Mindfulness and self-compassion as predictors of psychological wellbeing in long-term meditators and nonmeditators.

ARTICLE *in* THE JOURNAL OF POSITIVE PSYCHOLOGY · MAY 2012

Impact Factor: 1.67 · DOI: 10.1080/17439760.2012.674548

3 AUTHORS, INCLUDING:

Ruth Baer
University of Kentucky
109 PUBLICATIONS **6,376** CITATIONS

SEE PROFILE

Jessica R Peters
Alpert Medical School - Brown University
23 PUBLICATIONS **105** CITATIONS

SEE PROFILE

The Journal of Positive Psychology
2012, 1–9, iFirst

Mindfulness and self-compassion as predictors of psychological wellbeing in long-term meditators and matched nonmeditators

Ruth A. Baer[a]*, Emily L.B. Lykins[b] and Jessica R. Peters[a]

[a]*Department of Psychology, University of Kentucky, 115 Kastle Hall, Lexington, KY 40506-0044, USA;* [b]*Department of Psychology, Eastern Kentucky University, Richmond, KY 40475, USA*

(*Received 25 September 2011; final version received 2 March 2012*)

Mindfulness training has well-documented effects on psychological health. Recent findings suggest that increases in both mindfulness and self-compassion may mediate these outcomes; however, their separate and combined effects are rarely examined in the same participants. This study investigated cross-sectional relationships between self-reported mindfulness, self-compassion, meditation experience, and psychological wellbeing in 77 experienced meditators and 75 demographically matched nonmeditators. Most mindfulness and self-compassion scores were significantly correlated with meditation experience and psychological wellbeing. Mindfulness and self-compassion accounted for significant independent variance in wellbeing. A significant relationship between meditation experience and wellbeing was completely accounted for by a combination of mindfulness and self-compassion scores. Findings suggest that both mindfulness and self-compassion skills may play important roles in the improved wellbeing associated with mindfulness training; however, longitudinal studies are needed to confirm these findings.

Keywords: mindfulness; self-compassion; meditation; psychological wellbeing

Mindfulness is usually defined as a form of nonjudgmental and nonreactive awareness of present-moment experiences, including emotions, cognitions, and bodily sensations, as well as external stimuli such as sights, sounds, and smells (Kabat-Zinn, 2005; Linehan, 1993). It originates in Buddhist meditation traditions, which maintain that the regular practice of mindfulness meditation reduces suffering and cultivates positive qualities such as wellbeing, insight, wisdom, openness, equanimity, and compassion (Goldstein & Kornfield, 2001). Instruction in mindfulness has become widely available in the Western society through meditation centers and mental health treatment programs that include secular adaptations of meditation practices. Studies of mindfulness-based treatment and of long-term practitioners of mindfulness meditation consistently show that mindfulness training is associated with psychological health (Brown, Ryan, & Creswell, 2007; Keng, Smoski, & Robins, 2011).

Self-compassion also has roots in Buddhist teachings, which suggest that compassion (toward self or others) involves awareness of suffering and distress and a desire to alleviate it. It includes an openhearted willingness to face suffering, rather than denying or turning away from it, and the recognition that failings and misfortunes are universal human experiences (Goldstein & Kornfield, 2001). In the psychological literature, the definition of self-compassion that is most consistent with Buddhist thought has been articulated by Neff (2003a), who describes three essential elements: treating oneself kindly and without harsh judgment during times of difficulty; recognizing that mistakes, failures, and hardships are part of the common human experience and need not be isolating; and mindfulness, defined in this context as maintaining a balanced awareness of painful thoughts and feelings rather than avoiding, suppressing, or overidentifying with them. A growing body of literature shows that self-compassion is associated with many aspects of healthy psychological functioning and that it can be cultivated through the practice of skills and exercises (Neff, 2011).

Mindfulness and self-compassion are closely interrelated. Kabat-Zinn (2003) notes that mindful attention to present-moment experience 'includes an affectionate, compassionate quality within the attending, a sense of openhearted friendly presence and interest' (p. 145). Similarly, Marlatt and Kristeller (1999) suggest that mindfulness involves attending to one's immediate experience with an attitude of loving kindness. Neff (2003a) suggests a reciprocal relationship between mindfulness and self-compassion, in

*Corresponding author. Email: rbaer@email.uky.edu

ISSN 1743–9760 print/ISSN 1743–9779 online

http://dx.doi.org/10.1080/17439760.2012.674548
http://www.tandfonline.com

which they facilitate and enhance each other. Responding to painful thoughts and feelings with self-kindness requires observing and acknowledging them without avoidance or overidentification. In turn, self-kindness may reduce the perceived severity or threat of negative thoughts and feelings, making it easier to maintain mindful awareness of them. Despite overlap in their definitions, distinctions between mindfulness and self-compassion can be noted. Mindfulness is broadly applied to pleasant, unpleasant, or neutral experiences, whereas self-compassion is generally focused more narrowly on suffering (Germer, 2009). Self-compassion is applied to the global self, whereas mindfulness skills are sometimes applied to the self (particularly nonjudging skills) but are often defined as a contextual stance toward thoughts, feelings, and sensations.

