

A Wait-List Randomized Controlled Trial of Loving-Kindness Meditation Programme for Self-Criticism

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Self-criticism is a vulnerability risk factor for a number of psychological disorders, and it predicts poor response to psychological and pharmacological treatments. In the current study, we evaluated the efficacy of a loving-kindness meditation (LKM) programme designed to increase self-compassion in a sample of self-critical individuals. Thirty-eight individuals with high scores on the self-critical perfectionism subscale of the Dysfunctional Attitude Scale were randomized to an LKM condition ($n=19$) or a wait-list (WL) condition ($n=19$). Measures of self-criticism, self-compassion and psychological distress were administered before and immediately following the intervention (LKM or WL). WL participants received the intervention immediately after the waiting period. Both groups were assessed 3 months post-intervention. Intent-to-treat ($n=38$) and per-protocol analyses ($n=32$) showed significant reductions in self-criticism and depressive symptoms as well as significant increases in self-compassion and positive emotions in the LKM condition compared with the WL condition. A follow-up per-protocol analysis in both groups together ($n=20$) showed that these gains were maintained 3 months after the intervention. These preliminary results suggest that LKM may be efficacious in alleviating self-criticism, increasing self-compassion and improving depressive symptoms among self-critical individuals. Copyright © 2014 John Wiley & Sons, Ltd.

Key Practitioner Message:

- Self-criticism plays a major role in many psychological disorders and predicts poor response to brief psychological and pharmacological treatments for depression.
- The current study shows that loving-kindness meditation, designed to foster self-compassion, is efficacious in helping self-critical individuals become less self-critical and more self-compassionate.
- The study also suggests that practising loving-kindness may reduce depressive symptoms and increase positive emotions.

Keywords: loving-kindness meditation, self-criticism, self-compassion, randomized clinical trial

Self-criticism is a self-evaluative process in which people scrutinize and negatively judge different aspects of themselves, such as their personality traits, appearance and performance. Although everyone self-evaluates, people who experience high levels of self-criticism typically adopt a harsh, contemptuous and hostile manner towards themselves, which often leaves them feeling powerless, depressed and anxious. Self-criticism has mainly been investigated as a vulnerability risk factor for depression (Blatt, 2004; Zuroff, Mongrain, & Santor, 2004), but in recent years, a growing number of studies have shown that it plays an important role in other psychological

disorders, such as social anxiety (Cox, Fleet, & Stein, 2004; Cox *et al.*, 2000), post-traumatic stress disorder (Cox, MacPherson, Enns, & McWilliams, 2004), borderline personality disorder (Southwick, Yehuda, & Giller, 1995; Kopala-Sibley *et al.*, 2012), self-injurious behaviours (Glassman *et al.*, 2007), suicidality (Fazaa, & Page, 2009; Klomek *et al.*, 2008), bipolar disorders (Francis-Raniere, Alloy, & Abramson, 2006), schizophrenia (Mayhew & Gilbert, 2008) and eating disorders (Fennig *et al.*, 2008). The breadth of these findings suggests that self-criticism is a pervasive, transdiagnostic process implicated in a wide range of psychological difficulties.

Furthermore, several studies have shown that self-criticism negatively impacts the course and outcome of treatment for depression (Blatt, Quinlan, Pilkonis, & Shea, 1995; Rector *et al.*, 2000; Shahar, Blatt, Zuroff, & Pilkonis, 2003) and that

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this effect is mediated by difficulties in forming a positive therapeutic alliance (Zuroff *et al.*, 2000). Thus, given that self-criticism is a transdiagnostic process that appears to be crucial in the therapeutic context, it is important to explore and develop treatment strategies specifically designed to alleviate self-criticism. Such treatment strategies may be integrated in unified treatments designed to focus on common, underlying mechanisms rather than specific Diagnostic and Statistical Manual of Mental Disorder categories.

Self-criticism has largely been conceptualized as a global personality trait (Blatt & Zuroff, 1992), but more recently, there has been a shift towards viewing self-criticism as a dynamic, unfolding process in which a more dominant part of the self monitors, negatively judges or attacks a more subordinate part of the self (Gilbert & Irons, 2006; Gilbert & Procter, 2006; Longe *et al.*, 2010). The attacking part often expresses anger and contempt, whereas the attacked part is left with feelings of powerlessness, worthlessness, depression and anxiety (Whelton & Greenberg, 2005). Treatment approaches, such as compassion-focused therapy (Gilbert & Procter, 2006) and emotion-focused therapy (Greenberg, 2011; Shahar *et al.*, 2012), are based on this transactional (dialogical) view of self-criticism and emphasize the development of self-compassion as an antidote to self-criticism.

Self-compassion involves directing feelings of warmth and care inward. Specifically, Neff (2003) defines self-compassion as consisting of three elements: (a) self-kindness, which entails being kind to oneself in times of stress or following a failure, rather than being self-critical and self-judging; (b) common humanity, which involves recognizing that imperfections, mistakes, failures and suffering are all common and natural aspects of being human; and (c) mindfulness, which involves an experiential, mindful stance of observing one's imperfections rather than cognitively ruminating about them. A growing number of studies have been consistently showing that self-compassion is associated with a wide range of positive psychological and health-related outcomes (for reviews, see Neff, 2009). A recent meta-analysis showed that self-compassion is negatively associated with symptoms of depression, anxiety and stress (MacBeth & Gumley, 2012). Moreover, it seems that self-compassion is an important change mechanism in mindfulness-based interventions (Keng *et al.*, 2012; Kuyken *et al.*, 2010).

