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Trait mindfulness may buffer against the deleterious effects of childhood abuse in recurrent depression: A retrospective exploratory study

Shadi BESHAI and Priya PARMAR

Department of Psychology, University of Regina, Regina, Canada

Key words
childhood abuse, mindfulness, mindfulness-based cognitive therapy, recurrent depression, resilience.

Correspondence
Shadi Beshai, Department of Psychology, University of Regina, 3737 Wascana Parkway, Regina, SK S4S 0A2, Canada. Email: shadi.beshai@uregina.ca

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Abstract

Background: Individuals with a history of childhood maltreatment are particularly vulnerable to a longer course of depression. Immunisation theories of resilience suggest that resilience and related factors may buffer against the deleterious effects of early childhood adversity. Trait mindfulness is linked to resilience and may be a pathway to cultivating this dynamic process. In this study, we investigated whether trait mindfulness can buffer against the effects of early childhood maltreatment in predicting lifetime number of months depressed.

Methods: We recruited 43 previously depressed, currently remitted patients, and retrospectively examined their depression history (using a structured interview, LIFE-SCID (Longitudinal Interval Follow-Up Evaluation—Structured Clinical Interview for the Diagnostic and Statistical Manual-IV)), their self-reported experience of maltreatment in the first 16 years of life (MOPS (Measure of Parental Style)), and their levels of trait mindfulness (MAAS (Mindfulness Attention Awareness Scale)).

Results: We found that number of months depressed in a lifetime was positively associated with reported childhood maltreatment, and negatively associated with trait mindfulness. Second, we found evidence that trait mindfulness significantly moderated the relationship of early childhood maltreatment and number of months depressed. Specifically, it appears that individuals who report severe histories of maltreatment are especially vulnerable to recurrent depression if they are also reporting low levels of trait mindfulness.

Conclusions: Increasing mindfulness may be warranted among individuals reporting a history of childhood abuse with lower baselines of trait mindfulness; however, results of this retrospective study require replication in a larger, prospective trial.

Key Points

1 Childhood abuse may place individuals on a relapsing or recurrent trajectory of depression.
2 In this study, we found that trait mindfulness moderated the effects of childhood abuse.
3 Accordingly, interventions that increase mindfulness may be beneficial for those who report a history of abuse and low levels of mindfulness.

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Depression is a prevalent condition, affecting approximately 10–20% of individuals in developed nations in their life (Kessler & Bromet, 2013). Unfortunately,

depression is highly recurrent, and 50% of those who suffer from one episode of the condition often go on to develop several episodes in a lifetime (Bockting, Hollon, Jarrett, Kuyken, & Dobson, 2015). Accordingly, several psychological treatments for relapse and recurrence prevention have been developed, and a few are promising in their ability to thwart the recurrent course of depression (Beshai, Dobson, Bockting, & Quigley, 2011). These treatments include, but are not limited to, continuation and/or maintenance cognitive therapy, mindfulness-based cognitive therapy (MBCT), and interpersonal psychotherapy (Bockting et al., 2015). There is evidence those that are most vulnerable to relapse or recurrence of depression see the most benefit from these preventive efforts (Bockting et al., 2005; Williams et al., 2014); however, little is known about why this differential effect exists. Accordingly, studies that attempt to shed light on potential moderators of these treatments are warranted.

Factors Associated with Risk for Depression Relapse or Recurrence

Researchers have demonstrated that several factors are related to the onset and course of depression (Burcusa & Iacono, 2007). Recently, Pereverseff, Beshai, and Dimova (2017) found that individuals reporting an earlier age of depression onset (independent of age at assessment) and a more severe first episode also reported a higher number of weeks they were depressed in a lifetime. A large body of research has also demonstrated that certain deleterious experiences in the first few years of life are likely to place individuals on a more severe depressive trajectory. By far, most research has focused on history of childhood abuse (physical and sexual) specifically as a potential predictor of depression course. Some research is suggesting that childhood abuse may make individuals more reactive to, or slower to recover from, stress (Harkness, Bruce, & Lumley, 2006; Penza, Heim, & Nemeroff, 2003), which in turn may make them more vulnerable to severe and recurrent forms of depression. Consistent with this, Gladstone et al. (2004) found that individuals reporting childhood sexual abuse were more likely than those who are not reporting such experiences to suffer from more severe depression, and an earlier age of onset for first episode (Gladstone et al., 2004). In a meta-analysis, Nanni, Uher, and Danese (2012) found that individuals reporting a history of abuse were more likely to suffer from a more severe, recurrent course of depression, and that they were resistant to treatment in comparison to those not reporting such experiences (Nanni et al., 2012).