Both mindfulness and self-compassion may mediate the effects of mindfulness practice. It is widely assumed that practicing mindfulness should increase mindful responding to the experiences of daily life, which in turn should lead to reduced suffering and improved mental health (Carmody & Baer, 2008; Goldstein & Kornfield, 2001). Recent studies support this general model. In two randomized trials of mindfulness-based stress reduction (MBSR; Kabat-Zinn, 1982, 1990), one with a community sample (Nyklíček & Kuipers, 2008) and one with patients with cancer (Bränström, Kvillemo, Brandberg, & Moskowitz, 2010), increases in self-reported mindfulness skills statistically accounted for the effects of treatment on mental health outcomes. Two randomized trials of mindfulness-based cognitive therapy (MBCT; Segal, Williams, & Teasdale, 2002) found that increases in mindfulness skills mediated the effects of treatment on depressive symptoms (Kuyken et al., 2010; Shahar, Britton, Sbarra, Figueredo, & Bootzin, 2010). Carmody and Baer (2008) found that increased mindfulness scores mediated the relationship between home mindfulness practice and symptom reduction in MBSR participants. In long-term meditators and matched nonmeditators, Baer et al. (2008) found that a significant association between duration of meditation experience and psychological wellbeing was completely accounted for by increased mindfulness skills. Similar findings were reported by Josefsson, Larsman, Broberg, and Lundh (2011). These studies support the idea that increased mindfulness skills mediate the beneficial effects of mindfulness training and long-term meditation practice.

A few studies also suggest that self-compassion may mediate the effects of mindfulness practice. Shapiro, Astin, Bishop, and Cordova (2005) reported increased self-compassion scores in healthcare professionals who completed MBSR; this change may have mediated the effects on perceived stress, although the sample was too small to allow firm conclusions. Kuyken et al. (2010) reported that both self-compassion and mindfulness mediated the effects of MBCT on depressive symptoms. They also found that for participants with increased self-compassion, negative thoughts in response to sad moods did not lead to depressive relapse, suggesting that self-compassion allowed them to experience sad moods without succumbing to rumination.

Only a few studies have included measures of both mindfulness and self-compassion. In a clinical sample, Van Dam, Sheppard, Forsyth, and Earleywine (2011) found that mindfulness as measured by the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) accounted for much less variance in anxiety and depression than did self-compassion and concluded that self-compassion was a better predictor of these variables; however, they acknowledged that a multifaceted measure of mindfulness might have yielded different findings. Moreover, they did not assess previous history with mindfulness training or meditation. Hollis-Walker and Colosimo (2011) found that mindfulness and self-compassion predicted independent variance in psychological wellbeing, but used only a nonmeditating sample. Kuyken et al. (2010) assessed both mindfulness and self-compassion but examined only total scores, despite using multifaceted measures.

Several authors have argued that multifaceted constructs should be studied at the subscale level. Facets may be differentially correlated with other variables, and using only total scores sometimes obscures these relationships (Smith, Fischer, & Fister, 2003). The purpose of this study, therefore, was to examine relationships between psychological health and multifaceted measures of mindfulness and self-compassion in a sample with a wide range of meditation experience. We examined both total scores and subscale scores in our analyses. Because our sample was nonclinical, we used a comprehensive measure of psychological wellbeing as our dependent variable. We tested three hypotheses: first, that mindfulness and self-compassion would be significantly correlated with each other, with wellbeing, and with meditation experience; second, that mindfulness and self-compassion would account for independent variance in wellbeing; and third, that a significant relationship between meditation experience and wellbeing could be statistically accounted for by a combination of mindfulness and self-compassion scores.