Clearly, helping self-critical individuals to be kinder and more compassionate towards themselves would be clinically beneficial. One of the obvious candidate interventions for fostering self-compassion is loving-kindness meditation (LKM; Salzberg, 1995), also known as *Metta* meditation. Loving-kindness is a form of meditation practice designed to cultivate feelings of warmth and kindness to all beings including oneself. In an LKM programme, participants practise, through formal meditation and other exercises, to direct feelings of compassion, kindness and warmth to themselves, unconditionally, especially in

times of stress (Shapiro & Sahgal, 2012). This state is a stark contrast to the ruminative, self-blaming state that characterizes self-criticism.

A growing number of studies have begun to demonstrate the clinical and social/interpersonal benefits of LKM (Carson *et al.*, 2005; Fredrickson *et al.*, 2008; Johnson *et al.*, 2011; May *et al.*, 2012; Sears & Kraus, 2009; for a review, see Hofmann, Grossman, & Hinton, 2011), but none of them have specifically focused on alleviating self-criticism among self-critical participants. Because LKM is based on directing warmth and kindness towards the self and others, it has potential value for helping individuals who are doing exactly the opposite—individuals who judge and attack themselves and have difficulties generating self-compassion and self-warmth. Therefore, the goal of the current study was to evaluate, for the first time, whether an LKM programme can (a) help self-critical individuals to become less self-critical and more self-compassionate and (b) reduce psychological distress.

METHODS

Participants

Thirty-eight participants with high levels of self-criticism were randomly assigned to an LKM or wait-list (WL) condition. Participants were recruited between November 2011 and April 2012 through ads, flyers and Internet-based outlets. To ensure that the sample included individuals with high levels of self-criticism, participants completed the self-critical perfectionism (SCP) subscale of the Dysfunctional Attitude Scale (DAS; Weissman & Beck, 1978). Recently, de Graaf, Roelofs, and Huibers (2009) computed norms for the DAS and reported that scores lower than 19 on the SCP subscale were considered 'low', scores between 19 and 23 were considered 'below average', scores between 23 and 27 were considered 'average', scores between 27 and 35 were considered 'above average' and scores above 35 were considered 'high'. In the current study, therefore, we used a cut-off of 30 to select self-critical individuals (34 of the 38 randomized participants had a score of 35 or higher). Thus, inclusion criteria were (a) a score of 30 or above on the DAS-SCP and (b) age between 18 and 65 years. Exclusion criteria included (a) a history of or current bipolar disorders or psychotic disorders, current self-harm or active suicidality; (b) an inability to read and write in (removed for masked review); and (c) having a current regular meditation practice or past participation in a loving-kindness programme.

Baseline characteristics of participants in both groups are shown in Table 1, together with *t*-tests (for continuous variables) and chi-square tests (for categorical variables) examining possible pre-treatment between-group differences. As shown in Table 1, no significant differences in

Table 1. Baseline characteristics of participants ($n = 38$) randomized to loving-kindness meditation (LKM) and wait-list (WL) conditions

Variable	Group		Group difference		
	LKM ($n = 19$)	WL ($n = 19$)	t	χ^2	p
Age in years, M (SD)	28.68 (10.37)	32.56 (10.68)	-1.12		0.27
Gender, n (%) female	14 (73.7)	9 (47.4)		2.75	0.10
Years of education, M (SD)	14.58 (2.29)	15.28 (1.23)	-1.15		0.26
Marital status, n (%)					
Single	12 (63)	11 (57.9)		1.11	0.78
In a serious relationship	1 (5.3)	1 (5.3)			
Married	6 (31.6)	5 (26.3)			
Divorced	0 (0)	1 (5.3)			
DAS-SCP, M (SD)	49.11 (11.70)	48.37 (12.10)	0.19		0.85
FSCRS-IS, M (SD)	21.10 (7.07)	23.26 (8.22)	-0.87		0.39
FSCRS-HS, M (SD)	2.73 (3.57)	3.16 (2.91)	-0.40		0.69
FSCRS-RS, M (SD)	18.47 (6.04)	17.63 (5.27)	0.46		0.65
SCS-T, M (SD)	2.33 (0.57)	2.42 (0.66)	-0.46		0.66
DASS-21-D, M (SD)	4.68 (4.31)	4.16 (3.93)	0.39		0.70
DASS-21-A, M (SD)	1.74 (2.53)	1.84 (3.02)	-0.12		0.91
DASS-21-S, M (SD)	8.58 (5.97)	7.32 (3.65)	0.79		0.44
PANAS-NA, M (SD)	2.64 (0.99)	2.68 (0.91)	-0.14		0.89
PANAS-PA, M (SD)	2.72 (0.79)	2.95 (0.80)	-0.90		0.37

