

Compassion and Loving Kindness Meditation: An overview and prospects for the application in clinical samples

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Abstract:

Objectives: This article aims to present a brief overview of the empirical evidence of well-established mindfulness treatments and an in-depth review of less established compassion-based interventions (CBIs) and Loving Kindness Meditation (LKM). Definitions, cognitive and physiological mechanisms and methods of assessment are discussed. Suggestions for the application in patients who experience initial difficulties are presented.

Method: A literature review using the databases PsycINFO, PubMed and Google Scholar was conducted. Studies published until October 2017 were included.

Results: Whereas the efficacy of Mindfulness-based Stress-Reduction (MBSR) and Mindfulness-based Cognitive Therapy (MBCT) has been documented in many trials, only seven randomized controlled trials (RCTs) exist on CBIs and LKM. In these trials, CBIs have proven effectiveness in the treatment of psychotic disorders / affective disorders with psychotic features, major depressive disorder, eating disorders, and patients with suicide attempts in the past year, LKM in the treatment of chronic pain, a combination of both for borderline personality disorder. However, a larger number of non-randomized studies indicate that CBIs and LKM may be effective in the treatment of a wide range of clinical conditions, including depression, anxiety disorders, chronic pain, and post-traumatic stress disorder (PTSD).

Conclusions: Further studies are needed to confirm the promising effects of CBIs and LKM. Preliminary evidence suggests that both approaches might be beneficial across a considerable number of clinical populations. Future studies have to clarify whether these approaches might be an option as a stand-alone treatment or as an adjunct or augmentation of evidence-based methods in psychotherapy.

Key words: mindfulness, meditation, compassion, Loving Kindness Meditation (LKM), psychotherapy

Introduction

Meditation can be defined as a “family of complex emotional and attentional regulatory training regimes developed for various ends, including the cultivation of well-being and emotional balance.”^{1(p163)} In a recent classification, Dahl and colleagues² distinguish three types of meditation: 1. the *attentional family* of meditations, which foster self-regulatory skills in maintaining attention; 2. the *deconstructive family* of meditations, which have the aim to view sensations, cognitions and emotions as mental events rather than as reflections of reality, and take over an observer perspective; 3. the *constructive family* of meditations, which have the explicit goal to develop positive affect and more benevolent cognitions toward oneself and others and a more positive self-concept.

During recent years, most research efforts have been focusing on mindfulness meditation, comprising both attentional and deconstructive meditations. The established interventions *Mindfulness-based Stress Reduction (MBSR)*³ and *Mindfulness-based Cognitive Therapy (MBCT)*⁴ include attentional as well as deconstructive meditations. However, less attention has been paid to the potential therapeutic effects of constructive meditation techniques such as compassion- and Loving Kindness Meditation (LKM). These techniques aim at cognitive, motivational, and emotional changes through the development of benevolent and supporting attitudes and emotions toward self and others. LKM is a traditional Buddhist meditation focusing on benevolence and feelings of kindness and warmth toward others and oneself.⁵⁻⁷ In contrast, compassion can be defined as a “sensitivity to the suffering of self and others, with the deep commitment to try to alleviate and prevent it.”^{8(p19)} In this review we will focus on basic definitions, assessment methods and experimental findings related to the constructs that supposedly underlie these techniques. Furthermore, we will report evidence for their effectiveness and possible neurobiological and

cognitive mechanisms. Finally, we will discuss implications for clinical samples and therapeutic options.

We conducted a literature review including studies published until October 2017 in the databases PsycINFO, PubMed and Google Scholar. Search terms for the trials on compassion-based interventions (CBIs) and Loving Kindness Meditation (LKM) were “compassion meditation”, “compassion focused therapy” and “loving kindness meditation”. A total of 9920 titles were screened, 87 studies were eligible for the review. The included trials on CBIs and LKM had to address psychiatric symptoms. Single case studies were excluded, as were trials reporting data of non-clinical studies. Furthermore, the included studies had to assess symptoms quantitatively. After applying these criteria, a total of 25 studies were included in the review.

Mindful meditation

Mindfulness (*Buddhist term: sati*) was first conceptualized in Buddhist scriptures and described as a mind focused on the present to being able to notice the reality of internal and external experiences.^{9,10} The most widely used scientific definition of mindfulness by Kabat-Zinn^{11(p4)} comprises paying attention on purpose, in the present moment, and nonjudgmentally. A Buddhist definition of mindfulness further adds “an alert but receptive *equanimous* observation.”^{12(p40)} Another widely cited definition and operationalization of mindfulness consists of two facets; the self-regulation of attention directed toward the present moment and the development and maintenance of curiosity, openness and acceptance.¹³ The established mindfulness-based interventions MBSR³ and MBCT⁴ are both held in a group format with weekly sessions of two hours for eight weeks. Through meta-analyses both programs have shown to successfully reduce symptom severity in a wide range of clinical populations including patients suffering from anxiety and depressive disorders,^{14,15} chronic

pain,¹⁶ and attention deficit / hyperactivity disorder (ADHD).¹⁷ A recent meta-analysis was conducted with the scope to determine the overall effectiveness of mindfulness programs across different disorders and to compare the efficacy with other established treatments.¹⁸ No significant differences were found comparing the effectiveness of mindfulness-based treatments to traditional cognitive-behavioral therapies (CBT) and to pharmacological therapies. Regarding the overall effectiveness, medium sized effects were found both for pre-post-comparison-trials and for waitlist-controlled trials.

