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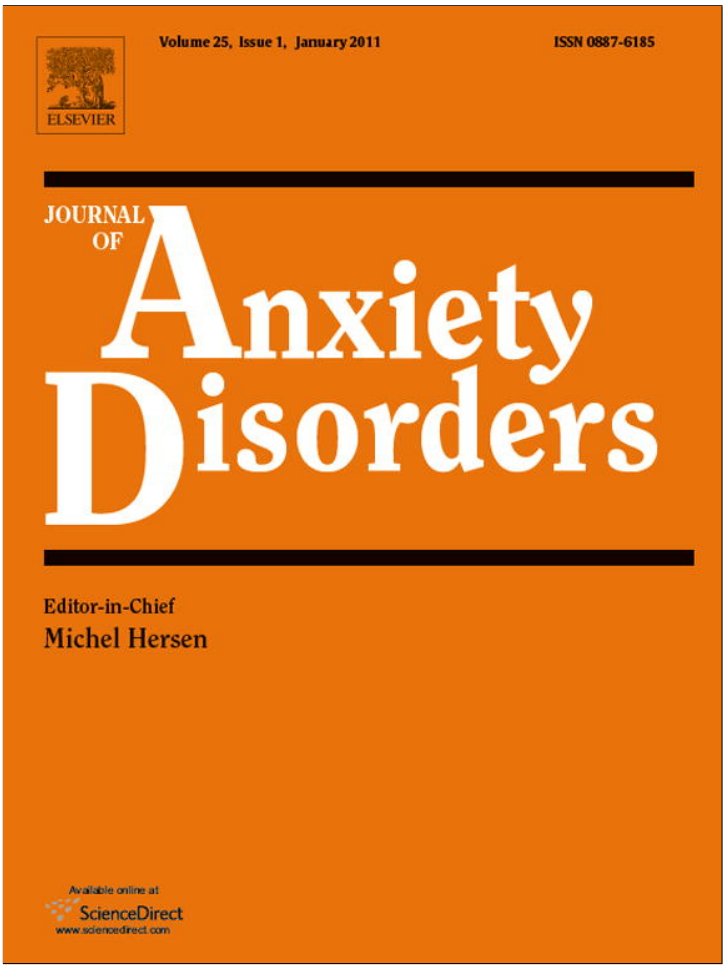

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Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression

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ABSTRACT

Mindfulness has received considerable attention as a correlate of psychological well-being and potential mechanism for the success of mindfulness-based interventions (MBIs). Despite a common emphasis of mindfulness, at least in name, among MBIs, mindfulness proves difficult to assess, warranting consideration of other common components. Self-compassion, an important construct that relates to many of the theoretical and practical components of MBIs, may be an important predictor of psychological health. The present study compared ability of the Self-Compassion Scale (SCS) and the Mindful Attention Awareness Scale (MAAS) to predict anxiety, depression, worry, and quality of life in a large community sample seeking self-help for anxious distress ($N = 504$). Multivariate and univariate analyses showed that self-compassion is a robust predictor of symptom severity and quality of life, accounting for as much as ten times more unique variance in the dependent variables than mindfulness. Of particular predictive utility are the self-judgment and isolation subscales of the SCS. These findings suggest that self-compassion is a robust and important predictor of psychological health that may be an important component of MBIs for anxiety and depression.

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1. Introduction

Mindfulness covaries with psychological well-being and mental health. A recent meta-analysis suggests that mindfulness-based interventions (MBIs) are efficacious (Hedge's $g \approx 1$) in treating anxiety and mood disorders and reduce anxious and depressive symptoms (Hedge's $g \approx 0.6$) (Hofmann, Sawyer, Witt, & Oh, 2010). At least two different operationalizations of mindfulness have been shown to mediate outcomes in MBIs (Carmody & Baer, 2008; Nykliček & Kuijpers, 2008). Despite the common link to mindfulness among MBIs, there is variability in the extent that varying treatments promote mindfulness (see Hofmann et al., 2010; Rapgay & Bystrisky, 2009). Further, debate about whether mindfulness can be assessed and if so, how to measure it, is widespread (e.g., *Psychological Inquiry*, 2007, Vol. 18, 4).

Mindfulness is commonly defined as a quality of consciousness involving present-centered attention and awareness that is accepting and non-judgmental (Bishop et al., 2004). It is a complex intentional phenomenon with attributes of meta-consciousness, attentional allocation, and directed awareness (e.g., Grossman, 2008; Kabat-Zinn, 2005). Mindfulness also entails a progressive understanding of the "moment to moment workings of adaptive and maladaptive thoughts and feelings" (Rapgay & Bystrisky, 2009, p. 154). Although changes in meta-cognition, attentional allocation, and directed awareness are known contributors to the effects of MBIs (e.g., Davidson et al., 2003; Lutz, Slagter, Dunne, & Davidson, 2008), these mechanisms prove difficult to assess via traditional self-report (e.g., Christopher, Charoensuk, Gilbert, Neary, & Pearce, 2009; Grossman, 2008; Van Dam, Earleywine, & Danoff-Burg, 2009).