Resilience and Trait Mindfulness

Although there is considerable discussion regarding how resilience should be defined, several researchers agree that resilience is a dynamic process typified by the capacity to successfully adapt or "bounce-back" from stress and adversity (Masten, 2001; Windle, 2011). Evidence from several studies on resilience in depression suggests that this process may be related to disorder onset and maintenance (see Waugh & Koster, 2015 for review). For example, researchers have found that scores on self-report measures of resilience are consistently negatively associated with depressive symptoms (Hjemdal, Aune, Reinfjell, Stiles, & Friborg, 2007). Pertinently, and given the definition of resilience as the ability to recover from stress, researchers have found that scores on resilience measures predict successful and rapid recovery from acute laboratory induced stress (Ong, Bergeman, Bisconti, & Wallace, 2006; Tugade & Fredrickson, 2004). Furthermore, there is evidence that resilience buffers against risk factors in depression (Haeffel & Vargas, 2011; Poole, Dobson, & Pusch, 2017). For example, Poole et al. found that psychological resilience buffered the effects of childhood abuse in predicting current depressive symptoms. In their immunisation theory of resilience, Garmezy, Masten, and Tellegen (1984) hypothesised that resilience may provide individuals with a psychological reserve or buffer against risk factors, ultimately protecting individuals from disorder onset or a prolonged disorder course.

As mentioned, resilience is a dynamic and multifaceted process; however, researchers have begun to examine factors that are closely associated with or appear to cultivate resilience in patient and non-patient populations. Trait mindfulness appears to be one of such factors.

Although there are several ways to conceptualise mindfulness, for example, as a *state* or as a family of interventions, trait mindfulness is defined as an individual-level and normally distributed characteristic typified by the capacity to purposefully pay attention to present moment experiences (Brown & Ryan, 2003). Results from longitudinal studies suggest that this characteristic is stable over time (Black, Sussman, Johnson, & Milam, 2012). Researchers have also found that mindfulness is a strong predictor of resilience among clinical and general population samples (Keye & Pidgeon, 2013; Montero-Martin et al., 2015; Pidgeon & Keye, 2014). Indeed, some investigators now conceptualise mindfulness as an essential component of resilience, especially resilience against trauma (Thompson, Arnkoff, & Glass, 2011).

Bishop et al. (2004) used a two-component model to operationally define mindfulness. These researchers argued that mindfulness can be explained by two independent factors that work in unison: self-regulation of attention and orientation toward experience. In their theory, self-regulation of attention is believed to foster sustained attentional processes, and attention switching from one object of observation (e.g., the thoughts) to the next (e.g., the body). Orientation toward experience is thought to be a secondary, yet equally important, component of mindfulness. Bishop et al. (2004) described this skill as adopting "a stance of acceptance" toward experience (p. 233), with acceptance defined as being experientially open to and curious about one's experiences.

MBCT for Recurrent Depression

Given the potential of mindfulness to be a buffer against risk factors in depression, several trials have examined the effects of MBCT (Segal, Williams, & Teasdale, 2012) in preventing relapse and recurrence in depression, and these trials demonstrate that MBCT is efficacious in preventing relapse or recurrence of the disorder. For example, in the earliest trials of MBCT for depression relapse, Teasdale et al. (2000), and Ma and Teasdale (2004) found that depression relapse was significantly reduced among individuals with a chronic course of depression (defined as 3+ previous episodes) who were randomised to the 8-week MBCT program, in comparison to those who received treatment as usual. There have since been several trials conducted supporting the efficacy of MBCT in reducing relapse in depression. Notably, Kuyken et al. (2015) found that relapse rates of individuals randomised to MBCT (with medication tapering support) were not significantly different from relapse rates of those who were receiving a maintenance dose of antidepressant medication over the 24-month duration of the study. In a sub-analysis of the Kuyken et al. (2015) data, the researchers found that individuals who reported heightened childhood maltreatment experienced significantly less relapse when they were in the MBCT condition, in comparison to those who reported severe history of childhood maltreatment and were randomised to the maintenance medication arm of the trial. Furthermore, Ma and Teasdale (2004) found that, compared to those with no history of depression and those with only one or two previous episodes, individuals reporting three or more previous depressive episodes endorsed higher scores on a measure of childhood maltreatment. These researchers argued that those with a more severe history of depression (3+ episodes) may represent a different population of depression sufferers than those with only 1–2 episodes. Finally, Williams et al. (2014) found that MBCT provided protection against depression relapse among those with a history of childhood trauma, but not among individuals who did not report such history.

