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Building Blocks of Emotional Flexibility: Trait Mindfulness and Self-Compassion Are Associated with Positive and Negative Mood Shifts

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Abstract Emotional flexibility can be defined as the ability to respond in a context-appropriate emotional manner and recover from one's initial emotional responses when the context changes. Emotional flexibility has been associated with psychological health. Mindfulness and self-compassion have both been associated with various aspects of well-being and are considered buffers against psychopathology; however, few studies have examined the relationships of mindfulness and self-compassion with emotional flexibility. A total of 417 participants were recruited through an online crowdsourcing website and completed study questionnaires as well as negative and positive mood induction procedures. Results indicated that both mindfulness and self-compassion were significantly and positively associated with mood drops and mood increases in response to negative and positive mood induction procedures, respectively. We also found that depressive symptoms and depression-related negative cognitions were negatively correlated with emotional flexibility. Further, hierarchical regression analyses revealed that self-compassion may explain variance in emotional flexibility beyond what is accounted for by trait mindfulness. Findings of this study underscore the importance of mindfulness and, specifically, self-compassion as likely key factors in emotional flexibility. Further, it appears that self-compassion may explain some aspects of emotional flexibility beyond variance contributed for by trait mindfulness alone, suggesting that both these constructs may need to be cultivated directly in psychological interventions for optimal psychological health. Future work should replicate and extend our findings and examine directionality among the examined factors.

Keywords Emotional flexibility · Mindfulness · Resilience · Self-compassion · Depression

Introduction

Successful psychological navigation of and adaptation to constantly changing environmental contexts—a construct known as psychological flexibility—appears to be a cornerstone of psychological health (Kashdan and Rottenberg 2010). Emotional flexibility, a component of psychological flexibility, is typically acknowledged to encompass the capacity to "respond flexibility to changing emotional circumstances" (Waugh et al. 2011, p. 1059). Accordingly, emotional responses that are congruent with environmental inputs may be an important facet of mental health (Coifman and Bonanno 2010; Gupta and Bonanno 2011).

Contrary to earlier research showing an exaggerated negative emotional response to sad stimuli, many recent trials are demonstrating that individuals with depression evidence a blunted emotional response to both happy and sad stimuli (Bylsma et al. 2008; Rottenberg 2005). Thus, depression appears to be associated with dampened and context-insensitive emotionality, regardless of valence. Accruing evidence also indicates that several factors are strongly associated with flexible responding to stimuli, such as mindfulness (Silberstein et al. 2012). Within the mindfulness framework, mental states are believed to be

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implicated in the maintenance of distress (Brown and Ryan 2003; Chiesa 2013). Subsequently, the central aim of mindfulness approaches is to cultivate a certain mental state that is conducive of well-being (Kabat-Zinn 2009). Within mainstream Western psychology, mindfulness may be defined as "being attentive to and aware of what is taking place in the present" (Brown and Ryan 2003, p. 822).

Mindfulness-based interventions have been adapted for several psychological conditions and as a way to increase well-being and quality of life (Beshai et al. 2016; Carlson et al. 2003). Pertinently, mindfulness-based cognitive therapy (MBCT) has been shown to be efficacious in preventing relapse in recurrent depression (Beshai et al. 2011; Kuyken et al. 2015) and in reducing generalized anxiety (Craigie et al. 2008). As such, mindfulness approaches appear to be related to increased psychological health, or they may moderate the effects of other protective factors known to facilitate well-being.

Self-compassion is a concept that is closely related to mindfulness and is defined as "being open to and moved by one's own suffering" (Neff 2003, p. 224). Neff et al. (2017, p. 1) further define self-compassion as "a type of self-to-self relating that represents a compassionate rather than uncompassionate stance toward the self when faced with personal suffering: self-kindness versus self-judgment, a sense of common humanity versus isolation, and mindfulness versus overidentification." Notably, while self-compassion involves the process of mindfulness, they are not synonymous. The mindfulness component of self-compassion is narrower in scope because it is focused on suffering in particular, while mindfulness more generally focuses on the gamut of one's present moment experiences (i.e., positive, neutral, or negative; Neff and Dahm 2015).

Another major distinction between mindfulness and self-compassion is their intended targets; while the former is "a way of relating to internal experiences," the latter is "a way of relating to the experiencer who is suffering" (Neff and Dahm 2015, p. 21). Additionally, Gilbert (2009) argues that self-compassion and mindfulness are associated with different physiological mechanisms and neural networks, as self-compassion is hypothesized to associate with activation of more primitive and emotional brain circuits, while mindfulness is hypothesized to correlate with activation of the newer frontal regions of the brain.

