is associated with reduced symptoms, negative correlations between the BSI and mindfulness scales were predicted.

*NEO-Five Factor Inventory (NEO-FFI; Costa & McCrae, 1992)*. The NEO-FFI is a 60-item measure of the domains of the five-factor model of personality, including neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. Predictions were made for neuroticism, extraversion, and openness. Because mindfulness is associated with reduced negative affect, negative correlations between neuroticism and mindfulness scales were predicted. Many descriptions of mindfulness include attentiveness and receptivity to inner feelings and observation with interest of environmental stimuli, which seems consistent with the openness domain of the five-factor model. Therefore, positive correlations between Openness and Mindfulness scales were predicted. Last, because level of mindfulness appears to be unrelated to introversion or extraversion, nonsignificant correlations were predicted.

*Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995)*. The TMMS measures emotional intelligence, including attention to and clarity of feelings and ability to regulate feelings. Salovey et al. (1995) have shown adequate to good internal consistency for the TMMS, and higher scores are associated with less depression and more life satisfaction (Martinez-Pons, 1997). Because many descriptions of mindfulness include observation and description of feelings, positive correlations between TMMS and mindfulness scores were predicted.

*White Bear Suppression Inventory (WBSI; Wegner & Zanakos, 1994)*. The WBSI measures thought suppression, or deliberate attempts to avoid or get rid of unwanted thoughts. Paradoxically, such attempts have been found to increase the frequency of these thoughts (Wenzlaff & Wegner, 2000). Because mindfulness includes acceptance of all thoughts as they occur and allowing them to come and go, negative correlations between WBSI scores and mindfulness scales were predicted.

*Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004)*. The DERS measures several elements of emotion regulation, including awareness, understanding, and acceptance of emotions as well as ability to act in desired ways regardless of emotional state and access to emotion regulation strategies. Gratz and Roemer (2004) reported internal consistency of .93, test-retest reliability of .88 during a 4- to 8-week interval, and a clear factor structure and predicted significant correlations with several criterion variables, including experiential avoidance and self-harm. Higher scores on the DERS indicate greater difficulties in emotion regulation. Because mindfulness includes awareness and acceptance of emotions, negative correlations between DERS scores and mindfulness scales were predicted.

*Toronto Alexithymia Scale (TAS-20; Bagby, Taylor, & Parker, 1993)*. Alexithymia includes difficulty identifying and describing feelings and a lack of interest in internal experience. The TAS-20 has shown good psychometric properties in student and clinical samples. Because mindfulness includes interest in and observation of feelings, negative correlations between TAS-20 and mindfulness scales were predicted.

*Scale of Dissociative Activities (SODAS; Mayer & Farmer, 2003)*. The SODAS is a recently developed measure whose content includes acting without awareness, lack of perception of inner experience, memory disruptions, and perceptions of unreality. It has shown good internal consistency (alpha = .95) and test-retest stability during a 38-day interval ($r$ = .77) and significant positive correlations with other measures of dissociation, including experience sampling measures in naturalistic environments. Because mindfulness includes awareness of one's inner experiences and actions, negative correlations between the SODAS and mindfulness scales were predicted.

*Acceptance and Action Questionnaire (AAQ; S. C. Hayes et al., in press)*. The AAQ measures experiential avoid-

ance, which is defined as negative evaluation of and unwillingness to maintain contact with internal experiences, such as bodily sensations, cognitions, emotions, and urges, and efforts to avoid, escape, or terminate these experiences, even when doing so is harmful. It is associated with increased levels of psychopathology and decreased quality of life (S. C. Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Because mindfulness includes observation and nonjudgmental acceptance of internal experiences, negative correlations between AAQ scores and mindfulness scales were predicted.

*Cognitive Failures Questionnaire (CFQ; Broadbent, Cooper, Fitzgerald, & Parks, 1982)*. The CFQ assesses absent-mindedness, or the tendency to make errors on simple tasks due to inattention, such as forgetting what to buy in the store or where one placed one's keys. It has good internal consistency (alpha =.89) and test-retest stability (.80-.82) and is moderately correlated with boredom proneness, attention deficit hyperactivity disorder in adults (Wallace, Kass, & Stanny, 2002), and symptoms of stress, anxiety, and depression but unrelated to intelligence, educational level, or social desirability. Because mindfulness should help individuals to avoid errors related to absent-mindedness, negative correlations between the CFQ and mindfulness scales were predicted.

*Self-Compassion Scale (SCS; Neff, 2003a)*. Although self-compassion is a central element of the Buddhist psychology from which mindfulness originates, efforts to study it scientifically have emerged only recently. Neff (2003b) suggested that self-compassion consists of several elements, including a kind and nonjudgmental attitude toward oneself when suffering; recognition that one's experiences are part of the larger, more universal human experience; and the holding of painful thoughts and feelings in balanced awareness, in which they are observed and accepted without judgment, rumination, or self-pity. Neff (2003a) conceptualized self-compassion as distinct from self-esteem in that it is nonevaluative. The SCS has shown internal consistency of .92; test-retest reliability of .93 during a 3-week interval; significant positive correlations with social connectedness, emotional intelligence, and life satisfaction; and significant negative correlations with self-criticism, perfectionism, depression, and anxiety. Because mindfulness includes awareness and acceptance of all experiences, with an attitude of acceptance and nonjudging, positive correlations between SCS scores and mindfulness scales were predicted.

## Results and Discussion

The following analyses used total scores for all measures, because their purpose was to examine global relationships between mindfulness and other constructs. Facets of mindfulness are examined in later sections.

**TABLE 1**
**Intercorrelations Among Mindfulness Questionnaires in Sample 1 (*N* = 613)**

| | *FMI* | *KIMS* | *CAMS* | *MQ* |
|---|---|---|---|---|
| MAAS | .31** | .51** | .51** | .38** |
| FMI | — | .57** | .60** | .45** |
| KIMS | | — | .67** | .45** |
| CAMS | | | — | .55** |

NOTE: MAAS = Mindful Attention Awareness Scale; FMI = Freiburg Mindfulness Inventory; KIMS = Kentucky Inventory of Mindfulness Skills; CAMS = Cognitive Affective Mindfulness Scale; MQ = Mindfulness Questionnaire.
**$p < .01$.

### Internal Consistency and Intercorrelations

The following alpha coefficients were obtained for the five mindfulness questionnaires, suggesting good internal consistency: MAAS = .86, FMI = .84, KIMS = .87, CAMS = .81, MQ = .85 (*n*s = 595-613). Relations among the mindfulness questionnaires can be seen in Table 1. All are significantly positively correlated with each other, with *r*s ranging from .31 (MAAS with FMI) to .67 (KIMS with CAMS).

#### Relationships With Meditation Experience

Most of the sample had little or no meditation experience, with 72% reporting none and 20% reporting a little. To create a subsample with a somewhat more balanced representation of meditation experience, we randomly selected 20 participants who reported "none" and 20 who reported "a little" and combined them with the 42 who reported "a medium amount" and the 6 who reported "quite a bit" or "a lot," for a subsample size of 88. For this subsample, correlations between meditation experience and mindfulness scales can be seen in the first line of Table 2. Correlations were significant and positive for the FMI and KIMS. Correlations for the CAMS and MQ were nearly significant (*p*s = .06 and .07, respectively), suggesting that in a sample with better representation of meditation experience, these relationships might also be significant.