Method

Participants and procedures

Participants were 77 adults engaged in the regular practice of mindfulness meditation (at least once or twice per week) and 75 demographically similar adults who had never meditated regularly (although they may

have tried it once or on a few occasions). All data were taken from an existing data set. Although other findings for some or all of these participants were reported by Baer et al. (2008), Lykins and Baer (2009), and Baer, Samuel, and Lykins (2011), the hypotheses of this study have not previously been tested in these participants. In the original data set, not all participants had completed all measures; therefore, this project used a subset of participants who had completed all of the relevant instruments (described later). Meditators had been recruited in several ways. Some had attended an international mindfulness conference at the University of Massachusetts Medical School and were subsequently mailed a large packet of questionnaires, including those used for this project. Others were recruited through announcements posted to internet-based groups on meditation or mindfulness. Flyers describing the study were posted in the local community and distributed in yoga and meditation centers. Many of the long-term meditators held graduate degrees and some worked in the mental health field. Demographically similar nonmeditators were recruited with flyers and mailings sent to staff and faculty at local colleges and universities and to mental health professionals in local hospitals, clinics, and private practices. More detailed description of these samples can be found in Baer et al. (2008).

Measures

Mindfulness was assessed using the Five Facet Mindfulness Questionnaire (FFMQ; Baer, Smith, Hopkins, Krietemeyer, & Toney, 2006), a 39-item instrument derived from a factor analysis of instruments measuring a dispositional tendency to be mindful in daily life. The FFMQ provides subscale scores for five elements of mindfulness: *observing, describing, acting with awareness, nonjudging of inner experience,* and *nonreactivity to inner experience*. Items are rated on a Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). FFMQ subscales have shown adequate to very good internal consistency in several samples and significant relationships in the predicted directions with many variables expected to be related to mindfulness. Studies have shown increases in FFMQ scores in participants in mindfulness-based treatment (Carmody & Baer, 2008) and significant correlations with extent of meditation experience in long-term practitioners (Lykins & Baer, 2009). In this sample, alpha was 0.94 for the total score and ranged from 0.84 to 0.91 for the subscales.

Self-compassion was measured with the Self-Compassion Scale (SCS, Neff, 2003b), a 26-item instrument with six subscales assessing elements of self-compassion. *Self-kindness* assesses the tendency to extend kindness and understanding toward oneself when feeling emotional pain or stress. *Self-judgment* assesses the tendency to be self-critical, disapproving, and intolerant toward one's own flaws and difficult experiences. *Common humanity* measures the recognition that feelings of inadequacy, emotional pain, and failure are universal human experiences. *Isolation* measures feelings of aloneness, separation, and disconnection from others at times of failure or distress. *Mindfulness* refers to holding negative thoughts and emotions in balanced awareness, with an open and accepting stance toward difficult feelings and situations. *Overidentification* assesses the tendency to become excessively immersed or consumed by negative feelings. The SCS has shown adequate to good internal consistency, significant negative correlations with self-criticism, neurotic perfectionism, anxiety, and depression, and significant positive correlations with social connectedness, life satisfaction, and emotional intelligence. SCS scores are moderately correlated with self-esteem but not with narcissism. Experienced meditators have been shown to score higher than nonmeditators (Neff, 2003b). In this study, alpha was 0.93 for the total scale and ranged from 0.72 to 0.86 for the subscales.

Psychological wellbeing was assessed with the scales of Psychological Wellbeing (PWB; Ryff & Keyes, 1995), which measure six elements of wellbeing: self-acceptance (a positive attitude toward oneself and one's life), positive relations with others (warm, trusting, and satisfying relationships), autonomy (independence, ability to follow one's own standards, and resist social pressures), environmental mastery (competence in managing life's demands), purpose in life (sense of meaning, goals, and direction), and personal growth (openness to new experiences, view of self as developing and growing). We used the 54-item version (total score only), which has been shown to have good psychometric properties (Ryff & Keyes, 1995) and had excellent internal consistency in this study ($\alpha = 0.94$).

Meditation experience was assessed with a brief questionnaire designed for the original collection of these data (Baer et al., 2008). Participants reported on whether they meditated regularly, for how long they had done so (in months or years), and the frequency per week and typical length in minutes of their meditation sessions. They were asked to exclude activities such as prayer, yoga, and tai chi when reporting on their meditation experience.

Results

Demographic characteristics of the meditating and nonmeditating samples are shown in Table 1. Differences between groups were examined with *t*-tests for continuous variables and chi-square analyses

Table 1. Demographic characteristics of meditating and nonmeditating samples.

	Meditators	Nonmeditators	t or χ^2	p
Age in years (M, SD)	45.26 (11.44)	43.15 (12.11)	$t = 1.11$	0.27
Education (% grad degree)	70%	77%	$\chi^2 = 3.49$	0.32
Sex (% male)	25%	36%	$\chi^2 = 2.31$	0.13
Race (% White)	92%	89%	$\chi^2 = 0.37$	0.54
% MH professional	56%	47%	$\chi^2 = 1.28$	0.26
Years experience MH field	14.05 (9.59)	15.03 (9.85)	$t = -0.43$	0.67

Note: MH = mental health.

