MARION SOMMERS-SPIJKERMAN **MIND COMPASSION**

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MENTAL HEALTH OUTCOMES AND CHANGE PROCESSES IN COMPASSION FOCUSED THERAPY

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How do you spell love?
~Piglet

You don't spell it. You feel it.
~Pooh

~Winnie the Pooh~

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Marion Sommers-Spijkerman
Arnhem, oktober 2018

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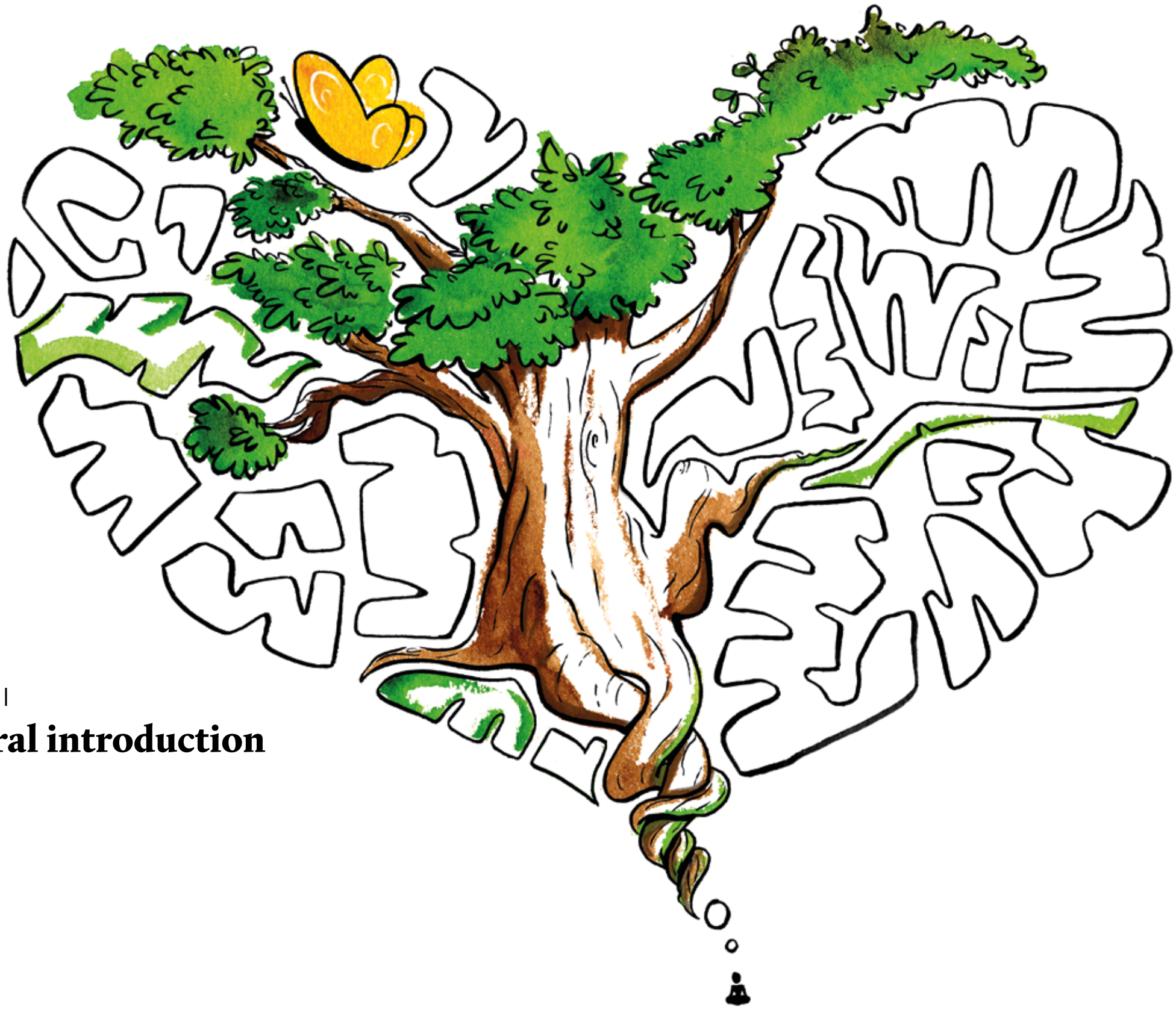

Chapter I

General introduction

Throughout the years, the field of psychotherapy has been subject to many reforms and developments. In the past three decades, there has been a movement towards therapies focusing on mindfulness, values, acceptance (Hayes, Villatte, Levin, & Hildebrandt, 2011), and, more recently, compassion (Kirby, 2017).

Within this new family of therapies, most evidence has been accumulated for Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1982, 1990), Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002) and Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). These interventions have proven useful and acceptable as a resource for mental well-being and as an antidote to psychopathological symptomatology in a broad range of clinical and non-clinical populations (A-Tjak et al., 2015; Abbott et al., 2014; Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Khoury, Sharma, Rush, & Fournier, 2015; Lauche, Cramer, Dobos, Langhorst, & Schmidt, 2013; McCarney, Schulz, & Grey, 2012; Strauss, Cavanagh, Oliver, & Pettman, 2014; Veehof, Trompetter, Bohlmeijer, & Schreurs, 2016; Vøllestad, Nielsen, & Nielsen, 2012; Zainal, Booth, & Huppert, 2013).

More recently, starting in the early 21st century, compassion-based interventions have been touted as potentially powerful means to promote mental health (Kirby, 2017; Kirby, Tellegen, & Steindl, 2017). Along with a growing recognition of the potential of compassion for augmenting mental health, multiple therapies emerged which integrated principles of compassion (Kirby, 2017), sometimes combined with mindfulness (Lo, Ng, & Chan, 2015; Neff & Germer, 2013; Perez-Blasco, Sales, Meléndez, & Mayordomo, 2015; Van den Brink & Koster, 2015) or ACT (Yadavaia, Hayes, & Vilardaga, 2014). Compassion-based interventions have yielded promising findings in a broad range of clinical and non-clinical populations, among others women with body image concerns (Albertson, Neff, & Dill-Shackleford, 2014), patients with schizophrenia spectrum disorder (Braehler et al., 2013), homeless male veterans (Held & Owens, 2015), breast cancer survivors (Dodds et al., 2015), patients with personality disorder (Feliu-Soler et al., 2017; Lucre & Corten, 2013), smokers (Kelly, Zuroff, Foa, & Gilbert, 2010), adults with recurrent depressive and anxiety symptoms (Lo et al., 2015), students (Johnson & O'Brien, 2013; Smeets, Neff, Alberts, & Peters, 2014) and community samples (Arimitsu, 2016; Jazaieri et al., 2012; Matos et al., 2017; Neff & Germer, 2013).

Largely parallel with the emergence of compassion-based therapies, another movement became apparent in the field of psychotherapy, away from emphasis on preventing and alleviating psychological distress and toward promoting well-being (Bolier et al., 2013; Sin & Lyubomirsky, 2009). This so called positive psychology movement was fostered by a growing recognition that psychopathology and well-being are correlated yet distinct continua (Huppert & Whittington, 2003; Keyes, 2005; Lamers, Westerhof, Glas, & Bohlmeijer, 2015).

Drawing on both developments, this thesis is devoted to the topic of compassion as a means to promote mental health, and specifically well-being. One specific compassion-based intervention lies at the heart of this thesis, namely Compassion Focused Therapy (CFT; Gilbert, 2009, 2014). CFT, and MBSR, MBCT and ACT alike, place a great deal of emphasis on mindfulness and acceptance as therapeutic processes and well-being as outcome of therapy.

This introductory chapter offers an introduction to compassion and sheds light on the theoretical roots, core processes and effectiveness of CFT. A rationale is provided for the application of CFT in people with suboptimal levels of well-being. At the end of this chapter, an outline is provided of the studies conducted within the context of this thesis.

What is compassion?

Although the term *compassion* is increasingly deployed in research and clinical practice, the debate surrounding the conceptualisation of compassion is far from settled (Kirby et al., 2017). Over the past decades, a number of definitions have been proposed.

A pioneer in research on compassion is Kristin Neff. Neff draws mainly on social psychology, approaching compassion as a healthy way of self-relating (Neff, 2003, 2011; Neff & Vonk, 2009). Her work mainly focused on self-compassion. According to Neff (2003), self-compassion entails three components: (1) self-kindness, the ability of being kind, warm and understanding towards ourselves when we suffer or fail, rather than being self-critical; (2) the experience of common humanity, the ability of recognising that suffering is part of the human experience and that we are not alone in our suffering; and (3) mindfulness, the ability of observing (painful) thoughts and feelings as they are without judgment, rather than suppressing or over-identifying with them.

A different perspective on compassion is offered by Goetz, Keltner, and Simon-Thomas (2010). They approach compassion as an affective state, defining it as 'the feeling that arises in witnessing another's suffering and that motivates a subsequent desire to help' (p. 351). In this definition, compassion is not so much directed at the self, but at others.

Other researchers have taken a broader perspective on compassion, suggesting that compassion is a multidimensional and dynamic process which comprises both affective and cognitive components. For instance, Jinpa (2010; in Jazaieri et al., 2013), who developed Compassion Cultivation Training, stressed that compassion entails four components, namely: (1) awareness of suffering; (2) sympathy, the ability to be emotionally moved by suffering; (3) a wish to see the relief of suffering; and (4) a responsiveness or readiness to help relieve suffering. In a recent review of definitions and measurement instruments of compassion, Strauss et al. (2016) propose a five-facet model of compassion, including (1) recognising suffering, (2) understanding the universality of human suffering, (3) feeling for the person suffering, (4) tolerating uncomfortable feelings, and (5) motivation to act in order to alleviate suffering.

To date, the most comprehensive definition of compassion, which goes beyond the affective and cognitive aspects referred to by e.g. Strauss et al. (2016) and also includes a behavioural component, has been provided by Paul Gilbert (2014), founder of CFT. Gilbert (2014) views compassion as a caring social mentality which can *flow* in three directions: we may experience compassion for ourselves, compassion for others or compassion from others to ourselves. He defined compassion as 'a sensitivity to suffering in self and others, with a commitment to try to alleviate and prevent it' (Gilbert, 2014, p. 19). Central to this definition of compassion is self-reassurance, that is, individuals' capacity to focus on one's positives and generate feelings of warmth, soothing and reassurance towards themselves in response to setbacks or failures (Gilbert, Clarke, Hempel, Miles, & Irons, 2004). Gilbert's (2014) multi-component model of compassion features two different mindsets or 'psychologies' of compassion. The first mindset is concerned with the motivation and ability to notice, engage with and make sense of the suffering of self and others, hence shows considerable overlap with other definitions of compassion (e.g., Strauss et al., 2016). Six compassionate attributes can be subsumed under the first dimension of compassion (see Figure 1): (1) care for well-being, the motivation/willingness to tackle or alleviate distress; (2) sensitivity, the ability to notice and attend to sources of distress; (3) sympathy, the ability to allow oneself to feel distress; (4) distress tolerance, the ability to tolerate rather than avoid or dissociate from distress; (5) empathy, the ability to take a different perspective as to understand the nature and causes of distress; and (6) non-judgment, the ability to take an accepting, non-condemning view towards distress (Gilbert, 2014, 2015).

The second mindset of compassion adds to existing definitions of compassion by taking into account an action-oriented approach to compassion, encompassing six skills to undertake actions toward preventing or alleviating suffering of the self and others (see Figure 1): (1) compassionate attention, the ability to pay attention to potential sources of care (e.g. caregivers, inner knowledge); (2) compassionate reasoning, the ability to relate to distress in a soothing and reassuring manner; (3) compassionate behaviour, the ability to work out behavioural strategies intended to alleviate distress; (4) compassionate imagery, the ability to construct a compassionate self in one's mind; (5) compassionate feeling, the ability to emotionally connect with acts of compassion; and (6) compassionate sensation, bodily awareness of compassion (Gilbert, 2014, 2015).

Though it seems that most researchers consider compassion a multidimensional construct, its underlying components are as yet not agreed upon. In this thesis, compassion is approached as an umbrella term referring to a family of psychological attributes and skills, thereby following the definition of Gilbert (2014).