For these reasons, self-compassion may be differentially related to depression and related constructs. As summarized by Neff and Dahm (2015), self-compassion as measured by the Self-Compassion Scale (Neff 2003) appears to be a stronger predictor of depressive symptoms than is mindfulness. In their meta-analysis, MacBeth and Gumley (2012) found that self-compassion was significantly and negatively associated with psychopathology. Trompetter et al. (2016) found that self-compassion may promote resilience against psychopathology by increasing positive and reducing negative emotionality. Taken together, these studies suggest that both mindfulness and self-compassion are likely key factors in the promotion of mental health and well-being.

Results summarized above indicate that emotional health is often exhibited in the appropriateness of emotional response (e.g., responding in a context-sensitive manner) and in the speed and quality of emotional recovery. Mindfulness appears to be highly related to the recovery processes that typify emotional flexibility. Kabat-Zinn (2009) suggested that mindfulness may exert its positive psychological effects by helping individuals to rapidly return to their baseline level of arousal. In other words, and consistent with the emotional flexibility hypothesis, "mindfulness is not necessarily expected to reduce distress in the moment; in fact awareness may increase distress by precluding avoidance" (Roemer and Orsillo 2003, p. 175).

These lines of evidence indicate that (a) mindfulness and the distinct but related construct of self-compassion may be associated with or are facilitators of emotional flexibility; (b) individuals who show emotional flexibility may exhibit exaggerated, yet appropriate initial emotional and physiological responses to negative materials, but these individuals can also return to baseline more rapidly in comparison to individuals who show less flexibility; and (c) mindfulness and self-compassion may parallel or enhance emotional flexibility by exaggerating initial emotional responses, but enabling individuals to return to equilibrium more rapidly.

Few studies to date have examined the effects of both mindfulness and self-compassion on aspects of psychological flexibility. Studies of this nature are important, as they may provide key insight into the mechanisms of mindfulness approaches in protecting against psychopathology. Mounting evidence indicates that a substantial minority of patients do not reap benefits from psychological treatments that focus solely on vulnerability (Kuyken et al. 2015). As such, examining emotional flexibility and related mechanisms in psychopathology and incorporating such factors in extant treatments may be optimal. Mindfulness and self-compassion both appear to play key roles in cultivating such flexibility.

In the current study, we used experimental mood induction procedures to examine the relationships of mindfulness and self-compassion to positive and negative mood shifts. Specifically, these relationships were examined in the context of depressive symptoms and depression-related constructs. We predicted that mindfulness and self-compassion would be negatively correlated with depression symptoms and depression-related cognitions, and in particular, self-compassion would be more strongly associated with depression and depression-related cognitions than is mindfulness (Neff and Dahm 2015). We further predicted that mindfulness and self-compassion would both be positively and moderately (.30 to .50) correlated with context-dependent mood shifts

(e.g., correlated with a mood drop as a result of negative mood induction) and with spontaneous mood recovery. Finally, we predicted that depressive symptoms and depression-related cognitions would be negatively and moderately related to negative mood shifts.

Method

Participants

A total of 529 participants were recruited online through CrowdFlower and provided consent to participate in our study. Of these, 417 participants completed all the study questionnaires and tasks. CrowdFlower is an online crowdsourcing platform and has been used previously for mental health research (Beshai et al. 2017). CrowdFlower has the potential to disseminate links to questionnaires and behavioral tasks to five million unique respondents all over the world (De Winter et al. 2015). This crowdsourcing website is the international alternative to the US-based MechanicalTurk. The mean age of the current sample was 36.03 (*SD* = 12.45), and over half of the participants (51.8%) were female. See Table 1 for detailed sample descriptions. The study was approved by the Research Ethics Board at the University of Regina and Ryerson University. All participants were compensated financially. Participants were asked to complete study measures and mood induction tasks (described below) via Qualtrics.