Table 2. Correlations between mindfulness and self-compassion subscales in combined sample ($N = 152$).

	Mindfulness subscales				
Self compassion subscales	Observe	Describe	Act aware	Nonjudge	Nonreact
Self-kindness	0.46**	0.47**	0.35**	0.58**	0.55**
Self-judgment	0.25**	0.28**	0.39**	0.69**	0.56**
Common humanity	0.34**	0.26**	0.13	0.30**	0.40**
Isolation	0.17*	0.15	0.40**	0.48**	0.40**
Mindfulness	0.42**	0.34**	0.31**	0.46**	0.54**
Overidentification	0.22**	0.26**	0.46**	0.60**	0.56**

Note: *$p < 0.05$, **$p < 0.01$.

for categorical variables. Differences for age, sex, race, level of education, status as a mental health professional, and years of experience in the mental health field were not significant; therefore, for the remaining analyses, we combined the meditating and nonmeditating groups to increase the range of variability for all measures. Among the regular meditators, mean duration of meditation practice was 7.23 years (SD = 3.88). Most (68%) reported meditating between three and six times per week (mean = 4.24 times per week, SD = 1.82). A large majority (74%) reported meditating between 20 and 45 minutes each time (mean = 30.49 minutes, SD = 12.27). Preliminary analyses showed that duration of meditation experience (in years) was more strongly correlated with the other variables than was frequency of meditation (times per week) or length in minutes. Therefore, we used duration of meditation experience in all analyses.

Our first hypothesis was that mindfulness and self-compassion scores would be significantly correlated with each other, with wellbeing, and with meditation experience (duration of regular practice). This hypothesis was largely supported. FFMQ and SCS total scores were strongly correlated ($r = 0.69$, $p < 0.001$). Correlations between the subscales are presented in Table 2. As expected, nearly all were significant. Correlations of mindfulness and self-compassion subscales with meditation experience and wellbeing are listed in Table 3. Most mindfulness and self-compassion scores showed small to moderate relationships with meditation experience, though a few were nonsignificant. All mindfulness and self-compassion scores were significantly related to psychological wellbeing. Meditation experience also was significantly correlated with wellbeing.

Table 3. Correlations of mindfulness and self-compassion subscales with psychological wellbeing and meditation experience ($N = 152$).

	Meditation experience	Psychological wellbeing
Mindfulness scales		
Observing	0.41***	0.30***
Describing	0.22**	0.45***
Acting with awareness	0.04	0.43***
Nonjudging	0.16*	0.52***
Nonreactivity	0.29***	0.50***
FFMQ total score	0.30***	0.60***
Self-compassion scales		
Self-kindness	0.30***	0.51***
Self-judgment	0.16*	0.56***
Common humanity	0.17*	0.44***
Isolation	0.07	0.55***
Mindfulness	0.30***	0.53***
Overidentification	0.05	0.55***
SCS total score	0.22**	0.67***
Psychological wellbeing	0.20*	–

Note: *$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

Our second hypothesis was that mindfulness and self-compassion would predict significant independent

Table 4. Hierarchical regression analyses showing prediction of psychological wellbeing by mindfulness and self-compassion scores.

Analysis	Step	Predictor(s)	Change in R^2	Total R^2	Final beta
1	1	Meditation experience	0.04*	0.04*	0.01 ns
	2	FFMQ and SCS total scores	0.45***	0.49***	
		FFMQ total			0.27***
		SCS total			0.48***
2	1	Meditation experience	0.04*	0.04*	0.01 ns
	2	SCS scores	0.35***	0.39***	
		Self-judgment/self-kindness			0.19[a]
		Common humanity/mindfulness			0.26***
	3	FFMQ scores	0.07***	0.47***	
		Observing			−0.08 ns
		Describing			0.22**
		Nonjudge/nonreact			0.24**

Notes: In both analyses, the dependent variable is the Psychological Wellbeing (PWB) total score. The beta weights are those obtained after the final step in the analysis. FFMQ = Five Facet Mindfulness Questionnaire, SCS = Self Compassion Scale.
[a]$p = 0.051$.
*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.

variance in psychological wellbeing. We tested this hypothesis with partial correlations using total scores for all variables. The partial correlation between mindfulness and wellbeing, controlling for self-compassion, was 0.27 ($p < 0.001$). The partial correlation between self-compassion and wellbeing, controlling for mindfulness, was 0.44 ($p < 0.001$). The difference between these two correlations is significant ($t = 2.93$, $p < 0.01$), suggesting that, when total scores are used, self-compassion is a stronger predictor of wellbeing than is mindfulness, although each predicts significant incremental variance in wellbeing after accounting for the other.