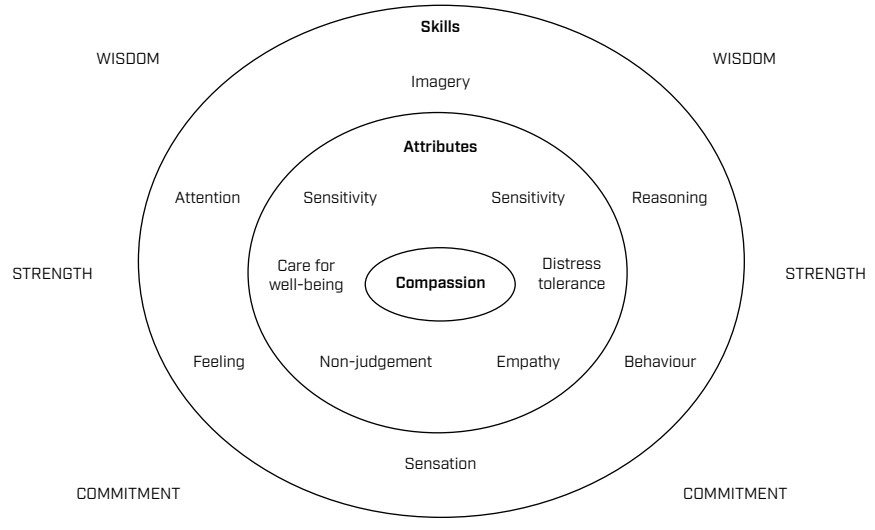

Figure 1. The attributes and skills of compassion. Adapted from Gilbert (2009). The Compassionate Mind. With kind permission from Constable Robinson.

Compassion as psychotherapeutic intervention

Although the principles of compassion have been applied in religious and spiritual traditions for centuries, it is only in more recent years that mental health researchers and practitioners have begun to explore its therapeutic value (Goetz et al., 2010; Kirby, 2017). A broad range of compassion-based interventions have been described in the literature wherein compassion not necessarily serves as an end in itself but also as a means to an end, namely as a resource for mental well-being or as an antidote to psychopathological symptomatology (Kirby, 2017; Kirby et al., 2017). Examples include Compassion Focused Therapy (CFT; Gilbert, 2014), Mindful Self-Compassion (MSC; Neff & Germer, 2013), Compassion Cultivation Training (CCT; Jazaieri et al., 2013); Cognitively-Based Compassion Training (CBCT; Pace et al., 2009) and Compassion-Mindfulness Therapy (C-MT; Lo et al., 2015), to name a few (for a review, see Kirby, 2017). Whereas some programs have evolved from Buddhist roots, others emerged from psychology. Differences across compassion-based interventions stem from variations in approaches to and operationalisations of compassion. The theoretical underpinnings of CFT, which has the focus in this thesis, are addressed briefly hereafter.

Compassion Focused Therapy: Roots and core principles

Paul Gilbert, a pioneer in the field of compassion, developed CFT based on the idea that an inability to experience feelings of warmth, safeness and reassurance, both from oneself and from others, plays a central role in the onset and maintenance of various forms of psychopathology (Gilbert, 2009). CFT embodies the psychotherapeutic process of applying the two mindsets of compassion, i.e., engagement attributes and transformative skills. Its roots can be found in neuroscience and evolutionary, social, developmental and Buddhist psychology (Gilbert, 2009, 2014, 2015). Before elaborating on the specific aims and contents of CFT, two salient theoretical paradigms upon which CFT is based are discussed as well as relevant empirical research per theory.

Social mentality theory

Throughout life, individuals pursue different social roles or motives (e.g., seeking friendships or status). The process of how a specific social motive directs our attention, facilitates cognitive processing, generates emotions and guides our behaviours is coined the term *social mentality* (Liotti & Gilbert, 2011). Gilbert (2014) distinguishes between care-seeking, care-giving, cooperative and competitive social mentalities, each of which may operate both inside and outside our awareness. With regard to compassion, care-seeking and care-giving mentalities bear particular interest. In a care-seeking social mentality, individuals are motivated to alleviate suffering of the self and others, hence direct their attention toward possible sources of care, evaluate whether they can offer safeness and reassurance and work out how to get help. Individuals who are in a care-giving mentality are motivated to care, hence their attention is drawn to distress in others and cognitive processing is aimed at identifying the needs and feelings of others and establishing how best to care in order to tackle or mitigate the impact of distress (Gilbert, 2014; Liotti & Gilbert, 2011).

In CFT, it is assumed that how people relate to the self is similar to how they relate to others, which, in turn, depends upon which social mentality is activated (Gilbert, 2014). It is theorised that a compassionate mind encompasses both a care-seeking and a care-giving social mentality, i.e., the two mindsets of compassion. The first mindset mirrors a care-seeking social mentality which hints distress and needs for care, whereas the second mindset represents a care-giving mentality characterized by compassionate attention, reasoning, feeling and behaviour. A few studies provide support for the notion that self-compassion emerges from a combination of care-seeking and care-giving mentalities, with individuals scoring higher on both social mentalities experiencing greater levels of self-compassion (Hermanto & Zuroff, 2016; Hermanto, Zuroff, Kelly, & Leybman, 2017).

Emotion systems

Drawing on evolutionary psychology and neuroscience, CFT is based on the notion that three major affect regulation systems, each with a unique motivational function, have evolved in humans (and other mammals) (Gilbert, 2009, 2014).

The *threat and protection system* enables us to detect (external or internal) threats, hence induces negative feelings such as anxiety, anger or disgust. These feelings urge us into fight, flight or submissive behaviours in order to protect ourselves and avoid harm.

The function of the *drive and resource-seeking system* is to direct our attention towards available resources conducive to prosperity and well-being (e.g., rewards, skills). This system can be linked to the broaden-and-build theory of Fredrickson (1998). Activation of this system evokes high arousal positive emotions, e.g., excitement, pleasure and vitality, which guide us toward satisfying our needs and achieving major life goals, both materialistic ones (e.g., power, status) and non-materialistic ones (e.g., friendships).

The *soothing and affiliation system* enables us to reassure and soothe ourselves, thereby regulating the threat protection system. Characteristic of this system are low arousal positive emotions, such as a sense of safeness, calmness and contentment. A mindful state of mind characterized by non-striving, accepting and being-in-the-moment is thought to facilitate access to the soothing and affiliation system. The development of the soothing and affiliation system can be linked to attachment theory (Bowlby, 1980). In brief, when infants are able to seek proximity and emotional support from their parent/caregiver when perceiving a threat, they learn to access and develop the soothing and affiliation system. Thus, secure attachment is associated with a sense of safeness.

Each of the three affect regulation systems can be linked to different social mentalities. For example, a competing social mentality activates the threat and drive system, whereas a care-giving social mentality activates the soothing and affiliation system. According to Gilbert (2009, 2014), well-being is possible when the three emotion systems are balanced. In CFT, emphasis lies on strengthening the soothing and affiliation system, with the goal of restoring the balance between the three affect regulation systems. Currently, there is very little empirical evidence supporting the distinction in the aforementioned three emotion systems. Gilbert et al. (2008) found that positive affect can be classified into activated, relaxed and safe/content positive affect, thereby supporting the idea of at least two positive affect regulation systems.

Core processes in Compassion Focused Therapy

According to Gilbert (2014), CFT comprises five steps which are not necessarily linear. The first step focuses on psycho-education on the human mind, specifically regarding the three emotion systems. This helps participants recognise that their symptoms, thoughts or feelings are not so much their fault but rather emerge from automatic safety strategies, thereby

reducing shaming and blaming. In the second step, participants gain insight into the functions and origins of their automatic safety strategies. This process brings to light how early life experiences and memories sensitised one's threat protection system, leading to maladaptive styles of self-to-self relating. Step three is aimed at cultivating attributes and building skills underlying compassion. Participants learn to activate their affiliative/soothing system, by using a range of therapeutic techniques including mindfulness, compassionate imagery, expressive writing and rhythm soothing breathing. In the fourth step, participants use the compassionate attributes and skills to construct the identity of a compassionate self. In the final step, participants come to use their new compassionate self to engage with and address specific symptoms, such as self-criticism, shame or depressive symptoms.

The aforementioned steps reveal a core process in CFT, namely replacing maladaptive forms of self-to-self relating, specifically self-criticism, with reassuring ones. To measure (changes in) processes of self-to-self-relating, Gilbert et al. (2004) developed the Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS). The FSCRS measures two forms of maladaptive self-to-self relating: self-criticism induced by the desire to correct or improve certain aspects of the self, coined *inadequate self*, and self-criticism arising from the desire to hurt, persecute and attack the self, coined *hated self*. Self-reassurance, the ability to reassure oneself in the face of setbacks, is measured as adaptive form of self-to-self-relating. Multiple studies have provided support for the validity and reliability of the FSCRS in both clinical and non-clinical populations (Baião, Gilbert, McEwan, & Carvalho, 2015; Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2004; Kupeli, Chilcot, Schmidt, Campbell, & Troop, 2013). Apart from theoretical speculations about change processes in CFT, such as altering processes of self-to-self relating, unfortunately very limited empirical evidence is available at present.

Compassion Focused Therapy as a means to promote mental health

Central to CFT is the cultivation of compassion (Gilbert, 2009, 2014). Increasing empirical evidence suggests that compassion can indeed be trained through CFT (Kirby, 2017; Leaviss & Uttley, 2015). Simultaneously, there has been a surge of empirical work corroborating the link between compassion and mental health. Compassion has been found negatively associated with various forms of psychopathology including depression and anxiety (Barnard & Curry, 2011; Ehret, Joormann, & Berking, 2015; MacBeth & Gumley, 2012; Muris & Petrocchi, 2016), as well as with underlying transdiagnostic risk factors such as self-criticism, shame, guilt, rumination and cognitive and behavioural avoidance (Johnson & O'Brien, 2013; Krieger, Altenstein, Baettig, Doerig, & Holtforth, 2013; Svendsen et al., 2016; Thew, Gregory, Roberts, & Rimes, 2017; Woods & Proeve, 2014).

With regard to the relationship between compassion and mental health, the reverse is also true. There is mounting evidence, mostly cross-sectional, that people who adopt a compassionate mindset possess more positive psychological resources, such as positive affect, optimism, and resilience (Barnard & Curry, 2011; Engen & Singer, 2015; Neff, Rude, & Kirkpatrick, 2007; Neff & Vonk, 2009; Trompetter, de Kleine, & Bohlmeijer, 2016). Consistently, a meta-analysis by Zessin, Dickhäuser, and Garbade (2015) revealed that self-compassion is significantly and positively associated with emotional, cognitive and psychological well-being. Though less well-documented, research has also shown a link between compassion and social well-being. In student and community samples, compassion was found positively correlated with a sense of social connectedness and positive romantic and social relationships (Barnard & Curry, 2011; Neff & Beretvas, 2013; Yarnell & Neff, 2013).

From the above, it becomes apparent that CFT may target both distress and well-being, hence impact the whole spectrum of mental health. Over the years, some empirical support has been gathered for the putative effects of CFT on mental health, which is presented hereafter.

Evaluation of Compassion Focused Therapy

CFT is a rapidly emerging form of psychotherapy which was originally designed to alleviate high levels of shame and self-criticism in clinical populations with chronic and complex mental health problems (Gilbert & Irons, 2004). Accordingly, a number of studies have confirmed the utility of CFT (exercises) in reducing levels of self-criticism and shame (Cuppage, Baird, Gibson, Booth, & Hevey, 2018; Gilbert & Procter, 2006; Matos et al., 2017). Especially since the past decade, studies investigating the effectiveness of CFT are proliferating (Kirby, 2017; Kirby et al., 2017; Leaviss & Uttley, 2015). CFT has been tested in group-based formats (Arimitsu, 2016; Braehler et al., 2013; Cuppage et al., 2018) as well as in individual (self-help) formats (Kelly & Carter, 2015; Kelly et al., 2010; Matos et al., 2017; Shapira & Mongrain, 2010) in a range of clinical samples (e.g., schizophrenia-spectrum disorder, binge eating disorder) and non-clinical samples. These studies yielded beneficial effects of CFT on predominantly distress-oriented mental health outcomes including depression, stress and negative affect.