Table 1 Descriptive statistics of pertinent demographic and other study variables

Variable	Mean (SD)
Age	36.03 (12.45)
Female (%)	51.8
MAAS	3.71 (0.97)
SCS-SF	35.18 (7.45)
PHQ-8	7.55 (5.75)
DAS	92.85 (19.62)
LEIDS-R	50.04 (20.64)
VAMS1	62.65 (21.28)
VAMS2	30.99 (24.68)
VAMS3	43.70 (23.97)
VAMS4	40.28 (23.44)
VAMS5	62.40 (22.59)
Mood drop[a]	31.35 (25.96)
Mood increase 1 (spontaneous)[b]	12.90 (18.96)
Mood increase 2 (positive induction)[c]	22.02 (23.64)

MAAS Mindful Attention Awareness Scale, *SCS-SF* Self-Compassion Scale-Short Form, *PHQ-8* Patient Health Questionnaire-8, *DAS* Dysfunctional Attitude Scale, *LEIDS-R* Leiden Index of Depression Sensitivity-Revised, *VAMS* Visual Analogue Mood Scale

[a] Mood change as a result of the negative mood induction (VAMS1 minus VAMS2)

[b] Spontaneous mood increase (VAMS3 minus VAMS2)

[c] Mood change as a result of a positive mod induction (VAMS5 minus VAMS5)

Procedure

The negative mood induction was presented to participants in the study after completion of the questionnaires, including Visual Analogue Mood Scale 1 (VAMS1). Immediately after the mood induction, participants completed the VAMS2 and the Leiden Index of Depression Sensitivity-Revised (LEIDS-R). Participants were then asked to complete the VAMS3, followed by a short picture recognition task to ascertain effort and attention during the negative mood induction procedure. Following the recognition task and immediately before the positive mood induction task, participants completed the VAMS4, and were then asked to complete the VAMS5 immediately after the positive mood induction task. Participants were then thanked and fully debriefed. See Fig. 1 for a detailed procedural timeline. For ethical reasons, we did not counterbalance the presentation of negative and positive mood inductions, as to ensure that all participants concluded the experiment with the positive induction.

Mood Induction Participants completed two mood inductions: a negative and a positive induction. The mood induction comprised of the presentation of emotionally valenced pictures derived from the International Affective Picture System (IAPS; Lang et al. 1997, 2008). In the negative mood induction, the pictures were combined with sad music to elicit the desired mood state. A similar procedure has been employed successfully in previous mood induction research (e.g., Jarrett et al. 2012).

In the negative mood induction, the pictures consisted of a series of 40 negatively valenced images selected from the IAPS (Lange et al. 1997, 2008), with each picture presented for 4 seconds. The music piece that was superimposed onto

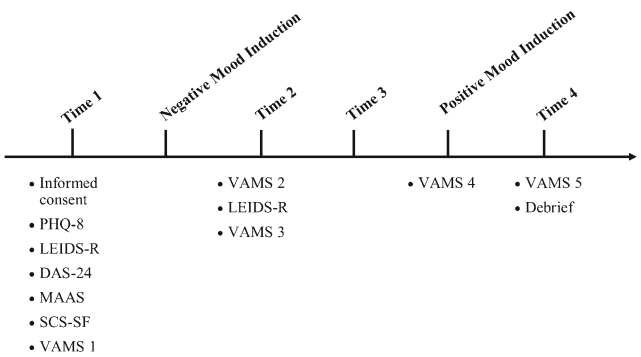

Fig. 1 Procedural timeline

the sad images was the "Russian Under the Yorke" played at half speed. This piece of music came from previous work by Clark and Teasdale (1985) and has been used successfully to induce a sad mood in previous research (e.g., Jarrett et al. 2012; Lau et al. 2012). The 40 negatively valenced pictures were selected based on their original IAPS valence scores (1 = *most sad*, 10 = *most happy*) and "unpleasantness" scores (10-point scale of 1 = *least unpleasant*; 10 = *most unpleasant*) obtained by two independent raters. The average valence score for the negatively valenced photos was 2.11 (*SD* = 0.28), and the unpleasantness score was 9.55 (*SD* = 0.65). There was excellent inter-rater reliability obtained for unpleasantness scores among raters (*ICC* = .94).

Similarly, the positive mood induction consisted of 40 positively valenced pictures that were selected from the IAPS (Lange et al. 1997, 2008). The average IAPS valence for the positive photos was 7.80 (*SD* = 0.29). Each picture was presented for 4 seconds. Unlike the negative mood induction procedure, there was no music exposure component in the positive mood induction, and no ratings of unpleasantness were calculated.

Measures

The Physical Health Information Questionnaire Depression Scale-8 (PHQ-8; Kroenke et al. 2009) is an eight-item self-report measure that assesses depressive symptoms over the past 2 weeks. The PHQ was developed in accordance with criteria for major depressive episode in the fourth edition of the Diagnostic Statistical Manual (DSM-IV; First et al. 1997). Participants answered each of the eight items on a 4-point Likert-type scale, ranging from 0 (*not at all*) to 3 (*nearly everyday*). Higher total scores were indicative of greater distress. The PHQ-8 has demonstrated excellent psychometric properties in previous studies (Kroenke et al. 2009). In the current study, the PHQ-8 demonstrated excellent internal consistency (α = .91).