Our third hypothesis was that a significant relationship between meditation experience and wellbeing would be accounted for by a combination of mindfulness and self-compassion scores. We tested this with two hierarchical regression analyses, listed in Table 4. The first used total scores for all variables. Meditation experience was entered at Step 1 and accounted for significant variance in wellbeing ($R^2 = 0.04$, beta = 0.20, $p < 0.02$). At Step 2, FFMQ and SCS total scores were entered simultaneously, accounting for an additional 45% of the variance and raising R^2 to 0.49 ($p < 0.001$). Although the FFMQ and SCS total scores are significantly correlated, variance inflation factors (VIFs) were below 2.0, well within the limits suggested by Fox (1991) for detecting problematic levels of multicollinearity. In the final model, both the FFMQ and the SCS were significant independent predictors of wellbeing, with beta weights of 0.27 and 0.48, respectively. These values are consistent with the partial correlations described earlier in suggesting that self-compassion is a stronger predictor of wellbeing than is mindfulness, when total scores are used. In the final model, the beta weight for meditation experience dropped to 0.01 (ns), showing that the significant relationship between meditation experience and wellbeing is entirely accounted for by mindfulness and self-compassion total scores and suggesting that both variables may be mediators of this relationship.

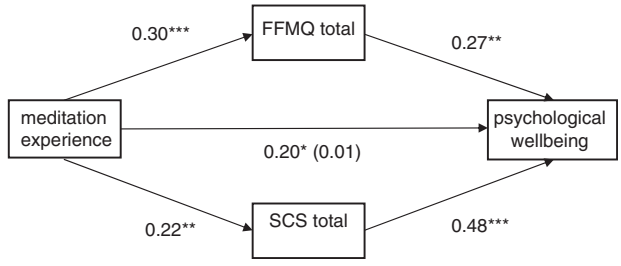

Figure 1. Relationship between meditation experience and psychological wellbeing, accounting for mindfulness and self-compassion total scores. All values are beta coefficients. Values on arrows leading from FFMQ and SCS scores show relationships with wellbeing when all variables are included in the model. The value in parentheses shows the relationship between meditation experience and wellbeing when both FFMQ and SCS total scores are included in the model.

The proposed mediational relationship is shown in Figure 1. To test significance of the indirect pathways, a bootstrap analysis was conducted using the procedure outlined by Preacher and Hayes (2004). Mindfulness and self-compassion were simultaneously entered as mediators for the relationship between meditation experience and psychological wellbeing. The total indirect effect via both self-compassion and mindfulness was significant (95% bootstrap confidence interval of 0.151–0.579). Significant indirect effects were also observed for both self-compassion (95%

bootstrap confidence interval of 0.067–0.395) and mindfulness (95% bootstrap confidence interval of 0.051–0.294). These findings suggest that both mindfulness and self-compassion independently account for significant components of the effect of meditation experience on psychological wellbeing.

Next, we examined whether particular components of mindfulness and self-compassion may function as mediators of the relationship between meditation experience and psychological wellbeing. Mediating variables generally have significant relationships with both the independent and dependent variables; therefore, in this analysis, we included only the subscales of the SCS and FFMQ that had shown significant zero-order correlations with both meditation experience and wellbeing in our previous analyses (Table 3). Four FFMQ scales (all but *acting with awareness*) and four SCS scales (all but *isolation* and *overidentification*) met these criteria. Regression models that include multiple intercorrelated predictors can be difficult to interpret; in particular, the magnitude of the regression coefficients is likely to be reduced, and misleading, because each is predicting substantially overlapping variance and, therefore, has little opportunity to make a unique contribution (Morrow-Howell, 1994). To circumvent this problem, we reduced the number of predictors by creating composite variables from pairs of subscales with intercorrelations over 0.50. The *self-judgment* and *self-kindness* subscales of the SCS are considered opposite poles of the same dimension and were strongly intercorrelated ($r = 0.72$); therefore, we averaged these two subscales. The resulting 10-item composite scale had excellent internal consistency ($\alpha = 0.91$). Similarly, we averaged the *common humanity* and *mindfulness* subscales of the SCS, which were strongly intercorrelated ($r = 0.62$); the resulting eight-item composite had very good internal consistency ($\alpha = 0.82$). We also averaged the *nonjudging* and *nonreactivity* subscales of the FFMQ ($r = 0.56$; $\alpha = 0.91$).