Despite that well-being is considered an important intended outcome of CFT, currently, like in many fields of psychotherapy, the main focus in research on CFT is on the 'negative side' of mental health and well-being research remains underexposed. A handful of randomised controlled trials have found that CFT elicits positive effects on emotional well-being (Arimitsu, 2016; Kelly & Carter, 2015; Kelly et al., 2010). Considering that CFT is a quickly expanding field, it seems a worthwhile endeavour to further establish its effectiveness, especially in terms of improving well-being.

A plea for the use of Compassion Focused Therapy to promote well-being

The notion that distress and well-being are related but independent constructs is increasingly confirmed (Huppert & Whittington, 2003; Keyes, 2005; Lamers et al., 2015). Along with this insight, after a long tradition of merely distress-oriented therapies, well-being receives increasing interest from scientists and practitioners (Magyary, 2002; Slade, 2010). Well-being entails an emotional, psychological and social dimension. *Emotional well-being* relates to the experience of positive emotions and satisfaction with one's life (Diener & Ryan, 2009). *Psychological well-being* relates to competences such as autonomy and self-acceptance which enable individuals to lead a meaningful life (Ryff, 2013). *Social well-being* relates to individuals' functioning in community and social lives (Keyes, 1998).

As evidenced by previous studies, well-being buffers against the onset, maintenance and recurrence of mental disorders (Keyes, Dhingra, & Simoes, 2010; Schotanus-Dijkstra, Ten Have, Lamers, de Graaf, & Bohlmeijer, 2017; Wood & Joseph, 2010), reduces the risk of suicidal behaviour (Keyes et al., 2012), and facilitates recovery from somatic illnesses and longevity (R. T. Howell, Kern, & Lyubomirsky, 2007; Lamers, Bolier, Westerhof, Smit, & Bohlmeijer, 2012; Ryff, 2013). Not only individuals, but also communities and society as a whole may benefit from efforts to enhance well-being. Individuals with higher levels of well-being (among others) tend to be more productive in the workplace and use less healthcare (K. H. Howell et al., 2016).

With growing evidence for the profound and enduring benefits of well-being on both an individual and societal level, the pursuit of well-being has been pointed at as a major goal in public mental health care – complementary to the treatment of psychopathology – and people with low levels of well-being have been identified as an important target population (Fledderus, Bohlmeijer, Smit, & Westerhof, 2010; Forsman et al., 2015; Huppert, 2009a, 2009b; Keyes, 2007; Schotanus-Dijkstra et al., 2017).

Compassion Focused Therapy as population intervention approach

A growing number of studies underscore that, to effectively promote public mental health, fostering (resources for) well-being is equally important as reducing (risks for) psychopathology (Slade, 2010). To even more effectively promote public mental health, Huppert (2004, 2009a) stressed that interventions should not be merely aimed at those with (or at risk for developing) a diagnosable mental disorder but rather at the general population. Such universal intervention approaches, as opposed to individual or targeted intervention approaches, are expected to shift the whole population toward better mental health.

Looking at its inherent therapeutic processes, CFT is ideally suited to simultaneously relieve psychological distress and improve well-being, and thus lends itself well to a general population intervention approach. Nonetheless, the majority of studies investigating the effectiveness of CFT employed an individual approach aimed at high-risk populations (e.g., Braehler et al., 2013; Cuppage et al., 2018; Gilbert & Procter, 2006). Broadening the reach of CFT from an individual-level toward a population-level approach may require delivery formats other than the conventional ones, for instance self-help. Offering CFT as self-help, either online or offline, may enable practitioners in the field to increase its accessibility and scalability against limited costs (Chamberlain, Heaps, & Robert, 2008; Cuijpers & Schuurmans, 2007).

Two previous trials have tested the effectiveness of CFT as self-help using a general population approach. In a Canadian general population sample, Shapira and Mongrain (2010) showed that practising an online self-help compassionate letter writing exercise on a daily basis for one week is effective in alleviating depressive symptoms up to three months after the intervention and improving emotional well-being up to six months, compared to writing about early memories. Additionally, in a Portuguese community sample, Matos et al. (2017) found that a two-week Compassionate Mind Training self-help program was effective in cultivating compassion and positive emotions and in reducing shame, self-criticism and stress over a two-week period relative to a waitlist control condition. Unfortunately, these studies are constrained by a number of methodological limitations, such as the use of a single exercise, a brief intervention period and/or a lack of follow-up data. Here lies a major opportunity for the field of CFT.

Outline of this thesis

Although research on compassion is a flourishing field, as yet there are still many theoretical and empirical knowledge gaps to bridge. This thesis aims to contribute towards closing some of these gaps in knowledge. The thesis' starting point is a meta-analytic review of findings of studies on the effectiveness of online-delivered mindfulness-based (self-help) interventions in terms of well-being and psychological distress. Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT) and Acceptance and Commitment Therapy (ACT) are at the core of Chapter II. These mindfulness-based interventions have been subjected to scientific scrutiny over at least three decades and are deemed precursors to compassion-based interventions like Compassion Focused Therapy (CFT). Evidence for the effectiveness of online mindfulness-based interventions may yield insight into the potential effectiveness of online CFT.

For CFT, exploring online formats may also be of interest in the light of enhancing its accessibility and scalability, but, at this point, the field is thought to benefit most from replication of the effectiveness of CFT, preferably in methodologically sound trials with comparison groups and long-term follow-up data, as well as identification of its working mechanisms. Hence, the remaining chapters are centered around a large-scale randomised controlled trial (RCT) conducted 'in real life' so as to test whether CFT offered as bibliotherapy intervention with email guidance is effective in improving mental health in the general Dutch population as compared to a waitlist control condition. The RCT data have been used for a number of studies, each with another objective.

The overarching question of Chapters III and IV is whether CFT as guided self-help has the potential to promote mental health, and, if so, what are the pathways to effectiveness. The outcomes and mediators under investigation as well as their presumed interrelations are visualised in Figure 2.

The main findings of the trial, that is, the effects of the CFT self-help intervention on well-being (primary outcome) and psychological distress as compared to the waitlist condition, are presented in Chapter III. In this chapter, also potential moderators of the intervention effects on well-being are explored as well as the added value of the email guidance. Chapter IV builds further upon the findings as described in the third chapter and focuses on the mechanisms through which the intervention brought about improvements in well-being and depressive and anxiety symptoms.

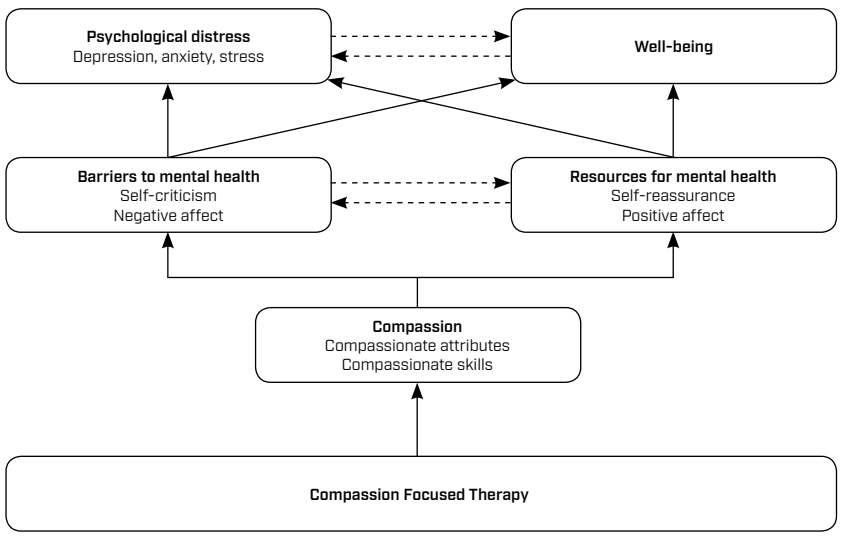

Figure 2. Theoretical framework (based on E. T. Bohlmeijer, 2018)

To support, promote and further advance research on change processes in CFT, it is crucial to gain a better understanding of key processes underlying compassion as well as to have suitable, and preferably brief, instruments to measure such processes. These are the central aims of chapter V and VI, respectively. Chapter V presents a mixed-methods study aimed at deepening our understanding of the psychological construct of compassion. Using the emails sent by CFT participants to their counsellors during the intervention, major attributes and skills underlying compassion were identified. Moreover, a comparison was made between participants who showed clinically relevant improvement on well-being and participants who did not, thereby providing insight into which compassionate attributes and skills matter most in the context of enhancing well-being.

Following up on the finding in Chapter IV that the beneficial effects of CFT can be partly attributed to changes in processes of self-to-self-relating, specifically self-reassurance and self-criticism, a short form of a self-report questionnaire commonly used for measuring self-reassurance and self-criticism, i.e., the Forms of Self-Criticising/Attacking and Reassuring Scale–Short Form, was developed and psychometrically tested in Chapter VI. The short form was developed using data from an adult community sample, while its reliability and validity were examined using baseline data of the RCT.

This thesis ends with Chapter VII which provides a summary and general discussion of the key findings of Chapters II to VI. Also, recommendations for future research are formulated and implications for public mental health practice are discussed.

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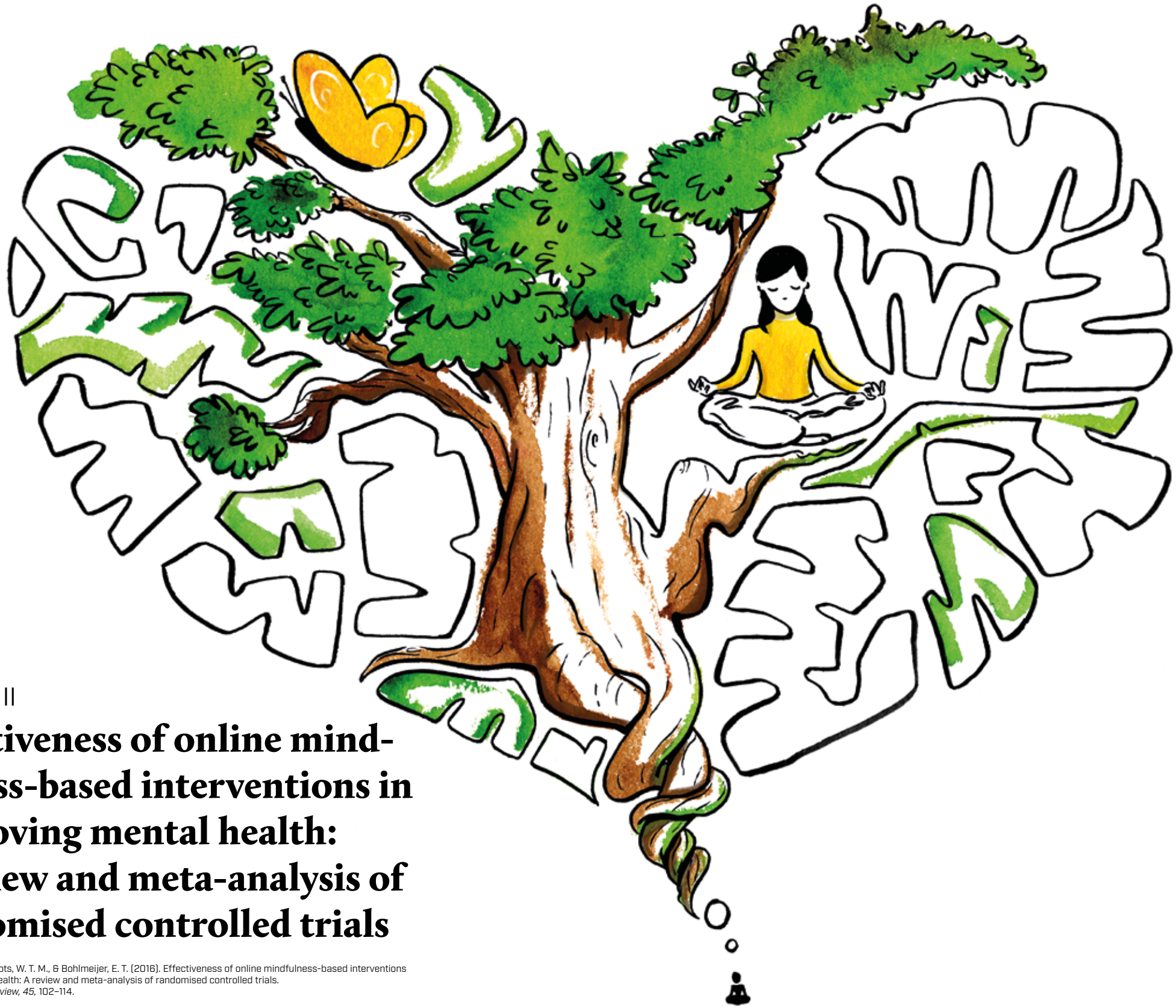

Chapter II

Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials

Spijkerman, M. P. J., Pots, W. T. M., & Bohlmeijer, E. T. (2016). Effectiveness of online mindfulness-based interventions in improving mental health: A review and meta-analysis of randomised controlled trials. *Clinical Psychology Review, 45,* 102–114.