Teasdale et al. (2000) hypothesised that mindfulness interventions work by first increasing mindfulness-specific skills (e.g., non-reactivity to inner experiences, present-moment awareness, acceptance, etc.), which then corresponds to a change in the risk (e.g., reduction of cognitive reactivity and rumination) and resilience (e.g., increase in self-compassion and stress recovery) profiles of vulnerable individuals. Recently, Alsubaie et al. (2017) found that global changes in mindfulness were predictive of better clinical outcomes in both MBCT and Mindfulness-Based Stress Reduction programs (Alsubaie et al., 2017).

These lines of evidence suggest the following: (1) early adverse experiences (e.g., childhood abuse) may make it more likely for individuals to experience a more severe trajectory of depression (e.g., earlier onset; heightened reactivity; reduced resilience to stress), (2) resilience is a buffer against adversity, and mindfulness is closely associated with resilience, (3) MBCT is an efficacious treatment in preventing depression relapse and recurrence, and (4) MBCT may exert its protective influence by cultivating mindfulness generally. These discoveries have prompted a few recurrent depression researchers to argue that our psychosocial treatments intended to prevent depression relapse and recurrence, such as MBCT, may work best for those who are most vulnerable to relapse (Bockting et al., 2015; Williams et al., 2014).

Despite these suggestive findings, few studies have examined whether trait mindfulness skills per se act as a naturalist buffer against recurrence in depression among the most vulnerable, and the studies that do exist examine this indirectly. For example, Paul, Stanton, Greeson, Smoski, and Wang (2012) found that the mindfulness facet of non-reactivity was inversely correlated with rumination and negative bias following a stress induction, which is assumed to lower vulnerability to depression. If such buffering effects of mindfulness are substantiated directly, this would support the hypothesis that the most vulnerable individuals who are also low on baseline mindfulness may benefit specifically from MBCT to prevent depressive relapse and recurrence. That is, such mounting support for this buffering hypothesis may serve as a guideline for selecting and matching specific psychotherapies for targeted groups of sufferers (Driessen & Hollon, 2010).

Present Study

In the present study, we recruited individuals with a history of depression and who were in remission during the

time of assessment. The aim of the study was to examine whether (1) a lifetime course of depression (measured as number of months depressed in a lifetime) was associated with trait mindfulness and severity of reported childhood maltreatment, and (2) trait mindfulness would buffer against (i.e., moderate the effects of) childhood maltreatment in predicting lifetime course of depression.

The present study replicates and extends the current literature in several ways. Childhood maltreatment has been linked to several indices that may be associated with a more recurrent course of depression (e.g., increased stress reactivity; Harkness et al., 2006), but to the authors' knowledge, only one study has linked recurrent depression to childhood abuse directly (Gladstone et al., 2004). Furthermore, no retrospective or prospective studies to-date have attempted to examine how reported childhood maltreatment may interact with trait mindfulness to predict the course of depression. The current cross-sectional, retrospective investigation is the first study to directly do so. This is important, as understanding how factors such as trait mindfulness may interact with early experiences may elucidate mechanisms of mindfulness, and with replication, may pave the way to more precise treatment selection efforts.

In accordance with previous literature (Kuyken et al., 2010; Kuyken et al., 2015; Ma & Teasdale, 2004; Williams et al., 2014), we predicted that total number of months depressed in life would be (1) negatively correlated with trait mindfulness, and (2) positively correlated with self-reported parental maltreatment in childhood. Furthermore, we predicted that (3) trait mindfulness would moderate the relationship between self-reported childhood maltreatment and number of months depressed in a lifetime, wherein those reporting the highest levels of maltreatment and lowest levels of trait mindfulness would also be reporting the highest number of months depressed.

Method

Participants and Retention

Participants were recruited through flyers posted in venues throughout the city of Regina, Saskatchewan, Canada, and through social media outlets (i.e., Facebook, Kijiji). Eligible participants were between 18 and 65 years of age, and had experienced at least one episode of depression in their life. Exclusion criteria included: (1) elevated depression symptoms as determined by a total score on the PHQ-8 higher than 15, or a score higher than 10 with an endorsement of 2 or 3 on items 1 (depressed mood) or 2 (anhedonia) of the scale, and (2) self-reported psychosis or mania symptoms in the last month.

The study was approved by the Research Ethics Board. All participants were compensated financially. Participants were asked to complete study measures (described above) via Qualtrics, an online surveying software.