As in the previous regression analysis, meditation experience entered at Step 1 and accounted for significant variance in wellbeing. At Step 2, we entered the SCS-based composite variables just described (*self-judgment/self-kindness* and *common humanity/mindfulness)* and found a significant increase in R^2 to 0.39. At Step 3, we entered *observing, describing,* and the *nonjudging/nonreactivity* composite from the FFMQ and R^2 increased to 0.47. In the final model, significant independent predictors of wellbeing were *common humanity/mindfulness* from the SCS and *describing* and *nonjudging/nonreactivity* from the FFMQ. *Self-judgment/self-kindness* from the SCS fell just short of significance ($p = 0.051$) and *observing* (from the FFMQ) was nonsignificant. VIF values were all below 2.55, suggesting that multicollinearity was not problematic. These findings (Table 4) are consistent with the previous analyses in suggesting that elements of both mindfulness and self-compassion are important in predicting psychological wellbeing. Beta weights for the significant predictors ranged from 0.22 to 0.26, suggesting that FFMQ and SCS scores are about equally predictive of wellbeing when these subscales and composites are used.

Discussion

This study examined the relative importance of mindfulness and self-compassion measures in accounting for variance in psychological wellbeing in a nonclinical sample with a wide range of meditation experience. Our findings clearly suggest that, although the mindfulness and self-compassion measures we used share significant variance, both are important in predicting psychological wellbeing. When total scores were used, self-compassion was a stronger predictor of wellbeing than was mindfulness. At the subscale level, facets of mindfulness and self-compassion were about equally predictive of wellbeing. Results showed that the significant association between duration of regular meditation practice and psychological wellbeing was completely accounted for by a combination of mindfulness and self-compassion scores. Findings suggest that both mindfulness and self-compassion may mediate the effects of meditation practice on wellbeing; however, this result must be interpreted cautiously because our analyses were cross-sectional.

Our findings differ somewhat from those of Van Dam et al. (2011), who reported that self-compassion was a much stronger predictor than mindfulness of symptoms of anxiety and depression in a clinical, nonmeditating sample. This difference may be attributable to two characteristics of our study: the use of a nonclinical sample that included many experienced meditators, and the use of the FFMQ instead of the MAAS to measure mindfulness. The multifaceted structure of the FFMQ, which has five subscale scores, provides a broader conceptualization of mindfulness skills than the MAAS, which provides only a total score. Meditation is believed to cultivate both mindfulness and self-compassion; therefore, the inclusion of experienced meditators probably created a broader range of these variables in our sample. Van Dam et al. (2011) also suggested that self-compassion may be easier to assess than mindfulness because the SCS measures attitudes toward the self, whereas the MAAS measures frequency of past conscious states, which may be difficult for many people to report on. In contrast, we note that many authors conceptualize both mindfulness and self-compassion as sets of skills. Linehan (1993) describes the development of *mindfulness skills* as a central goal of dialectical behavior therapy, a leading mindfulness-based intervention, and

Segal et al. (2002) describe mindfulness as the core skill to be learned in MBCT for depressive relapse. Similarly, Salzberg (2009) states that 'compassion and loving-kindness are skills' (p. ix) that can be developed and strengthened, and Neff (2011) describes self-compassion as a collection of skills that can be cultivated through practical exercises. Both the FFMQ and the SCS have shown strong psychometric properties in nonmeditating samples, suggesting that they assess psychological skills, or tendencies to respond to experience in particular ways, that ordinary people can report on. Both instruments also showed good internal consistencies in this sample, providing additional support for their utility in the study of how mindfulness training contributes to psychological health.

This study has several limitations. The sample was unusually well educated and included many mental health professionals. On the other hand, many long-term practitioners of mindfulness meditation are well educated and work in professional fields; therefore, including demographically matched nonmeditating participants controlled for the demographic characteristics of the meditators while providing increased variability in the measures of interest. The data are cross-sectional and, therefore, do not allow firm conclusions to be drawn about the mediating effects of self-compassion and mindfulness on psychological wellbeing. Convincing demonstrations of mediation require evidence that changes in the proposed mediator precede changes in the dependent variable; thus, longitudinal research that measures mindfulness and self-compassion frequently in participants who begin a regular meditation practice would be very informative. In addition, when multiple intercorrelated predictors are entered into regression models, as in our analysis at the subscale level, the beta weights can be difficult to interpret. We addressed this problem in several ways (J. Cohen & P. Cohen, 1983; Morrow-Howell, 1994). First, we reduced the number of predictors by creating composite variables from highly correlated subscales; the resulting composite scales had high internal consistencies. Second, we used hierarchical regression analysis and examined the significance of the change in variance accounted for at each step. Third, we examined the VIFs and found all to be well within accepted limits. Nevertheless, it is possible that in other samples, the specific subscales showing incremental validity in the prediction of wellbeing might differ from those reported in this study. However, our robust findings at the total score level suggest that both mindfulness and self-compassion are likely to be significant independent predictors when the FFMQ and SCS are used in other samples.