Abstract

Mindfulness-based interventions (MBIs) are increasingly being delivered through the Internet. Whereas numerous meta-analyses have investigated the effectiveness of face-to-face MBIs in the context of mental health and well-being, thus far a quantitative synthesis of the effectiveness of online MBIs is lacking. The aim of this meta-analysis was to estimate the overall effects of online MBIs on mental health. Fifteen randomised controlled trials were included in this study. A random effects model was used to compute pre-post between-group effect sizes, and the study quality of each of the included trials was rated. Results showed that online MBIs have a small but significant beneficial impact on depression (g = 0.29), anxiety (g = 0.22), well-being (g = 0.23) and mindfulness (g = 0.32). The largest effect was found for stress, with a moderate effect size (g = 0.51). For stress and mindfulness, exploratory subgroup analyses demonstrated significantly higher effect sizes for guided online MBIs than for unguided online MBIs. In addition, meta-regression analysis showed that effect sizes for stress were significantly moderated by the number of intervention sessions. Effect sizes, however, were not significantly related to study quality. The findings indicate that online MBIs have potential to contribute to improving mental health outcomes, particularly stress. Limitations, directions for future research and practical implications are discussed.

Introduction

Although mindfulness has been employed for centuries within Buddhist traditions, it is only since the 1970s that mindfulness has become a target of therapeutic intervention for common psychological problems such as stress, worry, anxiety and depression (Keng, Smoski, & Robins, 2011). Mindfulness could be defined as the ability to observe thoughts, bodily sensations or feelings in the present moment with an open and accepting orientation toward one's experiences (Bishop et al., 2004; Kabat-Zinn, 1990). Currently, mindfulness practices have been incorporated into various therapies in the field of mental health care, such as Mindfulness-Based Stress Reduction (MBSR; Kabat-Zinn, 1982, 1990), Mindfulness-Based Cognitive Therapy (MBCT; Segal, Williams, & Teasdale, 2002), Dialectical Behaviour Therapy (DBT; Linehan, 1993), and Acceptance and Commitment Therapy (ACT; Hayes, Strosahl, & Wilson, 1999). Through facilitating awareness and non-judgmental acceptance of moment-to-moment experiences, these mindfulness-based interventions (MBIs) are assumed to alleviate intense emotional states (Baer, 2003; Keng et al., 2011). Extensive descriptions of MBSR, MBCT, DBT and ACT as well as their underlying mechanisms of change can be found elsewhere (Baer, 2003; Bishop, 2002; Feigenbaum, 2007; Hayes, Luoma, Bond, Masuda, & Lillis, 2006; Metcalf & Dimidjian, 2014; Praissman, 2008; Ruiz, 2010).

In the past two decades, MBIs have become increasingly popular (Baer, 2003; Keng et al., 2011). Along with this growing interest in MBIs, there has been an exponential increase in the number of studies addressing the non-clinical and clinical utility of these interventions. As evidenced by a substantial number of meta-analyses, MBIs have proven effective in reducing psychological distress, most notably anxiety and depression, and improving well-being and quality of life in a broad range of populations, including healthy populations (Chiesa & Serretti, 2009; Khoury, Sharma, Rush, & Fournier, 2015), individuals with mental disorders (Chiesa & Serretti, 2011; Klainin-Yobas, Cho, & Creedy, 2012; McCarney, Schulz, & Grey, 2012; Piet & Hougaard, 2011; Strauss, Cavanagh, Oliver, & Pettman, 2014; Vøllestad, Nielsen, & Nielsen, 2012) and individuals suffering from chronic somatic illnesses (Abbott et al., 2014; Bohlmeijer, Prenger, Taal, & Cuijpers, 2010; Cramer, Lauche, Paul, & Dobos, 2012; Lauche, Cramer, Dobos, Langhorst, & Schmidt, 2013; Ledesma & Kumano, 2009; Piet, Wurtzen, & Zachariae, 2012; Veehof, Oskam, Schreurs, & Bohlmeijer, 2011; Zainal, Booth, & Huppert, 2013).

Previous meta-analyses have reported inconsistent findings with regard to the effects of MBIs on depression and anxiety, with effect sizes varying between 0.3 and 0.8 (Abbott et al., 2014; Bohlmeijer et al., 2010; Cavanagh, Strauss, Forder, & Jones, 2014; Cramer et al., 2012; Hofmann, Sawyer, Witt, & Oh, 2010; Khoury et al., 2015; Klainin-Yobas et al., 2012; McCarney et al., 2012; Piet et al., 2012; Strauss et al., 2014; Veehof et al., 2011; Vøllestad et al., 2012; Zainal et al., 2013). There are also multiple meta-analyses which have assessed the im-

pact of MBIs on stress with effect sizes ranging from 0.4 to 0.7 (Abbott et al., 2014; De Vibe, Bjørndal, Tipton, Hammerstrøm, & Kowalski, 2012; Khoury et al., 2015; Zainal et al., 2013). Effects on mindfulness, as found in several earlier meta-analyses are more consistent and in the moderate range, between approximately 0.4 and 0.5 (Cavanagh et al., 2014; Khoury et al., 2015; Piet et al., 2012; Visted, Vøllestad, Nielsen, & Nielsen, 2014). More recently, Gotink et al. (2015) synthesized the results of meta-analyses that investigated the effectiveness of MBSR and MBCT as compared to waitlist controls and treatment as usual in different populations. They found an effect size of 0.37, 0.49, 0.51 and 0.39 for depression, anxiety, stress and quality of life, respectively.

Not surprisingly, given the rapid development of information technologies, MBIs – like other psychotherapeutic interventions – are increasingly being delivered through the Internet. Online interventions have a number of advantages over face-to-face interventions. Online interventions: (1) are easily accessible, without long waiting lists; (2) available 24/7 to people in their own environment, saving traveling time and enabling people to work at their own pace; (3) permit users to remain anonymous without needing to adopt a patient role; (4) do not necessarily require involvement of a therapist educated in mindfulness; and (5) are less costly (Andersson & Titov, 2014; Cuijpers et al., 2009). Moreover, a cross-sectional survey among 500 adults in the United States showed that many people prefer individual and online formats for mindfulness meditation interventions above group formats (Wahbeh, Svalina, & Oken, 2014). The internet was found to be the first choice format for 42% of the participants, suggesting that, for many individuals, online MBIs may be an acceptable alternative to face-to-face formats.

While multiple randomised controlled trials (RCTs) have provided empirical evidence for the effectiveness of online MBIs in the context of mental health and well-being (e.g., Boettcher et al., 2014; Buhrman et al., 2013; Dowd et al., 2015; Ly et al., 2014; Pots et al., 2016; Trompetter, Bohlmeijer, Veehof, & Schreurs, 2014; Zernicke et al., 2014), to our knowledge, no published meta-analyses have examined the specific effects of online-delivered MBIs on mental health outcomes. However, two published meta-analyses investigating the effects of MBIs did include studies that employed online interventions. The first investigated the impact of self-help interventions, including components of mindfulness, on mindfulness/acceptance, depression and anxiety (Cavanagh et al., 2014). Cavanagh et al. (2014) found that self-help interventions that included components of mindfulness had a beneficial impact on mindfulness/acceptance skills (g = 0.49), anxiety (g = −0.33) and depression (g = −0.37) compared to control conditions. Although the meta-analysis conducted by Cavanagh et al. (2014) included eight (out of fifteen) studies that used an online intervention (of which four were multi-component interventions), their findings were inconclusive regarding the effectiveness of online-delivered MBIs. The second meta-analysis conducted by Öst (2014) evaluated the effectiveness of ACT across various psychiatric and somatic disorders. This study, however, only used the primary outcome measure, resulting in an overall effect size of g = 0.42 (Öst, 2014). In addition, only three of the sixty RCTs included in the study exclusively used online intervention. Finally, the meta-analysis of Öst (2014) did not examine the separate effects of ACT on depression, anxiety, stress or well-being nor the specific effects of online MBIs.

Since the publication of these two meta-analyses, both of which included data collected up until November 2013, a number of RCTs investigating the effectiveness of online MBIs have appeared in the scientific literature (e.g., Dowd et al., 2015; Pots et al., 2016; Trompetter et al., 2014; Zernicke et al., 2014). Based on the fact that most studies investigating the effects of online MBIs have been published in the last three years, and that interventions delivered through the Internet, in general, receive considerable attention nowadays (Barak, Klein, & Proudfoot, 2009), we anticipate a further rise in the number of online-delivered MBIs in the upcoming years. Hence, we consider it timely and important to meta-analytically test the effectiveness of online MBIs in terms of mental health outcomes. Accordingly, the primary aim of this explorative meta-analysis was to estimate the overall effect of online MBIs on depression, anxiety, stress and well-being, in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). MBSR, MBCT and ACT are the most frequently studied online MBIs and also the focus of this article. Since MBIs are based on the premise that enhancing mindfulness skills will contribute to better mental health outcomes, our secondary aim was to explore the effects of online MBIs on mindfulness.

Methods

This study was conducted in accordance with the PRISMA statement for reporting systematic reviews and meta-analyses of studies that evaluate health care interventions (Moher et al., 2009).

Search strategy

A systematic literature search was conducted in three electronic databases: PsycINFO, PubMed and Web of Science. Each database was initially searched for English language journal articles from the first available date until 27 November 2014, using the following search terms: (*mindful** or *acceptance* or *meditation*) and (*intervention** or *therap** or *treatment** or *program**) and (*online* or *e-health* or *Internet** or *web** or *computer* or *app* or *apps*) and (*random** or *trial* or *RCT* or *control**). In PsycINFO and PubMed, MesH terms and thesaurus terms were added, respectively (see the Appendix for the full search strings). During the preparation of the meta-analysis, the search was repeated three times to identify newly

published trials. The last search was conducted on 23 March 2015.

In addition, three clinical trial registers (www.clinicaltrialsregister.eu, www.isrctn.com, and www.clinicaltrials.gov) were searched on 26 February 2015, to detect completed trials that had not yet been published (see the Appendix for the full search strings). We contacted six authors of potentially relevant records of which one author responded.

Selection of studies

After the removal of duplicates, the remaining titles were reviewed, and then the abstracts of the potentially relevant articles were screened. Finally, the full-texts of the selected articles were obtained and assessed for eligibility. The screening of titles, abstracts and full-text articles, respectively, was independently conducted by two authors (MS, WP). Disagreements between the authors were discussed until consensus was reached. If any disagreement persisted, the last author (EB) was consulted. Due to the explorative nature of this meta-analysis, we opted for rather broad inclusion criteria. We included studies that: (1) employed MBIs (including MBSR, MBCT and ACT) either with or without guidance; (2) administered the MBI via the Internet or a computer application (including virtual classrooms); (3) used validated outcome measures to examine the effects of the intervention on depression, anxiety, stress or well-being; (4) administered the intervention to a population 18 years and older; (5) used a control condition whether inactive or active; and (6) used a randomised controlled design. Exclusion criteria were: (1) The intervention was merely a psycho-educational program and did not involve exercises for enhancing mindfulness or acceptance. (2) The intervention combined an MBI and other forms of therapy (e.g., cognitive behavioural therapy), making it difficult to disentangle the effects of the MBI from the other included therapies. (3) The article did not provide sufficient data to calculate pre-post effect sizes per condition and the author was unable to provide this necessary data. Five authors were contacted, all of whom provided additional data on request.

