The interplay between self-compassion and mindfulness in the explanation of depression and anxiety in depressed individuals

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Abstract

Previous studies have found that self-compassion and mindfulness are negatively related to depressive and anxiety symptoms. Still, the mechanisms underlying these relationships in major depression and whether such mechanisms differ in healthy people are poorly understood. In the present study, it was examined whether mindfulness and worrying mediated relationships between self-compassion, depression, and anxiety. An alternate model with mindfulness as the predictor and self-compassion as a mediator was also examined. 146 individuals who had been diagnosed as depressed (M_{age} = 34.49, SD = 10.14) and 198 healthy controls (M_{age} = 34.44, SD = 12.93) completed an online battery of questionnaires assessing self-compassion, mindfulness, worrying, trait anxiety, and depression. It was found that self-compassion and mindfulness may both function as mediators in predicting emotional distress. Diagnosis of clinical depression did not moderate the effects of mediational relationships in both the main and alternative models. These findings suggest that relationships between mindfulness and self-compassion are reciprocal in the explanation of depression and anxiety symptoms and suggest both mechanisms may contribute to the reduction of anxiety and depression, a claim that needs further experimental validation. Future research may benefit from longitudinal and experimental designs to understand causal precedence and the dynamic nature of the relationship between mindfulness and self-compassion.

self-compassion, mindfulness, depression, anxiety, major depression

INTRODUCTION

Recently, there has been a burgeoning increase in research on self-compassion and its relevance for well-being and mental health, including the alleviation of depression and anxiety [1]. Similarly, research on mindfulness meditation, which has entered the mainstream in the United States and Western countries in the past several decades, has grown, attracting the attention of researchers and clinicians due to its beneficial effects on psychological well-being [2,3]. Although mindfulness and self-compassion have been viewed as two related and inherent human capacities in the contemplative tradition [4] and the more recent Western approach [5] little is known about how mindfulness and self-compassion jointly influence the achievement and maintenance of well-being in healthy people and

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those experiencing clinical disorders for instance major depression.

Self-compassion, understood as "compassion directed inward," is comprised of three components: self-kindness, common humanity, and mindfulness [6,7] Neff [7] defines (a) self-kindness as the ability to be understanding and supportive toward oneself, (b) common humanity as the ability to recognize that one is not alone in his/her imperfection, but it is a trait shared among all people, and (c) mindfulness as being aware of one's negative thoughts and emotions and approaching them without resistance.

The last component's operationalization differs from the concept of mindfulness introduced by Jon Kabat-Zinn [8] in a few ways. Mindfulness in the tradition of Kabat-Zinn focuses on one's relationship with experiences in the present moment. In contrast, mindfulness, as a component of self-compassion, focuses on one's relationship with oneself [9]. Although mindfulness and self-compassion emphasize being non-judgmental, accepting, and tolerant, self-compassion focuses on suffering and explicitly emphasizes kindness for the self [10] whereas mindfulness does not. Mindfulness and self-compassion have been found to be positively related, but these relationships are not particularly strong [11] Moreover, despite their conceptual overlap, mindfulness and self-compassion are considered distinct constructs [9,12,13].

Both self-compassion and mindfulness have been found to be negatively related to depression and anxiety [14] and positively related to well-being [15]. Moreover, treatments for depression and anxiety that incorporate mindfulness and self-compassion practices have been found to be effective [16,17]. However, it is unclear if self-compassion and mindfulness are jointly related to psychological distress. One possibility is that once people become more mindful and aware of their suffering, they become more self-compassionate and engage in self-comforting behavior. If this is the case, self-compassion mediates the relationship between mindfulness and emotional well-being. Such mediation has been found previously [18,19].

Nevertheless, mindfulness may also mediate relationships between self-compassion and psychological distress. When people become more self-compassionate, they may attend to what they are experiencing in the present moment, even difficult experiences, with acceptance and an open mind, as they can rely on their ability to soothe themselves upon encountering adversity [15]. This, in turn, may help in reducing mental reactivity in the form of repetitive negative thinking and decrease overall psychological distress. This possibility has rarely been investigated [20].

In addition, some research suggests that worrying mediates relationships between self-compassion and psychological distress. For example, Raes [21] in a nonclinical sample, found that brooding (defined as moody pondering) was a significant mediator between self-compassion and depression, and both brooding and worrying (defined as future-oriented negative thinking) mediated relationships between self-compassion and anxiety. This suggests that self-compassion may alleviate psychological distress by reducing tendencies to worry. From a theoretical perspective, this makes clinical sense, as an increase in self-compassion is related to more acceptance and a compassionate attitude toward the current experience, which can weaken the tendency to engage in repetitive negative thinking.

To the authors' knowledge, little is known about the interplay and interaction of self-compassion, mindfulness, worrying, and psychological distress (depression and anxiety) in depression. This subject has potentially significant implications for psychotherapy of depression, the most common psychiatric condition with a lifetime prevalence rate of approximately 16%, [22] which is currently the leading cause of disability worldwide [23]. Does mindfulness and pervasive negative thinking (worrying) mediate the link between self-compassion and depressive-anxious symptomatology in depressed people, or does self-compassion mediate, together with worrying, relationships between mindfulness and mental health indicators? Finally, are these mediating mechanisms similar in clinically depressed and non-clinical people? Depressed individuals are particularly prone to be entangled in negative cognitions in the form of repetitive, recurrent, and uncontrollable thoughts [24] and they differ from healthy individuals concerning the exhibition of cognitive biases to negative information [25]. Determining if similar or differ-

ent mechanisms operate in depressed and non-depressed people may inform the development of mindfulness and compassion-based treatments for mood disorders.

Therefore, the current study aimed to evaluate the directional links between those constructs in depressed and non-depressed samples within a testable model in a cross-sectional study.