Measurement issues also must be considered. Although the availability of separate measures of mindfulness, self-compassion, and wellbeing implies that they are distinct constructs, overlap between them, at least as operationalized in the measures used in this study, must be acknowledged. In particular, the wellbeing scale (PWB) includes a self-acceptance subscale with items such as, 'I like most aspects of my personality' whose content overlaps with items on the self-judgment subscale of the SCS (e.g. 'I'm intolerant and impatient toward those aspects of my personality I don't like'). Overlap between a proposed mediator and the dependent variable is a limitation that might be addressed through the use of different measures in future research. In addition, this study relied entirely upon self-report methods of assessment. Although the measures used have well documented psychometric strengths, they may be subject to demand characteristics, and relationships among the variables may be inflated through the use of a single method of data collection. Finally, although participants reported on several aspects of their meditation experience, and were asked not to include related practices such as prayer and yoga, we collected no information about exactly what they do while meditating; e.g. how they respond when their minds wander or when sensation or emotions arise. Variations in meditation practices or in compliance with meditation instructions may be related to the other variables of interest. Future research with experienced meditators would be enhanced with better methods of assessing the nature and extent of participants' meditation practice.

Another important topic for future research is the extent to which more explicit training in self-compassion should be included in mindfulness-based interventions. In the Buddhist tradition, two distinct but closely related types of meditation are often described. Mindfulness meditation focuses on nonjudgmental, nonreactive observation of present moment experiences as they arise. Loving-kindness and compassion meditations, in contrast, invite participants to extend feelings of warmth, care, and goodwill to themselves and others, sometimes by silently repeating a sequence of phrases, such as 'may I (or he or she) be happy', 'may I be healthy', and 'may I be peaceful'. Although some MBSR programs include loving-kindness meditation in the eight-week course, many do not, and it is unknown whether the inclusion of this practice in MBSR enhances therapeutic outcomes. MBCT does not include loving kindness or compassion meditations, yet Kuyken et al. (2010) found that MBCT led to increases in self-compassion. Future research could investigate whether beneficial outcomes are stronger if this practice is added to the intervention.

In summary, this study adds to the literature on mindfulness and self-compassion by suggesting that both of these variables are important to understanding the mechanisms through which long-term meditation practice and mindfulness-based treatment lead to improved psychological health. Future research

should continue to investigate the extent to which mindfulness and self-compassion are overlapping vs. distinct constructs as well as the effects of mindfulness and self-compassion practices on mental health outcomes. Other important questions include whether mindfulness training should precede self-compassion practices, whether cultivation of one consistently leads to increases in the other, and whether self-compassion can be cultivated through practices other than meditation. Differences between individuals or between populations in the relative utility of mindfulness and self-compassion practices also should be studied.

References

Baer, R.A., Samuel, D.B., & Lykins, E. (2011). Differential item functioning on the Five Facet Mindfulness Questionnaire is minimal in demographically matched meditators and nonmeditators. *Assessment, 18*, 3–10.

Baer, R.A., Smith, G.T., Hopkins, J., Krietemeyer, J., & Toney, L. (2006). Using self-report assessment methods to explore facets of mindfulness. *Assessment, 13*, 27–45.

Baer, R.A., Smith, G.T., Lykins, E., Button, D., Krietemeyer, J., Sauer, S.E., ... Williams, M. (2008). Construct validity of the Five Facet Mindfulness Questionnaire in meditating and nonmeditating samples. *Assessment, 15*, 329–342.

Bränström, R., Kvillemo, P., Brandberg, Y., & Moskowitz, J.T. (2010). Self-report mindfulness as a mediator of psychological wellbeing in a stress reduction intervention for cancer patients: A randomized study. *Annals of Behavioral Medicine, 39*, 151–161.

Brown, K.W., & Ryan, R.M. (2003). The benefits of being in the present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848.