An important difficulty inherent to self-report for these constructs is that human participants have limited access to higher order cognitive processes of the type discussed in modern mindfulness research (Nisbett & Wilson, 1977). Although the experiments showing limited access to cognitive states are not without drawbacks (e.g., White, 1980), their conclusions have particular application to meta-conscious states, which some mindfulness scales may require. Attempts at re-representing conscious states are limited on philosophical, practical, and neuroscientific bases (see Schooler, 2002). These limitations may suggest the need for consideration of the various other qualities typically considered to support positive outcomes in MBIs (e.g., Kabat-Zinn, 1990; Leary & Tate, 2007). It may be that the attitudes and behaviors that support positive MBI outcomes are easier to assess and therefore may serve as better indicators of potential treatment progress. An early step to identifying potentially important constructs to effective MBIs is to

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examine the ability of supporting attitudes and behaviors to predict psychopathology and well-being, especially in direct comparison to mindfulness.

1.1. Positive mental states as robust mindful phenomena

Positive mental states are a robust construct commonly associated with MBIs; these may include the attitudes with which one approaches things (e.g., nonjudging awareness, nonstriving, acceptance; Kabat-Zinn, 1990), the behaviors one intends and commits (e.g., prosocial behavior; Leary & Tate, 2007), or the approach that one takes to interpreting private experience (e.g., self-compassion; Germer, 2009; Rosch, 2007). Although many MBIs cultivate positive mental states (e.g., Hayes, Strosahl, & Wilson, 1999; Kabat-Zinn, 1990, 2005), their contributions to process and outcomes have been largely overlooked. Positive mental states like lovingkindness, joy, compassion, and equanimity (see Germer, 2009; Kabat-Zinn, 2005), have only recently begun to receive attention for their ability to increase life satisfaction, improve resilience, and "living well" (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Gilbert, 2009). MBIs increase positive emotions and induce patterns of neurophysiological asymmetry indicative of positive affect (e.g., Davidson et al., 2003; Fredrickson et al., 2008). Positive emotions also display a reciprocal relationship with the meta-cognitive, attentional, and neuroscientific changes often associated with mindfulness (e.g., Lutz, Slagter, et al., 2008), and foster positive outcomes of MBIs (e.g., Shapiro, Astin, Bishop, & Cordova, 2005).

1.2. Self-compassion may be a critical component

One such positive mental state and one of the only other theoretically consistent constructs that has been shown to mediate MBI outcomes (Shapiro et al., 2005), is self-compassion. Within a traditional mindfulness context, ". . . compassion is viewed as a necessary underpinning for the whole path, a kind of pilot light for the other virtues . . ." (Rosch, 2007, p. 260). Self-compassion may be an especially important component of the positive mental states associated with MBIs (Germer, 2009). Normal function is characterized by self-evaluation (e.g., Leary & Tate, 2007; Rosch, 2007); the contents of which are often negative and self-deprecating in anxiety and depression (e.g., Beck, Rush, Shaw, & Emery, 1979; Mineka, Watson, & Clark, 1998). Attitudes of non-judgment and gentleness with one's private and public behaviors are commonly promoted in various MBIs (e.g., Hayes et al., 1999; Kabat-Zinn, 1990). These attitudes seem reflected by self-compassion, defined as "being touched by and open to one's own suffering, not avoiding or disconnecting from it, [and] generating the desire to alleviate one's suffering and to heal oneself with kindness" (Neff, 2003a, p. 87). By offering a radical alternative to the self-criticism, excessive self-control, and self-imposed rigid standards characteristic of anxiety and depression, self-compassion may contribute to the efficacy of MBIs in these disorders (e.g., Germer, 2009; Gilbert, 2009).

Self-compassion also has benefits relative to more traditional psychotherapeutic factors. It is less contingent upon external outcomes than self-esteem and is a significant predictor of happiness, optimism, and positive affect (Neff & Vonk, 2009). Higher self-compassion is associated with greater psychological well-being and provides a buffer against acute stressors (Neff, Kirkpatrick, & Rude, 2007). Self-compassion can also be developed indirectly and has implications for other components of MBIs. Forms of meditation training non-specific to compassion increase self-compassion (e.g., Shapiro, Brown, & Biegel, 2007). Further, changes in self-compassion strongly predict changes on the MAAS during meditation training (Shapiro et al., 2007) and the Self-Compassion Scale (SCS; Neff, 2003b) mediates increases in quality of life and decreases in general psychological distress and perceived stress following a commonly used MBI (Shapiro et al., 2005).

There are three theoretical facets to self-compassion as defined by Neff (2003a). These theoretical facets are represented by pairs of opposing subscales and identified by their positive quality; self-kindness and self-judgment, common humanity and isolation, and mindfulness and over-identification (Neff, 2003b). The self-kindness facet represents an alternative to self-criticism, self-condemnation, blaming, and rumination, which are common to classic notions of depression (see Beck et al., 1979) and other forms of psychopathology (e.g., anxiety disorders; Forsyth & Eifert, 2008). It represents an internalization of the attitude that therapists often attempt to portray toward their clients.

The common humanity facet represents a recognition that one's suffering does not occur in isolation, but is inherent to the nature of life and intimately related to the suffering of others. While this facet lacks theoretical associations with specific psychiatric symptomatology, it appears to have links to general well-being (Neff, 2003a). It also bears considerable similarity to the notion of de-centering, one potential mechanism of mindfulness (see Carmody, Baer, Lykins, & Oldendzki, 2009) and an important predictor of relapse in cognitive behavioral therapy for depression (Fresco, Segal, Buis, & Kennedy, 2007).