Cognitive mechanisms

From a theoretical perspective, possible mechanisms that may mediate the therapeutic effects of mindfulness meditation include changes in 1) attention regulation and body awareness, 2) emotion regulation, and 3) perspective on the self.¹⁹

- 1) Attention regulation and body awareness are core elements of most mindfulness meditations, usually focusing on certain domains (e.g. on the breath or body sensations). Beneficial effects of mindfulness meditation include the ability to maintain awareness on objects and tasks^{20,21} and increases in body awareness.²²
- 2) Furthermore, an accepting, non-reacting stance toward upcoming experiences in mindfulness techniques may foster adaptive emotion regulation and reduce maladaptive strategies like suppression or avoidance.²³⁻²⁵
- 3) Finally, the ability of changing the perspective on the self might be modified through decentering (de-identification).²⁶ Thoughts, sensations or emotions can be recognized as temporary mental events, rather than as static attributes of the self.⁴

Currently, researchers are empirically investigating possible mediating factors to explain the beneficial effects of MBSR and MBCT. To conclusively determine a mediator,

changes in the process variable (e.g. mindfulness) must precede changes in the outcome variable (e.g. depression, anxiety).²⁷ Firm conclusions may not be drawn at this point in time, as randomized controlled trials (RCTs) of high quality have produced mixed findings: Two trials found no mediating effects for changes in mindfulness on outcome variables,^{28,29} while another one did.³⁰ Mixed findings were also found for mediating effects of self-compassion with a trial confirming a mediating effect,³⁰ while another one did not.²⁸ No mediating effects were found for changes in rumination in a trial that assessed the impact of that variable.²⁸ Further studies that have addressed that issue have not controlled for temporal precedence in the potential mediators and therefore cannot contribute to the clarification of causality.^{31,32}

Brain imaging

Additional insight into the mechanisms underlying the effects of meditation is provided by brain imaging studies. A recent neuroimaging meta-analysis investigated current brain activation and deactivation across different meditation techniques.³³ These techniques were classified into four categories; focused attention, open monitoring, mantra recitation, and LKM and compassion meditation. In focused attention meditation, where attention is typically directed to breathing sensations, brain areas linked to voluntary regulation of thought and action were activated (premotor cortex and dorsal anterior cingulate cortex). Brain areas that showed patterns of deactivation during focused attention meditation are linked to episodic memory and conceptual processing (ventral posterior cingulate cortex and left inferior parietal lobule). Especially the deactivation patterns are noteworthy, as they seem to inhibit (non-voluntary) thinking about past and future events. In clinical populations this phenomenon may lead to a reduction rumination or excessive worrying. The effect sizes for activation patterns in focused attention meditation were of medium size, for deactivation even of large size which also indicates practical significance and relevance.

Compassion

Compassion (*Buddhist term: karuna*) is regarded as one of the four “immeasurable virtues” (*brahma viharas*) that are pursued within Buddhist traditions.^{6,9,34} The further virtues are loving kindness (*metta*), equanimity (*upekkha*) and joy for others’ joy / wellbeing (*mutida*). According to Gilbert,³⁵ compassion is composed of two psychological facets: An empathic emotional reaction to an observed suffering of self and others, and a motivational facet – the commitment and motivation to reduce the observed suffering. Various further definitions of compassion by contemporary researchers and Buddhist scholars (e.g. Feldman & Kuyken, Goetz; Kanov; Lazarus; Singer; Dalai Lama) also share the composition of the emotional and the motivational component.^{36,37} Drawing on writings of Buddhist teachers like Brach,³⁸ Goldstein & Kornfield,³⁹ and Salzberg,⁷ Neff operationalized the construct of self-compassion.⁴⁰ The construct of self-compassion can be divided into three basic components and includes conceptual opposite poles. *Self-kindness* includes dealing with own weaknesses in an accepting way and reacting to failures or distress in a caring vs. a self-blaming way. The conceptual opposite pole is *Self-judgement*. Regarding experienced suffering as a part of a *common humanity* vs. *isolation* from other people is conceptualized as the second basic component. The third basic component describes a mindful and accepting awareness of negative emotions and thoughts vs. suppression or engaging excessively with them. In further psychological literature, compassion is closely linked to the concept of empathy that incorporates altruistic feelings of sympathy, compassion,^{41(p86),42} but also the possibility of empathic distress.⁴³ According to Singer and Klimecki,⁴³ empathic distress is defined as sharing the feelings of an observed suffering (*feeling with*), while compassion is seen as a *feeling for* the suffering individual, followed by a motivational supporting orientation. There is also a close relationship between compassion and the attitude of benevolence / loving kindness, which is one of the reasons that compassion-based interventions (CBIs) and LKM

have been combined in treatment programs.⁴⁴⁻⁴⁷ Both concepts share a kind attitude toward self and others, although compassion focuses more on experienced suffering of self and others,³⁵ whereas loving kindness has a stronger focus on the wish for wellbeing and happiness of self and others.⁴⁸ Oftentimes, basic mindfulness techniques are taught before introducing constructive meditation techniques (e.g.^{44-46,49}). Finally, the constructive meditation techniques also incorporate aspects of mindfulness meditation such as focusing on the breathing. Thus, although CBIs are characterized by a specific focus, they share several features with other meditation techniques.

Cognitive mechanisms

Gilbert³⁵ bases his therapy approach *Compassion Focused Therapy (CFT)* on a neurobiological theory: he postulates the existence of three affect regulation systems, a “*threat and protection system*”, a “*drive resource-seeking and excitement system*” and a “*soothing and safeness system*”. The overstimulation of the “*threat and protection system*” in this theoretical context is regarded as a relevant factor for the development and maintenance of psychopathology.⁵⁰ Threats in this context are conceptualized both as *external* (e. g. being in a life-threatening situation) but also *internal* threats such as self-depreciating / self-critical thoughts or distressing memories. Hence, the therapy aims at stimulating the “*soothing and safeness system*” and to regulate the imbalance within the other affect regulation systems. In line with Gilbert’s theory, various experiments have provided evidence that priming feelings of safeness increases compassionate behavior.⁵¹ From a cognitive perspective, compassion can be described as a composition of different strategies for adaptive emotion regulation. In compassion interventions, attention is *directed* toward own or other beings’ suffering. This confrontation with suffering can in clinical populations at first create unpleasant or negative reactions,⁵² especially when a self-critical stance and feelings of shame regarding the own

suffering can be observed.^{50,53,54} This phenomenon may also be regarded as a threat response.