### Mindfulness Measures and Other Variables: Convergent and Discriminant Correlations

Correlations between mindfulness measures and other constructs are shown in Table 2. All correlations were in

**TABLE 2**
**Correlations Between Mindfulness Questionnaires and Other Variables**

| | *Mindfulness Questionnaire* | | | | |
|---|---|---|---|---|---|
| *Variable* | *MAAS* | *FMI* | *KIMS* | *CAMS* | *MQ* |
| Predicted positive correlations | | | | | |
| Meditation experience[a] | –.04 | .31** | .33** | .20 | .20 |
| Openness to experience | .23* | .30* | .47** | .22* | .14 |
| Emotional intelligence | .22* | .54** | .61** | .50** | .27** |
| Self-compassion | .36** | .53** | .49** | .59** | .57** |
| Predicted negative correlations | | | | | |
| Psychological symptoms | –.41** | –.31** | –.42** | –.55** | –.36** |
| Neuroticism | –.41** | –.53** | –.37** | –.63** | –.58** |
| Thought suppression | –.32** | –.27** | –.42** | –.44** | –.47** |
| Difficulties in emotion regulation | –.34** | –.46** | –.56** | –.63** | –.58** |
| Alexithymia | –.24** | –.42** | –.61** | –.52** | –.20** |
| Dissociation | –.53** | –.30* | –.41** | –.52** | –.32* |
| Experiential avoidance | –.32** | –.54** | –.44** | –.51** | –.60** |
| Absent-mindedness | –.54** | –.23** | –.37** | –.42** | –.41** |
| Predicted nonsignificant correlations | | | | | |
| Extraversion | –.08 | .20 | .06 | .05 | .12 |

NOTE: MAAS = Mindful Attention Awareness Scale; FMI = Freiburg Mindfulness Inventory; KIMS = Kentucky Inventory of Mindfulness Skills; CAMS = Cognitive Affective Mindfulness Scale; MQ = Mindfulness Questionnaire.
a. Selected subsample of $n = 88$.
*$p$ <.05. **$p$ < .01.

the expected directions, and all but one (MQ with openness to experience) were statistically significant. Most were moderate to large (except those predicted to be nonsignificant). These findings indicate that all of the mindfulness scales show predicted relationships with other variables.

## PART 2: EXPLORING FACETS OF MINDFULNESS

Part 1 established that the available mindfulness questionnaires are internally consistent and, to a large extent, correlated with each other, with meditation experience, and in predictable directions with several other variables. The findings also suggest that an examination of facets or components of mindfulness might yield useful information about the nature of mindfulness and its relationships with other constructs. Close examination of Table 2 shows that correlations between mindfulness and other variables vary widely. For example, emotional intelligence is correlated with the KIMS at .61 but with the MAAS at .22. A similar pattern can be seen with alexithymia. Absent-mindedness is correlated with the MAAS at –.54 but with the FMI at –.23, and experiential avoidance is correlated with the MAAS at –.32 but with the MQ at –.60. (Differences between correlations noted here are significant at $p < .001$). Such differences suggest that these questionnaires may be measuring somewhat different elements or facets of mindfulness. For example, the MAAS appears to emphasize an element of mindfulness related to dissociation and absent-mindedness, whereas the MQ focuses primarily on elements related to thought suppression and experiential avoidance.

Several authors have argued that measurement of complex constructs at the facet level is important for clarifying relationships between these constructs and other variables (Hough & Schneider, 1995; Paunonen & Ashton, 2001; Schneider, Hough, & Dunnette, 1996; Smith, Fischer, & Fister, 2003; Smith & McCarthy, 1995). Use of a single total score for the target construct can obscure these relationships if facets of the target construct are differentially correlated with the other variables. That is, one or more facets of the target construct may be strongly related to a particular variable, whereas other facets are not. Using a total score to examine these relationships effectively averages correlated with uncorrelated facets, providing a distorted view of the relationship. An example of this problem can be seen in the literature on the relationship between impulsivity and binge eating. Until recently, this literature has found inconsistent relationships between these two variables. However, more recent studies (Fischer, Smith & Anderson, 2003; Fischer, Smith, Anderson, & Flory, 2003) examining impulsivity at the facet level have shown that one facet of impulsivity known as urgency (tendency to act rashly when distressed) is strongly correlated with binge eating, whereas other facets of impulsivity (sensation seeking, lack of premeditation) are not. Measures of im-

pulsivity that include some or all of these facets but do not assess them separately tend to provide ambiguous or distorted information about this relationship. Similarly, it seems likely that clarification and reliable measurement of the facets of mindfulness might provide analogous advances in our understanding of this important construct.

Analysis at the facet level is also important for examining incremental validity in the assessment of mindfulness. According to Haynes and Lench (2003), a measure has incremental validity to the extent that it increases ability to predict other measures of interest. Although incremental validity can be examined at the level of individual instruments (i.e., one could examine the incremental validity of existing mindfulness questionnaires in predicting other measures), this procedure has disadvantages. It is unclear what facets of mindfulness are included in some of the available questionnaires, because they do not provide subscales. For this reason, evidence of incremental validity of one over another may be hard to interpret. Smith et al. (2003) argued that reliable assessment of clearly specified facets within a test is the most informative way of evaluating incremental validity. That is, if facet scores can be entered separately into regression analyses, then facets significantly related to the dependent variable will be included in the equation, whereas nonpredictive facets will be dropped, and the incremental validity of some facets over others in predicting the dependent variable can be examined.

This reasoning suggests that the most useful measures of mindfulness will be those that measure all relevant facets separately and reliably. Among the mindfulness questionnaires described earlier, only the KIMS provides subscales based on an empirically supported factor structure. The MAAS has been shown to be unidimensional (Brown & Ryan, 2003). The CAMS, FMI, and MQ contain content pertaining to more than one facet but provide only total scores, not subscale scores. Overall, it is unclear what facets of mindfulness may be represented in some of these mindfulness questionnaires.

The KIMS provides a clear facet structure with good empirical support (Baer et al., 2004). Given the strong correlations between the KIMS and the other mindfulness measures shown in Table 1, it seems likely that many of the items from the other questionnaires measure facets similar to those of the KIMS. However, it is also possible that some items in the other questionnaires represent facets of mindfulness not included in the KIMS. Therefore, the purpose of Part 2 was to examine the facet structure of the combined item pool (112 items) from all five of the mindfulness questionnaires from Part 1. Combining all items from these questionnaires into a single data set provides the opportunity to examine the facet structure across all of these independently developed operationalizations of mindfulness and should yield a broad-based empirical analysis of current thinking about the elements of mindfulness. To the extent that this analysis yields factors consistent with the KIMS, the validity of the KIMS will be supported. However, the emergence of new facets might suggest ways to expand the assessment of mindfulness to include more of the relevant content.

## Method

### Participants and Procedures

Participants were the 613 students from Part 1. Their responses to the items from the five mindfulness questionnaires were combined into a single data set and subjected to the exploratory factor analyses and correlational analyses described in the following sections.

## Results and Discussion

### Exploratory Factor Analyses

The combined data set for the five mindfulness questionnaires (MAAS, FMI, KIMS, CAMS, MQ) included 112 items. Using Sample 1 ($n$ = 613), responses to this combined item pool were subjected to exploratory factor analysis (EFA) using principal axis factoring with oblique rotation to allow for correlations among the factors. Results of the initial EFA yielded 26 factors with eigenvalues greater than 1.0 and accounting for 63% of the total variance. However, the scree plot clearly suggested a five-factor solution. Floyd and Widamon (1995) argued that the scree plot is a more useful guide to the number of factors to retain, because use of eigenvalues greater than 1.0 can lead to overestimation of the number of meaningful factors. Therefore, a second factor analysis was conducted, specifying that five factors should be identified and, again, using principal axis factoring with oblique rotation. This analysis yielded a five-factor solution accounting for 33% of the variance after factor extraction. This factor structure is shown in Table 3. Only items with minimum loadings of .40 on one factor and with a difference of at least .20 between the highest and next highest factor loadings are included in the table. For each item, the questionnaire from which it originates and its item number on that questionnaire also are shown.