The LEIDS-R (Van der Does 2002) is a 34-item scale that measures cognitive reactivity to sad mood. The scale asks respondents to imagine being in a sad mood and then asks them to indicate the extent to which the 34 statements reflect their thoughts while experiencing this sad mood state. Items were rated on a 5-point Likert scale, with scores ranging from 0 (*not at all*) to 4 (*very strongly*), with higher scores indicating greater cognitive reactivity during sad mood states. The LEIDS-R has demonstrated adequate reliability and validity in previous studies (Williams et al. 2008). The LEIDS-R demonstrated excellent internal consistency in the current sample (α = .94).

The Dysfunctional Attitudes Scale (DAS-24; Power et al. 1994) is a 24-item scale that assesses negative attitudes and statements related to depression on three subscales: achievement, self-control, and dependency. Each item was rated on a 7-point Likert scale (ranging from *totally agree* to *totally disagree*), with reversal of negatively -worded items, higher scores indicate the presence and severity of greater dysfunctional attitudes. Previous studies have reported good psychometric properties of the DAS-24 (e.g., Beshai et al. 2013). The DAS-24 demonstrated excellent internal consistency in the current sample (α = .87).

The Mindful Attention Awareness Scale (MAAS; Brown and Ryan 2003) is a 15-item measure that assesses trait mindfulness. Each item was answered on a 6-point Likert scale, with scores ranging from 1 (*almost always*) to 6 (*almost never*), with higher scores reflecting greater trait mindfulness. The MAAS has demonstrated good reliability and validity in previous studies (MacKillop and Anderson 2007). In the current study, the MAAS demonstrated excellent internal consistency (α = .92).

The Self-Compassion Scale-Short Form (SCS-SF; Raes et al. 2011) is a 12-item self-report scale that measures six components of self-compassion, including self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification. This short-form scale was developed based on the original 26-item SCS (Neff 2003). The SCS-SF demonstrated adequate psychometric properties in previous studies, and it was shown to be highly correlated with the original SCS (Raes et al. 2011). The total score was calculated by adding all subscale scores. The use of the total score was recommended over the use of each of the subscale scores (Raes et al. 2011). The SCS-SF demonstrated adequate internal consistency in the current study (α = .81).

The VAMS (Luria 1975) asks respondents to indicate, on a scale of 1 (*very sad*) to 100 (*very happy*), how sad or happy they feel in this moment. The VAMS is a good measure of current affect and has often been used to measure a manipulation's success in eliciting target moods. A movement of at least 20 points toward "sadness" is considered a successful manipulation of sad mood (e.g., Teasdale and Taylor 1981). The VAMS has been found to be valid and reliable in previous studies (Beshai et al. 2013).

Data Analyses

All analyses were performed on SPSS v. 19.0 (IBM, Chicago, USA; IBM Corp. 2010). An alpha level of .05 was used to determine significance for all analyses. First, descriptive statistics were calculated for all measures prior to the mood induction to ensure that assumptions of normality were met. Pearson product-moment correlations were calculated to examine the relationships between scores on the MAAS, SCS-SF, PHQ-8, DAS-24, LEIDS-R, and mood changes as a result of the negative mood induction (VAMS1 − VAMS2), spontaneous recovery/mood increase at time 1 (VAMS3 − VAMS2), and immediately after the positive mood induction/mood increase

at time 2 (VAMS5 − VAMS4). A Fisher's *r*-to-*z* transformation was conducted to assess the strength of correlation between emotional flexibility, depression, and related measures and trait mindfulness, in comparison with emotional flexibility, depression and related measures, and self-compassion. Finally, three hierarchical regression analyses were conducted to examine whether self-compassion (measured by SCS-SF) significantly predicted emotional flexibility, above and beyond trait mindfulness.

Results

A total of 112 participants dropped out of the study at various stages (see Fig. 2). A *t*-test and several chi-square analyses were conducted to examine whether study non-completers (n = 112) significantly differed from completers (n = 417) in age, sex, education, income, marital status, or ethnic identification. Analyses revealed no significant differences between completers and non-completers on any of these demographic variables. Among those who completed the study, missing data points were few. Accordingly, no imputation method was used and cases with missing values were not included in the analyses. In accordance with Chandler and Shapiro's (2016) suggestion, all participants who completed the questionnaires in this study were included in the analyses, including those who did not pass the included attention check question. Table 1 provides summaries of pertinent sample demographics, as well as mean total scores and standard deviations for the various outcome variables.