In a second step, the emerging emotions are attempted to be regulated with a soothing, kind and acting approach. Due to the often observed self-critical stance toward the own suffering, this aspect also poses a challenging shift. Neff⁴⁰ also puts forward the aspect of *common humanity* within self-compassion – the attitude that difficult experiences and pain are part of everybody's life. This aspect can be regarded as a cognitive encouragement to *normalize* one's own distress and to reduce shame about the experienced symptoms.

Compared to the deconstructive family of meditations, the constructive family seeks to directly and positively influence the attitudes and emotions toward oneself and others.

Common dysfunctional appraisals in clinical populations such as severe self-criticism or shame could therefore be addressed more specifically with CBIs than with the distancing approach of deconstructive meditation techniques.

Physiological mechanisms

Compared to the existing body of research on mindfulness, considerably less research has been conducted on physiological and neuroendocrine effects of CBIs. In one of the few existing studies neuroendocrine effects and effects on stress markers and stress scores were examined in a randomized trial. Healthy participants ($N = 59$) were either assigned to six weeks of compassion meditation or a control group with group discussions on health.⁵⁵ No main effect was found for group allocation, but those within the meditation group, who practiced more between the weekly sessions, showed decreased stress scores and decreased stress markers (cortisol and interleukin-6). However, initial reactions to CBIs are not always positive. In an experimental study with a student sample difficult initial reactions to a compassion imagery exercise (receiving compassion from another being) emerged and were further analyzed.⁵⁶ Participants low in self-criticism and with rather secure attachment styles

experienced an adaptive physiological reaction with a rise in heart rate variability and a drop in the cortisol level. In participants with higher manifestations of self-criticism and insecure attachment styles a less adaptive reaction to compassion imagery was observed, indicated through a drop in heart rate variability. This reaction may be interpreted as a threat response.⁵⁷ In this subgroup, no effect on the cortisol level was detected. These findings are limited by the small sample size of $n = 22$ completers and the non-clinical nature of the sample. However, the results provide evidence, that subjects need to be informed and supported in the issue of possible negative first reactions to CBIs, especially if they are highly self-critical.

Brain imaging

According to a recent meta-analysis, brain areas associated with body awareness and empathy (somatosensory cortices, anterior insula) were activated during practicing constructive meditations, the effect size being in a medium range.³³ No significant patterns of deactivations were detected. The involvement of regions associated with empathy illustrate the conceptual difference to the more established mindfulness meditations also on a neurobiological level. Furthermore, deficits in empathy have also been linked to psychopathology.⁵⁸ Distinctions between deficits in cognitive empathy (understanding mental states in other people and oneself) such as in autistic disorders⁵⁹ and deficits in emotional empathy such as in antisocial personality disorder⁵⁸ have been made. The treatment of disorders with empathy deficits in emotional empathy and slightly impaired cognitive empathy could be targeted with constructive meditation techniques, as they foster emotional empathic responses toward others and oneself but also the understanding of others' and own suffering. Possible applications of constructive meditation techniques are therefore

conceivable for depressive disorders,⁶⁰ social anxiety disorder,^{61,62} and borderline personality disorder.⁶³

Assessment

The most widely used scale to assess individual manifestations in (self)-compassion is the *Self-Compassion Scale (SCS)*⁶⁴, which consists of 26 items. This scale is based on Neff's operationalization of self-compassion.^{40,65} The SCS assesses the three basic components with their conceptual opposite poles, resulting in six subscales: *Self-kindness vs. self-judgement*, *common humanity vs. isolation*, and *mindful awareness vs. overidentification*. An overall self-compassion scale which reaches a high internal consistency can also be computed.

Recently, in addition to self-compassion, further scales were published, that also focus on the ability to feel *compassion toward others* and the ability to *receive compassion from others*.⁶⁶

In this instrument, the concept of compassion is based on the definition "sensitivity to the suffering of self and others, with the deep commitment to try to alleviate and prevent it",^{8(p19)} the scales are therefore divided in sensitivity / engagement- and action subscales. Good internal consistencies are reported.

Compassion-based interventions (CBIs)

Compassion Focused Therapy (CFT)³⁵ was originally developed for individuals with a strong disposition for self-criticism, feelings of shame about themselves or their symptoms, and little self-acceptance. CFT contains meditation and imagery exercises that draw from mindfulness techniques and have a soothing and compassion focus, but also chair work and the discussion of functions of self-criticism. Further CBIs put a stronger emphasis on traditional Buddhist compassion meditations and sometimes also incorporate LKM. Five randomized-controlled trials examining CBIs were conducted with efficacy findings for patients with psychotic disorders / affective disorders with psychotic features,⁶⁷ major depressive disorder,⁶⁸ eating

disorders,⁶⁹ patients with suicide attempts in the past year,⁷⁰ and in combination with LKM for borderline personality disorders.⁴⁴ Possible efficacy from non-randomized-trials exists for eating disorders,⁷¹ depression,^{45,46,50,72,73} anxiety disorders,^{72,73} chronic pain,⁴⁹ symptoms of post-traumatic stress disorder (PTSD),^{47,74,75} psychotic disorders in acute inpatients (including patients suffering from bipolar disorders with psychotic features),⁷⁶ personality disorders,^{73,77} patients with mild intellectual disabilities,⁷⁸ and traumatic brain injury.⁷⁹ A further uncontrolled study was conducted with an open group format addressing a transdiagnostic sample in an acute psychiatric setting. Outcome variables were in-session experiences with findings for reductions in distress and increases in calmness.⁸⁰ Two of the non-randomized studies used an active control group,^{74,75} one study was controlled with a treatment as usual (TAU)-condition,⁷³ two studies applied a within subjects-waitlist-design,^{45,49} one study applied a multiple baseline design,⁴⁷ the remaining studies were uncontrolled. More randomized controlled trials are needed at this early stage of evidence-base. An overview of the trials describing interventions, design, patient characteristics and results is outlined in table 1.