Table 3 shows that four of the five factors are virtually identical to those identified in the development of the KIMS (Baer et al., 2004) and that most of the KIMS items load on these factors, as do many items from the other measures. An additional factor also emerged, with items from the FMI and MQ that appear to describe a nonreactive stance toward internal experience.

## TABLE 3
## Factor Structure of Combined Items From Five Mindfulness Questionnaires in Sample of 613 Students

| *Source of Item and Content* | *Factor Loading* | | | | |
|---|---|---|---|---|---|
| | *1* | *2* | *3* | *4* | *5* |
| Factor 1: Nonreactivity to Inner Experience | | | | | |
| *FMI 18: I perceive my feelings and emotions without having to react to them. | **.46** | .14 | .01 | .00 | .10 |
| *FMI 25: I watch my feelings without getting lost in them. | **.44** | .10 | –.06 | –.10 | .07 |
| *FMI 26: In difficult situations, I can pause without immediately reacting. | **.43** | .18 | –.12 | .02 | .05 |
| *MQ 1: Usually when I have distressing thoughts or images, I am able just to notice them without reacting. | **.45** | –.03 | –.11 | .05 | .08 |
| *MQ 4: Usually when I have distressing thoughts or images, I feel calm soon after. | **.41** | .04 | –.13 | –.07 | .12 |
| *MQ 9: Usually when I have distressing thoughts or images, I "step back" and am aware of the thought or image without getting taken over by it. | **.44** | .08 | –.15 | –.05 | .14 |
| *MQ 10: Usually when I have distressing thoughts or images, I just notice them and let them go. | **.44** | –.15 | –.16 | –.03 | .13 |
| Factor 2: Observing/noticing/attending to sensations/perceptions/thoughts/feelings | | | | | |
| FMI 3: I sense my body, whether eating, cooking, cleaning, or talking. | .14 | **.50** | –.03 | –.03 | –.03 |
| FMI 6: I notice how my emotions express themselves through my body. | .12 | **.44** | .00 | –.11 | .02 |
| FMI 7: I remain present with sensations and feelings even when they are unpleasant or painful. | .14 | **.41** | .00 | –.07 | .02 |
| FMI 20: I examine pleasant as well as unpleasant sensations and perceptions. | .18 | **.42** | .07 | –.16 | .07 |
| KIMS 1: I notice changes in my body, such as whether my breathing slows down or speeds up. | –.11 | **.44** | –.02 | –.01 | –.07 |
| KIMS 5: I pay attention to whether my muscles are tense or relaxed. | .05 | **.47** | –.19 | .05 | –.08 |
| *KIMS 9: When I'm walking, I deliberately notice the sensations of my body moving. | –.02 | **.59** | –.10 | .00 | –.11 |
| *KIMS 13: When I take a shower or a bath, I stay alert to the sensations of water on my body. | .02 | **.60** | –.03 | –.02 | –.03 |
| *KIMS 17: I notice how foods and drinks affect my thoughts, bodily sensations, and emotions. | .06 | **.50** | –.02 | –.07 | –.08 |
| *KIMS 21: I pay attention to sensations, such as the wind in my hair or sun on my face. | .03 | **.66** | –.02 | .02 | –.01 |
| *KIMS 25: I pay attention to sounds, such as clocks ticking, birds chirping, or cars passing. | –.04 | **.60** | .00 | –.02 | .02 |
| *KIMS 29: I notice the smells and aromas of things. | –.03 | **.56** | .00 | –.05 | .10 |
| KIMS 30: I intentionally stay aware of my feelings. | –.01 | **.49** | .00 | –.22 | –.08 |
| *KIMS 33: I notice visual elements in art or nature, such as colors, shapes, textures, or patterns of light and shadow. | .00 | **.52** | .03 | –.11 | .01 |
| *KIMS 37: I pay attention to how my emotions affect my thoughts and behavior. | –.03 | **.50** | –.08 | –.13 | –.27 |
| Factor 3: Acting with awareness/automatic pilot/concentration/nondistraction | | | | | |
| MAAS 2: I break or spill things because of carelessness, not paying attention, or thinking of something else. | –.02 | .02 | **–.48** | –.02 | .07 |
| *MAAS 3: I find it difficult to stay focused on what's happening in the present. | .09 | –.06 | **–.66** | –.09 | .03 |
| *MAAS 7: It seems I am "running on automatic" without much awareness of what I'm doing. | –.19 | .27 | **–.66** | .07 | .07 |
| *MAAS 8: I rush through activities without being really attentive to them. | –.13 | .24 | **–.67** | .00 | .13 |
| MAAS 9: 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. | –.16 | .15 | **–.48** | .10 | .17 |
| *MAAS 10: I do jobs or tasks automatically, without being aware of what I'm doing. | –.12 | .25 | **–.61** | .14 | .10 |
| MAAS 11: I find myself listening to someone with one ear, doing something else at the same time. | –.08 | .16 | **–.45** | .02 | .08 |
| MAAS 12: I drive places on "automatic pilot" and then wonder why I went there. | –.22 | .15 | **–.50** | .06 | .10 |
| MAAS 13: I find myself preoccupied with the future or the past. | .17 | –.03 | **–.43** | .04 | .21 |
| *MAAS 14: I find myself doing things without paying attention. | –.09 | .08 | **–.70** | –.02 | .11 |
| MAAS 15: I snack without being aware that I'm eating. | .05 | .01 | **–.40** | –.02 | .13 |
| FMI 9: I easily get lost in my thoughts and feelings. | .17 | –.21 | **–.54** | –.02 | .05 |