Four hypotheses were tested:

1. Depressed participants will exhibit lower overall levels of self-compassion and mindfulness and higher worrying, depressive, and anxiety symptoms than healthy participants.
2. Self-compassion will be positively related to mindfulness and negatively related to worry, depression, and anxiety.
3. Worry and mindfulness will mediate relationships between self-compassion and depressive symptoms and between self-compassion and anxiety among clinically depressed and healthy controls (main model).
4. Self-compassion and worry mediate the relationships between mindfulness and psychological distress (the alternative model).

METHOD

Participants

A total of 344 participants took part in the current study. Of this total, 146 individuals had been diagnosed as depressed ($F = 117$, $M_{age} = 34.49$, $SD = 10.14$), and 198 participants qualified as healthy controls ($N = 198$, $F = 127$, $M_{age} = 34.19$, $SD = 12.80$). The groups did not differ in age ($p = .82$).

Recruitment of Depressed Participants

The aim was to recruit individuals who met the criteria for clinical symptoms of depression. Participants took part in a multi-step process of selection that included online questionnaire screening distributed on the website, a short interview over the phone, and a diagnostic interview with a clinician. Participants were informed about the study via an open call posted on two popular Internet portals in sections for employment. To mask the purpose of the study, individuals were invited to participate in a scientific study that focused on how people feel and process information in their daily lives. Participants were told that if they met the criteria, they would be paid the equivalent of 30 USD. The call stated that of interest were people who: 1. were recently feeling down, sad, or empty, 2. had been feeling that everyday activities were not as pleasurable as before, 3. were having sleeping problems, 4. were having problems with appetite, or 5. were feeling low in self-esteem.

Screening

Initially, 968 people responded to this call, and of these, 879 completed the screening measure, the Center for Epidemiological Studies Depression scale (CES-D).[26] The CES-D score results in the whole group ranged from 2 to 58. To maximize the likelihood that participants would be depressed, individuals who had a CES-D score of less than 20 points were screened out—685 people met this criterion.

Diagnostic Interviews

For the study, 227 possible candidates were contacted randomly for a preliminary phone interview. During this interview, they were asked whether they experienced anhedonia or depressed mood for at least two weeks on most days and most of the time during these days. Fifty-eight people did not want to continue with the study.

Finally, 169 candidates were interviewed using the Mini International Neuropsychiatric Interview *5.0.0*.[27] The interview was conducted in person by a trained clinician in a laboratory setting and lasted 60-90 minutes. To be eligible for the study, individuals had to be diagnosed as currently experiencing a major depressive episode (MDD) according to the DSM-IV. Individuals were excluded from the study if they had a current or lifetime psychotic disorder, bipolar disorder, substance abuse, or current suicidal tendencies. Twenty people were excluded from the study after the interview because of comorbid diagnoses or a lack of depression. One hundred forty-nine depressed participants were qualified to take part in the study, and of these, 146 completed measures of self-compassion, trait anxiety, and worrying.

Recruitment of Healthy Participants

Individuals were invited through advertisements posted on social media to participate in a scientific study that focused on how people feel and process information in their daily lives. Initially, 251 people responded to this call, and of these, 212 completed the initial screening measure, the Center for Epidemiological Studies Depression scale (CES-D).26 Potential participants also described their gender, age, education, and family and employment status. Diagnostic interviews were conducted in the same way as they were for the depressed group. Participants who did not meet criteria for any psychiatric disorders were included, and 198 individuals took part in the study and completed all measures.

MEASURES

Self-compassion Scale – Short Form

The SCS-SF28 is a 12-item questionnaire evaluating an individual's self-compassion across its six subscales (two items each): self-kindness, self-judgment, common humanity, isolation, mindfulness, and overidentification. The measure uses a five-point Likert-type response format, ranging from 1 (almost never) to 5 (almost always). An example item is, "I try to be understanding and patient towards those aspects of my personality I don't like." The SCS-SF is a short version of the 26-item Self-Compassion Scale.6 Cronbach's alpha for the present study was .89.

Mindful Attention Awareness Scale (MAAS)

The MAAS29 is a 15-item scale used to measure one's ability to observe the present environment and his/her experiences, a core facet of mindfulness, as a dispositional trait. It has been found to be a valid measure of the construct.30 An example item is "I find it difficult to stay focused on what's happening in the present," all items were reversed scored, and higher scores indicate greater mindfulness. Cronbach's alpha for the present study was .90.

Penn State Worry Questionnaire (PSWQ)

The PSWQ31 consists of 16 items that assess an individual's level of pathological worry using 11 positively worded items (for example, "I do not tend to worry about things") and five negatively worded items (for example, "My worries overwhelm me"). Respondents rate their answers on a 5-point Likert scale from 1 (not at all typical of me) to 5 (very typical of me), and negative items are reverse-scored before a total score is calculated. Cronbach's alpha for the present study was .94.

Center for Epidemiological Studies – Depression (CES-D)

The CES-D26 is a 20-item questionnaire used to measure how often an individual experienced depressive symptoms within the past seven days using a 4-point scale. The endpoints are anchored at 0 (rarely or none of the time, less than one day) and 3 (most of the time, 5–7 days). The questionnaire has both good reliability and validity.32 The reliability of the scale in the current study was .95.

State-Trait Anxiety Inventory, Trait version (STAI-T)

The STAI-T33 is a 20-item measure used to assess one's level of trait anxiety. Answers are scored on a 4-point scale ranging from not at all (scored as 1) to very much so (scored as 4). An example item is "I worry too much over something that really doesn't matter." Higher scores indicate higher anxiety. Cronbach's alpha for the present study was .96.