Longitudinal Interval Follow-Up Evaluation—Structured Clinical Interview for the Diagnostic and Statistical Manual (DSM)-IV (LIFE-SCID)

The LIFE-SCID (Keller et al., 1987) is a semi-structured interviewing technique that allows researchers to assess the longitudinal course of psychiatric disorders (Keller et al., 1987). In the present study, the LIFE-SCID (Mood Module) was used to calculate the number and length of each depressive episode participants may have experienced in their life by assessing if the identified episode met formal diagnostic criteria based on DSM-IV-TR's (American Psychiatric Association, 2000) criteria for major depression. The SCID, Mood Module is comprised of several questions that map onto the criteria for major depression as defined by the DSM-IV-TR. In the present study, the suicidality question (symptom 9 of the SCID) was removed, as members of the ethics board approving the study were concerned our assessors, who had little clinical experience at the time of the study, would have difficulty dealing with issues of risk if they arose. In accordance with the SCID-IV, each symptom was coded as absent, borderline, or present, and if symptom criteria were established (five or more symptoms present, with at least one hallmark feature endorsed), each episode had to last 2 weeks or longer, be associated with significant distress or functional impairment, and not be the result of physical illness, substance use, or bereavement. Keller et al. (1987) found the inter-rater reliability of the SCID interviews to range from .52 and .98.

Patient Health Questionnaire-8 (PHQ-8)

The PHQ-8 (Kroenke et al., 2009) is an 8-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 DSM (DSM-IV). Participants answered each of the eight items on a 4-point Likert-type scale, ranging from 0 (*Not at all*) to 3 (*Nearly every day*). Higher total scores were indicative of greater distress. The PHQ-8 has demonstrated excellent psychometric property in previous studies (Kroenke et al., 2009). In the current study, the PHQ-8 demonstrated adequate internal consistency (α = .75).

The Mindfulness Attention Awareness Scale (MAAS)

The MAAS (Brown & Ryan, 2003) is a 15-item scale that measures an individual's general tendency to be attentive and aware of present-moment experiences in daily life (e.g., "I could be experiencing some emotion and not be conscious of it until some time later"). Total scores represent an average of all 15 items, and can range from 1 to 6, with higher scores indicating greater trait mindfulness. The scale asks respondents to rate how often they have experienced each of the items, and each item is rated from one (*Almost always*) to six (*Almost never*). The MAAS has been found valid for both those who are novice and have no experience with meditation, and those who are experienced meditators. The MAAS has been found to have a Cronbach's alpha of .89 in a previous study (MacKillop & Anderson, 2007). In the current sample, the Cronbach's alpha for the MAAS was $\alpha = .87$.

Measure of Parental Style (MOPS)

The MOPS (Parker et al., 1997) is a commonly used, retrospective self-report instrument for dysfunctional parenting and instances of parental abuse. The MOPS is the revised version of the Parental Bonding Instrument (Parker, Tupling, & Brown, 1979). The MOPS is comprised of 30 items, which assess parental "indifference" (e.g., "My mother/father was uninterested in me") "overprotection" (e.g., "My mother/father was overprotective of me") and "abuse" (e.g., "My mother/father was physically violent or abusive") that participants recall having experienced from either their mother (maternal form) or father (parental form) during their first 16 years of life. The items are scored on a 4-point scale that indicates the degree of the participants' agreement with each item statement. Higher scores indicate higher reported maltreatment and/or abuse during the first years 16 years of life. The MOPS has been used extensively in clinical research (Dalgleish et al., 2003) and is both reliable and valid (Parker et al., 1997). Among the present sample, the 30-item MOPS evidenced excellent internal reliability, $\alpha = .90$.

Procedure

Consenting participants were contacted via telephone by study personnel, and both the PHQ-8 and LIFE-SCID (assuming PHQ-8 scores were not elevated beyond a priori cut-offs) were completed. During the telephone interview, participants were first asked to identify all possible previous episodes of depression by assessing instances when the two hallmark features of depression have occurred in their life (e.g., low mood or anhedonia for over 2 weeks). To enhance recall of these events and to establish a timeline, participants were asked additional questions that might trigger recall for the onset or end of an identified depressive period (e.g., "What season was it?," "Did this happen around a special event?"). The month and year when the episodes started and ended were then estimated for each of the periods generated. Once all possible depressive periods were identified, the SCID Mood Module was applied retrospectively, starting from the first identified period and ascending chronologically to present day, to establish whether diagnostic criteria were met during generated depressive periods. All participants (both eligible and ineligible) were provided with their initial compensation (an online gift card valued at 10 Canadian dollars) after the completion of the LIFE-SCID. Those not meeting criteria were thanked, debriefed, and provided with their compensation.