| | | | | | |
|---|---|---|---|---|---|
| *KIMS 3: When I do things, my mind wanders off and I'm easily distracted. | .10 | –.14 | **–.64** | –.14 | –.12 |
| KIMS 11: I drive on "automatic pilot" without paying attention to what I'm doing. | –.20 | .10 | **–.46** | –.03 | .11 |
| *KIMS 23: I don't pay attention to what I'm doing because I'm daydreaming, worrying, or otherwise distracted. | .09 | –.09 | **–.58** | –.21 | .03 |
| KIMS 27: When I'm doing chores, such as cleaning or laundry, I tend to daydream or think of other things. | .07 | –.21 | **–.44** | .02 | –.06 |
| KIMS 31: I tend to do several things at once rather than focusing on one thing at a time. | –.05 | .02 | **–.44** | .00 | .00 |
| KIMS 35: When I'm working on something, part of my mind is occupied with other things, such as what I'll be doing later or things I'd rather be doing. | .14 | –.14 | **–.55** | –.06 | –.09 |
| CAMS 1: It is easy for me to concentrate on what I'm doing. | .31 | –.14 | **–.56** | –.22 | –.12 |
| *CAMS 6: I am easily distracted. | .18 | –.17 | **–.65** | –.19 | –.14 |
| CAMS 12: I am able to pay close attention to one thing for a long period of time. | .30 | –.11 | **–.51** | –.23 | –.11 |
| Factor 4: Describing/labeling with words | | | | | |
| *KIMS 2: I'm good at finding the words to describe my feelings. | –.04 | .05 | .08 | **–.80** | –.04 |
| *KIMS 6: I can easily put my beliefs, opinions, and expectations into words. | –.02 | –.01 | .00 | **–.76** | .00 |
| KIMS 10: I'm good at thinking of words to express my perceptions, such as how things taste, smell, or sound. | –.05 | .20 | .00 | **–.65** | .00 |
| *KIMS 14: It's hard for me to find the words to describe what I'm thinking. | –.12 | –.10 | .00 | **–.80** | .08 |
| *KIMS 18: I have trouble thinking of the right words to express how I feel about things. | –.19 | –.09 | .02 | **–.86** | .12 |
| *KIMS 22: When I have a sensation in my body, it's hard for me to describe it because I can't find the right words. | –.15 | –.02 | –.03 | **–.65** | .18 |
| *KIMS 26: Even when I'm feeling terribly upset, I can find a way to put it into words. | –.06 | .08 | .06 | **–.72** | .03 |
| *KIMS 34: My natural tendency is to put my experiences into words. | –.11 | .17 | .05 | **–.71** | –.06 |
| *CAMS 5: I can usually describe how I feel at the moment in considerable detail. | –.07 | .06 | .01 | **–.74** | .00 |
| CAMS 8: It's easy for me to keep track of my thoughts and feelings. | .08 | .18 | –.15 | **–.43** | .00 |
| Factor 5: Nonjudging of experience | | | | | |
| *KIMS 4: I criticize myself for having irrational or inappropriate emotions. | .13 | –.09 | –.16 | –.07 | **.52** |
| KIMS 8: I tend to evaluate whether my perceptions are right or wrong. | –.15 | –.17 | .02 | .11 | **.46** |
| *KIMS 12: I tell myself that I shouldn't be feeling the way I'm feeling. | .09 | –.09 | –.10 | –.12 | **.57** |
| *KIMS 16: I believe some of my thoughts are abnormal or bad and I shouldn't think that way. | .00 | –.08 | .00 | –.11 | **.67** |
| *KIMS 20: I make judgments about whether my thoughts are good or bad. | –.05 | –.11 | .00 | .02 | **.69** |
| KIMS 24: I tend to make judgments about how worthwhile or worthless my experiences are. | .02 | –.18 | –.09 | .02 | **.47** |
| *KIMS 28: I tell myself I shouldn't be thinking the way I'm thinking. | .12 | –.08 | –.01 | –.15 | **.67** |
| *KIMS 32: I think some of my emotions are bad or inappropriate and I shouldn't feel them. | –.03 | –.02 | –.04 | –.15 | **.73** |
| *KIMS 36: I disapprove of myself when I have irrational ideas. | .08 | .00 | .00 | –.10 | **.64** |
| MQ 6: Usually when I have distressing thoughts or images, I get angry that this happens to me. | .21 | .04 | –.06 | –.07 | **.41** |
| *MQ 8: Usually when I have distressing thoughts or images, I judge myself as good or bad, depending what the thought/image is about. | .11 | .02 | .11 | –.05 | **.58** |
| Initial eigenvalues for each factor | 17.85 | 8.60 | 5.45 | 4.16 | 3.71 |
| Percentage of variance accounted for after extraction | 15.39 | 7.10 | 4.30 | 3.26 | 2.62 |

NOTE: MAAS = Mindful Attention Awareness Scale; FMI = Freiburg Mindfulness Inventory; KIMS = Kentucky Inventory of Mindfulness Skills; CAMS = Cognitive Affective Mindfulness Scale; MQ = Mindfulness Questionnaire.
*Item included in five-factor mindfulness questionnaire in Parts III and V.

**TABLE 4**
**Intercorrelations of Five Facets of Mindfulness Derived From Exploratory Factor Analysis of Five Mindfulness Questionnaires**

| *Facet* | *Describe* | *Actaware* | *Nonjudge* | *Nonreact* |
|---|---|---|---|---|
| Observe | .26** | .15** | –.07 | .16** |
| Describe | — | .30** | .21** | .22** |
| Actaware | — | — | .34** | .33** |
| Nonjudge | — | — | — | .34** |

NOTE: Actaware = act with awareness.
**$p < .01$.

A total of 64 of the 112 items analyzed met our strict criteria for inclusion in Table 3. For most of the remaining items, the highest factor loading was between .20 and .39, and many of these items showed similar loadings on more than one factor. Thus, although many of these items probably are reasonable representations of mindfulness, their content appears to incorporate more than one facet. As Smith et al. (2003) have noted, such items may be less useful than those loading on a single factor because they can obscure the facet structure of the instrument, the relationships between facets and other measures, and the incremental validity of some facets over others in predicting relevant variables.

#### Deriving Mindfulness Facets

To create mindfulness facets with adequate internal consistency and manageable length, the items with the highest loadings on the five factors derived in the EFA were selected for inclusion in facet scales. For the nonreactivity facet, all seven of the items shown in Table 3 were selected. For the other four facets (observing, acting with awareness, nonjudging, describing), the eight items with the highest factor loadings were selected, thus creating a subscale for each mindfulness facet. These items are marked with asterisks in Table 3. Alpha coefficients for each of the subscales then were computed. The following alpha values were obtained: nonreactivity = .75, observing = .83, acting with awareness = .87, describing = .91, and nonjudging = .87. Thus, all five facet scales showed adequate to good internal consistency.

Next, correlations among the five facet scales were computed. Because the facets appear to have distinct content yet were all derived from questionnaires designed to measure mindfulness, correlations were expected to be modest but significant. As shown in Table 4, this pattern was found in most cases. Only one correlation was nonsignificant (observe with nonjudge). The others ranged from .15 to .34.

To provide additional evidence that the facets have substantial nonoverlapping content, a regression analysis was conducted for each facet in which all four of the remaining facets were entered as predictors. The obtained value for adjusted *R*-squared represents the variance in each facet accounted for by its relationship to the other four facets. Adjusted $R^2$ values for the five facets ranged from .12 to .23. Subtracting each facet's $R^2$ value from its alpha coefficient yields the systematic variance of the facet that is independent of its relationship with the other four facets. These values ranged from .56 to .75, showing that most of the variance in each facet is distinct from the other four.

Overall, findings of Part 2 suggest that the combined item pool from the existing mindfulness measures includes five identifiable elements that are internally consistent and only modestly correlated with each other. As can be seen in Table 3, four of the five questionnaires examined (all but the MAAS, which is unidimensional) contributed items to two or more of the five facets identified in the EFA, suggesting that most of the existing questionnaires include more than one facet. However, these findings do not clarify whether the five mindfulness facets derived from the EFA can be seen as elements of an overall mindfulness construct or are better understood as five separate constructs. This question is examined in Part 3.

## PART 3: CONFIRMATORY FACTOR ANALYSIS (CFA)

The purpose of Part 3 was to use CFA to investigate the replicability of the five-factor structure derived in Part 2 in an independent sample. Several models were tested, including hierarchical models that examine whether the five facets should be viewed as components of an overarching mindfulness construct or are better understood as separate constructs.

### Method

#### Participants and Procedures

A new sample of 268 undergraduate psychology students (Sample 2) participated in Part 3. Their mean age was 18.9 years, 77% were female, and 90% were Caucasian. Like Sample 1, they completed the procedures in exchange for research participation credit in their classes. In 1-hour sessions, they completed a brief demographic form and a mindfulness questionnaire created by combining the 39 items (marked with asterisks in Table 3) that had been assigned to the five facets described in the preceding section. For this instrument, called the Five Facet Mindfulness Questionnaire (FFMQ), the 5-point Likert-type scale from the KIMS was used (1 = *never or very rarely true*, 5 = *very often or always true*). This required removing the word *usually* from the beginning of items from the MQ.