Finally, the mindfulness facet represents a stance of equanimity towards difficult and uncomfortable thoughts and experiences rather than over-identification or excessive fixation, a view similar to the distinction between cognitive defusion and cognitive fusion in Acceptance and Commitment Therapy (ACT; Hayes et al., 1999). The mindfulness facet of the SCS suggests an important role for adaptive and maladaptive emotion regulation, similar to classical notions of mindfulness (Rapgay & Bystrisky, 2009). Mindfulness, as operationalized in the SCS, represents a state of mental balance (one of the most promising of the mental states cultivated in MBIs; see Kabat-Zinn, 2005) rather than a specific type of attention or awareness (as mindfulness is more commonly operationalized; Bishop et al., 2004). Given the comprehensive multi-faceted nature, its relationship and theoretical relationship to MBIs (e.g., Shapiro et al., 2005), and positive relation to psychological health (Neff & Vonk, 2009), self-compassion may be an important component of MBIs and alternative indicator to mindfulness.

1.3. Current study

Using multiple regression and correlation analyses, we examined the cross-sectional ability of two known MBI mechanisms (e.g., mindfulness and self-compassion) to predict symptom severity (anxiety, depression, worry) and a measure of well-being (quality of life) in an international sample reporting anxious and depressive distress ($N = 504$). To our knowledge there is no prior work exploring the relationship of self-compassion and mindfulness simultaneously to psychological health in a sample with anxious and depressive symptoms. As such, the present study is exploratory in nature and adds to knowledge about self-compassion in relation to anxiety and depression, alone and in concert with mindfulness.

2. Methods

2.1. Procedure

Data presented in the current paper were collected as part of the initial assessment protocol of an ongoing randomized clinical trial evaluating the effectiveness of a popular self-help workbook for anxious suffering: *The mindfulness & acceptance workbook for anxiety: A guide to breaking free from anxiety, phobias, and worry using*

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Acceptance and Commitment Therapy (Forsyth & Eifert, 2008). Participants were recruited online from a variety of self-help and mental health websites and listservs and directed to the study website where they provided informed consent, demographic and eligibility information, and contact information (e.g., name, address, and email).

Individuals were eligible to participate if they were over the age of 18, had regular access to a computer, were fluent in written English with reading proficiency at the 8th grade level, had not previously used the self-help workbook being evaluated in the study, and endorsed at least one item indicating a struggle with worry, fear, and anxiety, in addition to a positive endorsement of the following question: "*Do you believe that you have a problem with anxiety, or may suffer from an anxiety disorder*?" Eligible participants were sent an email inviting them to complete an online battery of standardized assessment measures, the data from which were used in the current paper. Upon completion of the initial assessment battery, individuals were formally enrolled in the clinical trial. Participants were screened via Internet Protocol (IP) address and email to ensure no duplicate responses.

2.2. Participants

Data from 504 participants, 32.7% of whom were from locations outside of the United States, were analyzed in the current study. Our sample, although international, primarily represented individuals from Canada, the United Kingdom, or Australia (83.5% of international participants). The small number of remaining international participants (approximately 5.4% of total sample) represented a diverse collection of nations (e.g., India, Pakistan, Slovenia, South Africa, Greece). Participants ranged from 18 to 73 years of age ($M = 38.2$, $SD = 11.1$) and the majority (78.6%) was female. Most individuals self-identified as Caucasian (86.3%), followed by Other (4%), Asian (3.2%), Hispanic (3.2%), Multiracial (1.8%), and African American (1%). The sample was well educated; 32.9% indicating they had graduated college, 29% indicating they had a graduate education, 27% reporting some college, and 8.2% reporting a high school education or equivalent, and 3% indicating less than a high school degree. The participants were primarily employed either full (39.1%) or part-time (19.2%), though 14.5% were unemployed, 11.7% were on disability, and 8.5% were students.

Nearly the entire sample (90.5%) had sought mental health services at some point in their life, and 82% had been given a psychiatric diagnosis. Just under half of the participants (49.7%) reported current use of psychiatric medications and 46.4% stated they were currently in therapy. According to cut-off criteria for the Beck Depression Inventory (0–9 = not depressed, 10–18 = mild-moderate depression, 19–29 = moderate-severe depression, 30–63 = severe depression; Beck et al., 1979) and Beck Anxiety Inventory (0–7 = minimal anxiety, 8–15 = mild anxiety, 16–25 = moderate anxiety, 26–63 = severe anxiety; Beck & Steer, 1993), the majority of the population (87.3%) was experiencing moderate-severe anxiety *or* depression, 61.8% were experiencing moderate-severe anxiety *and* depression, and 34% were experiencing severe anxiety *and* depression.