PROCEDURE

After passing the initial screening and providing informed consent, participants were asked to complete the questionnaires mentioned earlier. The study was approved by the Ethics Committee of the local University Research Ethics Committee, and all participants provided written consent.

Overview of Mediation Analyses

Moderated mediation analyses were conducted using PROCESS version 3.5.3.[34] In all analyses, the moderating variable was the diagnostic status of participants, depressed vs. healthy, and the estimates were based on bootstrapping with 10,000 iterations. Analyses were conducted following the approach outlined by Hayes,[35] which allowed for the indirect effects of two mediators to be observed in isolation and a series.[36] These analyses resulted in a three-path mediation model, each described below.

In one set of analyses (labeled main), self-compassion was the predictor, and depression and anxiety were the outcomes. For each combination of self-compassion and an outcome, three models were conducted: one in which mindfulness was the sole mediator, a second in which worry was the sole mediator, and a third in which mindfulness and worry were mediators. In terms of Hayes's PROCESS nomenclature, the sole mediator analyses used Model 4, and the simultaneous mediator analyses used Model 92 (moderated serial mediation).

Another set of analyses that were structurally similar to the main analyses were also conducted. In these analyses, mindfulness was the predictor, depression and anxiety were the outcomes, and self-compassion and worry were the mediators. These analyses are labeled as the alternative model.

RESULTS

Correlations between Self-compassion, Mindfulness, Worry, Anxiety, and Depression

The primary purpose of the present study was to examine if mindfulness and worry mediated relationships between self-compassion and depression and anxiety. Before testing these relationships, correlations among the measures and between-group differences in the means of these measures were examined. Descriptive statistics and zero-order correlations between the measures are presented in Table 1, separately for depressed and healthy participants. The correlations were consistent with predictions. Self-compassion was negatively correlated with worry, depressive symptoms, and anxiety, whereas it was positively correlated with mindfulness. Mindfulness was negatively correlated with worry, depression, and anxiety. Worry was positively correlated with depression and anxiety. Finally, depression and anxiety were positively correlated.

Table 1. Descriptive statistics and zero-order order correlations of healthy controls and depressed participants

Group	Measure	M(SD)	1	2	3	4
Healthy controls	SCS-SF	37.0 (7.97)	-			
	MAAS	4.16 (.737)	.397**	-		
	PSWQ	46.3 (13.7)	-.620**	-.391**	-	
	CES-D	15.5 (10.3)	-.587**	-.359**	.601**	-
	STAI-T	42.5 (8.95)	-.616**	-.442**	.675**	.720**
Depressed individuals	SCS-SF	27.6 (6.96)	-			
	MAAS	3.36 (.719)	.310**	-		
	PSWQ	61.5 (11.7)	-.631**	-.338**	-	
	CES-D	40.2 (7.51)	-.422**	-.362**	.423**	-
	STAI-T	56.7 (7.29)	-.697**	-.463**	.678**	.392**

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

Between-group Comparison of Measures

In line with the second hypothesis, healthy controls (M = 4.16, SD = .737) had significantly higher levels of mindfulness and self-compassion than depressed participants (M = 4.16, SD = .737; vs. M = 3.36, SD = .719, t(342) = 10.1, p <.001, d = 1.10, and M = 37.0, SD = 7.97 vs M = 27.6, SD = 6.96, t(342) = 11.4, p < .001, d = 1.25, respectively). In contrast, depressed participants had significantly higher levels of worry than healthy participants (M = 61.5, SD = 11.7 vs. M = 46.3, SD = 13.7, t(334) = 11.1, p < .001, d = 1.18). Similarly, depressed people reported higher levels of depression and anxiety than healthy participants (M = 40.2, SD = 7.51 vs M = 15.5, SD = 10.3, t(336) = 25.6, p < .001, d = 2.70, and M = 56.7, SD = 7.29 vs M = 42.5, SD = 8.95), t(339) = 16.23, p < .001, d = 1.72, respectively).

Mediation Analyses of the Main Model: Self-compassion as the Predictor

Mindfulness as the Sole Mediator

A summary of the results of the model with self-compassion as a predictor of depression and anxiety and mindfulness as a mediator can be found in Table 2. Mindfulness did not significantly mediate relationships between self-compassion and depression for depressed participants (indirect = – .029, 95% CI [-.076, .007]) or healthy participants (indirect = – .030, 95% CI [-.071, .005]). In contrast, when mindfulness was analyzed as the sole mediator between self-compassion and anxiety, the indirect effects were significant for both depressed participants (indirect = – .059, 95% CI [-.110, – .021]) and healthy participants (indirect = – .063, 95% CI [-.116, – .021]). The moderation effects by group were not significant.

Table 2. Conditional direct and indirect effects for moderated serial mediational model of depression and anxiety with self-compassion as a predictor

	Indirect effect (SCS-SF→MAAS→ PSWQ→CES-D)		Indirect effect (SCS-SF→MAAS→ CES-D)		Indirect effect (SCS-SF→PSWQ→ CES-D)		Direct effect (SCS-SF→CES-D)			
Group	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	SE	p	95% Bootstrap CI
Depressed	-.007	-.016, – .001	-.029	-.076, .007	-.073	-.144, – .013	-.148	.065	.024	-.276, – .020
Healthy	-.012	-.029, – .001	-.030	-.071, .005	-.141	-.218, – .070	-.258	.052	<.001	-.360, – .156
	Indirect effect (SCS-SF→MAAS→ PSWQ→ STAI-T)		Indirect effect (SCS-SF→MAAS→ STAI-T)		Indirect effect (SCS-SF→PSWQ→ STAI-T)		Direct effect (SCS-SF→STAI-T)			
Group	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	SE	p	95% Bootstrap CI
Depressed	-.017	-.038, – .004	-.059	-.110, – .021	-.193	-.281, – .119	-.326	.068	<.001	-.459, – .193
Healthy	-.021	-.047, – .001	-.063	-.116, – .021	-.233	-.326, – .151	-.258	.053	<.001	-.362, – .154

Worry as the Sole Mediator

When the above analyses were performed with worry as the sole mediator between self-compassion and depression, the indirect effect was significant for depressed participants (indirect = – .073, 95% CI [-.144, – .013]) and healthy participants (indirect = – .141, 95% CI [-.218, – .070]). When these analyses were performed with anxiety as the dependent variable, the indirect effects were significant for both depressed participants (indirect = – .193, 95% CI [-.281, – .119]) and healthy participants (indirect = – .233, 95%

CI [-.326, – .151]). The moderation effects by group were not significant.