DAS-SCP = Dysfunctional Attitude Scale, self-critical perfectionism. FSCRS-IS = The Form of Self-Criticism and Self-Reassurance Scale, inadequate self. FSCRS-HS = The Form of Self-Criticism and Self-Reassurance Scale, hated self. FSCRS-RS = The Form of Self-Criticism and Self-Reassurance Scale, reassuring self. SCS-T = Self-Compassion Scale, total score. DASS-21-D = Depression Anxiety Stress Scale, 21-item version depression scale. DASS-21-A = Depression Anxiety Stress Scale, 21-item version anxiety scale. DASS-21-S = Depression Anxiety Stress Scale, 21-item version stress scale. PANAS-NA = Positive and Negative Affective Schedule, negative affect. PANAS-PA = Positive and Negative Affective Schedule, positive affect.

baseline characteristics were found between the two groups, indicating that randomization was successful. Comparing symptom levels in the current sample with normative data (Crawford *et al.*, 2011) revealed that the mean depression score in our sample ($M = 4.42$) corresponded to a percentile rank of 81–83%, the mean anxiety score ($M = 1.79$) corresponded to a percentile rank of 62–75% and the mean stress score ($M = 7.95$) corresponded to a percentile rank of 87%. A participant flow diagram is shown in Figure 1.

Measures

Self-Criticism

The DAS form A (Weissman & Beck, 1978) is a widely used and psychometrically sound questionnaire designed to measure negative self-attitudes. It is comprised of 40 statements rated on a 7-point scale. The DAS contains two subscales measuring SCP and dependence (Imber *et al.*, 1990; de Graaf *et al.*, 2009). In the current study, we used the 11-item SCP subscale found in the work of de Graaf *et al.* (2009). Scores on the DAS-SCP range from 11 to 77, with higher scores reflecting higher levels of SCP. Internal consistency (α) for the current study was 0.89.

The Form of Self-Criticism and Self-Reassurance Scale (FSCRS; Gilbert *et al.*, 2004) is a 22-item questionnaire that measures the extent to which individuals are self-critical

or self-reassuring when they experience a failure. We used the FSCRS in addition to the DAS-SCP because it assesses self-criticism in a more specific way: whereas the DAS-SCP measures global attitudes towards the self, the FSCRS also measures the actual self-attacking process and better reflects the dynamic aspect of self-criticism. Respondents are given the following probe: 'when things go wrong for me...' followed by 22 items rated on a 5-point scale. The questionnaire includes three subscales: inadequate self (IS; nine items; $\alpha = 0.88$ in the current study), assessing a moderate level of self-criticism and a sense of inadequacy ('There is a part of me that puts me down'); hated self (HS; five items, $\alpha = 0.64$ in the current study), assessing a more severe form of self-criticism ('I have become so angry with myself that I want to hurt or injure myself'); and reassurance self (RS; eight items, $\alpha = 0.87$ in the current study), assessing a tendency to be self-reassuring and self-supportive ('I am gentle and supportive with myself'). Gilbert *et al.* (2004) found good psychometric properties for all three subscales.

Self-Compassion

The Self-Compassion Scale (SCS; Neff, 2003) measures an inclination to be kind and compassionate towards oneself, especially in times of stress or perceived failure. It is comprised of 26 items that measure six subscales: self-kindness,