2.3. Measures

2.3.1. Mindfulness

Although there are many mindfulness measures available, we chose to use the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) because it (a) is psychometrically consistent across cultures (Christopher et al., 2009), (b) has shown theoretically consistent relationships to neural activity (Creswell, Way, Eisenberger, & Lieberman, 2007), and (c) is a known mediator of MBI outcomes (Nykliček & Kuijpers, 2008). The MAAS is a 15-item questionnaire assessing dispositional levels of present awareness and attention (e.g., "I rush through activities without being really attentive to them" and "I drive places on 'automatic pilot' and then wonder why I went there"). Respondents indicate how often they have the experiences referenced by each item using a 6-point Likert-type scale, anchored from 1 (*almost always*) to 6 (*almost never*). The MAAS has good convergent and discriminant validity, as well as good psychometric properties. Internal consistency in the current sample was high (Cronbach's $\alpha = .88$).

2.3.2. Self-compassion

The SCS (Neff, 2003b) is a 26-item questionnaire designed to assess overall self-compassion (total score) and components of self-compassions across three conceptually distinct, but theoretically related facets: common humanity (SCS-CH), mindfulness (SCS-M), and self-kindness (SCS-SK). Although the construct was defined with these three facets in mind (Neff, 2003a), factor analysis suggested six subscales representing a positive and negative aspect of each facet (Neff, 2003b). Items are designed to capture how respondents perceive their actions toward themselves in difficult times (e.g., "When times are really difficult, I tend to be tough on myself") and are rated using a Likert-type scale anchored from 1 (*almost never*) to 5 (*almost always*). The SCS has good reliability and validity cross-culturally (Neff, 2003b; Neff, Pisitsungkagarn, & Hsieh, 2008). In the current sample, internal consistency of the total scale score was high (Cronbach's $\alpha = .92$). Internal consistency was good for each of the subscales; SCSsk, Cronbach's $\alpha = .83$; SCSsj, Cronbach's $\alpha = .75$; SCSch; Cronbach's $\alpha = .76$; SCSi, Cronbach's $\alpha = .73$; SCSm, Cronbach's $\alpha = .72$; SCSoi, Cronbach's $\alpha = .72$.

2.3.3. Anxiety

The Beck Anxiety Inventory (BAI; Beck & Steer, 1993) is a widely used 21-item measure assessing common symptoms of anxiety. Respondents rate the extent to which they have been bothered by each symptom over the past week using a 4-point Likert-type scale ranging from 0 to 3. The items are summed to obtain a total score that can range from 0 to 63. The BAI has good reliability and validity across numerous diverse populations (e.g., Beck & Steer, 1993; Magán, Sanz, & García-Vera, 2008), and internal consistency in the current sample was high (Cronbach's $\alpha = .93$).

2.3.4. Depression

Extent of depression was assessed using the 21-item Beck Depression Inventory (BDI: Beck et al., 1979). Individual items represent clinically relevant symptoms of depression that are rated by self-evaluative statements on a Likert-type scale ranging from 0 to 3. The BDI has good reliability and validity across numerous diverse populations (Beck, Steer, & Carbin, 1988) and internal consistency in the current sample was high (Cronbach's $\alpha = .92$).

2.3.5. Worry

The Penn State Worry Questionnaire (PSWQ; Meyer, Miller, Metzger, & Borkovec, 1990) consists of 16 items assessing domains of worry commonly exhibited in anxiety disorders. The PSWQ consists of 11 items that directly assess prominence and pervasiveness of worry and 5 items that assess the lack of worry. Respondents rate each item on a scale of 1 (*not at all typical*) to 5 (*very typical*) indicating how characteristic each item is of them, with greater total scores indicative of pathological worry. The PSWQ has excellent reliability and validity cross-culturally (Dugas, Letarte, Rhéaume, Freeston, & Ladouceur, 1995; Meyer et al., 1990). Internal consistency in the present sample was high (Cronbach's $\alpha = .90$).

2.3.6. Quality of life

Though there are several available measures that can be used to assess quality of life, we chose the quality of life inventory (QOLI;

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Table 1
Zero-order and partial correlations among psychological distress self-report.

	BAI	BDI	PSWQ	QOLI
BAI	–	.306**	.235**	−.027
BDI	.508**	–	.280**	−.534**
PSWQ	.426**	.490**	–	−.032
QOLI	−.345**	−.633**	−.337**	–

BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, PSWQ = Penn State Worry Questionnaire, QOLI = Quality of Life Inventory.
N.B. Lower left half represents zero-order correlations while upper right half represents partial correlations corrected for all other outcome variables.
** $p < .001$.

Frisch, 1994) because it (a) evaluates several broad life domains, (b) yields an index of overall quality of life, (c) has excellent psychometric properties, and (d) has been validated in clinical and subclinical samples (e.g., Bourland et al., 2000; Frisch, Cornell, Villanueva, & Retzlaff, 1992). The QOLI assesses sixteen different domains of life (health, self-regard, philosophy of life, standard of living, work, recreation, learning, creativity, social service, love relationship, friendships, relationships with children, relationships with relatives, home, neighborhood, community) in terms of personal importance and personal satisfaction. Importance is rated on a scale from 0 (*not at all important*) to 2 (*extremely important*). Satisfaction is rated on a scale from −3 (*very dissatisfied*) to 3 (*very satisfied*). The product of endorsed importance rating and satisfaction rating yields a weighted score for each item, which is then averaged with its area counterpart to produce a score for that particular area of life. Overall life satisfaction is computed by averaging all nonzero weighted area of life scores. Internal consistency in the present sample was relatively high (Cronbach's $\alpha = .80$).