We examined the skewness and kurtosis for all measures in the present sample prior to the manipulation (MAAS, SCS-SF, PHQ-8, DAS-24, LEIDS-R, and VAMS1). Skewness values for these outcome variables were all within the acceptable range (± 1.0; Tabachnick and Fidell 2007) and ranged from − 0.41 (VAMS1) to 0.57 (PHQ-8). Similarly, kurtosis values fell within the ± 2.0 range (Tabachnick and Fidell 2007) and ranged from − 0.42 (PHQ-8) to 0.83 (SCS-SF).

As planned, we conducted the Pearson product-moment correlation analysis to examine the relationships between scores on the MAAS, SCS-SF, PHQ-8, DAS, LEIDS-R, and mood changes immediately after the negative mood induction (difference between VAMS1 and VAMS2), a second time after the mood induction (difference between VAMS2 and VAMS3), and immediately after the positive mood induction (difference between VAMS4 and VAMS5). The analysis revealed that MAAS and SCS-SF scores were negatively and significantly related to PHQ-8, DAS, and LEIDS-R scores. MAAS and SCS-SF were positively and significantly associated with negative and positive mood shifts. Zero-order correlation values are presented in Table 2.

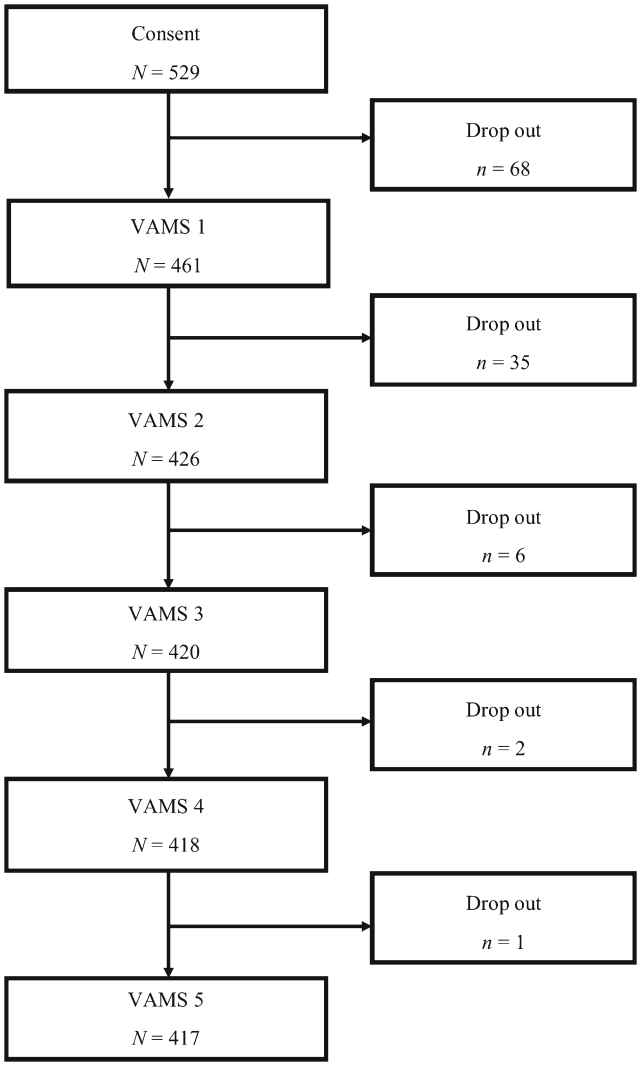

Fig. 2 Participant retention and drop-out

We conducted two Fisher's *r*-to-*z* transformations to examine differences in the strength of significant associations between mood shifts (mood drop; mood increase 1) and trait mindfulness (MAAS) versus self-compassion (SCS-SF) scores. The first transformation found that the association between self-compassion and mood drop was significantly stronger than the association between trait mindfulness and mood drop (z = 1.82, p = .034). The second transformation found no difference in association of trait mindfulness versus self-compassion with mood increase 1 (z = 1.51, p = .065, ns).