Data extraction and quality assessment

Data extraction was undertaken by the first author (MS) and checked by the second author (WP). Disagreements were resolved by discussion. For each included study, the following data were extracted: first author; country and year of publication; population characteristics, including type of sample, age, sex (% female) and number of participants per condition; intervention characteristics, including type of intervention (e.g., MBSR, MBCT, ACT), guidance (with/without), delivery mode (e.g., website), number of sessions and duration in weeks; control group (e.g., waitlist); assessment times (i.e., pre, post, follow-up); and outcome measures for depression, anxiety, stress, well-being and mindfulness.

The methodological quality of each study was independently assessed by two authors (MS, WP), who used seven criteria based on the Jadad scale (Jadad et al., 1996) and the Cochrane Collaboration's tool for assessing risk of bias (Higgins, Altman, & Sterne, 2011). The following criteria were applied: (1) adequate sequence generation and allocation concealment; (2) blinding of main outcome assessments, that is, outcome measures were administered online or by an independent person who was not involved in the study (Blinding of participants was not possible in most cases.); (3) reasons for drop-out and withdrawal were described; (4) handling of missing data, that is, intention-to-treat analyses were conducted, in which all randomised participants were included, or there were no drop-outs; (5) the sample size was based on an adequate power analysis; (6) study groups were similar with regard to prognostic indicators at baseline and this was explicitly assessed, or adjustments were made to correct for baseline imbalance; and (7) diagnostic assessment of the primary outcome was conducted by a professional (not by self-reporting or screening), or there were no diagnostic assessments necessary for the recruitment (e.g., students). One point was assigned for each criterion that was met, with a maximum score of 7. Disagreements between the two authors who assessed the quality of the studies were resolved by discussion. The quality of a study was assessed as *high* when all seven criteria were met, *medium* when five or six criteria were met, and *low* when four or less criteria were met.

Twelve authors were contacted because insufficient information was provided in the article with regard to the data extraction and/or to make an accurate quality assessment. Consequently, ten authors provided supplementary information.

Calculation of effect sizes

For each comparison between an online MBI and a control group, effect sizes were calculated per outcome variable, i.e., depression, anxiety, stress and well-being. For well-being, we also used instruments related to well-being such as life satisfaction (e.g., SWLS, QOLI). If more than one instrument was used to measure depression, anxiety, stress or well-being, we used the most valid instrument, so that each study outcome had one effect size. One study (Cavanagh et al., 2013) used the PHQ-4 to measure depression and anxiety. Since this questionnaire does not allow to calculate separate scores for depression and anxiety, we excluded this questionnaire. Additionally, we calculated effect sizes for mindfulness measures whenever possible.

Two studies investigated the effectiveness of two different online MBIs compared to the same control group (Mak, Chan, Cheung, Lin, & Ngai, 2015; Morledge et al., 2013). In these cases, we calculated an effect size for both comparisons. On the other hand, for the three studies that included two control groups and one experimental group (Pots et al., 2016; Trompetter et al., 2014; Wolever et al., 2012), we used only one control group to calculate an effect size. For these studies, we chose the inactive control condition (i.e., waitlist or no intervention) as this was the most common comparison group across all the studies. The number of studies using an active control condition (Pots et al., 2016; Trompetter et al.,

2014) was too small to allow for subgroup analyses based on the type of control group (i.e., inactive versus active).

For each comparison, Hedges' *g*, i.e., Cohen's *d* corrected for small sample bias, was calculated per relevant outcome measure, using means and standard deviations. First, we calculated standardised pre-post effect sizes, using the formula $d = (M_1 - M_0) / SD_0$, where M_1 and M_0 are the Means at post- and pre-test, respectively, and SD_0 is the pre-test standard deviation. Since we were interested in obtaining the effect size of the experimental effect minus the effect in the control group, we calculated *d* per condition, i.e., for the experimental condition (d_E) and the control condition (d_C). These *d*s represent how many standard deviations difference there is between the means of the pre- and the post-test of the respective condition. Subsequently, we calculated the difference between d_E and d_C, $\Delta(d)$, which shows us with how many standard deviations the experimental condition changed more compared to the control condition. Finally, using the software program Comprehensive Meta Analysis (CMA) version 2.2.064, $\Delta(d)$ was corrected for small sample bias, indicated as Hedges' *g*. Values of *g* can be interpreted in a similar manner as values of *d*. Using a second-order meta-analysis, Lipsey and Wilson (1993) have shown that an effect size from 0.00 to 0.32 can be considered a small effect, 0.33 to 0.55 a moderate effect and 0.56 to 1.20 a large effect. Because there was too much variability in follow-up periods, we did not calculate effect sizes of the change between pre-test and (longer-term) follow-up.

Meta-analytic procedures

All meta-analytic analyses were conducted with CMA version 2.2.064. Due to the diversity in intervention and population characteristics (see Table 1) and the rather broad inclusion criteria, we expected considerable variability in effect sizes and levels of heterogeneity. Consequently, it was decided a priori to use the random effects model. The random effects model is based on the assumption that the effect size may differ between studies not only due to random error within studies, but also as a result of true variation in effect sizes between studies (Hedges & Vevea, 1998).

Five separate meta-analyses were performed for (1) depression, (2) anxiety, (3) stress, (4) well-being, and (5) mindfulness. Forest plots of pre-post between-group effect sizes were produced for each outcome variable, both with and without outliers. A study was considered an outlier when its 95% confidence interval (CI) was outside the 95% CI of the overall mean effect size (on both sides). Outliers were identified through visual inspection of the forest plots. Subsequently, the analyses were repeated, but only with medium and high quality studies (including outliers).

Heterogeneity of effect sizes was examined using *Q* and I^2 statistics. A significant *Q* statistic ($p \leq 0.05$) indicated significant heterogeneity, i.e., the presence of one or more variables that moderated the observed effect size. The I^2 statistic was used to estimate the percentage of heterogeneity across the primary studies not attributable to random sample error alone. A value of 0% indicated no heterogeneity. Values of 25%, 50% and 75% reflected low, moderate and high degrees of heterogeneity, respectively (Higgins & Thompson, 2002).

Pre-specified exploratory subgroup analyses were performed (including outliers) to examine differences in effect sizes based on: (1) intervention type: mindfulness or ACT; (2) therapist guidance: with or without; and (3) population: healthy, psychological symptoms, or physical symptoms. The moderating effects of the study quality and number of intervention sessions on effect sizes were assessed using meta-regression analyses, according to the mixed effects model.

Publication bias was assessed in three ways. First, a funnel plot was created by plotting the overall mean effect size against study size. Whereas a symmetric distribution of studies around the effect size indicates the absence of publication bias, a higher concentration of studies on one side of the effect size than on the other indicates publication bias (Sterne, Egger, & Moher, 2008). Second, a fail-safe *N*, a formal test of funnel plot asymmetry, was calculated for each analysis. The fail-safe *N* indicates the number of unpublished non-significant studies that would be required to lower the overall effect size below significance (Egger, Davey Smith, Schneider, & Minder, 1997). The findings were considered robust if the fail-safe $N \geq 5n + 10$, where *n* is the number of comparisons (Rosenberg, 2005). Third, Duval and Tweedie's (2000) trim-and-fill procedure was applied. This procedure imputes the effect sizes of missing studies and produces an adjusted effect size accounting for these missing studies (Duval & Tweedie, 2000).

Results

Selection of studies

A flow diagram of the study selection process is presented in Figure 1. The electronic database searches produced 805 records after removal of duplicates. After reviewing the titles, we identified 150 potentially eligible records. Based on the abstracts, 34 of these 150 articles were selected for further examination. Full-text versions of these articles were obtained and assessed for eligibility. This led to the inclusion of 15 RCTs, totalling 17 comparisons of an online MBI with a control group (in two trials, two comparisons are made using a single control group). Additionally, 176 records were identified through searching trial registers, of which seven were assessed as potentially relevant. No unpublished data were made available.

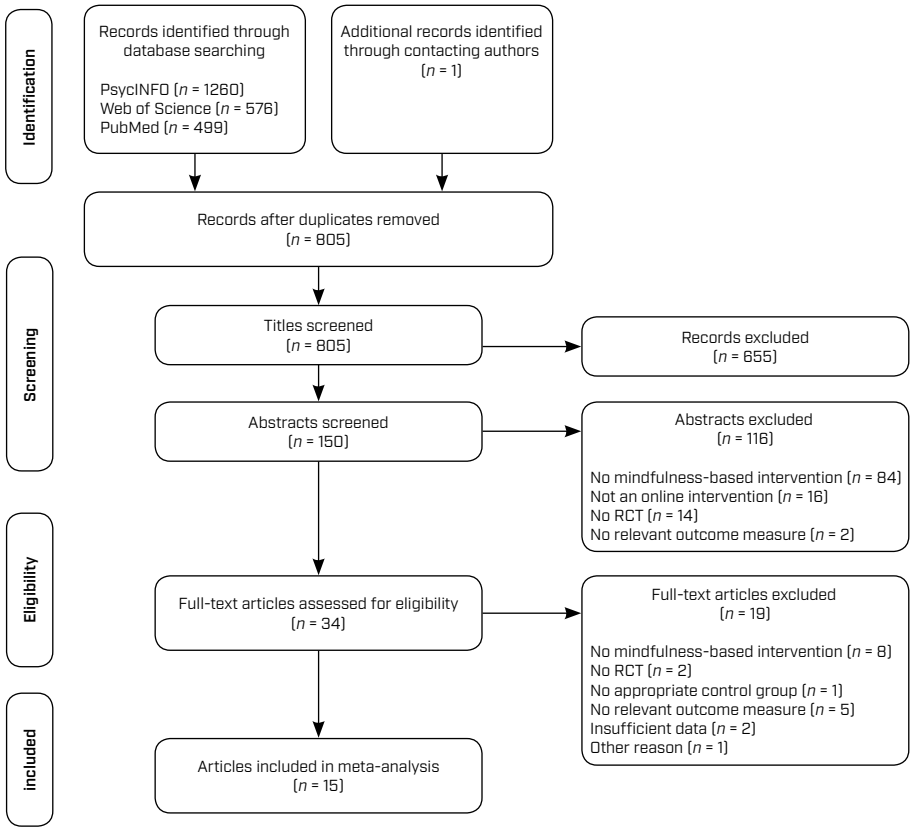

Figure 1. Flowchart of the study selection process

Description of included studies

Four studies were conducted in the United States, four in Sweden, two in The Netherlands, and one each in the United Kingdom, Ireland, Austria/Switzerland, China, and Canada. Characteristics of the included trials are presented in Table 1.

Population characteristics

The total population comprised 2360 participants of which 1211 participants were in the experimental conditions and 1149 in the control conditions (913 when excluding the control conditions not included in the meta-analysis). In all but one study (Hesser et al., 2012), the majority of the sample was female. All participants were adults, with a mean age ranging from 18 to 58 years. The total sample size ranged from 49 in a pilot study (Glück & Maercker, 2011) to 551 in a large-scale trial (Morledge et al., 2013). Five of the 15 studies were conducted in a population with a somatic illness, including chronic pain (n = 3), tinnitus (n = 1) and cancer recovery patients (n = 1). In three studies, participants were characterized by psychological illnesses, i.e., anxiety (n = 1) or depression (n = 2). Non-clinical populations, such as students or employees, were used in the remaining seven studies.