Insert table 1 here

Loving Kindness Meditation (LKM)

Loving Kindness (*Buddhist term: metta*) is a further “immeasurable virtue” that is aimed for in Buddhist traditions^{6,9,34} and has recently found application in clinical psychology as Loving Kindness Meditation (LKM). LKM has the scope to create feelings of kindness and warmth toward others and oneself.⁵⁻⁷ To elicit these positive emotions kind wishes like “may (he / she / they / I) be safe / happy / live with ease / be free from suffering” are directed

toward friends or people one had positive memories with, unknown / "neutral" persons, oneself, all living beings and after some routine to people who one had difficulties with.

Cognitive mechanisms

Fredrickson^{81,82} has put forward a theory ("*broaden and build-theory*") and empirical evidence on how and why increasing positive affect can be beneficial in the long term. According to her theory, people who experience positive emotions *broaden* their attention and are better able to think flexibly, in contrast to negative emotions where the attentional focus is often narrowed on a threat. If positive emotions occur frequently, it is assumed that the broader perception and thinking create the opportunity to *build* personal resources. In a study conducted by Fredrickson ($N = 139$), LKM helped to elicit positive emotions such as contentment, joy, love, gratitude or hope in a nonclinical sample.⁸³ Regular practice of LKM and therefore an increased frequency of experiencing these emotions helped *building* resources such as positive relations with others, self-acceptance, purpose in life and the feeling of environmental mastery. Hutcherson and colleagues⁸⁴ confirmed that LKM significantly increased positive affect, furthermore feelings of social connection toward unknown persons were increased. An increase in positive emotions has also shown to promote resilience.⁸⁵ In clinical samples eliciting positive emotions could help to overcome the difficulty of acquiring positive appraisals (about self and others). This effect might not be achieved by solely practicing techniques of the deconstructive family, as they rather offer a de-identifying stance toward positive and negative appraisals than enabling positive appraisals. Furthermore, developing kind thoughts and wishes especially for people who one had difficulties with can be regarded as fostering cognitive and affective flexibility.⁸⁶

In a recent controversy based on differing neuroscientific findings Dahl et al.^{2,87} and Engen & Singer⁸⁸ put forward unlike possible mechanisms regarding the underlying

cognitive mechanisms in LKM. In line with the notion that cognitive flexibility is developed through practicing LKM,⁸⁶ Dahl et al.^{2,87} propose perspective taking, reappraisal and (positive) changes in self-perception as possible underlying mechanisms for LKM and the constructive family of meditations. Engen & Singer⁸⁸ concur that while these mechanisms might be of some relevance, the generation of positive affect and a prosocial (caring) motivation are the main underlying mechanisms of these meditations. At this stage, it remains unclear which of the proposed mechanisms are of greater relevance in these meditation techniques, but the available clinical and neuroscientific data indicate that all the postulated mechanisms may play a role within the practice of meditations of the constructive family. Further research is warranted to determine the importance of the proposed mechanisms at different stages during the meditation.

Physiological mechanisms

LKM was recently compared to breathing meditation and observing thoughts meditation,⁸⁹ two types of meditations practiced within MBCT. In a sample of $N = 156$ healthy participants cardiovascular effects (heart rate, high-frequency heart rate variability), invested mental effort and likeability of the exercises were examined. Heart rate and mental effort measures were significantly higher both in LKM and observing thoughts meditation compared to breathing meditation. Average likeability for LKM was significantly lower compared to breathing meditation, although over a period of 3 months of regular practice likeability significantly increased for all exercises. Heart rate variability was surprisingly decreased over time in LKM and observing thoughts meditation, however, effort significantly decreased over time. Concerning clinical implications it could be inferred that patients ought to be prepared

for a possible adverse initial effect of LKM and that likeability will increase and effort decrease over time.

LKM and breathing meditation have also been compared in a small study of $N = 15$ previously depressed patients.⁹⁰ Both meditation forms led to increased prefrontal α -asymmetry in electroencephalographic (EEG) measures, a marker for adaptive emotion regulation and positive affect. Further analyses revealed, that participants low in ruminative brooding responded better to LKM, whereas participants high in ruminative brooding responded better to breathing meditation. The study is limited by the small sample size and the fact that participants did not undergo both conditions. As rumination is a common symptom in depression, basic mindfulness exercises could therefore be indicated before practicing LKM.

Assessment

Loving Kindness can be assessed with the *Compassionate Love Scale*.⁹¹ The scale consists of 21 items that measure closeness and feelings of connectedness, affection and the motivation to support other people. One version of the questionnaire addresses Compassionate Love toward close others, the second version addresses Compassionate Love toward all of humankind. A very high internal consistency of $\alpha = .95$ is reported for both scales.

Compassionate Love toward oneself is not assessed. Therefore, in further research a scale to assess this construct should be developed. Another approach to assess the effects of LKM used by Fredrickson and colleagues⁹² is the *Modified Differential Emotions Scale (mDES)*.

The experience of 19 emotions experienced during the last 24 hours is assessed daily for. The enquired emotions include amusement, anger, awe, compassion, contempt, contentment, disgust, embarrassment, gratitude, hope, joy, interest, love, pride, guilt, sadness, shame, fear, and surprise.