We conducted three additional Fisher's *r*-to-*z* transformations to examine differences in the strength of association between depression and related measures (PHQ-8; DAS; LEIDS-R) and trait mindfulness (MAAS) versus self-compassion (SCS-SF). We found that the association of self-compassion and depressive symptoms (PHQ-8 scores), dysfunctional attitudes (DAS scores), and cognitive reactivity

Table 2 Correlation coefficients between study measures, mood, and mood changes

	1	2	3	4	5	6	7	8	9	10	11
1. MASS	–										
2.SCS-SF	.30**	–									
3. PHQ-8	− .19**	− .43**	–								
4. DAS	− .37**	− .50**	.31**	–							
5. LEIDS-R	− .20**	− .38**	.64**	.43**	–						
6. VAMS1	.05	.16**	− .21**	− .12*	− .15**	–					
7. VAMS2	.15**	.35**	− .37**	− .21**	− .25**	.70**	–				
8. VAMS3	.16**	.30**	− .29**	− .20**	− .22**	.75**	.85**	–			
9. VAMS5	.23**	.46**	− .32**	− .16**	− .17**	.25**	.54**	.47**	–		
10. Mood drop (NMI)[a]	.14**	.26**	− .17**	− .13**	− .06	− .65**	− .18*	− .26**	.33**	–	
11. Mood increase 1[b]	.14**	.24**	− .19**	.10*	− .12*	− .42**	.36**	.10*	.36**	.61**	–
12. Mood increase 2 (PMI)[c]	.07	.14**	− .02	.04	.05	− .51**	− .32*	− .54**	.49**	.57**	.25**

MAAS Mindful Attention Awareness Scale, *SCS-SF* Self-Compassion Scale-Short Form, *PHQ-8* Patient Health Questionnaire-8, *DAS* Dysfunctional Attitude Scale, *LEIDS-R* Leiden Index of Depression Sensitivity-Revised, *VAMS* Visual Analogue Mood Scale

[a] Mood change as a result of the negative mood induction (VAMS1 minus VAMS2)

[b] Spontaneous mood increase (VAMS3 minus VAMS2)

[c] Mood change as a result of a positive mood induction (VAMS5 minus VAMS4)

*$p < .05$; **$p < .01$; ***$p < .001$

(LEIDS-R) was significantly stronger than the association of trait mindfulness with such measures ($z = 3.85$, $p < .01$; $z = 2.31$ $p = .02$; and $z = 2.84$, $p < .01$, respectively).

We conducted three hierarchical linear regression analyses to examine whether scores on the self-compassion measure (SCS-SF) significantly predicted changes in mood (mood drop; spontaneous mood increase; mood increase after positive induction), over and above variance predicted by scores on trait mindfulness (MAAS). As summarized in Table 3, SCS-SF scores were incrementally and significantly predictive of the three shifts in mood beyond variance accounted for by MAAS scores; however, the overall model for mood increases in response to the positive induction (time 2) was not significant. MAAS scores were no longer predictive of mood drops and spontaneous mood increases after SCS-SF scores were entered into the model.

Discussion

The present study examined trait mindfulness and self-compassion as contributory factors to emotional flexibility. Consistent with our hypotheses, we found that trait mindfulness and self-compassion were negatively and significantly correlated with depressive symptoms, dysfunctional attitudes, and cognitive reactivity to sad mood. Trait mindfulness was positively and significantly associated with mood drops and spontaneous mood recovery, and self-compassion was significantly associated with affective shifts in either direction in response to the inductions (positive and negative) and positively associated with spontaneous mood recovery. We found that, while both mindfulness and self-compassion are significantly associated with depression and depressive cognitions, self-compassion appeared to be a stronger predictor of these constructs. We also found that self-compassion offered unique variance beyond that contributed by trait mindfulness alone in predicting mood drop, and spontaneous recovery after the negative mood induction. Interestingly, we found that mindfulness was no longer predictive of affective shifts after self-compassion scores were entered into the model.

In the third hierarchal regression, trait mindfulness was unable to predict a significant portion of variance in affective shifts following the positive mood induction; that is, trait mindfulness accounted for 0.5% of the variance. Nevertheless, self-compassion was able to account for a unique portion of variance in affective shifts over and above trait mindfulness, albeit to differing degrees of clinical meaningfulness. If the affective shift observed among participants of this study is a proxy for emotional flexibility, it appears that mindfulness and, in particular, self-compassion play an important role in regulating such flexibility. In this way, self-compassion may serve to enhance emotional resilience (i.e., the capacity to maintain equanimity in the face of adversity; Bonanno 2004) over and above mindfulness.