Simultaneous Mediation by Mindfulness and Worry

The moderated serial mediation model with self-compassion as the predictor and depression as an outcome found significant direct effects between self-compassion and depressive symptoms in the depressed group (direct = – .148, 95% CI [-.276, – .020]) and healthy group (direct = – .258, 95% CI [-.360, – .156]). The indirect effects between self-compassion and depressive
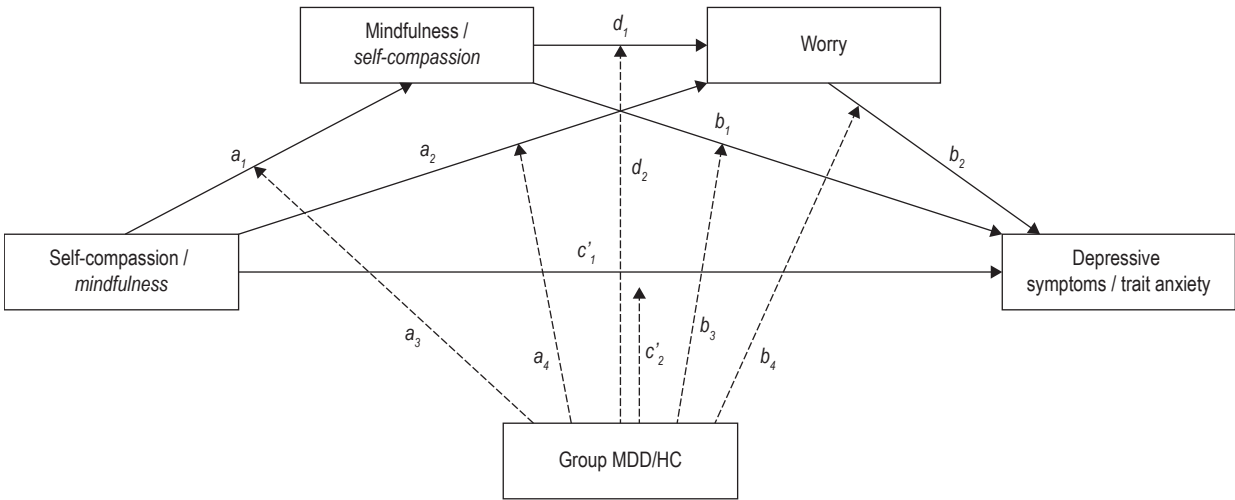
Figure 1. Interplay

symptoms through both mindfulness and worry were significant for both depressed (indirect = − .007, 95% CI [-.016, − .001]) and healthy (indirect = − .012, 95% CI [-.029, − .001]) groups.

The group variable did not moderate any of the indirect effects. The indices of moderated mediation were not significant for any indirect effects (see Table 3).

Table 3. Indices of moderated mediation for indirect effects

Indirect effect	Index	Boot SE	Confidence interval
SCS-SF → MAAS → CES-D	-.001	.028	[-.056, .056]
SCS-SF → PSWQ → CES-D	-.068	.051	[-.167, .031]
SCS-SF →MAAS → PSWQ → CES-D	-.006	.008	[-.024, .009]
SCS-SF → MAAS → STAI-T	-.004	.033	[-.070, .062]
SCS-SF → PSWQ → STAI-T	-.040	.060	[-.157, .079]
SCS-SF → MAAS → PSWQ → STAI-T	-.003	.014	[-.033, .024]
MAAS → SCS-SF → CES-D	-.059	.035	[-.132, .007]
MAAS → PSWQ → CES-D	-.014	.020	[-.056, .024]
MAAS → SCS-SF → PSWQ → CES-D	-.034	.021	[-.077, .005]
MAAS → SCS-SF → STAI-T	-.014	.040	[-.093, .063]
MAAS → PSWQ → STAI-T	-.002	.034	[-.068, .064]
MAAS → SCS-SF → PSWQ → STAI-T	-.041	.030	[-.100, .018]

The overall moderated serial mediation model with self-compassion as the predictor and anxiety as the dependent variable was significant (R^2 = .335, $F(3, 338)$ = 56.66, p < .001). The coefficient of path a_2 between self-compassion and worrying was significant, a_2 = − .490 (SE = .249, t = 1.97, p = .050), as was the coefficient of path c'_1 between self-compassion and anxiety, c'_1 = − .461 (SE = .229, t = 2.02, p = .044; see Figure 1). The remaining path coefficients were not significant.

The direct effects between self-compassion and anxiety for depressed (direct = − .326, 95% CI [-.459, − .193]) and healthy (direct = − .258, 95% CI [-.362, − .154]) individuals were significant. The indirect effect through both mindfulness and worry for depressed (indirect = − .017, 95% CI [-.038, − .004]) and healthy (indirect = − .021, 95% CI [-.047, − .001]) groups was significant. Once again, the group variable did not moderate any of the effects.