2.4. Statistical approach

To address the relative predictive contributions of mindfulness and self-compassion to anxiety, depression, and overall quality of life we opted for a sequential multivariate and univariate analytic approach. Given the high comorbidity of anxiety and depression and the similarities in manifestation and etiology of unipolar depression and generalized anxiety (e.g., Mineka et al., 1998), we hypothesized that the outcome variables would be highly intercorrelated. Theoretical similarities between the predictors (e.g., MAAS and SCS scores) led us to anticipate high intercorrelations among them as well. The relationships between the outcome variables and predictors were examined independently via correlational analysis. Partial correlations were also computed to examine unique relationships while controlling for common relationships (see Cohen, Cohen, West, & Aiken, 2003). A multiple analysis of variance (MANOVA) was subsequently conducted to determine the optimal linear combination of predictors and outcome variables. Because we anticipated that a multivariate approach would eliminate proportions of predicted variance in the individual outcome variables, we used multiple univariate regressions to examine each of the outcome variables independently. Of additional interest was the extent that subscales of the SCS make individual contributions to predictive validity. Accordingly, we also computed multiple univariate regressions using the six SCS subscales. All statistics were computed using SPSS 17.0.

3. Results

3.1. Correlational analyses

Prior to examining the multivariate case, correlations and partial correlations within outcome variables (see Table 1) and predictors (see Table 2) were examined respectively. All outcome variables and predictors were significantly correlated among themselves. Partial correlations suggested that among outcome variables, all variables accounted for unique variance in other variables with the exception of the QOLI. The QOLI only had a significant partial correlation with the BDI. The correlation between the SCS and the MAAS was $r = .428$, $p < .01$. The patterns of partial correlations between the MAAS and SCS subscales were less straightforward. Only the self-judgment and mindfulness subscales had significant partial correlations with the MAAS. The isolation subscale was not significantly partially correlated with either the self-kindness or mindfulness subscales. The over-identification and common humanity subscales did not exhibit a significant partial correlation. One might anticipate the largest partial correlation for any given subscale would be with the other subscale of the main facet it represents. That was only the case for the self-kindness facet (see Table 2).

3.2. Multivariate analyses

The ranges of scores on all scales were within an acceptable proportion of their respective maxima: BAI = 60/62, 96.8% ($M = 31.4$, $SD = 14.0$); BDI = 57/62 = 91.9% ($M = 26.0$, $SD = 12.5$); PSWQ = 58/64 = 90.6% ($M = 66.0$, $SD = 10.5$); MAAS = 4.47/5, 89.4% ($M = 3.09$, $SD = 0.8$); SCS = 3.62/4, 90.5% ($M = 2.2$, $SD = 0.5$); QOLI = 10.88/12, 90.7% ($M = -0.1$, $SD = 1.9$). The SCS exhibited positive skew (.760), however, examination of the histogram suggested good fit to a normally distributed curve. The PSWQ exhibited negative skew (−.881), with dense clustering near the maximum. All other variables approximated normal distributions. Although the SCS and PSWQ were skewed, transformations led to no change in the pattern of results. We used the non-transformed data to improve interpretability. Examination of Mahalinobis distance values revealed only one multivariate outlier. Because all individual variables of the multivariate outlier case were within 0.5 standard deviations of their respective means, the case was retained in multivariate analyses (see Bray & Maxwell, 1985). With non-transformed data, there was a significant relation between predictors and psychological self-report, Pillai's $V = .559$, $F(8, 998) = 48.4$, $p < .001$, Pillai's $\eta_p^2 = .230$. Dimension reduction analysis indicated only one significant root, representing the only canonical variable that reflected a significant proportion of the variance in the predictors (Bray & Maxwell, 1985). The first canonical variable accounted for 55.6% of the variance in psychological self-report and 37.4% of the variance in predictors. Loadings of both outcome variables and predictors on canonical variable one appear in Table 3. In the case of the predictors, the SCS had a standardized loading >3 times the size of the loading of the MAAS. In the case of the outcome variables, the BDI and the PSWQ had the highest standardized loadings, nearly 2.5 times as large as the QOLI. The BAI was barely represented by the combination of outcome variables. These findings suggest that the multivariate relation of greatest impact is the ability of self-compassion to predict depression and worry (with other constructs represented to some extent via their relationships to these variables).

3.3. Univariate analyses

The combination of the MAAS and SCS was significantly predictive of anxious symptoms [$R = .404$, $F(2, 503) = 48.9$, $p < .001$], depressive symptoms [$R = .664$, $F(2, 503) = 197.6$, $p < .001$], worry [$R = .605$, $F(2, 503) = 144.9$, $p < .001$], and quality of life, [$R = .521$, $F(2, 503) = 93.1$, $p < .001$]. The predictors accounted for 16.3% of the variance in anxiety, 44.1% of the variance in depression, 36.6% of the variance in worry, and 27.1% of the variance in quality of life. The standardized regression coefficients, significance test values,

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Table 2
Zero-order and partial correlations among MAAS and SCS subscales.