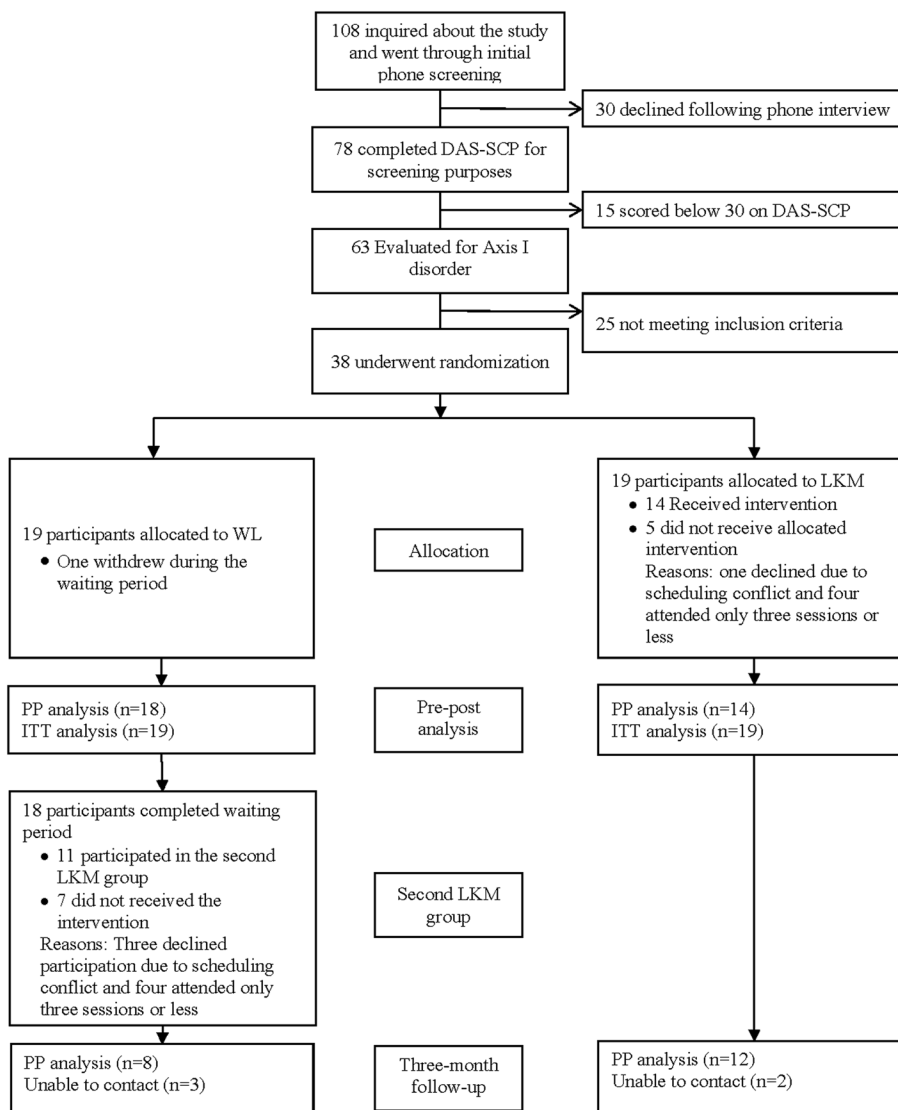


Figure 1. Participant flow through the study. DAS-SCP = Dysfunctional Attitude Scale, self-critical perfectionism. LKM = loving-kindness meditation. WL = wait list. PP = per protocol. ITT = intent to treat

common humanity, mindfulness, self-judgment, isolation and over-identification. Items on the latter three are reverse scored, and the mean of all items is computed to generate a total self-compassion score. The psychometric properties of the SCS are very good (Neff, 2003; $\alpha = 0.62$ for all 26 items in the current study).

Psychological Symptoms

The 21-item version of the Depression Anxiety Stress Scale (DASS-21; Antony *et al.*, 1998; Henry & Crawford, 2005) is a psychometrically sound self-report assessing depressive, anxiety and stress-related symptoms experienced

during the past week. Each of the three subscales is scored from 0 (*Did not apply to me at all*) to 3 (*Applied to me very much, or most of the time*). Thus, scores on each subscale range from 0 to 21, with higher scores reflecting more severe symptomatology. The DASS-21 is widely used and has excellent psychometric properties (in the current study, $\alpha = 0.86$ for the depression subscale, $\alpha = 0.68$ for the anxiety subscale and $\alpha = 0.89$ for the stress subscale).

Negative and Positive Emotions

The Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) is comprised of two

10-item independent subscales that measure negative affect (NA) and positive affect (PA). Each item on the PANAS is a single word that describes an emotion. The NA subscale contains words such as 'distressed', 'guilty' and 'nervous', and the PA subscale contains words such as 'excited', 'proud' and 'active'. Respondents are asked to indicate the extent to which each item describes how they felt in the last week on a 1 (*slightly or not at all*) to 5 (*extremely*) scale. The psychometric properties of the PANAS are well established (Crawford & Henry, 2004; Watson *et al.*, 1988; $\alpha=0.92$ for the NA subscale and $\alpha=0.89$ for the PA subscale in the current study).

Procedure

All study procedures were approved by the (removed for masked review) ethical review board. First, interested participants were asked to complete the DAS-SCP online. Participants scoring above 29 completed a brief phone interview to explain the study procedures and screen for obvious exclusion criteria. Eligible participants were invited to a more thorough face-to-face clinical interview that included a consent process, the Structured Clinical Interview for Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1995) and all study questionnaires. The SCID-I interview was conducted by a clinical psychologist who received specialized training for using this instrument. Eligible participants were then randomized to LKM or WL using a computerized random number generator. The randomization process was conducted by an independent statistician not involved in the study. Participants who were randomized to the LKM group completed the study questionnaire three times: at the initial assessment meeting, immediately after the 7-week LKM programme and at a 3-month follow-up (FU). Participants allocated to the WL group participated in the LKM programme after the waiting period. They completed the study questionnaires four times: at the initial assessment meeting, immediately after the 7-week waiting period, immediately after the LKM programme and at a 3-month FU. For FU analysis, participants from both groups were analysed together, with the post-waiting assessment serving as the baseline assessment point for the WL participants.

Intervention

The LKM intervention consisted of seven 90-min weekly meetings. All sessions were conducted by a senior meditation teacher from the Vipassana tradition (the seventh author) with over 20 years of experience leading loving-kindness and mindfulness-based groups. At the end of each session, participants were given a CD that included instructions for a guided meditation related to the topic covered in that session; they were asked to practise each

day until the next session. In the first session, participants practised directing warmth and compassion towards themselves. In subsequent weeks, they directed these emotions towards a benefactor (Week 2), a dear friend (Week 3), a friend in need (Week 4), a neutral person (Week 5) and a person with whom participants have a difficult relationship (Week 6). The final session was devoted to summarizing, reviewing and practising gratitude. Each session began with an interactive discussion, where participants discussed their experiences and difficulties practising the meditation at home. This was followed by a discussion of the specific qualities of the person to which they directed the weekly LKM practice and the contribution of these figures to the practice. The last part of each session was dedicated to the specific, formal, LKM practice of that week.