We found that self-compassion was more strongly associated with depressive symptoms, dysfunctional attitudes, and

Table 3 Three regression models corresponding to the three analyses of self-compassion as a significant predictor of mood drop (VAMS1 − VAMS2), mood increase 1 (spontaneous; VAMS3 − VAMS2), and mood increase 2 (in response to the positive induction; VAMS5 − VAMS4), above and beyond trait mindfulness

	B	*SE*	*β*	*t*
Model A: mood drop				
Step 1: $R = .15$, $R^2 = .022$***				
Trait mindfulness (MAAS)	3.95	1.30	.15	3.10**
Step 2: $R = .27$, $\Delta R^2 = .053$***				
Trait mindfulness (MAAS)	1.91	1.33	.07	1.44
Self-compassion (SCS-SF)	.84	.17	.24	4.90***
Model B: mood increase 1 (spontaneous)				
Step 1: $R = .14$, $R^2 = .020$**				
Trait mindfulness (MAAS)	2.68	.95	.14	2.82**
Step 2: $R = .24$, $\Delta R^2 = .041$***				
Trait mindfulness (MAAS)	1.37	.98	.07	1.39
Self-compassion (SCS-SF)	.54	.13	.21	4.26***
Model C: mood increase 2 (positive induction)				
Step 1: $R = .07$, $R^2 = .005$				
Trait mindfulness (MAAS)	1.69	1.20	.07	1.41
Step 2: $R = .15$, $\Delta R^2 = .02$**				
Trait mindfulness (MAAS)	.68	1.25	.03	.59
Self-compassion (SCS-SF)	.43	.16	.13	2.62**

MAAS Mindful Attention Awareness Scale, *SCS-SF* Self-Compassion Scale-Short Form

*$p < .05$; **$p < .01$; ***$p < .001$

cognitive reactivity than is mindfulness. These findings are consistent with the notion that mindfulness and self-compassion are two distinct constructs and therefore have unique predictive value (Neff and Dahm 2015). Self-compassion may have predicted emotional flexibility above and beyond mindfulness, as mindfulness is typically employed in a variety of situations given its broader focus relative to self-compassion (i.e., any ongoing positive, negative, or neutral experience; Neff et al. 2017). Therefore, individuals high in trait self-compassion likely engaged in self-compassion in response to the negative mood induction—a strategy specifically targeted to the alleviation of suffering. It is also noteworthy that mindfulness scores were no longer predictive of the affective shifts after the inclusion of self-compassion, providing further evidence that self-compassion is a unique and possibly a more encompassing contributor to emotional flexibility than mindfulness (López et al. 2016).

Self-compassion does not entail the avoidance of painful experiences and feelings; rather, acting in a self-compassionate manner connotes the mindful embrace of even negative or painful emotions (Neff 2003). Thus, the finding that self-compassion accounted for unique variance both in initial mood drops following a negative mood induction and in spontaneous recovery is in line with Neff's theoretical perspective of self-compassion (c.f., Neff 2003). Following the negative mood induction, individuals scoring higher on self-compassion are unlikely to suppress their negative emotion. Instead, they are more likely to mindfully experience their emotions and then self-correct the negative experience through the provision of warmth, kindness, and a non-judgmental understanding toward themselves. However, given that participants were first exposed to negative, rather than pleasant or neutral stimuli, it appears that they were more likely to engage in acts of self-compassion as an antidote to their suffering (Germer 2009). It is conceivable then that self-compassion accounted for a unique portion of variance in initial mood drops and spontaneous recovery, but less in affective change following the positive mood induction, given that participants were exposed to negative stimuli in the former and positive stimuli in the latter. The need to engage in self-compassion would not be triggered when exposed to positive stimuli and thus accounts for less variance explained in this relationship.

Another noteworthy finding of the present study is that self-compassion was able to account for unique variance in affective shift following exposure to negative stimuli, an absence of stimuli, but not to positive stimuli. This finding may serve to further underscore the importance of self-regulation among people higher on mindfulness and self-compassion. A spontaneous mood shift suggests that individuals high on self-compassion were experiencing suffering as a result of the negative mood induction and, without environmental solicitation, acted kindly toward themselves in an attempt to alleviate their painful emotions. Thus, following the spontaneous recovery period, individuals may have been experiencing an absence of suffering and therefore may not have felt the need for an environmental aid in the form of a positive induction to alleviate such feelings. This explanation is further bolstered by the study's methodology. Specifically, given the current study's findings, individuals likely engaged in self-compassion during the spontaneous recovery phase, and the time between the negative mood induction and the positive mood induction was too brief to either account for an effect of self-compassion and/or even require a self-compassionate response given the lack of distress following recovery from the negative mood.

The finding that self-compassion was able to account for unique variance in affective shift following exposure to negative stimuli is consistent with research demonstrating that self-compassion inductions are associated with decreases in depressed mood (Diedrich et al. 2014; Diedrich et al. 2016). In addition, self-compassionate writing has been found to improve affect following a negative mood induction in

undergraduate students (Odou and Brinker 2014) and in individuals vulnerable to depression (Shapira and Mongrain 2010) and shame (Johnson and O'Brien 2013). Findings from these studies bolster evidence for the role of self-compassion interventions in reducing negative mood and, more generally, to self-compassion's contribution to emotional flexibility.