Those meeting criteria for at least one previous episode were provided a participant number (that connected their interview data with their questionnaire scores), and directed to complete an online survey on which study questionnaires were hosted and presented in randomised order. After completion of the online questionnaires, all participants were thanked, debriefed, and compensated with a second $CAD 10 gift card to a vendor of their choice. Only data from participants who were eligible for all portions of the study and completed study questionnaires were included in the analyses.

Assessor Training

Three student researchers conducted the interviews with participants in the present study. All three students were trained by a Doctoral-level clinical scientist with extensive experience in using the SCID. This training included in-session practice of the SCID Mood Module, as well as listening to audio recordings of previously conducted SCID assessments, and re-coding the assessments in accordance with SCID criteria. This re-coding was then checked for accuracy. Researchers were also trained on how to assess and respond to suicidal risk if it arose.

Statistical Analyses

First, we calculated and summarised sample demographics and descriptive statistics for study variables. We calculated the total number of months depressed in a lifetime by summing the length of each clinically diagnosable episode (in months) across all assessed episodes.

To test our first set of hypotheses, we conducted a Pearson's product–moment correlation analysis to assess associations between number of reported depressive episode, number of months depressed in a lifetime, depression symptoms (PHQ-8), trait mindfulness (MAAS), and

reported childhood maltreatment (MOPS) scores. To examine the moderating effect of trait mindfulness (MAAS) on the relationship of reported childhood maltreatment (MOPS) and depression course (total months depressed in a lifetime), we conducted a hierarchical regression analysis as outlined by Baron and Kenny (1986). Specifically, demographic characteristics (age, gender, marital status) and PHQ-8 scores were entered in Step 1 (Model A) of the regression, mindfulness (MAAS scores) and reported childhood maltreatment (MOPS scores) were entered in Step 2 (Model B), and the interaction of mindfulness and childhood maltreatment were entered in Step 3 (Model C) (Baron & Kenny, 1986). To reduce the threat of multicollinearity, we mean centered MAAS and MOPS scores as used in the regression model (Beshai, Prentice, Swan, & Dobson, 2015; Dalal & Zickar, 2012).

To interpret interaction effects when they were found, we created three groups based on MOPS and MAAS total scores, wherein "Low," "Moderate," and "High" groups were comprised of $n = 14$, $n = 14$, and $n = 15$ (total $n = 43$) in ascending order of total scores.

Results

Eighty-two interested participants who contacted study personnel were directed toward an online consent form. Of those, two did not consent and eight did not complete the consent form. Of the 72 participants who arranged an interview, nine were excluded for endorsing heightened depressive symptoms (PHQ-8 total score over 15 or score of over 10 with items 1 and 2 meeting clinical threshold), and one was excluded for not meeting criteria for a previous major depressive episode. An additional 19 participants were excluded from final analyses as they endorsed symptoms of either psychosis or mania.

Study sample characteristics are summarised in Table 1. A total of 43 participants (34 women and 9 men; $M = 31.56$, $SD = 10.78$, *Range* = 19–63) completed the assessment. The majority ($n = 39$; 90.7%) identified as White, with two (4.7%) participants identifying as Asian, and two (4.7%) as Aboriginal.

Table 1 Summary of study sample's demographic characteristics, and summary of descriptive statistics of study measures

	$n = 43$
Age, *M* (*SD*)	31.56 (10.78)
Sex, *n* (%)	
Female	34 (79.1)
Male	8 (18.60)
Missing	1 (2.30)
Marital status	
Single (never married)	27 (62.80)
Married	14 (32.60)
Separated/divorced	2 (4.7)
Highest education	
No degree, certificate or diploma	2 (4.7)
Secondary (high) school graduation certificate or equivalent	9 (20.9)
Trades certificate or diploma	7 (16.3)
Other non-university certificate or diploma	4 (9.3)
University certificate or diploma below bachelor level	1 (2.3)
Bachelor's degree	16 (37.2)
Master's degree	4 (9.3)
Other	
Grade 12	1 (2.3)
Year 3 university	1 (2.3)
Yearly income	
I am unemployed/no yearly income	5 (11.6)
10 000–30 000	15 (34.9)
30 000–50 000	12 (27.9)
50 000–75 000	6 (14.0)
75 000 and over	4 (9.3)
None of the above	1 (2.3)
Number of episodes, *M* (*SD*)	2.61 (1.63)
Age of onset	21.44 (7.08)
Months depressed in a lifetime	31.42 (49.32)
PHQ-8, *M* (*SD*)	4.47 (3.63)
MAAS	4.19 (0.83)
MOPS	19.00 (14.20)

Note: MAAS, mindfulness attention awareness scale; MOPS, Measure of Parental Style; PHQ-8, Patient Health Questionnaire-8.