RESULTS

Data Analytic Strategy

A multivariate approach was employed to test group differences in clusters of theoretically related variables. This approach is preferable to an exclusively univariate approach because it takes into account the associations between dependent variables when analysing overall group differences. Specifically, two clusters of dependent variables were examined: variables related to self-criticism and self-compassion (e.g., DAS-SCP, SCS total score and the three FSCRS subscales) and variables related to psychological distress or symptoms (e.g., the three subscales of the DASS-21 and the NA and PA subscales of the PANAS). These dependent variables were used in a multivariate two-way repeated-measures ANOVA, with time of measurement (pre-treatment vs post-treatment) and experimental group (LKM vs WL) as the independent variables. Cohen's *d*'s were computed for each group separately as the difference between pre-treatment and post-treatment means divided by the standard deviation of the difference scores.

To examine the extent to which gains were maintained after 3 months, the same dependent variables were examined in a multivariate one-way repeated-measures ANOVA that compared pre-treatment, post-treatment and FU measurements among all participants who eventually completed the LKM programme. In this one-way analysis, pre-treatment measurements for WL participants were their measurements at the end of their waiting period and the beginning of their LKM treatment. In this analysis, Cohen's *d*'s were calculated for the differences between pre-treatment and post-treatment means and the differences between pre-treatment and FU means. In both sets of analyses, multivariate models were followed by univariate analyses on specific dependent variables.

Table 2. Pre-treatment and post-treatment means, SDs and Cohen's *d*'s as a function of treatment condition

Variable	LKM (<i>n</i> = 14)			WL (<i>n</i> = 18) [†]		
	Pre-treatment, M (SD)	Post-treatment, M (SD)	Cohen's <i>d</i>	Pre-treatment, M (SD)	Post-treatment, M (SD)	Cohen's <i>d</i>
DAS-SCP	51.14 (12.15)	33.14 (12.94)	2.02***	48.44 (12.42)	38.22 (14.62)	0.70**
SCS-T	2.31 (0.63)	2.71 (0.72)	1.11***	2.40 (0.67)	2.41 (0.77)	0.03
FSCRS-IS	22.21 (7.22)	16.57 (6.97)	1.06***	23.61 (8.31)	22.50 (7.41)	0.35
FSCRS-HS	3.21 (3.98)	2.29 (2.95)	0.44	3.11 (2.99)	2.56 (2.73)	0.21
FSCRS-RS	17.57 (6.37)	20.21 (6.42)	0.72***	17.61 (5.42)	17.94 (5.60)	0.16
DASS-21-D	4.93 (4.57)	3.21 (3.31)	0.48*	4.28 (4.01)	5.06 (4.12)	0.31
DASS-21-A	2.00 (2.66)	1.79 (2.46)	0.09	1.94 (3.08)	1.78 (2.67)	0.11
DASS-21-S	9.00 (6.74)	6.93 (4.62)	0.37	7.50 (3.67)	8.17 (4.15)	0.17
PANAS-NA	2.60 (1.15)	2.60 (0.87)	0	2.62 (0.88)	2.72 (0.98)	0.16
PANAS-PA	2.76 (0.86)	3.27 (1.11)	0.62*	2.93 (0.84)	2.81 (0.81)	0.17

DAS-SCP = Dysfunctional Attitude Scale, self-critical perfectionism. FSCRS-IS = The Form of Self-Criticism and Self-Reassurance Scale, inadequate self. FSCRS-HS = The Form of Self-Criticism and Self-Reassurance Scale, hated self. FSCRS-RS = The Form of Self-Criticism and Self-Reassurance Scale, reassuring self. SCS-T = Self-Compassion Scale, total score. DASS-21-D = Depression Anxiety Stress Scale, 21-item version depression scale. DASS-21-A = Depression Anxiety Stress Scale, 21-item version anxiety scale. DASS-21-S = Depression Anxiety Stress Scale, 21-item version stress scale. PANAS-NA = Positive and Negative Affective Schedule, negative affect. PANAS-PA = Positive and Negative Affective Schedule, positive affect.

[†]For SCS-T and PANAS, *n* = 17. **p* < 0.05, ***p* < 0.01, ****p* < 0.001.

Finally, we conducted the pre-treatment–post-treatment analyses on both the per-protocol (PP; *n* = 32) and intent-to-treat (ITT; *n* = 38) samples (see Figure 1 for participant flow). For the ITT analyses, we used the conservative method of carrying forward the last observation (e.g., baseline score) of participants who dropped out. We decided not to carry out an ITT analysis in the FU sample because it seemed too lenient to assume that improvements during the programme would be maintained throughout the FU period. Only the PP results are reported here, as the PP and ITT analyses were similar. ITT results are reported only where they differ from the PP results.