Mediation Analyses of the Alternative Model: Mindfulness as the Predictor

Self-compassion as the Sole Mediator

Moderated mediation analyses were conducted for a model in which self-compassion was the sole mediator between mindfulness and depression and anxiety. The results of the conditional direct and indirect effects of the model with mindfulness as the predictor can be found in Table 4. Among depressed participants, the indirect effect between mindfulness and depression through self-compassion was significant (indirect = − .041, 95% CI [-.081, − .009]), and it was significant among healthy participants (indirect = − .100, 95% CI [-.165, − .049]). When anxiety was the outcome, the indirect effect among depressed participants was significant (indirect = − .091, 95% CI [-.146, − .044]) and among healthy participants (indirect = − .105, 95% CI [-.170, − .050]).

The moderation effects by group were not significant.

Worry as the Sole Mediator

In the model in which mindfulness was the predictor and depression was the dependent variable, the indirect effect through worry was significant for depressed individuals (indirect = − .019, 95% CI [-.043, − .002]) and healthy participants (indirect = − .033, 95% CI [-.071, − .002]). When anxiety was the dependent variable in this model, the indirect effect through worry was significant for depressed and healthy participants (depressed: indirect = − .050, 95% CI [-.093, healthy: − .013]; indirect = − .052, 95% CI [-.107, − .002]). The moderation effects by group were not significant.

Simultaneous Mediation by Self-compassion and Worry

Moderated serial mediation analyses were conducted with self-compassion and worry as mediators, mindfulness as the predictor, and depressive symptoms as the dependent variable. This mediational model was significant (R^2 = .370, $F(3, 333)$ = 65.16, p < .001). Only the coefficient a_1 depicting the path between mindfulness and self-compassion was significant in this model, a_1 = .062 (SE = .268, t = 7.29, p < .001; see Figure 1). The bootstrapping analysis for this model determined that the direct effects between mindfulness and depressive symptoms were not significant for depressed (direct = − .085, 95% CI [-.182, .012]) and healthy (direct = − .080, 95% CI [-.165, .006]) individuals. The indirect effects through both self-compassion and worry for depressed (indirect = − .020, 95% CI [-.046, − .003]) and healthy (indirect = − .055, 95% CI [-.093, − .025]) groups were significant. The indices of moderated mediation for the indirect effects were not significant (see Table 4).

Table 4. Conditional direct and indirect effects for moderated serial mediational model of depression and anxiety with mindfulness as a predictor

	Indirect effect (MAAS→SCS-SF→PSWQ→CES-D)		Indirect effect (MAAS→SCS-SF→CES-D)		Indirect effect (MAAS→PSWQ→CES-D)		Direct effect (MAAS→CES-D)			
Group	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	SE	p	95% Bootstrap CI
Depressed	-.020	-.046, − .003	-.041	-.081, − .009	-.019	-.043, − .002	-.085	.049	.087	-.182, .012
Healthy	-.055	-.093, − .025	-.100	-.165, − .049	-.033	-.071, − .002	-.080	.043	.068	-.165, .006
	Indirect effect (MAAS→SCS-SF→PSWQ→STAI-T)		Indirect effect (MAAS→SCS-SF→STAI-T)		Indirect effect (MAAS→PSWQ→STAI-T)		Direct effect (MAAS→STAI-T)			
Group	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	95% Bootstrap CI	Effect	SE	p	95% Bootstrap CI
Depressed	-.054	-.094, − .024	-.091	-.146, − .044	-.050	-.093, − .013	-.171	.051	.001	-.272, − .071
Healthy	-.095	-.147, − .054	-.105	-.170, − .050	-.052	-.107, − .002	-.159	.044	<.001	-.246, − .072

Lastly, moderated serial mediation analyses were performed similarly to the previous model with trait anxiety as the dependent variable. The total mediational model was significant

(R^2 = .375, $F(3, 338)$ = 67.53, p < .001). In this model the coefficient of path b_1 between self-compassion and anxiety was significant, b_1 = − .461 (SE = .229, t = 2.02, p = .044), as well as coefficient d_1 depicting the path between self-compassion and worrying, d_1 = − .490 (SE = .249, t = 1.97, p = .050; see Figure 1). The bootstrapping analysis found that the direct effects between mindfulness and anxiety were significant for both groups (depressed: direct = − .171, 95% CI [-.272, − .071]; healthy: direct = − .159, 95% CI [-.246, − .072]). The indirect effects through both self-compassion and worry were significant for both groups (depressed: indirect = − .054, 95% CI [-.094, − .024]; healthy: indirect = − .095, 95% CI [-.147, − .054]). The group variable did not moderate any of the effects in this model (see Table 4).

DISCUSSION

In the last two decades, several studies have demonstrated that self-compassion is a significant mediator for the relationship between mindfulness and well-being in both adult [9,18] and adolescent populations [20]. However, there is an alternative hypothesis that mindfulness mediates the link between self-compassion and well-being. In other words, an increase in mindfulness skills in self-compassionate people may be related to additional beneficial effects on emotional distress.

These hypotheses are not contradictory and can be viewed as complementary, pointing to the reciprocal and possibly dynamic nature of the relationship between mindfulness and self-compassion. Such a possibility is discussed as part of the contemplative roots of mindfulness, where mindfulness and compassion were described as intertwined.4 Similarly, dispositional mindfulness and self-compassion have been described as two related and inherent human capacities.5 Consistent with this, Bluth and Blanton20 found empirical evidence for a reciprocal and dynamic association between mindfulness and self-compassion in the explanation of well-being. They found that both mindfulness and self-compassion functioned as mediators in the pathway to emotional well-being in a cross-sectional study examining adolescents.

In the current research, being aware of the limitations of a cross-sectional study design in investigating mediation, such relationships were evaluated in adults, and clinically depressed people were compared with healthy controls. In addition, worry was included as the second mediator on the basis of literature showing that worrying mediates relationships between mindfulness and anxiety symptoms [37] and between self-compassion and depression [21].