Effects of LKM-interventions

LKM has shown to be effective in RCTs for chronic pain⁹³ and self-criticism as a transdiagnostic symptom.⁹⁴ Possible efficacy from uncontrolled studies exists for symptoms of PTSD,⁹⁵ schizophrenia spectrum disorders,⁹⁶ and depression.⁹⁷ Positive affect was significantly increased in the studies that assessed this domain.^{94,96,97} However, the results have to be regarded with caution as only two studies used a randomized controlled design and none of the studies utilized an active control group. As in clinical research on CBIs, more randomized controlled trials are needed at this early stage of evidence-base. An overview of the clinical trials administering LKM is shown in table 2.

 Insert table 2 here

Implementation in clinical samples

In some patients, developing an open and accepting stance toward their own suffering can trigger unpleasant first reactions, as has been shown in experimental research and clinical practice.^{52,56} Therefore, patients should be informed and supported to overcome these difficulties. Reducing the resistance for compassion may even be regarded as a goal of CBIs. Usually, meditation interventions are delivered in groups, which is a helpful setting for developing compassion toward others and receiving compassion from others. However, in some cases, intense blocks toward cultivating self-compassion may require further individual sessions to allow a deeper exploration and development of solutions for this issue. In this instance, assumed functions of self-criticism may persist that impede the development of self-compassion.³⁵ A function of self-criticism could mean that a patient is convinced that self-criticism helps to prevent potential mistakes and maintains or even increases productivity.

The harmful effects and negative emotions elicited through a self-critical attitude should be discussed and it ought to be challenged if the elicited feelings really help to increase productivity. Similar to dialectical behavioral therapy (DBT),⁹⁸ the patients could be taught that their previous self-critical dealing with difficult situations is not their fault but constitutes their best regulation possibility and that new, more beneficial regulation possibilities can be acquired. Whenever a self-devaluation is perceived, first, the attention should be focused on the breath, then it is attempted to meet the self-devaluation with compassionate attention, compassionate thoughts (e. g. “What do I need in this difficult situation?”) and (if possible) compassionate behavior. Furthermore, the concept of an ideal individual compassionate self may be cultivated and included in the intervention.⁵⁰ Ideas on how the ideal compassionate self may deal with a distressing situation are then developed. Difficulties in developing self-compassion, compassion toward others and to receiving compassion from others can be assessed with the *Fear of Compassion Scale*.⁵⁷

Regarding LKM, psychoeducation about possible initial arousing effects is recommended, as well. However, patients should be encouraged to maintain their practice since existing evidence indicates that positive experiences increase during the course of the training.⁸⁹ Individuals with a strong tendency to ruminate might benefit from learning breathing meditation before beginning LKM.⁹⁰ Furthermore, directing kind wishes to oneself and to persons associated with negative experiences can pose challenges to novice meditators: Thus, it might be helpful to first directing the loving kindness phrases to a person, who one has a positive attitude to. Clients with predominantly negative attachment experiences may struggle with selecting a “positive person” to send the positive wishes to. Here, especially in novice meditators, the LKM phrases may also be directed to a fictional positive being. Directing positive wishes to oneself might be difficult, especially when individuals are highly self-critical, have low self-esteem or feel ashamed of themselves,

which may cause persisting cognitions about not deserving positive emotions or happiness. In this case, an individual session might be helpful to address such a cognition with an exploration of the effects of that cognition. A therapeutic model reacting in a kind and compassionate way to the experienced suffering may be helpful to implicitly enable the experience of a kind and compassionate stance toward oneself.⁴

Very little evidence exists for the applicability of CBIs and LKM in non-Western cultures. Only one of the reported CFT-trials was conducted with a non-Western sample of female Iranian participants.⁶⁸ No cultural adaptation of the contents of therapy were reported in this trial. Depression and anxiety were significantly reduced at a two-month follow-up assessment, but no effects were found for changes in self-criticism. The authors assume, that self-criticism may be more difficult to influence as it is considered a virtue in collectivistic cultures. Regarding LKM, researchers on culturally adapted therapy approaches have proposed to include culturally consonant imagery. Based on case-studies and clinical experience, recommendations to imagine loving kindness as a warm light radiating from the heart are proposed for Latin cultures;⁸⁶ in Asian Buddhist and Muslim populations the image of water flowing from the heart and body is reported to have a similar positive connotation.^{86,99} Practicing LKM with an indigenous South African group, the Sepedi, did not require an adaptation as an overlap with their of concept of *ubuntu* (“a shared bond of empathy between all human beings and emotional “inseparability” from others”)^{99(p8)} was observed.

Encouraging imagery processing may also be helpful for patients with difficulties to experience positive effects just by inwardly repeating the LKM phrases semantically. Here, guidance to imagery processing like “Imagine how it would look like if you felt safe / happy” can be helpful. Another option to adapt LKM in clinical populations includes developing

personal loving kindness phrases, especially if patients have difficulties relating to the standard LKM-phrases.

Conclusions and clinical perspectives

Mindfulness-based treatments have repeatedly demonstrated significant efficacy in a large number of controlled studies with various clinical populations. Less evidence exists for the effects of CBIs and LKM. However, the preliminary results of the available studies are promising. The efficacy of CBIs, and also, although still to a lesser extent, in LKM has been demonstrated in a growing number of RCTs. The mental disorders treated with both approaches include also severe conditions, such as psychotic disorders, borderline personality disorder, suicidality, and different types of depression. However, randomized controlled trials with active control groups are needed to investigate the specific benefits explainable by these approaches.

As most of the available studies on LKM and CBIs were conducted in group settings, some of which included acute inpatients,^{67,70,73,76,80} these interventions might be implemented in psychiatric clinics. Furthermore, some of the existing trials included patients with differing disorders such as psychotic disorders, affective disorders, anxiety disorders and personality disorders in the same treatment groups,^{46,72,73,80} which may also be regarded as evidence for a broad transdiagnostic viability. Common clinical problems that can be addressed with a kind and compassionate stance are self-criticism, shame, negative affect, and lack of empathy and of positive affect.