Self-Criticism and Self-Compassion

A multivariate two-way repeated-measures ANOVA¹ revealed a significant Time × Group interaction [$F(5, 25) = 3.54, p < 0.05, \text{partial } \eta^2 = 0.42$] for the self-criticism and self-compassion dependent variables. Whereas a significant difference was found between pre-treatment and post-treatment in the LKM group [$F(5, 25) = 10.39, p < 0.001, \text{partial } \eta^2 = 0.68$], no such difference was found in the WL group [$F(5, 25) = 2.07, \text{NS}$]. In order to examine which of the self-criticism and/or self-compassion measures were driving the multivariate effect, univariate two-way repeated-measures ANOVAs were conducted on each dependent variable separately. Univariate Time × Group interactions were found for FSCRS-IS [$F(1, 30) = 9.04, p < 0.01,$

partial $\eta^2 = 0.23$], FSCRS-RS [$F(1, 30) = 5.14, p < 0.05, \text{partial } \eta^2 = 0.15$] and SCS [$F(1, 29) = 11.81, p < 0.01, \text{partial } \eta^2 = 0.29$]. In contrast, the Time × Group interaction was not significant for the FSCRS-HS [$F(1, 30) = 0.18, \text{NS}$] and only marginally significant for DAS-SCP [$F(1, 30) = 3.06, p = 0.09, \text{partial } \eta^2 = 0.09$]. The univariate pre-treatment–post-treatment effects, reported in Table 2, indicated that LKM significantly decreased FSCRS-IS and DAS-SCP scores and significantly increased FSCRS-RS and SCS scores. These effects were not found in the WL group, with the exception of DAS-SCP, which unexpectedly significantly decreased among WL participants.

The fact that the Time × Group interaction on the DAS-SCP was not significant can be attributed to the surprising decrease in DAS-SCP scores among WL participants. A more meticulous analysis identified two outliers in the WL group who were driving most of this effect. These participants' DAS-SCP scores decreased by 44 and 37 points during the waiting period, whereas the average decrease of the other 16 WL participants was only 6.44 points. Although it is unclear why these participants' DAS-SCP scores decreased dramatically without treatment, removing either one of them from the analysis rendered the Time × Group interaction on DAS-SCP scores significant.

The ITT sample yielded largely similar results with two exceptions. First, the overall multivariate effect was only marginally significant [$F(5, 32) = 2.05, p = 0.097, \text{partial } \eta^2 = 0.24$], and second, the univariate effect for the FSCRS-RS effect was also only marginally significant [$F(1, 36) = 3.36, p = 0.075, \text{partial } \eta^2 = 0.09$].

In order to examine whether the effects of LKM on self-criticism and self-compassion are maintained over time, a multivariate one-way repeated-measures ANOVA (pre-treatment, post-treatment and FU) was conducted. All

¹One participant in the WL group was missing a post-treatment SCS score. Hence, the multivariate analyses with SCS included only 17 participants in the WL group.

Table 3. Pre-treatment, post-treatment and follow-up means and SDs, Cohen's *d*'s and *F*'s (loving-kindness meditation and wait-list conditions together, *n* = 20)

Variable	Pre-treatment, M (SD)	Post-treatment, M (SD)	Follow-up, M (SD)	Pre-treatment– post-treatment Cohen's <i>d</i>	Pre-treatment– follow-up Cohen's <i>d</i>	<i>F</i>
DAS-SCP	41.95 (15.70)	30.63 (13.55)	30.11 (15.44)	0.98***	1.14***	14.58***
SCS-T	2.48 (0.71)	2.87 (0.58)	3.10 (0.75)	0.73**	1.06***	13.61***
FSCRS-IS	22.00 (7.61)	16.90 (7.50)	14.35 (7.90)	1.05***	1.48***	26.67***
FSCRS-HS	2.90 (3.58)	2.30 (2.89)	2.35 (3.60)	0.29	0.21	0.84
FSCRS-RS	18.00 (6.55)	20.30 (5.95)	21.50 (6.54)	0.64**	0.67**	6.93**
DASS-21-D	5.15 (4.58)	3.45 (3.14)	3.60 (5.35)	0.50*	0.29	1.78
DASS-21-A	1.60 (2.33)	1.40 (2.14)	1.60 (2.21)	0.10	0.00	0.11
DASS-21-S	8.55 (6.26)	6.15 (4.02)	4.40 (4.67)	0.42	0.57*	4.30*
PANAS-NA	2.50 (0.98)	2.39 (0.80)	2.19 (1.03)	0.14	0.31	1.28
PANAS-PA	2.79 (0.90)	3.25 (0.98)	3.21 (0.82)	0.56*	0.66**	4.64*

n = 20 except for SCS total and DAS (*n* = 19). *F* values are of univariate repeated-measures ANOVAs on each measure.

DAS-SCP = Dysfunctional Attitude Scale, self-critical perfectionism. FSCRS-IS = The Form of Self-Criticism and Self-Reassurance Scale, inadequate self, reassuring self. SCS-T = Self-Compassion Scale, total score. DASS-21-D = Depression Anxiety Stress Scale, 21-item version depression scale. DASS-21-A = Depression Anxiety Stress Scale, 21-item version anxiety scale. DASS-21-S = Depression Anxiety Stress Scale, 21-item version stress scale. PANAS-NA = Positive and Negative Affective Schedule, negative affect. PANAS-PA = Positive and Negative Affective Schedule, positive affect.

p* < 0.05, *p* < 0.01, ****p* < 0.001.

participants who eventually went through the treatment (LKM and WL) and provided FU measurements were included in the analysis.² Consistent with the pre-treatment–post-treatment analysis reported above, a significant multivariate effect was found [$F(10, 9) = 4.65, p < 0.05$, partial $\eta^2 = 0.84$]. Multivariate pairwise comparisons indicated that, as expected, pre-treatment scores were significantly different than post-treatment scores [$F(5, 14) = 5.97, p < 0.01$, partial $\eta^2 = 0.68$] and FU scores [$F(5, 14) = 9.91, p < 0.001$, partial $\eta^2 = 0.78$], whereas post-treatment and FU scores were not significantly different [$F(5, 14) = 2.75, NS$].