Significant relationships were found in the expected direction between self-compassion (the predictor in the main model) and mindfulness as the predictor in the alternative model and each of the two emotional distress measures. As expected, mindfulness was positively correlated with self-compassion [11] and similar to the results of previous research [13,14,29] both measures were negatively correlated with depression, anxiety, and worry. Moreover, like the results of Krieger et al., [38] self-compassion and mindfulness were found to be lower in depressed participants than they were in healthy participants.

Main Model: Self-compassion as the Predictor

The analyses of the main model with self-compassion as a predictor, worry and mindfulness as mediators, and depression and anxiety as dependent measures found both direct effects and indirect effects through mindfulness and worry between self-compassion and depressive symptoms and between self-compassion and anxiety in both groups. Mindfulness had an indirect effect through worrying for both measures of distress, but there was a direct effect only for anxiety. Moreover, the lack of differences between the healthy and depressed individuals in mediational analyses suggests that these mechanisms operate similarly in depressed people and healthy controls.

Alternative Model: Mindfulness as the Predictor

When mindfulness was a predictor of emotional distress and self-compassion and worry were mediators, indirect effects through self-compassion and worry were found to be significant for both groups for both outcome measures, where-

as the direct effect was significant only for the link between mindfulness and trait anxiety but not depressive symptoms. Again, similar to the main model, worry was both a direct single mediator and an indirect mediator in the relationships between examined measures. There were also no group differences in these relationships.

Reciprocal and Dynamic Relationships

The results clearly support the idea of a reciprocal and dynamic relationship between mindfulness and self-compassion in the explanation of emotional well-being, similar to the conclusion reached by Bluth and Blanton [20]. Their study was done on adolescents, and well-being was defined in terms of positive and negative affect, life satisfaction, and perceived stress. In contrast, in the current study, participants were healthy and depressed adult members of the community, and the outcome measures were anxiety and depression.

It seems that mindfulness skills of awareness and attention may allow one to become more aware of thoughts, and this awareness may then give rise to recognition of the degree to which one is worrying and harsh to oneself, leading to an increase in self-kindness and a decrease in worrying. Reciprocally, being more self-compassionate may foster mindfulness, in particular, its component of acceptance toward the present experience and toward oneself,20 and this acceptance may go together with the awareness of being a human being with flaws and imperfections (another aspect of self-compassion), contributing to a reduction in worrying and negative thinking.

Taken together, these mechanisms may contribute to a decrease in levels of anxiety and depression both in healthy and depressed people, a claim that obviously needs to be validated in an experimental study. Importantly, the findings suggest that whereas self-compassion has direct effects on depression and anxiety, mindfulness has a direct effect on anxiety exclusively. In a similar vein, Bergen-Cico and Cheon [39] found that increases in mindfulness had the most robust mediating effect on reductions in anxiety. Other research has found that mindfulness and self-compassion are related to emotion-

al distress. For example, Van Dam et al.[13] and Woodruff et al.40 found that both mindfulness and self-compassion were negatively related to anxiety, depression, negative affect, and worry and that self-compassion uniquely explained more variance in these outcome measures than mindfulness.

Previous research about relationships between mindfulness and depression has found that such relationships have been mediated by self-acceptance and clarity about the emotional experience [15,41] and suppression, reappraisal, worry, and rumination [42]. Similar to Parmentier et al.,[42] it was found that mindfulness may be negatively related to depression via a reduced tendency to worry. Furthermore, worry alone significantly mediated the relationship between self-compassion and depression, and worry was a direct and indirect mediator of the relationship between self-compassion and trait anxiety.

The impact of worry on the relationship of self-compassion with anxiety is consistent with Raes et al.'s findings,[21] but is at odds with respect to depression, which was uniquely explained by depressive brooding in Raes' study. The findings stand in opposition to the claim that worry is uniquely associated with anxiety while rumination is uniquely associated with depression.43 Note that rumination and worry are not fully distinct constructs [44], that may represent overlapping and unique transdiagnostic cognitive processes [45] and may be conceptualized as dimensional forms of repetitive negative thinking tendencies that contribute to the development and maintenance of internalizing psychopathologies, for instance anxiety and depression.46 Indeed, research demonstrates that excessive worrying is not limited to anxiety disorders but also occurs in major depressive disorder [47].

LIMITATIONS AND FUTURE DIRECTIONS

In closing, several limitations of the current research are noted. The present study utilized correlational data to test the proposed models. Experimental manipulations with an intervention design would provide more support for the hypothesized relationships and stronger tests of the proposed mechanisms of action within the

model. However, results from research with experimental manipulation may be less suitable for understanding the relationship between dispositional self-compassion and dispositional mindfulness and their association with emotional distress. Another way to test for dispositional self-compassion and mindfulness is via longitudinal design, and future studies may benefit by employing it. Next, the current study relied upon self-report measures, which are prone to a number of inherent confounds. Diary and ecological momentary assessment methods enable researchers to assess the ongoing experience of examined individuals in their natural environment while reducing potential biases in recall, a common problem of assessment using questionnaires [48]. Not surprisingly, studies using these methods have recently made important contributions to understanding a variety of psychiatric problems, including major depression [49]. It would be fruitful, therefore, to examine how, on a state level, constructs examined in the current study and the relationships between them vary in daily functioning and to assess their relationships with dispositional measures of mindfulness and self-compassion. Additionally, the current study utilized the MAAS as a measure of mindfulness, though the validity of this assessment has been criticized in recent times [50]. It is recommended that newer studies use a different assessment to measure mindfulness to minimize doubts regarding the validity of the studies' findings. Lastly, the current model is not expected to be a complete depiction of potential mediators in the relationships among self-compassion, mindfulness, and emotional distress. Future work might investigate other possible mechanisms of action in this relationship, for instance different emotion regulation strategies51 or future outlook [52].