**TABLE 5**
**Summary of Results of Tests of Alternative Factor Structures of Mindfulness**

| *Model* | df | $\chi^2$ | $\chi^2$ *difference* | *CFI* | *NNFI* | *RMSEA* |
|---|---|---|---|---|---|---|
| Sample 2 ($n$ = 268) | | | | | | |
| One factor | 90 | 1113.78*** | — | .43 | .34 | .21 |
| Five factors | 80 | 146.68*** | — | .96 | .95 | .06 |
| Hierarchical—five factors | 85 | 207.75*** | 61.07* | .93 | .92 | .07 |
| Four factors | 48 | 97.65*** | — | .97 | .96 | .06 |
| Hierarchical—four factors | 50 | 100.73*** | 3.08 | .97 | .96 | .06 |
| Meditator sample ($n$ = 190) | | | | | | |
| Five factors | 80 | 154.44*** | — | .95 | .94 | .07 |
| Hierarchical—five factors | 82 | 149.69*** | 3.01 | .96 | .95 | .06 |

NOTE: Chi-square difference tests were conducted to compare each hierarchical model with its corresponding nonhierarchical model. The one-factor model was ruled out; the difference tests were conducted to determine the value of a hierarchical framework. *Hierarchical—five factors* refers to the model in which all five putative facets loaded on one, overall mindfulness factor. *Hierarchical—four factors* refers to the model in which describe, actaware, nonjudge, and nonreact loaded on the overall mindfulness factor and observe was not included in the model. The meditator sample includes those participants from Samples 1 and 2 with meditation experience.
*$p$ < .05. ***$p$ < .001.

No other changes in the items were made. Items were arranged in an order that roughly alternated among the five facets. Each participant also completed a subset of the criterion measures from Part 1 to increase sample sizes for correlational and regression analyses described later.

CFAs were conducted using the responses from these 268 participants to the 39 items on the FFMQ. 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) and the nonnormed fit index (NNFI; Bentler, 1990), the root mean square error of approximation (RMSEA; Marsh, Balla, & Hau, 1996), and a chi-square test for discrepancy between the model and the data. By rule of thumb, CFI and NNFI 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). Although the chi-square statistic is generally no longer used to evaluate fit because of its hypersensitivity, we report it here to facilitate comparisons between alternative factor models. We used the maximum likelihood estimation method because of its robust performance in a variety of situations (Hu, Bentler, & Kano, 1992).

For several reasons, we conducted these CFAs using item parcels (groups of items) rather than individual 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 is 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. Before choosing to use item parcels, it is important to determine whether the scale to be parceled represents a unidimensional construct; if it does not, parcels of items could mask multidimensionality (Hagtvet & Nasser, 2004; Little et al., 2002). Little et al. (2002) recommended conducting an exploratory factor analysis of the measure to evaluate scales' unidimensionality. We did so in Sample 1: Each of the five putative facets of mindfulness emerged as unidimensional in that independent sample.

We took one further step to enhance our confidence in these CFAs: We conducted all analyses twice, using methods recommended by Little et al. (2002). In the first set of analyses, we assigned items within scales to parcels randomly. In the second, items were assigned based on their factor loadings in the EFA. For both methods, we created three parcels for each factor and averaged the item scores with each parcel. Thus, each a priori factor was represented by three indicators. A given factor's indicators were not allowed to correlate with other factors, nor were error terms allowed to correlate.

## Results

Results of tests of several alternative factor structures are summarized in Table 5 for analyses using random parcel creation. Findings for the other parceling method closely replicated these results. That is, model compari-

sons produced the same results, and facet loadings for the final model differed, on average, by only two one hundredths (.02).

First, we tested a single-factor model in which all item parcels are indicators of one, overall mindfulness factor. The fit of this model was poor—CFI = .43, NNFI = .34, and RMSEA = .21 (90% confidence interval: .20 to .22)—suggesting that the item parcels as a group do not have a unidimensional factor structure. Next, we tested the five-factor model that was identified via EFA in the previous sample. The five factors were allowed to intercorrelate. This model fit the sample well: CFI = .96, NNFI = .95, and RMSEA = .06 (90% confidence interval: .04 to .07). This finding replicates the results of the EFA on Sample 1. However, it does not demonstrate whether the five factors are components of an overall mindfulness construct. To examine this question, we tested a hierarchical model, in which the five factors were themselves indicators of an overall mindfulness factor. This model fit the data reasonably well: Both CFI and NNFI were greater than .90, and the RMSEA of .07 suggests a fair fit to the data. However, the pattern of loadings suggested that the model was misspecified. The loadings of describe, actaware, nonjudge, and nonreact were all significant at $p < .001$, but observe loaded nonsignificantly on the Overall Mindfulness factor. Not surprisingly, chi-square difference tests indicated that this model fit significantly worse than did the five-factor (nonhierarchical) model.

Next, we tested an alternative hierarchical model, in which describe, actaware, nonjudge, and nonreact were defined as facets of an overall mindfulness construct and observe was not included in the model. That model fit much better (CFI = .97, NNFI = .96, RMSEA = .06). There was no loss of fit for this more parsimonious four-factor hierarchical model as compared to a four-factor nonhierarchical model (chi-square difference = 3.08, nonsignificant, all fit indices identical). This finding supports a hierarchical structure to mindfulness, in which describe, actaware, nonjudge, and nonreact can be considered facets of a broad mindfulness construct. This model is depicted in Figure 1.