Once again, univariate analyses were conducted on each dependent variable separately to explore the source of the multivariate effect. Means, SDs, *d*'s and *F*'s for these analyses are reported in Table 3. Similar to the pre-treatment–post-treatment analyses, significant LKM effects were found for FSCRS-IS, FSCRS-RS, SCS and DAS-SCP scores, whereas no significant effect was found for FSCRS-HS. For all significant univariate effects, pairwise comparisons indicated that significant differences found between pre-treatment and post-treatment scores were maintained through the FU period, as indicated by significant differences between pre-treatment and FU scores in the expected direction. Hence, all significant univariate effects paralleled the multivariate effects.

²In order to rule out any possible group effects, the analysis was also conducted with group as an additional independent variable. No Time \times Group interaction was found, indicating that regardless of whether participants had to wait before undergoing LKM, there was no change in their response to the treatment.

Psychological Distress

A multivariate two-way repeated-measures ANOVA³ did not find a significant Time \times Group interaction on the three DASS-21 scales and the PANAS-NA and PANAS-PA scales [$F(5, 25) = 1.61, NS$]. Moreover, no significant differences were found between pre-treatment and post-treatment scores in the LKM group [$F(5, 25) = 1.86, NS$] or in the WL group [$F(5, 25) = 0.22, NS$].

Nevertheless, we proceeded with exploratory univariate two-way repeated-measures ANOVAs on each of the DASS-21 and PANAS scales separately. A univariate Time \times Group interaction was found for the DASS-21 depression scale [$F(1, 30) = 5.28, p < 0.05$, partial $\eta^2 = 0.15$] and the PANAS-PA scale [$F(1, 29) = 5.34, p < 0.05$, partial $\eta^2 = 0.16$], but not for anxiety [$F(1, 30) = 0.01, NS$], stress [$F(1, 30) = 2.69, NS$] or PANAS-NA [$F(1, 29) = 0.16, NS$]. The univariate pre-treatment–post-treatment effects, reported in Table 2, indicated that LKM significantly decreased depression and increased PA compared with the WL condition.

In order to examine whether LKM effects on depression, anxiety, stress, NA and PA were observed over time, a multivariate one-way repeated-measures ANOVA (pre-treatment, post-treatment and FU) was conducted. Once again, the multivariate effect was not significant [$F(10, 10) = 1.21, NS$]. However, multivariate pairwise comparisons showed a significant difference between pre-treatment and

³One participant in the WL group was missing post-treatment PANAS-NA and PANAS-PA scores. Hence, the multivariate analyses with PANAS included only 17 participants in the WL group.

post-treatment scores [$F(5, 25)=2.92, p < 0.05$, partial $\eta^2=0.42$]⁴ and a marginally significant difference between pre-treatment and FU scores [$F(5, 15)=2.65, p = 0.066$, partial $\eta^2=0.47$].

Univariate analyses were conducted on each dependent variable separately to explore possible univariate differences that could not be detected by the multivariate analysis. Means, SDs, d 's and F 's for these analyses are reported in Table 3. These univariate analyses found a significant reduction in depressive symptoms and a significant increase in PA between pre-treatment and post-treatment scores, consistent with the pre-treatment–post-treatment univariate analyses reported above. In addition, significant differences were found between pre-treatment and FU stress and PA scores. However, due to the marginal significance of the multivariate pre-treatment–FU effect, these differences should be interpreted cautiously. The ITT analyses were identical to the PP analyses when psychological distress variables were examined.

DISCUSSION

The current study is the first randomized controlled trial examining the effects of LKM among individuals suffering from high levels of self-criticism. The main findings revealed that LKM can help self-critical individuals become less self-critical and more self-compassionate. In addition, the results suggest that LKM may be efficacious in reducing depressive symptoms and increasing positive emotions. However, these latter findings should be interpreted cautiously, as the multivariate effect for the psychological distress variables was not significant. The programme did not impact DASS-21 anxiety or PANAS-NA scores, whereas significant reductions in DASS-21 stress scores were observed only in the 3-month FU, not in the pre-treatment–post-treatment analyses. Overall, the programme's effects remained stable at the 3-month FU.

Self-Criticism and Self-Compassion

Given that self-criticism plays a central role in a large number of psychological difficulties (Longe *et al.*, 2010) and that self-compassion is associated with many favourable psychological outcomes (MacBeth & Gumley, 2012; Hofmann *et al.*, 2011; Neff, 2009), the findings from this study are important, as they demonstrate that these processes can be directly targeted and worked with in a brief, group-based intervention. Prior research showing that depressed patients with higher levels of self-criticism

tend to respond poorly to psychological and pharmacological treatments provide an additional motive for targeting self-criticism and self-compassion in psychological treatments. The results of this study suggest that loving-kindness interventions are clinically beneficial with self-critical individuals and can be incorporated in various therapeutic approaches with this client group.