In addition to reducing the main symptoms of the disorders, LKM has also shown to promote positive affect,^{94,96,97} which may contribute to the increase of resilience.⁸⁵ Hence, LKM may be useful for patients in therapy who already have achieved some understanding and mastery of their clinical symptoms and would further benefit from increased positive

affect (cf. *broaden and build-theory*).^{81,82} Furthermore, combinations of CBIs and LKM with CBT interventions are promising (e. g. discussing kind or compassionate acts toward other people in social skills training and developing ideas for kind and compassionate acts toward oneself in times of distress). Also, standard cognitive and behavioral interventions such as guided discovery and behavioral experiments may support the effects of meditation on interpersonal functioning. Combining individual sessions with group sessions, similar to the DBT model,⁹⁸ may also be a viable: LKM and compassion approaches could be economically instructed in group sessions, emerging difficulties could then be addressed in depth in individual sessions. If randomized controlled trials with active control groups confirm that CBIs and LKM are effective, these interventions might extend psychotherapeutic options for patients suffering from self-criticism and shame about symptoms or themselves, patients feeling detached from others and for patients with difficulties developing positive affect and empathy. Possible applications of CBIs and LKM could therefore be developed for patients suffering from social anxiety disorder, as shame,^{100,101} self-criticism,¹⁰² and difficulties developing empathy for positive affect in other people⁶¹ seem to be underlying factors for maintaining the disorder. Shame is also considered a major symptom in patients suffering from body dysmorphic disorder.^{103,104} Hence, approaches that foster a kind and compassionate stance toward oneself seem promising, as well. As several of the suggested factors also are of relevance in depressive disorders,^{54,60} PTSD,^{105,106} eating disorders,^{107,108} borderline personality disorder,^{63,109} intellectual disabilities,¹⁰⁹ and schizophrenia-spectrum-disorders with negative symptoms like anhedonia,¹¹⁰ the existing research on applicability of CBIs and LKM should also be extended for these disorders. Future studies will also have to clarify whether CBIs and LKM might be an option as a stand-alone treatment or as an adjunct or augmentation of evidence-based psychotherapeutic treatments. Furthermore, research should also contribute to clarify initial problems of novices starting CBIs and LKM. For

instance, a recent study comparing the effects of LKM and mindful meditation, found that genetic differences related to oxytocin signaling moderated increases of positive emotions for LKM, but not mindful meditation.¹¹¹ Relatedly, another recent study found that oxytocin, administered intranasally in a randomized, double-blind design, elevated positive emotions (assessed implicitly and explicitly) after a one-time, 20-minutes guided meditation of either mindful meditations or LKM.¹¹² Further research is also needed to test for generalization to clinical populations. These studies ought to ideally be accompanied by physiological assessments such as cortisol levels and heart rate variability. Research to develop further recommendations on how to ideally administer CBIs and LKM (e.g. number of sessions; accompanying individual sessions to address emerging problems from CBI / LKM group sessions) is also warranted. Online-interventions containing CBIs and LKM may also be conducted. Those interventions could enhance options for relapse prevention in clinical populations. In a RCT delivering LKM online, positive effects on well-being were observed in a non-clinical sample.¹¹³ However, initial difficulties could probably not be addressed as comprehensively as in a group setting for clinical populations. Therefore, online interventions might be helpful to maintain an already initiated meditation routine. Furthermore, given empirical validation from clinical trials, CBIs might also be applied to conditions that involve inevitable suffering as in terminal illnesses like cancer.¹¹⁴ Finally, future research should also address the applicability of CBIs and LKM in various cultures as these approaches have so far mainly been applied in Western populations.

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Table legends:

- Table 1. Overview of clinical studies applying compassion-based interventions (CBIs)
- Table 2. Overview of clinical studies applying Loving Kindness Meditation (LKM)

TABLE 1. Overview of clinical studies applying compassion-based interventions (CBIs)

Study	Intervention	Diagnoses	N	Results	Control condition
Gilbert & Procter (2006) ⁵⁰	12 weekly 2-hour-group sessions of CFT; outpatient setting	Personality disorders and / or chronic affective disorder	6*	Significant reductions in depression, experience of insufficiency, self-criticism, shame and anxiety. Significant increases in self-compassion (estimates of according statements in diary entries).	-
Laithwaite et al., (2009) ⁷⁶	2 weekly group sessions of CFT for 10 weeks (20 sessions); inpatient setting	Schizophrenia, schizo-affective disorder, bipolar disorder with psychotic features	19 (18)*	Significant improvements in shame, unfavorable social comparisons, self-esteem, depression and general psychopathology. Changes were maintained after a 6-week follow-up-period.	-
Beaumont et al., (2012) ⁷⁴	Up to 12 group sessions of CBT+CFT vs. 12 group sessions of CBT; outpatient setting	Symptoms of Post-Traumatic-Stress-Disorder (PTSD)	36 (32)*	Significant reductions in both groups in avoidant behavior, intrusive thoughts, hyperarousal, depression and anxiety. The only significant differences between groups was found for an increase in self-compassion in the CFT+CBT-group.	CBT only
Judge et al., (2012) ⁷²	12-14 weekly 2 hour-sessions of CFT; outpatient setting	Patients in a naturalistic setting, mainly suffering from affective or anxiety disorders	42 (27)*	Significant reductions in depression, anxiety, self-criticism, shame, unfavorable social comparisons and submissive behavior.	-
Braehler et al., (2013) ⁶⁷	16 weekly 2-hour-group sessions of CFT + TAU; mostly for outpatients, 1 inpatient	Schizophrenia-spectrum-disorder or affective disorder with psychotic features	40 (32)*	TAU (treatment as usual) condition consisted of psychopharmacological medication, contact with a psychiatrist and / or a psychiatric nurse, support through a day center and occupational therapy. 65% of patients in the CFT + TAU-condition improved, only 5% experienced an improvement in the TAU-only-condition.	TAU alone, randomized
Lucre & Corten (2013) ⁷⁷	16 weekly sessions of CFT in a group setting; outpatient setting	Various personality disorders (emotionally unstable, histrionic, paranoid, anxious-avoidant and obsessive-compulsive)	10 (8)*	Significant increases in well-being, functioning and abilities to be self-assuring. Significant reductions in depression, stress and feelings of hating oneself. Results were maintained at 1-year follow-up and in most cases less psychiatric treatment was needed compared to pre-therapy.	-
Noorbala et al., (2013) ⁶⁸	12 2-hour sessions of CFT, 2 sessions per week; outpatient setting	Major Depressive Disorder in Iranian females	19 (16)*	No significant reductions in depression, anxiety and self-criticism after the intervention, but significant reductions in depression and anxiety in a 2-month-follow-up-assessment.	No intervention, randomized