Associations of Childhood Maltreatment, Mindfulness, and Depression Course

Results of the correlational analysis are summarised in Table 2. The analysis revealed that number of previous depressive episodes was significantly and positively correlated with the number of months depressed in a lifetime, $r = .32$, $p < .05$. Furthermore, total months depressed in a lifetime was significantly and positively correlated with scores on the MOPS, $r = .39$, $p < .01$, and negatively correlated with MAAS scores, $r = -.32$, $p < .05$.

Moderating Effect of Mindfulness on Childhood Maltreatment and Depression Course

Results of the hierarchical regression are summarised in Table 3. Overall, Model A (demographics and PHQ-8-scores) was significant in predicting number of months depressed in a lifetime, $F(4, 39) = 2.93$, $p = .034$, while Models B (Main effects of MOPS and MAAS) and C (Interaction of MOPS and MAAS) were both significant predictors of number of months depressed, $F(6, 37) = 2.84$, $p = .02$, $F(7, 36) = 3.31$, $p < .01$,

Table 2 Correlation coefficients between clinical indices of depression and psychological variables (current depressive symptoms, trait mindfulness, and self-reported parental maltreatment)

	Age of onset	Number of episodes	Months depressed	PHQ-8	MAAS	MOPS
Age of onset	—	−.14	−.02	.46[a]	.01	−.08
Number of episodes		—	.32[b]	.06	−.20	.02
Months depressed			—	.29	−.32[b]	.39[a]
PHQ-8				—	−.26	.24
MAAS					—	−.23
MOPS						—

Note: MAAS, mindfulness attention awareness scale; MOPS, Measure of Parental Style; PHQ-8, Patient Health Questionnaire-8.

[a] Correlation is significant at the .01 level (two-tailed).

[b] Correlation is significant at the .05 level (two-tailed).

Table 3 Hierarchical regression examining main effects and interaction of trait mindfulness (MAAS) and self-reported childhood maltreatment (MOPS) on course of depression in a lifetime (total months depressed)

	B	*SE*	β	*t*
Model A (Demographics): $R = .50$, $R^2 = .25$				
Age	1.54	.77	.34	2.01
Gender	17.33	18.13	.14	0.96
Marital status	10.81	15.34	.13	0.71
PHQ-8	1.48	2.25	.11	0.66
Model B (Main effects): $R = .59$, $R^2 = .33$, $\Delta R^2 = .09$				
Age	1.37	.76	.30	1.80
Gender	5.61	18.47	.05	0.30
Marital status	8.34	14.92	.10	0.56
PHQ-8	.48	2.24	.04	0.22
MOPS-total (centred)	.67	.53	.19	1.27
MAAS-total (centred)	−13.74	9.17	−.23	−1.50
Model C (Interaction): $R = .65$, $R^2 = .41$, $\Delta R^2 = .08$[a]				
Age	.96	.75	.21	1.27
Gender	7.50	17.65	.06	0.43
Marital status	14.37	14.53	.17	0.99
PHQ-8	−.79	2.22	−.06	−0.36
MOPS-total (centred)	.55	.51	.16	1.08
MAAS-total (centred)	−21.29	9.46	−.35	−2.25[a]
MOPS × MAAS	−1.40	.67	−.32	−2.10[a]

Note: MAAS, Mindfulness Attention Awareness Scale; MOPS, Measure of Parental Style; PHQ-8, Patient Health Questionnaire-8.

[a] Correlation is significant at the .05 level (two-tailed).

respectively. Models A, B, and C were associated with an R^2 of .25, .33, and .41 (explaining 25%, 33%, and 41% of variance in number of months depressed, respectively). The R^2 change from Model B (MOPS and MAAS separately) to the interaction Model C (Interaction of MOPS and MAAS) was significant, increasing predictive power of the model by 8%, $R^2_{\text{change}} = .08$, $p = .043$.

As planned, we created a line graph to aid in the interpretation of the significant moderation effect (Fig. 1). As can be seen in the figure, MAAS scores appear to matter less among individuals scoring "Low" on the MOPS in predicting total months depressed. Those scoring "High" on MOPS and "Low" on MAAS reported the highest number of months depressed in a lifetime, in comparison to other MOPS and MAAS scoring categories.