Brown, K.W., Ryan, R.M., & Creswell, J.D. (2007). Mindfulness: Theoretical foundations and evidence for its salutary effects. *Psychological Inquiry, 18*, 211–237.

Carmody, J., & Baer, R.A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*, 23–33.

Cohen, J., & Cohen, P. (1983). *Applied multiple regression/correlation analysis for the behavioral sciences*. Hillsdale, MJ: Lawrence Erlbaum.

Fox, J. (1991). *Regression diagnostics*. Beverly Hills, CA: Sage.

Germer, C.K. (2009). *The mindful path to self-compassion: Freeing yourself from destructive thoughts and emotions*. New York, NY: Guilford Press.

Goldstein, J., & Kornfield, J. (2001). *Seeking the heart of wisdom: The path of insight meditation* (reprint ed.). Boston, MA: Shambhala Classics.

Hollis-Walker, L., & Colosimo, K. (2011). Mindfulness, self-compassion, and happiness in nonmeditators: A theoretical and empirical examination. *Personality and Individual Differences, 50*, 222–227.

Josefsson, T., Larsman, P., Broberg, A., & Lundh, L.-G. (2011). Self-reported mindfulness mediates the relation between meditation experience and psychological well-being. *Mindfulness, 2*, 49–58.

Kabat-Zinn, J. (1982). An outpatient program in behavioral medicine for chronic pain patients based on the practice of mindfulness meditation: Theoretical considerations and preliminary results. *General Hospital Psychiatry, 4*, 33–47.

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your mind and body to face stress, pain, and illness*. New York, NY: Delacorte.

Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice, 10*, 144–156.

Kabat-Zinn, J. (2005). *Coming to our senses: Healing ourselves and the world through mindfulness*. New York, NY: Hyperion.

Keng, S., Smoski, J.J., & Robins, C.J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review, 31*, 1041–1056.

Kuyken, W., Watkins, E., Holden, E., White, K., Taylor, R., Byford, S., ... Dalgleish, T. (2010). How does mindfulness-based cognitive therapy work? *Behaviour Research and Therapy, 48*, 1105–1112.

Linehan, M. (1993). *Cognitive-behavioral treatment of borderline personality disorder*. New York, NY: Guilford.

Lykins, E.L., & Baer, R.A. (2009). Psychological functioning in a sample of long-term practitioners of mindfulness meditation. *Journal of Cognitive Psychotherapy, 23*, 226–241.

Marlatt, G.A., & Kristeller, J.L. (1999). Mindfulness and meditation. In W.R. Miller (Ed.), *Integrating spirituality into treatment* (pp. 67–84). Washington, DC: American Psychological Association.

Morrow-Howell, N. (1994). The M word: Multicollinearity in multiple regression. *Social Work Research, 18*, 247–251.

Neff, K.D. (2003a). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity, 2*, 85–101.

Neff, K.D. (2003b). The development and validation of a scale to measure self-compassion. *Self and Identify, 2*, 223–250.

Neff, K.D. (2011). *Self-compassion*. New York, NY: Harper Collins.

Nyklíček, I., & Kuipers, K. (2008). Effects of mindfulness-based stress reduction intervention on psychological well-being and quality of life: Is increased mindfulness indeed the mechanism? *Annals of Behavioral Medicine, 35*, 331–340.

Preacher, K.J., & Hayes, A.F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*, 717–731.

Ryff, C.D., & Keyes, C.L.M. (1995). The structure of psychological wellbeing revisited. *Journal of Personality and Social Psychology, 69*, 719–727.

Salzberg, S. (2009). Foreword. In C.K. Germer (Ed.), *The mindful path to self-compassion*. New York, NY: Guilford.

Segal, Z.V., Williams, J.M., & Teasdale, J.D. (2002). *Mindfulness-based cognitive therapy for depression: A new approach to preventing relapse*. New York, NY: Guilford.

Shahar, B., Britton, W., Sbarra, D., Figueredo, A., & Bootzin, R. (2010). Mechanisms of change of mindfulness-based cognitive therapy for depression: Preliminary evidence from a randomized controlled trial. *International Journal of Cognitive Therapy, 3*, 402–418.

Shapiro, S.L., Astin, J.A., Bishop, S.R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management, 12*, 164–176.

Smith, G.T., Fischer, S., & Fister, S.M. (2003). Incremental validity principles in test construction. *Psychological Assessment, 15*, 467–477.

Van Dam, N.T., Sheppard, S.C., Forsyth, J.P., & Earleywine, M. (2011). Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. *Journal of Anxiety Disorders, 25*, 123–130.