Intervention characteristics

Eight of the 17 comparisons examined MBSR, two MBCT and five ACT. The 10 comparisons examining MBSR or MBCT used modified protocols instead of pure MBSR or MBCT, in the sense that the intervention: (1) comprised more or less than eight sessions, (2) used shortened exercises, (3) was adapted to a specific target population (e.g., cancer recovery patients) and/or (4) did not involve a retreat. Two comparisons used an Internet-based mindfulness treatment which could not be classified as MBSR or MBCT (Boettcher et al., 2014; Cavanagh et al., 2013). In nine comparisons, therapist guidance was offered during the intervention. In five of these comparisons, guidance consisted of individual coaching and feedback (e.g., answering questions, feedback on assignments, positive encouragement) delivered through email, an enclosed and encrypted webpage and/or telephone. In three comparisons, guidance was provided in the form of weekly 1- or 2-hour (online) classes (group-based), of which one study additionally provided (pre-programmed) individual email coaching and feedback. In one comparison, participants were reinforced through messages posted on an online message board. MBIs were most commonly delivered via a website (n = 14). Other delivery modes included a smartphone application (n = 1) and a virtual online classroom (n = 2). One comparison (Aikens et al., 2014) used a combination of a website and a virtual online classroom. Sessions were usually weekly, ranging from 2 to 12 sessions. The intervention duration varied from 2 to 12 weeks.

Adherence

Adherence to the intervention was addressed in ten studies, using various definitions of adherence (e.g., 100% of the sessions completed, ≥ 5 sessions completed, or 6 – 8 weeks). When adherence was defined as completion of all sessions, adherence rates varied between 39.5% and 92% (based on five studies).

Comparison group

Nine studies compared an online MBI to a waitlist control group, of which two studies (Pots et al., 2016; Trompetter et al., 2014) also included an active control group (i.e., expressive writing). In five studies, the control group received access to an online discussion forum (n = 3), a psycho-educational program (n = 1), or a behavioural activation program (n = 1). In the remaining study, the control group received no intervention.

Table 1. Characteristics of studies included in the meta-analysis

First author (year)	Population, country	% F[a]	Mean age (range or *SD*)[b]	Intervention (*n*)	Guidance (with/ without)	Delivery mode	*n* sessions, duration in weeks	Control group (*n*)	Measurements[c]	Outcome measures				
										Depression	Anxiety	Stress	Well-being	Mindfulness
Aikens (2014)	Employees, US	50%	U (U)	MBSR (44)	With (G + I)	Website and virtual online classroom	7 sessions, 7 weeks	Waitlist (45)	Pre, post	-	-	PSS-14	-	FFMQ
Boettcher (2014)	Adults diagnosed with an anxiety disorder, Sweden	71.4	38 (22-65)	Internet-based Mindfulness Treatment (45)	Without	Website	8 sessions, 8 weeks	Online discussion forum (46)	Pre, post	BDI-II	BAI	-	QOLI	-
Buhrman (2013)	Chronic pain patients, Sweden	59.2	49 (27-69)	ACT (38)	With (I)	Website	7 sessions, 7 weeks	Online discussion forum (38)	Pre, post	HADS-D	HADS-A	-	QOLI	-
Cavanagh (2013)	Students, UK	88.5	25 (19-51)1	Internet-based Mindfulness Treatment (54)	Without	Website	U, 2 weeks	Waitlist (50)	Pre, post	-	-	PSS	-	FFMQ
Dowd (2015)	Adults with self-reported chronic pain, Ireland	90.3	45 (19-76)	MBCT (62)	Without	Website	12 sessions, 6 weeks	Psychoeducation (62)	Pre, post, 7.5-month FU	HADS-D	HADS-A	-	SWLS	MAAS
Glück (2011)	Students, employees, Austria/ Switzerland	73.5	35 (20-73)	MBSR (28)	Without	Website	2 sessions, 2 weeks	Waitlist (21)	Pre, post, 3.5-month FU	-	-	PSQ	-	FMI

Table 1. Characteristics of studies included in the meta-analysis *(continued)*

First author (year)	Population, country	% F[a]	Mean age (range or *SD*)[b]	Intervention (*n*)	Guidance (with/ without)	Delivery mode	*n* sessions, duration in weeks	Control group (*n*)	Measurements[c]	Outcome measures				
										Depression	Anxiety	Stress	Well-being	Mindfulness
Hesser (2012)	Adults diagnosed with tinnitus, Sweden	43.4	49 (20-78)	ACT (35)	With (I)	Website	8 sessions, 8 weeks	Online discussion forum (32)	Pre, post, 1-year FU	HADS-D	HADS-A	PSS	QOLI	-
Levin (2014)	Students, US	53.9	18 (18-20)	ACT (37)	Without	Website	2 sessions, 3 weeks	Waitlist (39)	Pre, post	DASS-D	DASS-A	DASS-S	-	-
Ly (2014)	Adults with MDD	70.4	36 (20-61)	MBCT (41)	With (I)	Smartphone application	U, 8 weeks	BA treatment (40)	Pre, post, 6-month FU	BDI-II,	BAI	-	QOLI	-
Mak (2015)	Students, employees, China	66.3	23 (17-53)	MBSR (107)	Without	Website	8 sessions, 8 weeks	Waitlist (107)	Pre, post, 3-month FU	DASS-D	DASS-A	PSS	SWLS	FFMQ
				MBSR-HAPA (107)	Without	Website	8 sessions, 8 weeks							
Morledge (2013)	Healthy individuals, US	88.9	U	MBSR (184)	With (G)	Website	8 sessions, 8 weeks	Waitlist (184)	Pre, post, 12-week FU	-	-	PSS	-	MAAS
				MBSR (183)	Without	Website	8 sessions, 8 weeks							
Pots (2016)	Adults with mild to moderate depressive symptoms, the Netherlands	75.8	47 (20-73)	ACT (82)	With (I)	Website	9 sessions, 12 weeks	Waitlist (87) Expressive writing (67)	Pre, post, 6-month FU	CES-D	HADS-A	-	MHC-SF	FFMQ-SF

Table 1. Characteristics of studies included in the meta-analysis *(continued)*

First author (year)	Population, country	% F[a]	Mean age (range or *SD*)[b]	Intervention (*n*)	Guidance (with/without)	Delivery mode	*n* sessions, duration in weeks	Control group (*n*)	Measurements[c]	Outcome measures				
										Depression	Anxiety	Stress	Well-being	Mindfulness
Trompetter (2014)	Adults with chronic pain, the Netherlands	76.0	53 (20-84)	ACT (82)	With (I)	Website	9 sessions, 9-12 weeks	Waitlist (77) Expressive writing (79)	Pre, post, 6- and 12-month FU	HADS-D	HADS-A	-	MHC-SF	FFMQ-SF
Wolever (2012)	Employees, US	77.2	43 (U)	MBSR (52)	With (G)	Virtual online classroom	12 sessions, 12 weeks	No intervention (53) Yoga (90)	Pre, post	CES-D	-	PSS	-	CAMS-R
Zernicke (2014)	Cancer recovery patients, Canada	72.6	58 (29-79)	MBSR (30)	With (G)	Virtual online classroom	8 sessions, 8 weeks	Waitlist (32)	Pre, post	POMS-D	POMS-A	CSOSI	-	FFMQ

Note. ACT, Acceptance and Commitment Therapy; BA, Behavioural Activation; BAI, Beck Anxiety Inventory; BDI-II, Beck Depression Inventory–II; CAMS-R, Cognitive and Affective Mindfulness Scale–Revised; CDC, Centers for Disease Control Chronic Fatigue Syndrome Symptom Inventory; CES-D, Center for Epidemiological Studies Depression Scale; CFS, chronic fatigue syndrome; CSOSI, Calgary Symptoms of Stress Inventory; DASS-A, Depression Anxiety and Stress Scale–Anxiety subscale; DASS-D, Depression Anxiety and Stress Scale–Depression subscale; DASS-S, Depression Anxiety and Stress Scale–Stress subscale; F, female; FFMQ, Five Facets of Mindfulness Questionnaire; FFMQ-SF, Five Facet Mindfulness Questionnaire–Short Form; FMI, Freiburg Mindfulness Inventory; FU, follow-up; G, group-based; HADS-A, Hospital Anxiety and Depression Scale–Anxiety subscale; HADS-D, Hospital Anxiety and Depression Scale–Depression subscale; HAPA, health action process approach; I, individual; ITT, Intention-To-Treat; MAAS, Mindful Attention Awareness Scale; MBCT, Mindfulness-Based Cognitive Therapy; MBSR, Mindfulness-Based Stress Reduction; MDD, Major Depressive Disorder; MHC-SF, Mental Health Continuum-Short Form; PHQ-9-D, Patient Health Questionnaire-Depression Scale; POMS-A, Profile of Mood States–Anxiety Subscale; POMS-D, Profile of Mood States–Depression Subscale; PSS, Perceived Stress Scale; PSQ, Perceived Stress Questionnaire; PWB-SA, Psychological Well-Being Self–Acceptance scale; QoL, quality of life; QOLI, Quality of Life Inventory; SF-36, RAND 36-Item Short Form Health Survey; U, unknown; UK, United Kingdom; US, United States.

[a] % female of the total study population at baseline.

[b] Mean age (*SD* and/or range) of the total study population at baseline.

[c] We solely report measurements that were used in the meta-analysis. Follow-up times are since baseline.

Outcomes

Outcome measures were administered as follows: depression in 12 comparisons, anxiety in 11 comparisons, stress in 11 comparisons, well-being in 9 comparisons and mindfulness in 12 comparisons. All instruments had good psychometric properties. Eight studies reported follow-up data, with follow-up periods varying between 12 weeks and one year.

Quality of studies

The quality assessment scores ranged from 3 to 7 points (see Table 2). Most studies (n = 10) were of medium quality, three of low quality and two of high quality. All studies met the criteria of blinding and intention-to-treat analysis. Description of withdrawals/drop-outs (criterion 3) was the most poorly rated, with only three studies meeting this criterion.

Meta-analysis

The pre-post between-group effects for depression, anxiety, stress, well-being and mindfulness are presented in Table 3. Below, the results are discussed per outcome measure.

Effects on depression

For depression (12 comparisons), a significant, small effect was observed (g = 0.29, 95% CI: 0.13 to 0.46, p = .001). The level of heterogeneity was moderate (I^2 = 58.35). Two outliers were detected (Boettcher et al., 2014; Ly et al., 2014). After omitting these studies from the analysis, we found a similar effect, with g = 0.27 (95% CI: 0.16 to 0.39, $p \leq .001$), and heterogeneity reduced substantially (I^2 = 6.33). When only studies scored as medium or high quality were included in the analysis (including outliers), a similar significant effect size was observed (g = 0.28, 95% CI: 0.08 to 0.47, p = .005), with a substantial level of heterogeneity (I^2 = 65.29).

Effects on anxiety

Based on 11 comparisons, we found a significant, small effect of online MBIs on anxiety, with g = 0.22 (95% CI: 0.05 to 0.39, p = .010) and no outliers. The level of heterogeneity was moderate (I^2 = 56.98). After removal of low quality studies from the analysis, the effect size was virtually the same (g = 0.21, 95% CI: 0.03 to 0.40, p = .022), and heterogeneity remained substantial (I^2 = 60.58).