CONCLUSION

To conclude, these findings complement and extend existing research by demonstrating a reciprocal relationship between mindfulness and self-compassion in the explanation of emotional distress in depressed and healthy people. The findings emphasize the importance of cultivating mindfulness and self-compassion as skills that

may decrease vulnerability to emotional distress and are built on the emerging clinical research showing that, in particular, having higher levels of self-compassion is protective in depression and anxiety. Future research should assess in an experimental fashion the temporal order of the implicated chain of changes that involve mindfulness and self-compassion in the alleviation of emotional distress.

REFERENCES

1. Neff, K., & Germer, C. (2017). *Self-compassion and psychological well-being*. Oxford Handbooks Online. https://doi.org/10.1093/oxfordhb/9780190464684.013.27

2. Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical Psychology Review*, 59, 52-60. https://doi.org/10.1016/j.cpr.2017.10.011

3. Khoury B, Lecomte T, Fortin G, Masse M, Therien P, Bouchard V, et al. Mindfulness-based therapy: a comprehensive meta-analysis. Clinical Psychology Review. 2013 Aug;33(6):763–71.

4. Condon P. Mindfulness, Compassion, and Prosocial Behaviour. In: Mindfulness in Social Psychology [Internet]. Abingdon, Oxon ; New York, NY : Routledge, 2017. | Series: Current issues in social psychology: Routledge; 2017 [cited 2024 Jun 22]. p. 124–38. Available from: http://dx.doi.org/10.4324/9781315627700-9

5. Kabat-Zinn J. Mindfulness-Based Interventions in Context: Past, Present, and Future. Clinical Psychology: Science and Practice. 2003 May 1;10(2):144–56.

6. Neff KD. The Development and Validation of a Scale to Measure Self-Compassion. Self and Identity. 2003 Jul;2(3):223–50.

7. Neff K. Self-Compassion: An Alternative Conceptualization of a Healthy Attitude Toward Oneself. Self and Identity. 2003 Apr;2(2):85–101.

8. Kabat-Zinn J. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. New York: Delacorte; 1990.

9. Baer RA, Lykins ELB, Peters JR. Mindfulness and self-compassion as predictors of psychological wellbeing in long-term meditators and matched nonmeditators. The Journal of Positive Psychology. 2012 May;7(3):230–8.

10. Neff KD, Dahm KA. Self-Compassion: What It Is, What It Does, and How It Relates to Mindfulness. In: Handbook of Mindfulness and Self-Regulation [Internet]. New York, NY: Springer New York; 2015 [cited 2024 Jun 22]. p. 121–37. Available from: http://dx.doi.org/10.1007/978-1-4939-2263-5_10

11. Birnie K, Speca M, Carlson LE. Exploring self-compassion and empathy in the context of mindfulness-based stress reduction (MBSR). Stress and Health. 2010 Nov 29;26(5):359–71.

12. Kuyken W, Watkins E, Holden E, White K, Taylor RS, Byford S, et al. How does mindfulness-based cognitive therapy work? Behaviour Research and Therapy. 2010 Nov;48(11):1105–12.

13. Van Dam NT, Sheppard SC, Forsyth JP, Earleywine M. Self-compassion is a better predictor than mindfulness of symptom severity and quality of life in mixed anxiety and depression. Journal of Anxiety Disorders. 2011 Jan;25(1):123–30.

14. MacBeth A, Gumley A. Exploring compassion: A meta-analysis of the association between self-compassion and psychopathology. Clinical Psychology Review. 2012 Aug;32(6):545–52.

15. Coffey KA, Hartman M, Fredrickson BL. Deconstructing mindfulness and constructing mental health: Understanding mindfulness and its mechanisms of action. Mindfulness. 2010 Dec;1:235-53.

16. Galante J, Galante I, Bekkers MJ, Gallacher J. Effect of kindness-based meditation on health and well-being: a systematic review and meta-analysis. Journal of consulting and clinical psychology. 2014 Dec;82(6):1101.

17. Davies S. The effect of mindfulness-based therapy on anxiety and depression: a meta-analytic review.

18. Keng SL, Smoski MJ, Robins CJ, Ekblad AG, Brantley JG. Mechanisms of change in mindfulness-based stress reduction: Self-compassion and mindfulness as mediators of intervention outcomes. Journal of Cognitive Psychotherapy. 2012 Jan 1;26(3):270-80.

19. Kuyken W, Watkins E, Holden E, White K, Taylor RS, Byford S, Evans A, Radford S, Teasdale JD, Dalgleish T. How does mindfulness-based cognitive therapy work?. Behaviour research and therapy. 2010 Nov 1;48(11):1105-12.

20. Bluth K, Blanton PW. Mindfulness and self-compassion: Exploring pathways to adolescent emotional well-being. Journal of child and family studies. 2014 Oct;23:1298-309.

21. Raes F. Rumination and worry as mediators of the relationship between self-compassion and depression and anxiety. Personality and Individual Differences. 2010 Apr 1;48(6):757-61.

22. Kessler RC, Aguilar-Gaxiola S, Alonso J, Chatterji S, Lee S, Ormel J, Üstün TB, Wang PS. The global burden of mental disorders: an update from the WHO World Mental Health (WMH) surveys. Epidemiology and Psychiatric Sciences. 2009 Mar;18(1):23-33.

23. World Health Organization. Depression and other common mental disorders: global health estimates. World Health Organization; 2017.

24. Brinker JK, Dozois DJ. Ruminative thought style and depressed mood. Journal of clinical psychology. 2009 Jan;65(1):1-9.