The results of the present study demonstrated that mindfulness and self-compassion are associated with emotional flexibility, which is likely a key component of psychological flexibility, which, in turn, may be associated with resilience (Waugh et al. 2011). Given that individuals high in self-compassion demonstrate a tendency to first experience their distress and then employ acts of self-kindness as an antidote to their suffering, it follows that emoting negatively is not inherently maladaptive. Research to date has demonstrated that mindfulness and self-compassion are associated with psychological well-being (Neff 2003; Macbeth and Gumley 2012). Indeed, extant research has shown that individuals with major depressive disorder have dampened emotional responses to both negative and positive stimuli, and they are unable to return quickly to baseline levels of emotion after experiencing fluctuations in mood (Bylsma et al. 2008). Furthermore, Trompetter et al. (2016) found that self-compassion partially mediated the relationship between psychological health and psychopathology. The authors concluded that self-compassion may be an important mechanism to target in clinical intervention, as self-compassion likely promotes resiliency and buffers against psychopathology. Findings from the current study support self-compassion and mindfulness as factors that may afford emotional flexibility.

The role of self-compassion as a protective factor for mood and pathology has also been demonstrated elsewhere. For example, self-compassion has been associated with lower levels of rumination in depression and anxiety (Raes 2010) and fewer symptoms of post-traumatic stress disorder, depression, and generalized anxiety disorder following exposure to potentially traumatic events (Maheux and Price 2016). In addition, self-compassion may serve as a protective factor against symptoms characteristic of personality disorders (Denckla et al. 2017). Baer et al. (2012) also assessed the relative importance of mindfulness and self-compassion in predicting psychological well-being and found that self-compassion was a more robust predictor than mindfulness. Similar findings were demonstrated in a sample of anxious and depressed adults whereby the authors found that self-compassion was a stronger predictor of depressive and anxious symptomatology than mindfulness (Van Dam et al. 2011). These findings provide evidence for the role of self-compassion in either developing psychological well-being or buffering against psychopathology, potentially beyond the effects of mindfulness alone.

Notably, there are several processes that may also act as potential predictors of affective shifts other than self-compassion and trait mindfulness. For example, self-efficacy may increase one's ability, whether perceived or real, to cope effectively with negative experiences such as a negative mood induction. The ability to take an objective perspective on negative emotions and react in a kind manner toward oneself likely consistently contributes to one's self-efficacy and the belief that painful emotions are not to be feared or avoided but coped with effectively (c.f., Neff et al. 2007). Therefore, self-compassion may be a predictor of mood shifts through one's self-efficacy.

Limitations and Suggestions for Future Research

There are several limitations of the present study that are noteworthy. First, the correlational and cross-sectional nature of the study's design precludes the examination of causal relationships between trait mindfulness, self-compassion, emotional flexibility, and depressive symptoms and depression-related cognitions. Second, the online community sample did not allow for the examination of clinical diagnoses (e.g., using gold standard diagnostic interviewing). However, a community sample greatly increases the generalizability of the findings relative to student samples, which are commonly employed in this line of research. Third, although Neff's measurement of self-compassion is commonly used, its validity has come into question (Strauss et al. 2016). Fourth, our use of the MAAS may have biased findings related to mindfulness, as the MAAS may be a less comprehensive scale of mindfulness skills compared to measures such as the FFMQ. Fifth, the study employed a crowdsourced sample, which may introduce potential sampling bias based on previous comparisons of general and crowdsourced samples (Chandler and Shapiro 2016). Last, our relatively narrow conceptualization of emotional flexibility may have impacted the content validity of the study.

Future research should extend this line of research through the examination of the unique impact of self-compassion and mindfulness in the face of trauma or serious adverse life events. This particular line of research may have clinical implications, as findings will likely elucidate the relative significance of a self-compassion intervention in addition to mindfulness training to maximize treatment outcomes and overall psychological well-being. Moreover, longitudinal approaches may shed light on the directionality of the relationship between self-compassion and mindfulness.

Author Contributions SB designed and executed the study, assisted with the data analyses, and wrote the introduction. JLP collaborated with the design and writing of the study. VH wrote the methods and the results. SB, JLP, and VH collaborated in the editing of the final manuscript.

Compliance with Ethical Standards

Ethical Approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the University of Regina's Research Ethics Board and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

Conflict of Interest The authors declare that they have no conflict of interest.

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