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TABLE 1. Overview of clinical studies applying compassion-based interventions (CBIs; Continued)

Study	Intervention	Diagnoses	N	Results	Control condition
Chapin et al., (2014) ⁴⁹	9 weekly 2-hour group sessions (2 basic mindfulness sessions, then CM), home practice; outpatient setting	Chronic pain	12 (12)*	No significant changes emerged in the 5 week-waiting condition, but significant reductions in pain severity and anger and an increase in pain acceptance were observed after treatment.	Within-subjects-waitlist-condition
Gale et al., (2014) ⁷¹	4 psychoeducation sessions and 20 group therapy sessions (CBT + CFT), 2 hours of homework / week; outpatient setting	Eating disorders	139 (99)*	Significant changes in all administered scales including restraining, eating concern, weight concern, shape concern, anorexic behaviors and cognitions, bulimic behaviors and cognitions, perceived external control, low assertiveness, low self-esteem and self-directed hostility. Well-being and functioning were also significantly improved. Patients suffering from bulimia nervosa showed significantly higher improvements than patients suffering from anorexia nervosa.	-
Heriot-Maitland et al., (2014) ⁸⁰	Open CFT-group for acute inpatients, 22 sessions on psychoeducation, mindfulness, compassion and compassionate imagery during a 6 month period; inpatient setting	Various disorders including schizophrenia, schizoaffective disorder, affective disorders, anxiety, personality disorders	82 (57)*	Pre-and post-session data was collected with overall significant reductions in distress and significant increases in calmness after the sessions. Regarding the different therapy elements, distress was significantly reduced in sessions on compassion and imagery, calmness was significantly increased in sessions on imagery.	-
Ashworth et al., (2015) ⁷⁹	Up to 18 individual CFT sessions and a “Compassionate mind mood group”; outpatient setting	Acquired brain injuries	12 (12)* (9)**	Significant reductions in anxiety, self-criticism and depression. A significant increase was found in the ability to reassure the self. In a 3-month follow-up assessment the effects were maintained with the limitation that data was only obtained for $n = 9$ patients.	-
Beaumont et al., (2016) ⁷⁵	Up to 12 group sessions of CBT+CFT vs. 12 group sessions of CBT, 10 1-hour sessions, 2 1.5-hour sessions; outpatient setting	Fire service personnel with symptoms of Post-Traumatic-Stress-Disorder (PTSD)	(17)*	Significant reductions in both groups in avoidant behavior, intrusive thoughts, hyperarousal, depression and anxiety. The only significant differences between groups was found for an increase in self-compassion in the CFT+CBT-group.	CBT only

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TABLE 1. Overview of clinical studies applying compassion-based interventions (CBIs; Continued)

Study	Intervention	Diagnoses	N	Results	Control condition
Bartels-Velthuis et al., (2016) ⁴⁶	9 group sessions of CM and LKM for completers of either an MBSR or MBCT course, 9 weekly 2.5-hour sessions; outpatient setting	Mainly depression and anxiety disorders, 48.5 % with axis-II comorbidity	33 (29)*	Significant reductions in depression, significant increases in mindfulness and self-compassion. Effects for these variables were of medium size. No significant effect was found for reductions in anxiety, the effect size being small.	-
Graser et al., (2016) ⁴⁵	12 weekly group sessions (100 minutes each) with 4 weeks each for mindfulness, CFT, LKM, 30 minutes daily home practice; outpatient setting	Chronic depression (chronic major depressive disorder or dysthymia)	11 (10)* (10)**	No significant changes in the waiting-condition. After 12 weeks of therapy a medium sized effect was observed for reduction of depressive symptoms for the $n = 10$ completers. After a 3 month-follow-up period a large effect size was reached. Secondary outcome variables that reached significant increases at follow-up were acceptance of emotions, compassionate love and mindfulness. Significant decreases at follow-up were found for suppression of emotions and rumination about oneself.	Within-subjects-waitlist-condition
Au et al., (2017) ⁴⁷	6 weekly individual sessions of 60-90 minutes; self-compassion interventions, also including LKM; outpatient setting	Post-Traumatic-Stress-Disorder (PTSD)	13 (10)*	Large effect sizes were found for reductions in PTSD symptoms, shame and self-blame. Self-compassion increased with a large effect size. All effects further increased at a 4-weeks-follow-up-assessment.	Multiple baseline design
Clapton et al., (2017) ⁷⁸	6 group sessions (90 minutes each) of CFT adapted for intellectual disabilities; outpatient setting	Mild intellectual disabilities; significant distress and self-criticism	7 (6)*	Significant reductions in self-criticism and unfavorable social comparisons. No significant effects on distress.	-
Cuppage et al., (2017) ⁷³	14 group sessions of CFT of 3 hours each (twice weekly for 5 weeks, once weekly for 4 weeks) + TAU; mixed setting (in- and outpatients included)	Patients in a naturalistic setting, mainly suffering from affective, personality or anxiety disorders	CFT: 58 (49)* (28)** TAU: 29 (29)*	TAU condition consisted of psychiatric pharmacology, disorder-oriented psychoeducation groups and in some cases individual support such as psychotherapy, occupational therapy or social work. Compared to the TAU-only condition the CFT+TAU condition showed significantly stronger decreases in psychopathology, fear of compassion, shame and significant increases in social safeness. Effects were maintained in a 2-month-follow-up, although only 57 % of the completers could be assessed at follow-up. Reductions in psychopathology were predicted by reductions in self-criticism and fear of compassion.	TAU only