25. Foland-Ross LC, Gotlib IH. Cognitive and neural aspects of information processing in major depressive disorder: an integrative perspective. Frontiers in psychology. 2012 Nov 12;3:489.

26. Radloff LS. The CES-D scale: A self-report depression scale for research in the general population. Applied psychological measurement. 1977 Jun;1(3):385-401.

27. Sheehan DV, Lecrubier Y, Sheehan KH, Amorim P, Janavs J, Weiller E, Hergueta T, Baker R, Dunbar GC. The Mini-International Neuropsychiatric Interview (MINI): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. Journal of clinical psychiatry. 1998 Jan 1;59(20):22-33.

28. Raes F, Pommier E, Neff KD, Van Gucht D. Construction and factorial validation of a short form of the self-compassion scale. Clinical psychology & psychotherapy. 2011 May;18(3):250-5.

29. Brown KW, Ryan RM. The benefits of being present: mindfulness and its role in psychological well-being. Journal of personality and social psychology. 2003 Apr;84(4):822.

30. MacKillop J, Anderson EJ. Further psychometric validation of the mindful attention awareness scale (MAAS). Journal of Psychopathology and Behavioral Assessment. 2007 Dec;29:289-93.

31. Meyer TJ, Miller ML, Metzger RL, Borkovec TD. Development and validation of the penn state worry questionnaire. Behaviour research and therapy. 1990 Jan 1;28(6):487-95.

32. Lewinsohn PM, Seeley JR, Roberts RE, Allen NB. Center for Epidemiologic Studies Depression Scale (CES-D) as a screening instrument for depression among community-residing older adults. Psychology and aging. 1997 Jun;12(2):277.

33. Spielberger CD, Gorsuch RL, Lushene RE, Vagg PR, Jacobs GA. Manual for the State-Trait Anxiety Inventory (Form Y). Palo Alto, CA: Consulting Psychologists Press; 1983.

34. Hayes AF. Partial, conditional, and moderated moderated mediation: Quantification, inference, and interpretation. Communication monographs. 2018 Jan 2;85(1):4-0.

35. Hayes AF. Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach. 3rd ed. New York: The Guilford Press; 2022.

36. Van Jaarsveld DD, Walker DD, Skarlicki DP. The role of job demands and emotional exhaustion in the relationship between customer and employee incivility. Journal of management. 2010 Nov;36(6):1486-504.

37. Desrosiers A, Vine V, Klemanski DH, Nolen-Hoeksema S. Mindfulness and emotion regulation in depression and anxiety: common and distinct mechanisms of action. Depression and anxiety. 2013 Jul;30(7):654-61.

38. Krieger T, Altenstein D, Baettig I, Doerig N, Holtforth MG. Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. Behavior therapy. 2013 Sep 1;44(3):501-13.

39. Bergen-Cico D, Cheon S. The mediating effects of mindfulness and self-compassion on trait anxiety. Mindfulness, 5 (5), 505–519.

40. Woodruff SC, Glass CR, Arnkoff DB, Crowley KJ, Hindman RK, Hirschhorn EW. Comparing self-compassion, mindfulness, and psychological inflexibility as predictors of psychological health. Mindfulness. 2014 Aug;5:410-21.

41. Jimenez SS, Niles BL, Park CL. A mindfulness model of affect regulation and depressive symptoms: Positive emotions, mood regulation expectancies, and self-acceptance as regulatory mechanisms. Personality and individual differences. 2010 Oct 1;49(6):645-50.

42. Parmentier FB, García-Toro M, García-Campayo J, Yañez AM, Andrés P, Gili M. Mindfulness and symptoms of depression and anxiety in the general population: The mediating roles of worry, rumination, reappraisal and suppression. Frontiers in psychology. 2019 Mar 8;10:438030.

43. Hong RY. Worry and rumination: Differential associations with anxious and depressive symptoms and coping behavior. Behaviour research and therapy. 2007 Feb 1;45(2):277-90.

44. Topper M, Molenaar D, Emmelkamp PM, Ehring T. Are rumination and worry two sides of the same coin? A structural equation modelling approach. Journal of Experimental Psychopathology. 2014 Nov;5(3):363-81.

45. Feurer C, Jimmy J, Chang F, Langenecker SA, Phan KL, Ajilore O, Klumpp H. Resting state functional connectivity correlates of rumination and worry in internalizing psychopathologies. Depression and anxiety. 2021 May;38(5):488-97.

46. McEvoy PM, Watson H, Watkins ER, Nathan P. The relationship between worry, rumination, and comorbidity: Evidence for repetitive negative thinking as a transdiagnostic construct. Journal of affective disorders. 2013 Oct 1;151(1):313-20.

47. Starcevic V. Pathological worry in major depression: A preliminary report. Behaviour Research and Therapy. 1995 Jan 1;33(1):55-6.

48. Shiffman S, Stone AA, Hufford MR. Ecological momentary assessment. Annu. Rev. Clin. Psychol.. 2008 Apr 27;4:1-32.

49. Krejtz I, Rohnka N, Holas P, Rusanowska M, Nezlek JB. Manifestations of clinical depression in daily life: A daily diary study of descriptions of naturally occurring events. Cognition and Emotion. 2020 Nov 16;34(8):1664-75.

50. Grossman P. Defining mindfulness by how poorly I think I pay attention during everyday awareness and other intractable problems for psychology's (re) invention of mindfulness: comment on Brown et al.(2011).

51. Bakker AM, Cox DW, Hubley AM, Owens RL. Emotion regulation as a mediator of self-compassion and depressive symptoms in recurrent depression. Mindfulness. 2019 Jun 15;10:1169-80.

52. Phillips WJ. Future-outlook mediates the association between self-compassion and well-being. Personality and Individual Differences. 2018 Dec 1;135:143-8.