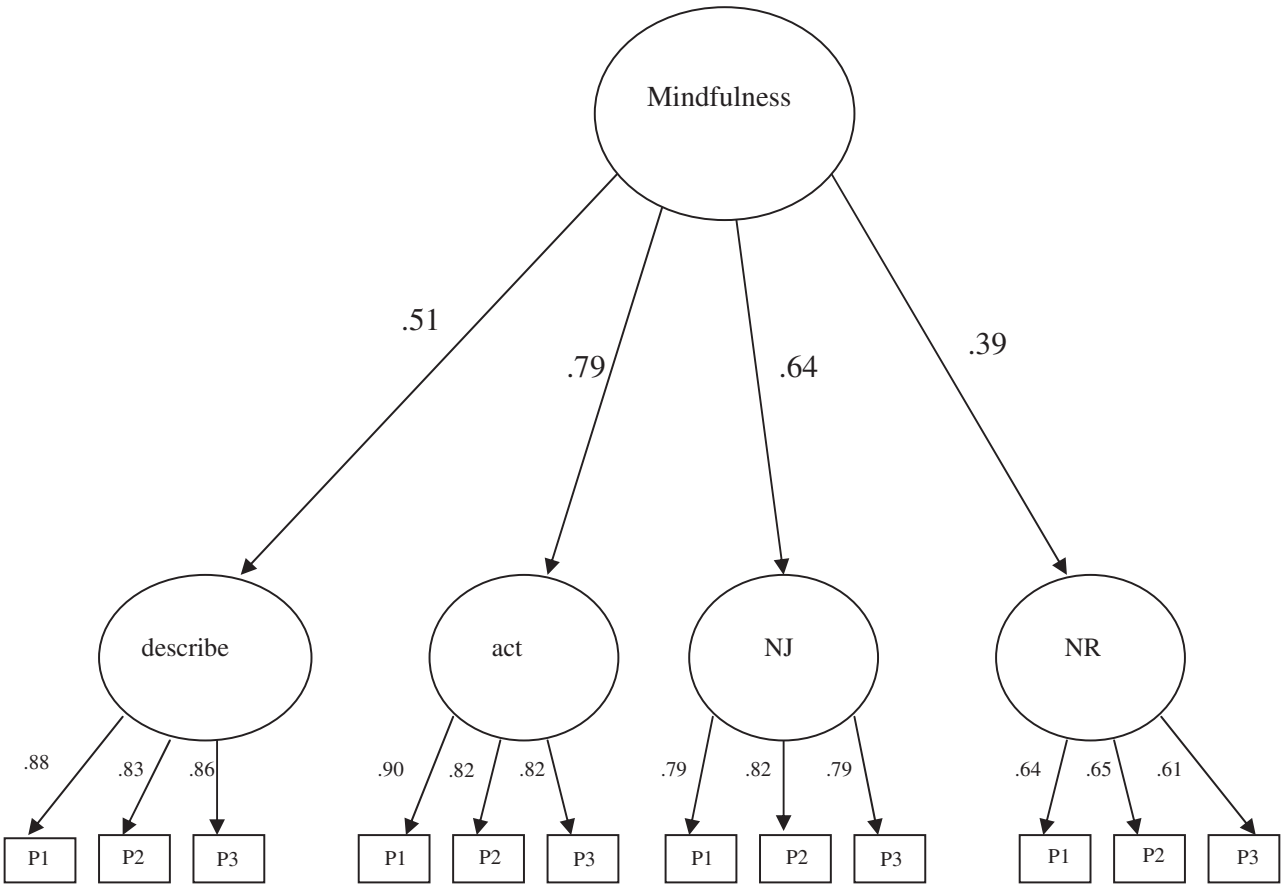
Failure of the observe facet to fit this model is unexpected, because observing is widely described as a central feature of mindfulness. Lack of fit with the model is probably a function of observe's differential correlations with the other four facets, particularly its nonsignificant (and negative) correlation with nonjudge. In the development of the KIMS, Baer et al. (2004) reported a significant negative correlation between observe and nonjudge and suggested that in individuals with no meditation experience, attending to experiences might typically be associated with judging them but that people with meditation experience should be expected to show higher levels of both observing and nonjudging and a positive correlation between these two scales. We examined this possibility by first combining Samples 1 and 2 (to increase the number of participants with meditation experience) and then comparing intercorrelations among the facets for participants with and without meditation experience (*n*s = 190 and 667, respectively). Although most did not differ, the relation between observe and nonjudge was significantly different (and positive) in those with meditation experience, suggesting that the observe facet might fit the hierarchical model described above in samples with more meditation experience.

Testing this possibility in Sample 2 was not feasible because the number of participants with meditation experience was too small for a CFA. Therefore, we tested this model in those participants from our combined sample who reported some degree of meditation experience ($n$ = 190) and found that all five facets loaded significantly on the overall mindfulness construct (loadings: observe = .34, describe = .57, actaware = .72, nonjudge = .55, nonreact = .71). Fit indices for this model were CFI = .96, NNFI = .94, and RMSEA = .07, and the chi-square test of the difference between this model and the five-factor nonhierarchical model in this sample was not significant, thus suggesting the plausibility of a hierarchical, five-factor structure to mindfulness among individuals with meditation experience. This model is depicted in Figure 2. This analysis must be interpreted cautiously because it included participants from Sample 1 and therefore is not independent of the EFA conducted in Part 2. However, it does suggest that the hierarchical five-facet structure merits additional study in an independent sample with a larger proportion of experienced meditators.

## PART 4: DIFFERENTIAL RELATIONSHIPS BETWEEN MINDFULNESS FACETS AND OTHER CONSTRUCTS

As noted earlier, measurement of complex constructs at the facet level is useful for understanding their relations with other variables, particularly when one or more facets of a construct are strongly related to a specific variable, whereas other facets are weakly related or unrelated. Therefore, the purpose of Part 4 was to examine whether mindfulness facets are differentially related to the variables described in Part 1 (openness to experience, emotional intelligence, etc.). Based on the item content of the mindfulness facets and the measures of the other constructs, rational predictions were developed about which mindfulness facet(s) should most strongly correlate with each variable. Support for these predictions will provide evidence for the use of a multifaceted conceptualization of mindfulness by showing which elements of mindfulness

**FIGURE 1**
**The Hierarchical Model of Mindfulness for Sample 2**




NOTE: The coefficients describing the loadings of the four facets on the broad mindfulness construct are maximum likelihood estimates. Act = act with awareness; NJ = nonjudging; NR = nonreactivity. Each of the four facets was represented by three parcels of items as indicators (P1 = Parcel 1, P2 = Parcel 2, etc.). Maximum likelihood estimates of parcel loadings on facets are also provided. For ease of presentation, error terms for parcels are omitted.

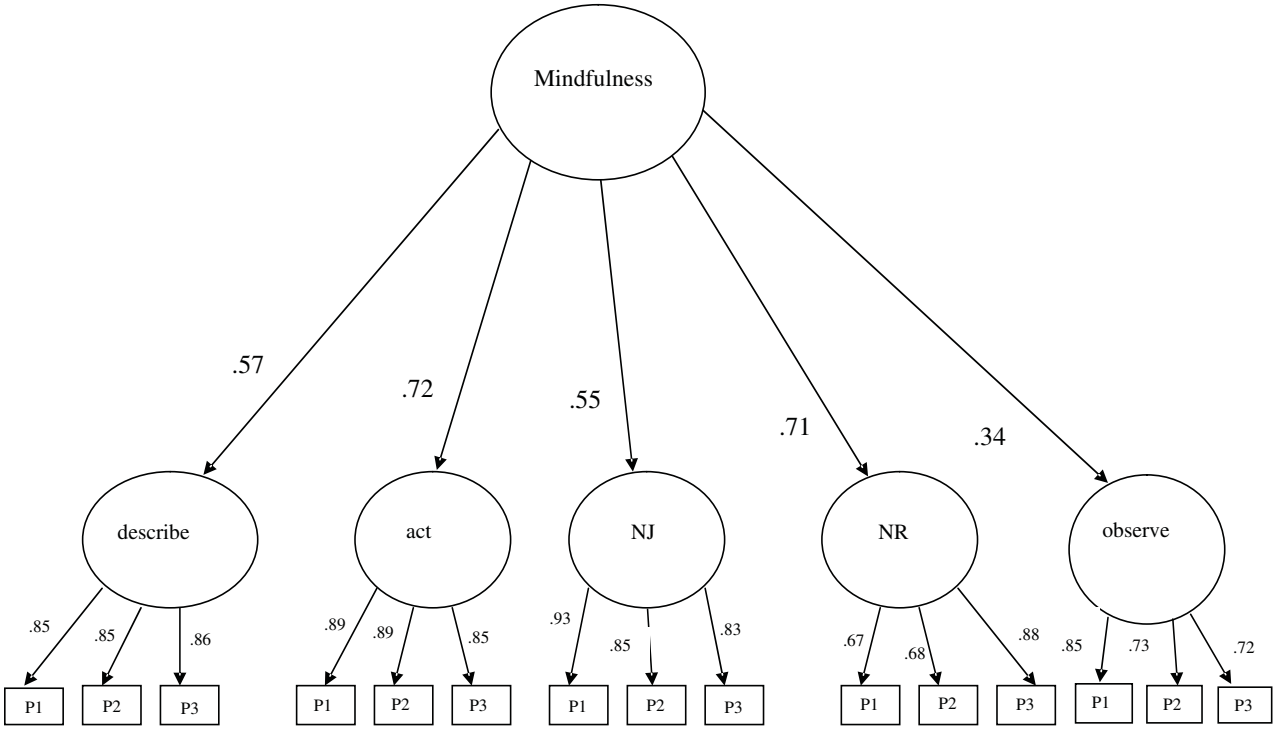
are responsible for the significant relationships shown in Part 1 between global mindfulness and these other constructs. Although the observe facet was not part of the hierarchical factor structure of mindfulness in our largely nonmeditating sample (see Part 3), it is included here because of its potential use in samples of experienced meditators.