Discussion

Depression is a highly recurrent condition and is associated with significant impairment (Bockting et al., 2015). In the present study, we examined the associations of depression course, measured as the number of months depressed in a lifetime, with reported experiences of childhood maltreatment, and trait mindfulness. Furthermore, we investigated the buffering effect of trait mindfulness on self-reported childhood maltreatment in thwarting a chronic course of depression. Studies of this nature are important, as they elucidate moderators of treatments that specifically target mindfulness, as well as pave the way for larger studies that may examine for whom MBCT may work best and why.

Consistent with our hypotheses, we found that total months depressed in life was positively associated with severity of childhood maltreatment, and negatively correlated with trait mindfulness. Also consistent with our hypotheses, we found that trait mindfulness appeared to moderate the relationship between the experience of childhood maltreatment and number of months depressed. Specifically, we found that, among patients reporting the most severe childhood maltreatment, having low levels of mindfulness was associated with the most chronic course of depression. Among those reporting few ("Low") experiences of childhood maltreatment, one's level of trait mindfulness were negligible in predicting number of months depressed in a lifetime. Indeed, individuals who have experienced severe histories of maltreatment with low levels of trait mindfulness appeared to exhibit an almost a fivefold increase in the mean number of months depressed in their life, compared to those with severe histories of maltreatment combined with high levels of mindfulness. However, the results of the moderation analysis need to be interpreted with caution, as the effect size appeared small, and

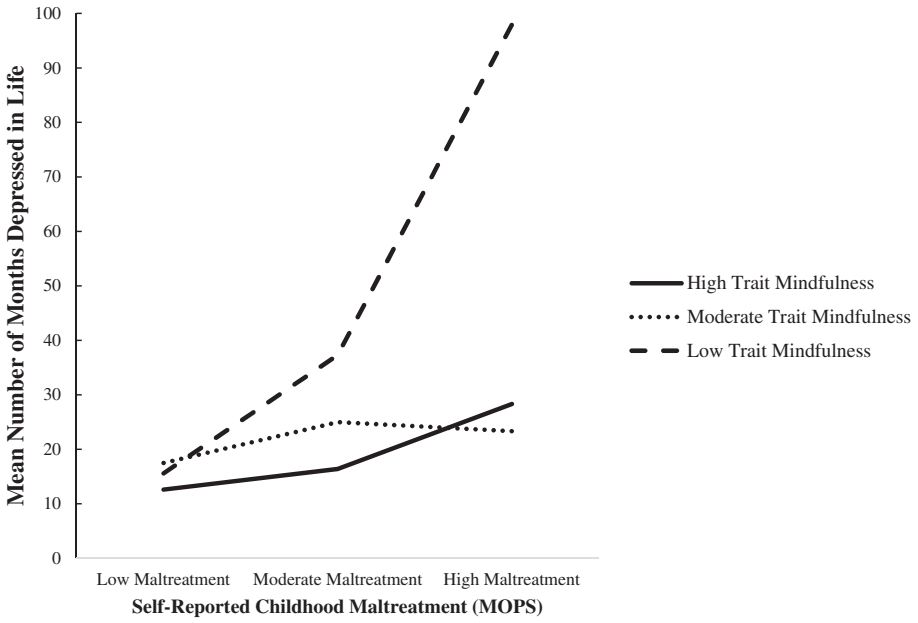

Figure 1 Moderating effect of trait mindfulness (MAAS scores) in the relationship of reported childhood maltreatment (MOPS scores) and lifetime number of months depressed.

regression analysis results obtained with small samples may not be reliable (Tabachnick & Fidell, 2001).

Interestingly, we found that, when the interaction term is entered into the hierarchical regression model in the final step, scores on the mindfulness scale become a significant predictor of number of months depressed in a lifetime. That is, there was an apparent augmentation in the effects of mindfulness alone once the interaction of mindfulness and childhood adversity was entered. This finding is difficult to interpret, and may be a statistical artifact. That is, after partialling out variance associated with the interaction of mindfulness and reported maltreatment, the portion of "mindfulness" that remains, which is significant, is likely no longer interpretable. Furthermore, Tabachnick and Fidell (2001) recommend that main effects are not interpreted when the interaction term is significant.

The results of this investigation are in line with results of previous studies, which suggested that certain populations, such as those with a severe history of abuse in the first few years of life, are likely on a more chronic course for recurrent depression (Ma & Teasdale, 2004). Furthermore, and consistent with hypotheses by several researchers in the field of recurrent depression, it appears that highly vulnerable subpopulations of sufferers may benefit the most from our psychosocial interventions to thwart relapsing depression (Bockting et al., 2015; Burcusa & Iacono, 2007; Piet & Hougaard, 2011; Williams et al., 2014).