Table 2. Methodological quality of studies included in the meta-analysis

First author (year)	1. Adequate allocation sequence generation and allocation concealment	2. Blinding of main outcome assessments	3. Description of withdrawals/drop-outs	4. Intention-to-treat analysis is performed or there are no drop-outs	5. The sample size is based on an adequate power analysis.	6. The groups are similar on prognostic indicators at baseline (and this was explicitly assessed) or adjustments were made to correct for baseline imbalance (using appropriate covariates).	7. Diagnostic assessment was conducted by a professional, or there were no diagnostic assessments necessary for the recruitment	Score
Aikens (2014)	Yes	Yes	Yes	Yes	No	Yes	Yes	6
Boettcher (2014)	Yes	Yes	No	Yes	Unclear	Yes	Yes	5
Buhrman (2013)	Yes	Yes	No	Yes	Yes	No	No	4
Cavanagh (2013)	Yes	Yes	No	Yes	Unclear	Yes	Yes	5
Dowd (2015)	Yes	Yes	No	Yes	Yes	Yes	No	5
Glück (2011)	No	Yes	No	Yes	No	No	Yes	3
Hesser (2012)	Yes	Yes	No	Yes	Unclear	Yes	Yes	5
Levin (2014)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7
Ly (2014)	Yes	Yes	No	Yes	Unclear	Yes	Yes	5
Mak (2015)	Yes	Yes	No	Yes	Yes	No	Yes	5
Morledge (2013)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	7
Pots (2016)	Yes	Yes	No	Yes	Yes	Yes	Yes	6
Trompetter (2014)	Yes	Yes	No	Yes	Yes	Yes	No	5
Wolever (2012)	Yes	Yes	No	Yes	Unclear	Unclear	Yes	4
Zernicke (2014)	Yes	Yes	No	Yes	Yes	Yes	Yes	6

Table 3. Pre-post between-group effects

Outcome measures	N_{comp}	Hedge's *g*	95% CI	*Z*	Heterogeneity		Fail-safe *N*
					Q-value	I^2	
All studies (including outliers)							
Depression	12	0.29	0.13 to 0.46	3.44**	26.41**	58.35	76
Anxiety	11	0.22	0.05 to 0.39	2.58*	23.25*	56.98	33
Stress	11	0.51	0.26 to 0.75	4.07***	57.01***	82.46	225
Well-being	9	0.23	0.09 to 0.38	3.23**	11.92	32.86	28
Mindfulness	12	0.32	0.23 to 0.42	6.60***	12.53	12.23	145
All studies (excluding outliers)							
Depression	10	0.27	0.16 to 0.39	4.67***	9.61	6.33	56
Stress	10	0.39	0.21 to 0.57	4.20***	26.19**	65.63	125
Mindfulness	11	0.30	0.21 to 0.39	6.51***	6.62	0	101
Medium and high quality studies							
Depression	10	0.28	0.08 to 0.47	2.80**	25.93**	65.29	48
Anxiety	10	0.21	0.03 to 0.40	2.30*	22.83*	60.58	24
Stress	9	0.40	0.20 to 0.59	4.00***	26.15**	69.41	114
Well-being	8	0.25	0.10 to 0.40	3.29**	10.96**	36.16	29
Mindfulness	10	0.32	0.21 to 0.43	5.78***	12.26	26.60	114

Note. N_{comp}, number of comparisons; CI, confidence interval. *$p < .05$. **$p < .01$. ***$p < .001$.

Effects on stress

For stress (11 comparisons), a significant, moderate effect was found (g = 0.51, 95% CI: 0.26 to 0.75, $p \leq .001$). Heterogeneity was considerable (I^2 = 82.46), and one outlier was detected (Wolever et al., 2012). After removal of the outlier, the effect size dropped to g = 0.39 (95% CI: 0.21 to 0.57, $p \leq .001$), but still remained in the moderate range, and the level of heterogeneity remained high (I^2 = 65.63). Also when studies of low quality were omitted from the analysis, the effect size for stress was in the moderate range (g = 0.40, 95% CI: 0.20 to 0.59, $p \leq .001$), with substantial heterogeneity (I^2 = 69.41).

Effects on well-being

The overall mean effect size for 9 comparisons on well-being was g = 0.23 (95% CI: 0.09 to 0.38). This effect was statistically significant (p = .001) and can be considered a small effect. The level of heterogeneity was low to moderate (I^2 = 32.86), and no outliers were identified. After removal of low quality studies, the effect size for well-being slightly increased to g = 0.25 (95% CI: 0.10 to 0.40, p = .001), and heterogeneity was moderate (I^2 = 36.16).

Effects on mindfulness

For mindfulness, we were able to compare the effects of an online MBI to a control condition in 10 studies, totalling 12 comparisons. The findings revealed that online MBIs have a significant impact on mindfulness, with a small effect size of g = 0.32 (95% CI: 0.23 to 0.42, $p \leq .001$). Heterogeneity was low (I^2 = 12.23). One outlier was identified (Aikens et al., 2014). After removal of this outlier, the observed effect size was virtually the same (g = 0.30, 95% CI: 0.21 to 0.39, $p \leq .001$), with absence of heterogeneity (I^2 = 0). When we included only studies of medium or high quality in the analysis, we found the same effect size for mindfulness (g = 0.32, 95% CI: 0.21 to 0.43, $p \leq .001$). The level of heterogeneity was low with I^2 = 26.60.

Subgroup analyses

Exploratory subgroup analyses are presented in Table 4. For stress (Q = 20.12, df = 1, $p \leq .001$) and mindfulness (Q = 5.50, df = 1, p = .019), significantly higher effect sizes were found for online MBIs with therapist guidance than for online MBIs without therapist guidance, but effect sizes did not vary based on intervention type (i.e., mindfulness or ACT) or population (i.e., healthy, psychological symptoms or physical symptoms). For depression, anxiety and well-being, no significant differences between subgroups were found.

Table 4. Subgroup analyses (including outliers)

Outcome measure	Criterion	Subgroup	N_{comp}	Hedge's g	95% CI	I^2	Z
Depression	Intervention type	Mindfulness	7	0.21	0.01 to 0.42	68.44	2.01*
		ACT	5	0.40	0.15 to 0.66	0	3.10**
	Guidance	With	7	0.29	0.06 to 0.53	57.33	2.48*
		Without	5	0.29	0.03 to 0.55	66.12	2.18*
	Population	Healthy	4	0.21	-0.07 to 0.50	0	1.48
		Psychological symptoms	3	0.41	0.07 to 0.76	89.51	2.35*
		Physical symptoms	5	0.29	0.01 to 0.56	0	2.05*
Anxiety	Intervention type	Mindfulness	6	0.11	-0.10 to 0.31	60.55	1.01
		ACT	5	0.37	0.13 to 0.60	12.43	3.07**
	Guidance	With	6	0.26	0.02 to 0.50	50.47	2.09*
		Without	5	0.19	-0.06 to 0.43	65.73	1.46
	Population	Healthy	3	0.10	-0.19 to 0.39	0	0.69
		Psychological symptoms	3	0.41	0.09 to 0.72	81.11	2.52*
		Physical symptoms	5	0.19	-0.06 to 0.45	10.97	1.49
Stress	Intervention type	Mindfulness	9	0.54	0.27 to 0.82	85.18	3.86***
		ACT	2	0.34	0.28 to 0.96	61.22	1.08
	Guidance	With	5	0.89	0.65 to 1.12	75.96	7.41***
		Without	6	0.19	-0.01 to 0.38	0	1.88
	Population	Healthy	9	0.47	0.20 to 0.73	85.06	3.41**
		Psychological symptoms	0	-	-	-	-
		Physical symptoms	2	0.73	0.12 to 1.35	0	2.33*
Well-being	Intervention type	Mindfulness	5	0.28	0.09 to 0.48	36.05	2.84**
		ACT	4	0.17	-0.06 to 0.40	40.59	1.42
	Guidance	With	5	0.15	-0.05 to 0.36	23.05	1.47
		Without	4	0.31	0.11 to 0.52	45.09	3.02**
	Population	Healthy	2	0.19	-0.02 to 0.41	0	1.77
		Psychological symptoms	3	0.43	0.20 to 0.66	56.87	3.61***
		Physical symptoms	4	0.11	-0.09 to 0.32	0	1.10
Mindfulness	Intervention type	Mindfulness	10	0.31	0.20 to 0.42	8.09	5.57***
		ACT	2	0.39	0.15 to 0.63	55.25	3.21**
	Guidance	With	6	0.43	0.30 to 0.56	20.33	6.60***
		Without	6	0.22	0.10 to 0.34	0	3.63***
	Population	Healthy	8	0.32	0.21 to 0.42	11.71	5.84***
		Psychological symptoms	1	0.56	0.24 to 0.87	0	3.46**
		Physical symptoms	3	0.23	0.01 to 0.45	0	2.09*

Note. N_{comp}, number of comparisons; CI, confidence interval. *p < .05. **p < .01. ***p < .001.

Meta-regression analysis

Using meta-regression analysis, we found no evidence that effect sizes were moderated by study quality. For stress, the number of sessions had a significant positive influence on the effect size, with more sessions resulting in higher effect sizes. This was found when we included the outlier (slope: 0.10, $Z = 2.22$, $p = .026$), but not when we excluded the outlier (slope: 0.04, $Z = 0.78$, $p = .43$).

Publication bias

Some indication for publication bias was found. For anxiety, stress and well-being, funnel plots were somewhat skewed in favour of studies with a positive outcome. Furthermore, the fail-safe *N* indicated that the findings for depression, stress and mindfulness were robust, whereas the fail-safe numbers for anxiety (33) and well-being (28) were lower than required (respectively 65 and 55).

When omitting either outliers or low quality studies, the findings for stress and mindfulness were still found to be robust. After removing outliers, the fail-safe *N* (56) for depression was slightly lower than required (60). When low quality studies were excluded from the analysis, findings did not appear robust for depression, anxiety and well-being, with fail-safe numbers of 48, 24 and 29, respectively.

After adjusting for potential publication bias with Duval and Tweedie's trim-and-fill procedure, the effect sizes for depression, anxiety, stress, well-being and mindfulness remained the same. However, for depression, four studies were imputed after removal of outliers and the adjusted effect size was $g = 0.18$ (95% CI: 0.04 to 0.31). When only studies of medium or high quality were included in the analysis, two studies were imputed for stress and the effect size was adjusted to $g = 0.30$ (95% CI: 0.10 to 0.50).

Discussion

Main findings

The aim of this explorative meta-analysis was to estimate the overall effects of online MBIs on depression, anxiety, stress, well-being (primary outcomes) and mindfulness (secondary outcome) compared to controls. When all studies were taken into account, we found small but significant effect sizes for depression, anxiety, well-being and mindfulness, and a significant moderate effect size for stress. Based on the fail-safe *N*, the effects on depression, stress and mindfulness appear robust. This meta-analysis shows the most promising findings for stress.

The observed effect of online MBIs on stress, including the outlier, is comparable to the effect size found for traditional MBSR and MBCT ($d = 0.51$) as found in a recent systematic review and meta-analysis of systematic reviews of RCTs (Gotink et al., 2015). The fact that a considerably greater beneficial impact on stress was observed, relative to the other outcomes, can be explained as the majority of studies that administered a stress outcome measure employed MBSR (8/11), which was originally developed for reducing stress in people with chronic pain (Kabat-Zinn, 1982). However, the observed effect size for stress dropped from 0.51 to 0.39 after removal of one extreme positive outlier (Wolever et al., 2012), suggesting that the effect on stress may be somewhat overestimated. One potential explanation for the divergent findings of Wolever et al. (2012) is that the intervention duration in this particular study was relatively long (12 sessions) compared to the other studies (ranging from 2 to 8 sessions). We found a moderating effect of the number of sessions on the effectiveness of online MBIs in reducing stress, although this effect seemed to be driven by the aforementioned outlier (Wolever et al., 2012). Because only one study that evaluated an online MBI with 12 sessions was included in our meta-analysis, no definite conclusions can be drawn. Moreover, the study quality of Wolever et al. (2012) was low.

Contrary to the literature, which has demonstrated that online psychotherapeutic interventions are equally effective as face-to-face interventions (Barak, Hen, Boniel-Nissim, & Shapira, 2008), the effect sizes for depression and anxiety in this meta-analysis were in general lower than the medium to large effect sizes found for face-to-face MBIs in previous research (e.g., Abbott et al., 2014; Cavanagh et al., 2014; Gotink et al., 2015; Hofmann et al., 2010; Khoury et al., 2015; Piet et al., 2012; Vøllestad et al., 2012; Zainal et al., 2013). These findings may suggest that online MBIs are, as yet, not equally effective as traditional face-to-face MBIs in reducing depression and anxiety. Nevertheless, drawing any conclusions based on these findings would be premature since only a relatively small number of trials addressing the effectiveness of online MBIs on depression and anxiety could be included in the present meta-analysis.