	MAAS	SCSsk	SCSsj	SCSch	SCSi	SCSm	SCSoi
MAAS	–	.006	−.140**	.028	−.067	.097*	−.083
SCSsk	.316**	–	−.440**	.300**	.009	.413**	.138**
SCSsj	−.377**	−.591**	–	.091*	.245**	.134**	.417**
SCSch	.278**	.622**	−.369**	–	−.140**	.352**	−.050
SCSi	−.326**	−.432**	.555**	−.421**	–	−.059	.292**
SCSm	.333**	.675**	−.416**	.656**	−.434**	–	−.251**
SCSoi	−.359**	−.432**	.625**	−.405**	.583**	−.497**	–

MAAS = Mindful Attention Awareness Scale, SCS = Self-Compassion Scale (-sk = Self-Kindness subscale, -sj = Self-Judgment subscale, -ch = Common Humanity subscale, -i = Isolation subscale, -m = Mindfulness subscale, -oi = Over-identification subscale).
N.B. Lower left half represents zero-order correlations while upper right half represents partial correlations controlling for the other subscales of the SCS.
* $p < .05$.
** $p < .01$.

Table 3
Relationship of experimental variables to first canonical variate.

	β	r	r^2
Outcome variables			
BAI	.002	−.541	.293
BDI	−.523	−.889	.790
PSWQ	−.487	−.811	.658
QOLI	.202	.697	.486
Predictors			
MAAS	.262	.630	.397
SCS	.860	.972	.945

β = standardized canonical coefficient; r = structural coefficient; r^2 = structural coefficient squared.
BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, PSWQ = Penn State Worry Questionnaire, QOLI = Quality of Life Inventory.
MAAS = Mindful Attention Awareness Scale, SCS = Self-Compassion Scale.
N.B. The r^2 values reported here are substantially higher than the overall proportion of variance in either predictors or outcome variables as they relate to canonical variable one. This is because these values do not account for the substantial overlap of outcome variables and predictors independently, as indicated by Tables 1 and 2.

zero-order correlations, and unique contributions to proportion of outcome variance explained are reported in Table 4.

One possibility is that the mindfulness subscale of the SCS accounts for its predictive ability. To explore this possibility and to examine the contributions of the other subscales of the SCS, each of the four regression analyses was re-computed using the SCS subscales as predictors instead of the total scale score. The combination of the SCS subscales significantly predicted anxious symptoms [$R = .423$, $F(6, 503) = 18.0$, $p < .001$], depressive symptoms [$R = .659$, $F(6, 503) = 63.6$, $p < .001$], worry [$R = .647$, $F(6, 503) = 59.7$, $p < .001$], and quality of life, [$R = .536$, $F(6, 503) = 33.4$, $p < .001$]. The predictors accounted for 17.9% of the variance in anxiety, 43.5% of the variance in depression, 41.9% of the variance in worry, and 28.8% of the variance in quality of life. The fact that the subscales explained a greater proportion of variance in the dependent variables than the total scale score may represent the reverse-scoring of 3 subscales necessary to compute SCS total score (Neff, 2003b). The standardized regression coefficients, significance test values, zero-order correlations, and unique contributions to proportion of outcome variance explained appear in Table 5.

4. Discussion

The aim of the present analyses was to explore the relative predictive ability of mindfulness and self-compassion in relation to symptom severity and quality of life in those with mixed anxiety and depression. Collectively, our findings suggest that self-compassion (as measured by the SCS) is a more robust predictor of depressive and anxious symptomatology and quality of life than "dispositional" mindfulness (as measured by the MAAS). Both multivariate and univariate analyses revealed this to be the case. In multiple univariate regressions, the SCS uniquely accounted for between 10 and 27% of the individual outcome variables, while the MAAS only uniquely accounted for between 1 and 3% of variance for the same outcome variables. The predictors shared approximately 6 and 16% of the predicted outcome variance (see Table 4). Correlational and regression analyses suggest that the mindfulness subscale of the SCS may measure a different construct from that of the MAAS (see Tables 2 and 5). Further, the findings suggest that it is the SCS as a whole, not merely the mindfulness subscale, that makes the SCS a robust predictor.

4.1. Correlational analyses

The large relationships between the outcome variables (see Table 1) and predictors (see Table 2) on a full and partial correlational basis confirmed our hypotheses about large intra-relationships among variables. That the BDI was the only significant partial predictor of quality of life perhaps suggests that it taps some latent variable that predicts overall well-being better than the BAI or PSWQ. Examination of the partial relationships between the two definitions of mindfulness (MAAS and SCSm) with other SCS subscales suggests that they may represent different latent variables. The self-judgment subscale predicts a greater proportion of unique variance than the mindfulness subscale or the MAAS. Further, the mindfulness subscale was more strongly related to four of the five

Table 4
Regressing multiple outcome variables on combined and individual predictors with exploration of unique and common variance.

	MAAS + SCS R^2	MAAS R^2	SCS R^2	Common variance	MAAS sr^2	SCS sr^2
BAI	.163**	.065**	.154**	.055**	.009*	.099**
BDI	.441**	.185**	.411**	.155**	.030**	.256**
PSWQ	.366**	.140**	.348**	.121**	.018**	.227**
QOLI	.271**	.098**	.260**	.087**	.011**	.173**

R^2 = proportion of outcome variables variance explained by predictors; sr^2 = semi-partial r^2 (proportion of variance attributable only to specific predictor).
BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, MAAS = Mindful Attention Awareness Scale, PSWQ = Penn State Worry Questionnaire, SCS = Self-Compassion Scale QOLI = Quality of Life Inventory.
* $p < .05$.
** $p < .01$.