Mindfulness-based approaches may be especially indicated for individuals with a history of childhood maltreatment. Mindfulness-based interventions appear to exert their effects by cultivating general mindfulness skills (e.g., non-reactivity; awareness; non-judging/acceptance), which are then hypothesised to ignite a cascade of beneficial effects (Alsubaie et al., 2017). For example, mindfulness has been shown to mitigate factors associated with vulnerability, such as cognitive reactivity (Fresco, Segal, Buis, & Kennedy, 2007; Raes, Dewulf, Van Heeringen, & Williams, 2009). In addition to mitigating vulnerability, mindfulness also appears to cultivate resilience factors (Pidgeon & Keye, 2014). Indeed, some researchers conceptualise mindfulness as a key component of resilience against trauma (Thompson et al., 2011). Furthermore, mindfulness has been suggested as a building block of emotional and psychological flexibility (Beshai, Prentice, & Huang, 2017). Researchers have found that resilience specifically may be protective against childhood adversity in depression (Poole et al., 2017). With this said, methodological limitations of the present study preclude definitive conclusions regarding the differential efficacy of MBCT for individuals reporting childhood maltreatment or trauma.

The present study contributes to the literature in several ways. First, this is the first study to examine the buffering effects of trait mindfulness on childhood adversity in recurrent depression. Second, and although retrospective analyses are limited, we assessed history of depression in accordance with a "gold-standard" assessment method used in several depression recurrence trials (Beshai et al., 2011). Third, results of this study lay the ground work for larger trials that are aimed at replicating and extending the

present results. Specifically, we believe that studies such as one described are important in initiating a science of treatment selection in depression.

With this said, the present study is not without its limitations. First, this is a retrospective study, and therefore participant recall may have been biased or incomplete (Burcusa & Iacono, 2007). In addition, participants rated their current levels of trait mindfulness, and were asked to recall childhood experiences in the first few years of their life, as well as recall their experience of depressive episodes in the past. Thus, it is not possible to estimate how current trait mindfulness levels may have changed with the experience of successive depression episodes, and whether the moderating effect of mindfulness observed herein would hold prospectively; however, and as mentioned above, there is evidence to suggest that trait mindfulness as measured by the MAAS is a stable characteristic over time (Black et al., 2012). Third, the sample size was small, and the sample was relatively homogenous in composition (mostly White females). This limits the generalisability of the obtained results. Furthermore, we note that the size of the demonstrated moderation effect is small, and thus, it is difficult to know whether this effect is reliable. In addition, although our hypotheses were based on literature suggesting that childhood abuse specifically is a predictor of poorer outcome in recurrent depression, the MOPS is a general measure of abuse and neglect. Finally, the MAAS, which was the measure of trait mindfulness in the current study, is a limited measurement of mindfulness, as it may only measure the "acting with awareness" sub construct within mindfulness (Brown & Ryan, 2003). Given the limited conceptual coverage of the MAAS, it was not possible to determine if aspects of mindfulness other than mindful attention were responsible for the moderation effect observed. In addition, mindfulness-based interventions, such as MBCT, likely exert their therapeutic effects by cultivating, not just attention, but several other components of mindfulness (Alsubaie et al., 2017). Several researchers (e.g., Bishop et al., 2004) have argued that the attentional component of mindfulness is an essential component of the construct; however, and due to the limitations of the MAAS, we could not test the differential effects of the "orientation to experiences" component of mindfulness (Bishop et al., 2004). Furthermore, and to the best of our knowledge, the MAAS is the only study for which data exists in support of its longitudinal stability (Black et al., 2012).

Despite the small sample size, a moderation effect was still detectable; however, future studies employing much larger samples are needed to replicate our obtained results. Future studies should also replicate the present findings using a prospective design. Third, a larger clinical trial that is specifically powered to establish the efficacy of MBCT for individuals with severe histories of abuse is needed. Fourth, and although results of recent investigations point to the mediating effects of mindfulness skills in MBCT, additional research is needed to investigate exact mechanisms of change (Kazdin, 2007). That is, how exactly do mindfulness skills interfere with vulnerability and cultivate resilience? What is the role and importance of self-compassion in the mechanisms of action of MBCT? As it stands, these questions have seldom been addressed.

The current study found that individuals with a severe self-reported history of childhood maltreatment were especially vulnerable to developing a highly chronic course of depression if they were also low on trait mindfulness. Alternatively, those with a severe history of abuse coupled with high trait mindfulness appeared protected, and thus showed a less chronic course. This study provides preliminary evidence that mindfulness approaches that increase mindfulness skills may be warranted for highly vulnerable subpopulations of depressed individuals. However, larger, prospective trials are needed to replicate the present findings.

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