How does practising loving-kindness reduce self-criticism and increase self-compassion? One possible explanation can be that directing kind words and warm feelings towards the self (and others) may activate a soothing-caring affect regulation system that is probably deficient among self-critics (Gilbert & Procter, 2006). According to the work of Gilbert and colleagues (Gilbert & Procter, 2006; Gilbert & Irons, 2006; based on Depue & Morrone-Strupinsky, 2005), the soothing-caring regulatory system is responsible for generating feelings of contentment and safeness as a result of a secure bond with attachment figures. When parents are attuned to their children's feelings, validate and soothe them, children learn to self-soothe and develop a sense of safeness and esteem. Parental criticism, shaming and neglect, however, create a threatening context wherein children feel insecure, powerless and evaluated. They develop negative internal working models in which others are represented as powerful, critical, judging and hostile, whereas the self is experienced as weak, inferior and unworthy (Bowlby, 1988; Mikulincer & Shaver, 2004). In such contexts, self-criticism is viewed as a safety behaviour, in which people self-monitor in order to spot flaws and prevent their exposure and self-blame in order to correct, improve and further hide their perceived deficiencies. Self-critical individuals, then, are focused on their flaws, feel threatened by others and lack self-soothing. In fact, for many self-critics, self-soothing may be experienced as dangerous because it may undermine the functions served by self-criticism (Gilbert, McEwan, Matos, & Ravis, 2011). Practising loving-kindness may help to shift this balance and strengthen the capacity to self-soothe in times of stress.

It is important to note that the HS subscale of the FSCRS was not affected by the LKM programme. The HS items measure a severe, more destructive aspect of self-criticism that often characterizes individuals with severe and long-standing psychopathologies. The HS items capture more extreme anger towards the self and wanting to self-injure and self-punish rather than a mere sense of inadequacy. Such self-hate seems to require longer and more intensive interventions.

Psychological Distress

As mentioned above, the programme's effect on depressive symptoms and PA should be interpreted with caution because the multivariate effect for the psychological distress variables was not significant. However, given that

⁴This comparison included five participants who did not provide FU measurements and hence were not included in the overall analysis.

the results from the current trial are similar to the results reported by Fredrickson *et al.* (2008) in a community sample and Johnson *et al.* (2011) in patients with schizophrenia, it seems that the effect of LKM on positive emotions and depressive symptoms is replicable. It is not surprising that both positive emotions and depressive symptoms were affected by the programme because low levels of PA are a specific indicator of depression (Clark & Watson, 1991). Indeed, in the current sample, depressive symptoms and PA were highly correlated ($r = -0.53$ at baseline and -0.60 at post-intervention). Another possibility, more closely aligned with Fredrickson's broaden-and-build theory, is that LKM produces its effects on depressive symptoms via the effect on positive emotions.

It is not entirely clear why aspects of depression improved during and following the programme whereas anxiety symptoms were not affected. One potential explanation may be related to LKM's specific focus on positive emotions. As noted above, positive emotions are more closely related to depressive symptoms compared with anxiety. Another explanation may relate to the fact that in LKM, participants engage in an active task (directing warmth and compassion towards themselves or a figure), which can divert their attention from ruminative processes linked with depression (Nolen-Hoeksema, 1991). Moreover, unlike mindfulness practice, which requires active focusing attention (e.g., on the bodily sensations), LKM practice does not directly cultivate concentration and attention stability, which is considered beneficial to regulating anxiety (Hofmann, Sawyer, Witt, & Oh, 2010).

Limitation and Future Research Directions

Several limitations should be taken into account when interpreting the results of this study. First, given the pilot nature of this study, the sample size was relatively small. Second, there was one group in each condition (WL or LKM), and one LKM instructor conducted the programme. Future studies should attempt to replicate these findings with larger samples and more than one LKM instructor in order to ensure that the loving-kindness practice is responsible for change and not other factors such as the alliance with the instructor. Third, although the LKM instructor was highly experienced, specific adherence to LKM was not assessed. Currently, specific adherence measures in LKM interventions do not exist. Fourth, the reliance on self-reports to measure change is an additional limitation, and future studies should strive to incorporate objective assessments in addition to self-reports. Finally, future studies should attempt to identify the effects of specific ingredients in loving-kindness programmes. Such analysis is likely to involve more detailed session-by-session assessments of specific processes. For example, directing warmth to a 'difficult figure' may

elicit processes of forgiveness and/or letting go of emotional needs in relation to an injuring attachment figure (Greenberg, Warwar, & Malcolm, 2008). If such processes do occur as a result of the practice in Week 6 of the programme, this would be important to know.

In conclusion, despite its limitations, the present study provides important initial evidence that practising LKM can reduce self-criticism and increase self-compassion among self-critical individuals. This study joins other studies that treat self-criticism as a transdiagnostic psychopathological process (Gilbert & Irons, 2006; Shahar *et al.*, 2012).

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