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Table 5
Standardized regression coefficients, significance tests, zero-order correlations, and unique contributions to proportion of outcome variables variance explained for four psychological distress self-report outcome variables and self-compassion scale subscales.

	β	t	r^2	sr^2	
Beck Anxiety Inventory					
SCSsk	−.020	−.31	.073	.000	R = .423
SCSsj	.124	2.02*	.120	.007	R^2 = .179
SCSch	.029	.50	.048	.000	
SCSi	.161	2.99**	.125	.015	
SCSm	−.091	−1.45	.080	.003	
SCSoi	.150	2.56*	.132	.010	
Beck Depression Inventory					
SCSsk	−.159	−.291**	.283	.009	R = .659
SCSsj	.285	5.62***	.327	.036	R^2 = .435
SCSch	.014	.30	.157	.000	
SCSi	.152	3.41**	.238	.013	
SCSm	−.177	−3.39**	.242	.013	
SCSoi	.064	1.32	.232	.002	
Penn State Worry Questionnaire					
SCSsk	−.038	−.69	.166	.001	R = .647
SCSsj	.243	4.72***	.308	.026	R^2 = .419
SCSch	−.006	−.13	.110	.000	
SCSi	.112	2.47*	.228	.007	
SCSm	−.047	−.88	.152	.001	
SCSoi	.330	6.71***	.347	.052	
Quality of Life Index					
SCSsk	.142	2.32*	.187	.008	R = .536
SCSsj	−.203	−.356***	.190	.018	R^2 = .288
SCSch	−.035	−.65	.100	.001	
SCSi	−.225	−4.49***	.182	.029	
SCSm	.181	3.08**	.164	.013	
SCSoi	.061	1.12	.112	.002	

t = t-test value; r^2 = zero-order r^2; sr^2 = semi-partial r^2.
BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, PSWQ = Penn State Worry Questionnaire, SCS = Self-Compassion Scale (-sk = Self-Kindness subscale, -sj = Self-Judgment subscale, -ch = Common Humanity subscale, -i = Isolation subscale, -m = Mindfulness subscale, -oi = Over-Identification subscale), QOLI = Quality of Life Inventory.
* $p < .05$.
** $p < .01$.
*** $p < .001$.

other SCS subscales than to the MAAS. This suggests that the latent trait influencing the mindfulness subscale of the SCS reflects self-kindness in the recognition that experiences are fleeting and not unique to the individual experiencing them (consistent with traditional Buddhist notions surrounding mindfulness, cf. Kabat-Zinn, 2005; Rapgay & Bystrisky, 2009).

4.2. Multivariate prediction of high prevalence psychopathology

The combination of outcome variables was dominated by scores on the BDI and PSWQ (see Table 3). To understand why the outcome variables were combined as they were in the multivariate case, one must simultaneously consider the nature of the predictors. The multivariate case generates the optimal linear combination(s) of both predictors and outcome variables (simultaneously). Any discussion is in reference to the common canonical variate that represents this combination of coefficient weights for all predictors and outcome variables (see Bray & Maxwell, 1985; Cohen et al., 2003). Examining the standardized coefficients, the SCS contributes three times as much to the linear combination compared with the MAAS. This indicates that the SCS is substantially better at predicting the combination of outcome variables (a presentation of negative affect, rumination, and worry) in the multivariate analysis than the MAAS.

With regard to mindfulness, the present findings suggest that focused attention and awareness (the proposed operationalization of the MAAS) may be less important in explaining distress outcomes and quality of life than the nature of one's interaction with the experience of intrusive negative thoughts and/or other emotionally charged private experiences. Approaching experience with self-kindness, an understanding of the universality of suffering, and a balanced state of equipoise/equanimity seems to be a powerful predictor of psychological distress and quality of life. This is suggested by the predictive ability of the SCS over and above that of the MAAS (see Table 3 for the multivariate case and Table 4 for the univariate cases).

4.3. Multiple univariate prediction of high prevalence psychopathology

The ability of the MAAS and SCS to predict the individual outcome variables (e.g., anxiety, depression, worry, quality of life) largely reflects the linear weighting of the outcome variables in the multivariate case (see Table 4). We would like to emphasize here the differences between the proportion of variance explained by the MAAS with the SCS (combined case), the MAAS alone, and the SCS alone. While the SCS alone would only decrease predicted outcome variance by 1–3%, the MAAS alone fares considerably worse, with a decrease in predicted variance ranging from approximately 10–26%. Table 4 also shows the common predictive variance of the MAAS and SCS alongside the unique predictive variance of the MAAS and SCS. It should be noted that the R^2 value for MAAS and SCS, respectively, is merely the common variance plus each scale's unique contribution. While exclusion of the SCS is extremely detrimental to predictive ability, the MAAS only contributes a small proportion of unique predictive ability. This finding suggests that, at least in individuals with mixed anxiety and depression, the SCS can do most of the work of the MAAS and more in predicting psychological health.