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TABLE 1. Overview of clinical studies applying compassion-based interventions (CBIs; Continued)

Study	Intervention	Diagnoses	<i>N</i>	Results	Control condition
Feliu-Soler et al., (2017) ⁴⁴	10 weeks of mindfulness practice, then randomization to either 3 weeks of CM + LKM or mindfulness continuation training, all sessions in group format; outpatient setting	Borderline personality disorder	32*	Compared to the control-group, participants in the compassion and LKM-group reached significant changes in acceptance of the present moment experience. No further Time x Group interactions reached significance, however significant changes within the Compassion / LKM group were found for borderline symptom severity, self-criticism, self-kindness and mindfulness. Effect sizes within the compassion and LKM group ranged from moderate to large. A small effect on borderline symptom severity was found for the reduction in the control condition.	Mindfulness continuation training, randomized
Kelly et al., (2017) ⁶⁹	12 weekly group sessions of CFT + TAU; outpatient setting	Eating disorders	22 (16)*	TAU-condition consisted of weekly individual therapy sessions and optional psychiatrist and nutritionist appointments. The individual sessions contained CBT and DBT. Compared to TAU alone controls symptoms of eating disorders were reduced by an almost large effect size. Self-compassion was increased by a large effect size, shame and fear of compassion were reduced with a medium effect size.	TAU alone, randomized
Johnson et al., (2017) ⁷⁰	6 weekly group sessions of CM; mixed setting (in- and outpatients included)	African American patients with suicide attempts in the past year	59*	Compared to a support group compassion meditation significantly reduced self-criticism. Reductions in self-criticism fully mediated the link between treatment condition and reductions of depressive symptoms.	Support group, randomized

Note. CBT = Cognitive-Behavioral Therapy; CFT = Compassion Focused Therapy; CM = compassion meditation; DBT = Dialectical Behavior Therapy; LKM = Loving Kindness Meditation; MBCT = Mindfulness-based Cognitive Therapy; MBSR = Mindfulness-based Stress Reduction; TAU = treatment as usual.

*: Number of completers after treatment; **: Number of completers of the trial at final point of assessment (follow-up).

TABLE 2. Overview of clinical studies applying Loving Kindness Meditation (LKM)

Study	Intervention	Diagnoses	N	Results	Control condition
Carson et al., (2005) ⁹³	8 week LKM group program, 90 minutes weekly, 10-30 minutes daily home practice; outpatient setting	Chronic back pain	43 (38)*	Significant reductions in pain intensity and psychological distress (medium sized effects), no effects in control group.	TAU, randomized
Johnson et al., (2011) ⁹⁶	6 weekly one hour-session of LKM, daily home practice, 1 booster session 6 weeks later; outpatient setting	Schizophrenia-spectrum-disorders	18 (16)* (14)**	Significant increase in intensity and frequency of positive emotions, self-acceptance, life satisfaction as well as a reduction of negative symptoms, especially anhedonia. At 3-month-follow-up the effects mostly prevailed; the intensity of positive emotions and self-acceptance decreased from a large effect size to a medium effect size but were still significantly above baseline.	-
Kearney et al., (2013) ⁹⁵	12 week LKM group therapy, 30 minutes daily home practice; outpatient setting	War veterans with PTSD	42 (37)* (34)**	Almost large effect on PTSD symptoms post therapy, large effect at 3-month-follow-up; large effects on mindfulness post therapy, maintained at follow-up; small effect on depression after the program, medium sized effect at follow-up; large effect on self-compassion, maintained at follow up.	-
Hofmann et al., (2015; study 1) ⁹⁷	12 weekly sessions of 1 hour each (2 sessions mindfulness, 10 sessions LKM), 30 minutes daily home practice; outpatient setting	Subclinical dysthymia (1 year of present symptoms)	10*	Large effects were found for the reduction of depressive symptoms, negative affect and rumination. Positive emotions were also increased with large effect sizes.	-
Hofmann et al., (2015; study 2) ⁹⁷	12 weekly sessions of 100 minutes each (6 session mindfulness, 6 sessions LKM), 30 minutes daily home practice; outpatient setting	Chronic depression (chronic major depressive disorder or dysthymia)	8*	Depression both in self- and clinician rating was reduced with large effect sizes, as was negative affect. Positive affect was increased with a large effect size. Rumination was reduced by an almost large effect. Medium sized effects were found for adjusting and accepting emotions.	-

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TABLE 2. Overview of clinical studies applying Loving Kindness Meditation (LKM; continued)

Study	Intervention	Diagnoses	<i>N</i>	Results	Control condition
Shahar et al., (2015) ⁹⁴	7 weekly LKM-sessions of 90 minutes, daily home practice; outpatient setting	Individuals with high levels of self-criticism	38 (32)* (20)**	Compared to participants in the waitlist-condition depression symptoms and self-criticism significantly decreased, self-compassion and positive emotions significantly increased. The effects were maintained at 3-month-follow-up.	Waitlist-control-group, randomized

Note. LKM = Loving Kindness Meditation; TAU = treatment as usual; PTSD = post-traumatic stress disorder.

*: Number of completers after treatment; **: Number of completers of the trial at final point of assessment (follow-up).