## Method

Mindfulness facets were correlated with each of the other constructs. For these analyses, data from Samples 1 and 2 were combined. Total *N* for this combined sample was 881. However, as each participant had completed only a subset of the other measures, sample sizes for the correlations ranged from 300 to 581.

We made the following predictions about relationships between mindfulness facets and other constructs. First, the facets were expected to correlate with these constructs in the same directions as do the original mindfulness questionnaires (as shown in Table 2). That is, correlations should be positive with constructs that appear to include elements of mindfulness (e.g., emotional intelligence, self-compassion) and negative with constructs that appear to reflect an absence of mindfulness (e.g., dissociation, thought suppression, etc). Second, we made the following predictions about which specific mindfulness facets would be most strongly related to each variable. An important feature of openness to experience is attentiveness to internal and external stimuli. Therefore, we predicted that openness would be most strongly related to the observe facet. For both emotional intelligence and alexithymia, the ability to recognize and label emotional states is a central element. For this reason, these two variables were expected to be most strongly correlated with the describe facet. Dissociation and absent-mindedness both involve

**FIGURE 2**
**The Hierarchical Model of Mindfulness for the Sample With Meditation Experience**




NOTE: Participants are from Samples 1 and 2. The coefficients describing the loadings of the five facets on the broad mindfulness construct are maximum likelihood estimates. Act = act with awareness; NJ = nonjudging; NR = nonreactivity. Each of the five facets was represented by three parcels of items as indicators (P1 = Parcel 1, P2 = Parcel 2, etc.). Maximum likelihood estimates of parcel loadings on facets are also provided. For ease of presentation, error terms for parcels are omitted.

acting without awareness and therefore were expected to be most strongly related (negatively) to the act with awareness facet, which measures attending to one's current activities and avoiding automatic pilot. Thought suppression and difficulties in emotion regulation both include judgmental or self-critical attitudes about thoughts and/or emotions and therefore were expected to be most strongly related to the nonjudging facet. Similarly, experiential avoidance and self-compassion both include judgmental or self-critical attitudes. In addition, experiential avoidance includes the ability to experience unpleasant inner phenomena without reacting to them with maladaptive, counterproductive behavior, and self-compassion involves awareness of internal experience without maladaptive reactivity when suffering. Thus, experiential avoidance and self-compassion were expected to be strongly and similarly correlated with both the nonjudging and nonreactivity facets. Finally, it was difficult to specify a single mindfulness facet that should be most strongly related to psychological symptoms or neuroticism. Data collected in the development of the KIMS (Baer et al., 2004) showed that describe, act with awareness, and accept without judgment all were significantly and similarly correlated with these variables, whereas observe was not. Similar results were predicted here.

## Results and Discussion

Correlations between mindfulness facets and related variables can be seen in Table 6. Because of the large number of correlations presented, only those with $p < .001$ are marked as significant. In each row, the largest correlation is shown in bold, and the correlations that differ significantly ($p < .01$) from the largest one are shown in italics.

These findings clearly show that the mindfulness facets are differentially related to the other constructs and that the facets most strongly related to each construct are consistent with our predictions. In each case, although several facets are significantly correlated with the construct, the predicted facet is significantly more strongly correlated than several others. In addition, the most strongly related facet differs across the constructs examined, suggesting that all facets are useful in understanding the relationships between mindfulness and other conceptually related vari-

**TABLE 6**
**Correlations Between Mindfulness Facets and Related Constructs**

| | *Mindfulness Facet* | | | | |
|---|---|---|---|---|---|
| *Construct* | *Observe* | *Describe* | *Actaware* | *Nonjudge* | *Nonreact* |
| Predicted positive correlations | | | | | |
| Openness to experience | **.42***** | *.19**** | *.02* | *–.07* | *.18**** |
| Emotional intelligence | *.22**** | **.60***** | *.31**** | *.37**** | *.21**** |
| Self-compassion | *.14**** | *.30**** | *.40**** | .48*** | **.53***** |
| Predicted negative correlations | | | | | |
| Alexithymia | *–.08* | **–.68***** | *–.42**** | *–.34**** | *–.19**** |
| Dissociation | *.27**** | *–.32**** | **–.62***** | *–.49**** | *–.12* |
| Absent-mindedness | *.16**** | *–.28**** | **–.61***** | *–.41**** | *–.15**** |
| Psychological symptoms | *.17**** | *–.27**** | –.48*** | **–.50***** | *–.31**** |
| Neuroticism | *.07* | *–.23**** | *–.44**** | **–.55***** | *–.35**** |
| Thought suppression | *.16**** | *–.23**** | *–.36**** | **–.56***** | *–.22**** |
| Difficulties emotion regulation | *–.02* | *–.38**** | *–.40**** | **–.52***** | *–.36**** |
| Experiential avoidance | *.12* | *–.23**** | *–.30**** | **–.49***** | –.39*** |

NOTE: In each row, the largest correlation is shown in bold, and correlations that differ significantly from the largest ($p < .01$) are shown in italics.
***$p < .001$.

ables. For example, the describe facet is the most important in understanding mindfulness' relationships with emotional intelligence and alexithymia, whereas the act with awareness facet is central to its relationships with dissociation and absent-mindedness.

Directional findings are almost entirely consistent with predictions, except for the observe facet, which was positively correlated with openness, emotional intelligence, and self-compassion (as predicted) and also positively correlated with dissociation, absent-mindedness, psychological symptoms, and thought suppression (contrary to our predictions). When recalculated in the subsample of participants with meditation experience, these four unexpected positive correlations were nonsignificant, whereas all other correlations in this table were unchanged or became significantly larger in the predicted direction. These findings are consistent with those described earlier in suggesting that observe's relationships with other variables may change as a function of meditation experience, whereas this is apparently not true for the other four facets.

## PART 5: INCREMENTAL VALIDITY OF MINDFULNESS FACETS IN PREDICTING PSYCHOLOGICAL SYMPTOMS

Most theoretical and empirical writings about mindfulness address its use in reducing symptoms or improving well-being. Thus, it is important to examine the extent to which mindfulness facets predict general mental health. For this purpose, we conducted a regression analysis in which the mindfulness facets (excluding observe, which was correlated in the unexpected direction with symptoms) were used to predict psychological symptom level as measured by the BSI. Entry of more than one mindfulness facet into the model will suggest that consideration of multiple facets is helpful in understanding the relationship between mindfulness and symptom level. Results of this analysis can be seen in Table 7. Three of the four facets (actaware, nonjudge, nonreact) were significant predictors, showing that each accounts for a significant portion of the variance not accounted for by the others. That is, it appears that these three facets have incremental validity over the others in the prediction of symptom level.