One could argue that the ability of the SCS to do the "work" of the MAAS lies in the mindfulness subscale of the SCS. The commonality in name of these scales does not necessarily mean that they measure the same construct (see Strauss & Smith, 2009). The correlation between the SCS and the MAAS was quite high, but the subscale correlations with the MAAS contradict a common mindfulness solution; the self-judgment subscale predicts the largest proportion of unique variance on the MAAS (see Table 2). Further, examination of the multiple univariate regressions using the SCS subscales as predictors indicates that more than one subscale is a significant predictor in each case (see Table 5). Across all outcome variables at least one of the two subscales of each of the three facets of the SCS (see Neff, 2003a) was a significant predictor. This suggests that all three facets have important implications for symptom severity and quality of life in mixed anxiety and depression. Notably, The self-judgment and isolation subscales were significant predictors of all outcome variables. This suggests that self-judgment and feelings of isolation resulting from negative private experiences are important correlates of psychological health in mixed anxiety and depression. Common humanity was not a significant predictor of any outcome variables, though it bears important relationships to other SCS subscales (see Table 2).

4.4. Limitations

Due to the cross-sectional nature of the study, any mediational or long-term contributions of any of the variables in question regarding MBI outcomes await further evaluation, using longitudinal designs. Both self-compassion and mindfulness represent two of several key processes that may be important mediators of MBI outcomes (e.g., Carmody & Baer, 2008; Shapiro et al., 2005). The present findings provide a basis for evaluating the ability of both constructs to predict anxious and depressive symptoms, suggesting

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that self-compassion may be a particularly important component of MBIs for anxiety and depression.

We also wish to alert the reader to characteristics of our sample than may limit the generalizability of the present findings. Our sample, although international, primarily represented individuals from Western cultures (83.5% of international participants were from Canada, the United Kingdom, or Australia). Although the remaining international participants represented a diverse collection of nations (e.g., India, Pakistan, Slovenia, South Africa, Greece), the small number of participants from these countries (approximately 5.4% of total sample) limits generalization of results from the current studies to non-Western cultures. The fact that many of the individuals had accessed and used psychotherapeutic services or pharmacotherapy and were interested in participating in a self-help intervention study, may suggest a unique population. The results may not generalize to populations that have not sought mental health services. However, the sample did exhibit high levels of anxious and depressive symptomatology as well as impoverished quality of life. Further, our sample consisted of primarily highly educated women, although this is consistent with the disproportionate ratio of females to males for anxiety and mood disorders (e.g., Mineka et al., 1998).

Yet another limitation is the choice of measures for each of the constructs. There are now at least seven different measures of mindfulness, each with its own idiosyncrasies and benefits (Grossman, 2008), though the MAAS is one of the most commonly used (Christopher et al., 2009). More than anything, the results here could reflect more about the particular scales we chose rather than the constructs purportedly underlying them. When assessing any construct that originated from a culture other than that in which it was developed, there are potential limitations. The SCS is likely subject to some of the some complications as measures of mindfulness (see Grossman, 2008), however attitudes towards the self may be easier to report than frequency of past conscious states. Further studies simultaneously examining multiple MBI components are warranted. Other measures of mindfulness, especially those that are more inclusive and consistent with classical and modern operationalizations of mindfulness (see Christopher et al., 2009; Grossman, 2008; Rapgay & Bystrisky, 2009; Van Dam, Earleywine, & Borders, 2010), as well as measures of traditional changes in cognition like reappraisal, could reveal important information about necessary and sufficient aspects of MBIs. Likewise, there are most certainly other measures of positive mental states and emotions that may serve as potential targets for future research of this type.

4.5. Conclusions: importance of self-compassion for MBIs

To our knowledge, self-compassion (Shapiro et al., 2005) and two different operationalizations of mindfulness (e.g., Carmody & Baer, 2008; Nykliček & Kuijpers, 2008) have been the only theory-consistent constructs shown to mediate change in MBIs. In the present study, the SCS explained more unique variance in emotional distress and quality of life than a popular measure of mindfulness (MAAS; Brown & Ryan, 2003). Self-compassion may have advantages over mindfulness both as a predictor and indicator. Some mindfulness scales exhibit questionable construct representation (e.g., Grossman, 2008; Van Dam et al., 2010; Van Dam et al., 2009) and seem to lack cross-cultural validity (e.g., Christopher et al., 2009). In contrast, self-compassion has shown promising and consistent relations with various measures of affect, psychopathology, and well-being (e.g., Neff et al., 2007; Neff & Vonk, 2009) as well as a consistent factor-structure across both Eastern and Western cultures (Neff et al., 2008).

The nature of the SCS facets (common humanity, mindfulness, and self-kindness) capture a broad construct representing the interdependent nature of suffering, the benefits of equanimity, and the utility of being gentle with oneself and others (Neff, 2003b; Neff et al., 2008). Although these three facets likely miss important domains underlying various MBIs, they do broadly represent the theoretical underpinnings and practical strategies promoted by such interventions (see Rapgay & Bystrisky, 2009). The SCS predicted from 15 to 41% of the variance in high prevalence psychopathology and as much as 26% of the variance in one measure of quality of life. The MAAS, by contrast, only accounted for 7–19% and 10% of the variance, respectively. Future studies should explore the importance of self-compassion to MBI-related changes and evaluate the subcomponents of self-compassion to optimize MBIs and other therapy for variations of anxiety and depression.

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