**TABLE 7**
**Regression Analysis Showing Prediction of Psychological Symptoms by Mindfulness Facets**

| *Variable* | B | SE | β | t | *Significance* |
|---|---|---|---|---|---|
| Describe | 3.21 | .005 | –.06 | –1.47 | .142 |
| Actaware | –.03 | .005 | –.29 | –6.14 | .000 |
| Nonjudge | –.04 | .005 | –.36 | –7.99 | .000 |
| Nonreact | –.02 | .006 | –.11 | –2.54 | .012 |

NOTE: Actaware = act with awareness. $R^2$ for model = .37.

## GENERAL DISCUSSION

The purposes of this project were to examine psychometric characteristics of recently developed mindfulness questionnaires, to use these instruments to investigate the facet structure of mindfulness, to examine whether identified facets are differentially correlated with a variety of constructs that are conceptually related to mindfulness, and to test whether facets have incremental validity in the prediction of psychological symptoms. Findings suggest

several conclusions. First, the available mindfulness questionnaires appear psychometrically promising, showing good internal consistency and expected correlations with several other variables. This was true even for the FMI, which was developed with experienced meditators and whose authors have expressed concern about its use in nonmeditating samples (Buchheld et al., 2001).

Findings also support the conceptualization of mindfulness as a multifaceted construct. Results of EFA suggested that five distinct facets are represented within the currently available mindfulness questionnaires. Correlational analyses showed that four of these facets (describe, act with awareness, nonjudge, and nonreact) are consistently related in expected ways to a variety of other variables, whereas observe showed both expected and unexpected relationships. CFA suggested that describe, act with awareness, nonjudge, and nonreact are elements of an overarching mindfulness construct, and three of these facets (act with awareness, nonjudge, and nonreact) were shown to have incremental validity in the prediction of psychological symptoms.

Findings for the observe facet were unexpected in two ways. First, observe did not fit the hierarchical model in our full CFA sample, although it fit well with a sample having some exposure to meditation. In addition, observe's correlations with a few of the other constructs were in the unexpected direction. Reasons for these findings are not entirely clear. It is possible that the content of the observe items used here does not adequately capture the quality of noticing or attending to experience that is characteristic of mindfulness. Several of the items included on the observe facet address external stimuli (sounds, smells, etc.) and bodily sensations, whereas the other facets are concerned primarily with cognitions and emotions or with functioning on automatic pilot. Perhaps observe items with similar content would show more of the expected patterns. It should also be noted that although mindfulness has both statelike and traitlike qualities (Brown & Ryan, 2004; Segal et al., 2004), it has also been described as a skill (or set of skills) that can be developed with practice (Bishop et al., 2004; Linehan, 1993b). Therefore, it is possible that the observe facet is particularly sensitive to changes with meditation experience that alter its relationships with other mindfulness facets and with related variables, such that observe becomes a clear facet of mindfulness and related in expected directions to other variables as mindfulness skills develop. Additional work is required to investigate this possibility, especially in samples with better representation of meditation experience.

Our findings may shed light on the nature of acceptance, which is often discussed as a central component of mindfulness. Several items using acceptance-related terms are available in the item pool examined here (e.g., "I am able to accept the thoughts and feelings I have" from the CAMS, and "I accept unpleasant experience" from the FMI). However, none of these items met our strict criteria for inclusion in Table 3, because they generally had modest and similar loadings on more than one factor. This finding may be consistent with those of Brown and Ryan (2004), who noted that the original form of the MAAS had an acceptance factor but that this factor showed no incremental validity in the prediction of criterion measures. Items using the term *accept* may be less useful than other items in clarifying the facets of mindfulness, perhaps because some respondents may equate acceptance with approval of undesirable conditions or with passive resignation (Linehan, 1993a; Segal et al., 2002). However, our findings clearly suggest that nonreactivity and nonjudging of inner experience are useful facets. Both may be seen as ways of operationalizing acceptance. That is, to accept an experience, such as feeling anxious, might include refraining from judgments or self-criticism about having this experience (nonjudging) and refraining from impulsive reactions to the experience (nonreactivity). Additional work is needed to clarify the definition and components of acceptance and its relationship to mindfulness.

Several authors have noted the importance of discriminating outcomes of practicing mindfulness from elements of the mindfulness construct. For example, Bishop et al. (2004) suggested that nonreactivity and compassion, although sometimes discussed as components of mindfulness, might be better understood as outcomes of mindfulness practice, and Brown and Ryan (2004) made a similar point about acceptance. The same question might be raised about some of the facets of mindfulness identified in the current project. Although our data do not entirely resolve this question, our hierarchical CFAs and the finding of incremental validity of several facets in predicting psychological symptoms both suggest that the multifaceted conceptualization of mindfulness has merit. In addition, many current descriptions suggest that a mindful approach to experience includes, at a minimum, observing experiences without reactivity or judgment and avoiding automatic pilot. On the other hand, confounding elements of mindfulness with its outcomes will certainly impair our understanding of this important construct. Therefore, additional study of this question appears warranted.

This project relied entirely on student samples. Several authors have argued that mindfulness is a naturally occurring characteristic that shows meaningful variation in nonclinical and nonmeditating samples (Brown & Ryan, 2003; Kabat-Zinn, 2003). The numerous expected relationships reported here support this idea. However, because mindfulness-based interventions are used primarily in clinical samples to address significant mental health issues, the use of the questionnaires and the facet structure examined here must be investigated in clinical samples. In addition, our findings suggest that the factor structure of

mindfulness and its relationships to other variables will be enhanced by study of samples with meditation experience.

In spite of the reliance on student samples, these findings may have implications for clinical practice. Santorelli and Kabat-Zinn (2002) stated that the ability to describe mindfulness in readily accessible language is essential for providers of MBSR. Understanding of empirically supported facets of mindfulness may provide suggestions to clinicians about how to describe it to clients. In addition, correlational and regression analyses showed that four of the mindfulness facets are significantly related to psychological symptoms (in the expected direction) and that three of these contribute independently to the prediction of symptom level, suggesting that these skills are important in teaching mindfulness for purposes of symptom reduction. Research on changes with treatment in these facets might shed additional light on how mindfulness training contributes to reductions in symptoms and improved well-being.

Conducting such research will require multifaceted assessment of mindfulness. The FFMQ derived here requires extensive additional validation in a range of samples. However, our findings suggest that it has reasonable psychometric properties and it is currently the only one that assesses all five of the mindfulness facets identified in this project. Thus, it may be useful in future research. An alternative for multifaceted assessment is the KIMS, which measures four of the five facets identified here (all but nonreactivity).

Future research should expand the assessment of mindfulness to include methods other than self-report questionnaires. Experience sampling methods could be used to examine individuals' mindful awareness during daily activities (Brown & Ryan, 2003). In addition, a growing literature uses laboratory tasks to study the effects of acceptance and suppression-based methods of coping with stressors, such as upsetting film clips, cold-pressor task, or carbon dioxide challenge. Findings generally suggest that acceptance-based methods lead to increased tolerance of stressful stimuli (e.g., Cioffi & Holloway, 1993; Feldner, Zvolensky, Eifert, & Spira, 2003; S. C. Hayes, Bissett, et al., 1999; Levitt, Brown, Orsillo, & Barlow, 2004). Additional studies could examine whether differences in the mindfulness facets identified here are related to differences in tendencies to use mindfulness-based strategies for coping with such laboratory stressors and whether training in these mindfulness skills increases tolerance for them.

In summary, findings reported here suggest that self-report mindfulness questionnaires have good psychometric properties and that exploration of the facets of mindfulness may be useful in understanding the nature of the construct and its relationships with other variables.

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