Moreover, considerable variability existed across the studies, e.g., in terms of study population. It is possible that particular subgroups may benefit more from online delivered MBIs than other groups. For instance, a meta-analysis of Barak et al. (2008) showed that Internet-based psychotherapeutic interventions are more suitable for individuals with psychological symptoms than for individuals with physical symptoms. Although we did not find strong evidence for this notion, effect sizes appeared to be larger for populations with psychological symptoms (e.g., depression, anxiety) than for healthy populations or populations with physical symptoms (e.g., chronic pain) on all outcome measures, except for stress (for stress, comparisons were only possible for healthy populations and populations with physical symptoms). However, these differences did not reach statistical significance, possibly due to the small number of studies per subgroup. Since about half of the included studies ($n = 7$) were conducted in healthy samples (e.g., students and employees), the effectiveness of online MBIs in alleviating depression and anxiety might be underestimated.

Healthy populations are likely to have lower baseline scores on psychological symptoms, such as depression and anxiety, leading to less room for improvement compared to clinical populations. In other words, the small effect sizes for depression and anxiety may be attributed to a floor effect.

Another possible explanation for the small effect sizes of online MBIs compared to face-to-face MBIs has to do with adherence. Non-adherence occurs when people stop using the intervention or use the intervention in a way its developers did not intend. This is a common issue in online psychological interventions and may diminish the effectiveness of an intervention (Christensen, Griffiths, & Farrer, 2009; Donkin et al., 2011; Wangberg, Bergmo, & Johnsen, 2008). Adherence is especially relevant in mindfulness training, as regular practise is assumed essential for developing mindfulness skills (e.g., Carmody & Baer, 2008). In those studies included in our meta-analysis that reported adherence, adherence rates varied between 35% and 92%. Due to variations in definitions and measurements of adherence along with the lack of clarity around how adherence was measured (e.g., self-reported or using log-data), we were not able to systematically study whether adherence to the intervention is significantly associated with effectiveness. Hence, we cannot rule out that non-optimal adherence may have prevented (some of) the online MBIs from reaching their full potential in terms of mental health outcomes.

This poses the question as to how adherence to online MBIs may be enhanced. Previous research indicates that providing support has a positive influence on adherence and enhances the effectiveness of online psychological interventions (Andersson & Cuijpers, 2009; Richards & Richardson, 2012; Spek et al., 2007). Consistently, for stress and mindfulness, significantly larger effect sizes were found for online MBIs with therapist guidance (g = 0.89 and g = 0.43, respectively) than for online MBIs without therapist guidance (g = 0.19 and g = 0.22, respectively) (see also Table 4). However, we did not find a significant influence of therapist guidance on depression, anxiety and well-being. In this respect, we would like to stress that the subgroup analyses were underpowered and that these findings should be interpreted with caution.

Offering therapist guidance to participants of online MBIs may thus potentially improve adherence and treatment outcomes, however, not without a few disadvantages. For instance, involvement of a therapist is costly and may restrict the scalability of the intervention. These barriers may be overcome by using automated support instead of human support. Examples of automated support, which may be helpful in the context of online MBIs, are automated text messages and personalised experience stories. Such messages and stories can address participants' possible doubts about the mindfulness programme and/or the restlessness and sleepiness they might be experiencing, by providing suggestions on how to successfully cope with these hindrances.

Automated support has proven effective in improving adherence and effectiveness of interventions (Furmark et al., 2009; Morgan, Jorm, & Mackinnon, 2012; Titov et al., 2010). In addition, a recent RCT (Kelders, Bohlmeijer, Pots, & Van Gemert-Pijnen, 2015) suggests that automated support may be as effective as human support, when enriched with persuasive e-health technologies such as text messages, interaction, tailoring and personalisation (for an overview, see Oinas- Kukkonen & Harjumaa, 2009). In another recent study (Kelders et al., 2015), a human-supported web-based ACT intervention and an automated-supported web-based ACT intervention, both of which aimed to aid people with mild to moderate depressive symptoms, were compared to one another in terms of adherence and effectiveness. This comparison showed similar adherence rates as well as similar improvements in depression and anxiety after six months. That persuasive e-health technologies may enhance adherence and effectiveness of online interventions is also confirmed by a systematic review of adherence to web-based interventions (Kelders, Kok, Ossebaard, & Van Gemert-Pijnen, 2012).

With respect to study quality, we found that when low quality studies were omitted from the analysis, virtually the same effects were found for each outcome measure except for stress for which the effect size dropped from 0.51 to 0.40. However, the meta-regression analysis indicated that there was no significant relationship between the methodological quality of the studies and effect sizes for any of the outcome measures. While this finding is in line with previous meta-analyses investigating the effects of MBIs (Bohlmeijer et al., 2010; Hofmann et al., 2010; Klainin-Yobas et al., 2012; Powers, Zum Vörde Sive Vörding, & Emmelkamp, 2009; Strauss et al., 2014; Veehof et al., 2011), there are also meta-analyses which indicate that higher quality studies yield smaller effect sizes (A-Tjak et al., 2015; Khoury et al., 2013). Nonetheless, we recommend researchers conducting RCTs on online MBIs to comply with the criteria for designing high quality trials, in order to build a body of sound scientific knowledge on the effectiveness of online MBIs.

Limitations and directions for future research

This meta-analysis had several limitations. First, despite the growing empirical literature on the effectiveness of online MBIs in terms of mental health outcomes, we were only able to include a relatively small number of RCTs in our meta-analysis. Second, the effect sizes of the included studies varied considerably per outcome, which may be explained by differences in study characteristics, such as population, intervention type (e.g., ACT, MBSR or MBCT), and outcome measures. The small number of studies and substantial variability across studies warrants caution in interpreting and generalising the observed effect sizes. Third, although we conducted several subgroup analyses in order to explore potential moderators of the effects of online MBIs, it must be acknowledged that these analyses were underpowered and that the findings should be interpreted tentatively. Fourth, given the small number of studies and the fact that only two studies concerned MBCT, it was not pos-

sible to conduct separate meta-analyses for ACT, MBSR and MBCT, respectively. These interventions use somewhat different approaches, for example, MBCT and ACT incorporate elements of cognitive behavioural therapy as opposed to MBSR. Furthermore, ACT uses mindfulness techniques, but does not require meditation, whereas MBCT and MBSR are meditation-based. Hence, the interventions might not be equally effective. Finally, it was not possible to conduct a meta-analysis of the long-term effects of online MBIs because of the high variability in follow-up periods (ranging from 12 weeks to 1 year). This is considered important, because multiple trials have shown that effects of online MBIs are maintained up to one year after baseline (e.g., Hesser et al., 2012; Pots et al., 2016).

Given the widespread attention for mindfulness and the potential value of online MBIs for clinical practice, additional research to establish the beneficial effects of online MBIs and to gain insight in their moderators of effectiveness is warranted. Future research might focus on a number of specific areas, including: (1) testing whether the observed beneficial effects of online MBIs on depression, anxiety, stress, well-being and mindfulness are maintained over time; (2) assessing the clinical utility of online MBIs across various subgroups (e.g., psychological versus somatic illnesses) and in various (clinical) populations; and (3) identifying moderators of the effects of online MBIs (e.g., type of intervention: ACT, MBSR or MBCT; delivery mode: smartphone versus computer).

In addition, we encourage researchers in the field to take into account study quality criteria. Although most studies were of satisfactory quality, only two studies (Levin, Pistorello, Seeley, & Hayes, 2014; Morledge et al., 2013) could be classified as high quality. In particular, the description of withdrawals/drop-outs (criterion 3) and the sample size being based on an adequate power analysis (criterion 5) were often not adequately addressed. Finally, we strongly recommend researchers to not only report on study drop-outs, but to address adherence to the intervention as well (e.g., number of sessions completed and length of time practiced). Given the dose–response relationship that has been found for the use of online interventions (Christensen et al., 2009; Donkin et al., 2011; Wangberg et al., 2008), adherence seems an important factor to take into account when considering the effectiveness of online MBIs. This finding is corroborated in the study of Trompetter et al. (2014) which yielded significantly greater gains for adherers than for non-adherers.

Conclusions and implications

To our knowledge, this is the first meta-analysis that evaluates the specific effects of online MBIs on mental health and well-being. It has been argued that online interventions in the context of public mental health are a promising strategy to alleviate psychological symptomatology and reduce the prevalence of severe mental health problems (Barak et al., 2008; Fledderus, Bohlmeijer, Pieterse, & Schreurs, 2012; Pots et al., 2016; Ybarra & Eaton, 2005). Our findings, in turn, contribute to a better understanding of the effectiveness of online MBIs. Although research exploring the effectiveness of online MBIs is still in its infancy, we conclude that there is emerging evidence that online MBIs have the potential to improve mental health outcomes, most notably stress.

We found small effects for most outcomes (i.e., depression, anxiety, well-being, and mindfulness). Nonetheless, the wide reach and low cost of online MBIs may facilitate improved mental health and well-being in many people (with psychological distress). Online MBIs may be used in various manners and for various purposes. For instance, online MBIs might be an acceptable and useful alternative for people who may benefit from cultivating their mindfulness skills, but cannot be reached with traditional (individual or group-based) face-to-face formats (e.g., Wahbeh et al., 2014). In addition, online MBIs may be offered to individuals who are on a waitlist to receive a face-to-face MBI. Furthermore, online MBIs may be integrated in other (online) psychotherapeutic interventions (e.g., cognitive behavioural therapy) aimed at decreasing distress and/or enhancing well-being (e.g., Bohlmeijer et al., 2010; Veehof et al., 2011).

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Appendix: Full electronic search strategies

Search strategy: PsycINFO (EBSCO)

#1 TI (mindful* OR acceptance OR meditation) OR AB (mindful* OR acceptance OR meditation) OR KW (mindful* OR acceptance OR meditation)
#2 DE "Mindfulness" OR DE "Acceptance and Commitment Therapy" OR DE "Meditation"
#3 TI (intervention* OR therap* OR treatment* OR program*) OR AB (intervention* OR therap* OR treatment* OR program*) OR KW (intervention* OR therap* OR treatment* OR program*)
#4 TI (online OR e-health OR Internet* OR web* OR computer* OR app OR apps) OR AB (online OR e-health OR Internet* OR web* OR computer* OR app OR apps) OR KW (online OR e-health OR Internet* OR web* OR computer* OR app OR apps)
#5 DE "Mobile Devices" OR DE "Computers"
#6 DE "Online Therapy" OR DE "Computer Assisted Therapy"
#7 TI (random* OR trial OR RCT OR control*) OR AB (random* OR trial OR RCT OR control*) OR KW (random* OR trial OR RCT OR control*)
#8 DE "Clinical trials" OR DE "Treatment Effectiveness Evaluation"
#9 #1 OR #2
#10 #4 OR #5
#11 #3 AND #10
#12 #11 OR #6
#13 #7 OR #8
#14 #9 AND #12 AND #13
#15 #14 (Filters: English, journal article)

Search strategy: Web of Science

#1 TS=(mindful* OR acceptance OR meditation)
#2 TS=(intervention* OR therap* OR treatment* OR program*)
#3 TS=(online OR e-health OR Internet* OR web* OR computer* OR app OR apps)
#4 TS=(random* OR trial OR RCT OR control*)
#5 #1 AND #2 AND #3 AND #4
#6 #5 (Filters: English, journal article)

Search strategy: PubMed

#1 mindful*[tiab] OR acceptance[tiab] OR meditation [tiab]
#2 "Mindfulness"[Mesh] OR "Acceptance and Commitment Therapy"[Mesh] OR "Meditation"[Mesh]
#3 intervention*[tiab] OR therap*[tiab] OR treatment* [tiab] OR program* [tiab]
#4 online[tiab] OR e-health[tiab] OR Internet*[tiab] OR web*[tiab] OR computer*[tiab] OR app[tiab] OR apps[tiab]
#5 "Computers"[Mesh] OR "Mobile Applications"[Mesh]
#6 random*[tiab] OR trial[tiab] OR RCT[tiab] OR control*[tiab]
#7 "Controlled Clinical Trial"[Mesh] OR "Randomized Controlled Trial"[Mesh] OR "Random Allocation"[Mesh] OR "Treatment Outcome"[Mesh]
#8 #1 OR #2
#9 #4 OR #5
#10 #6 OR #7
#11 #3 AND #8 AND #9 AND #10
#12 #11 (Filters: English, journal article)

Search strategy: www.clinicaltrialsregister.eu

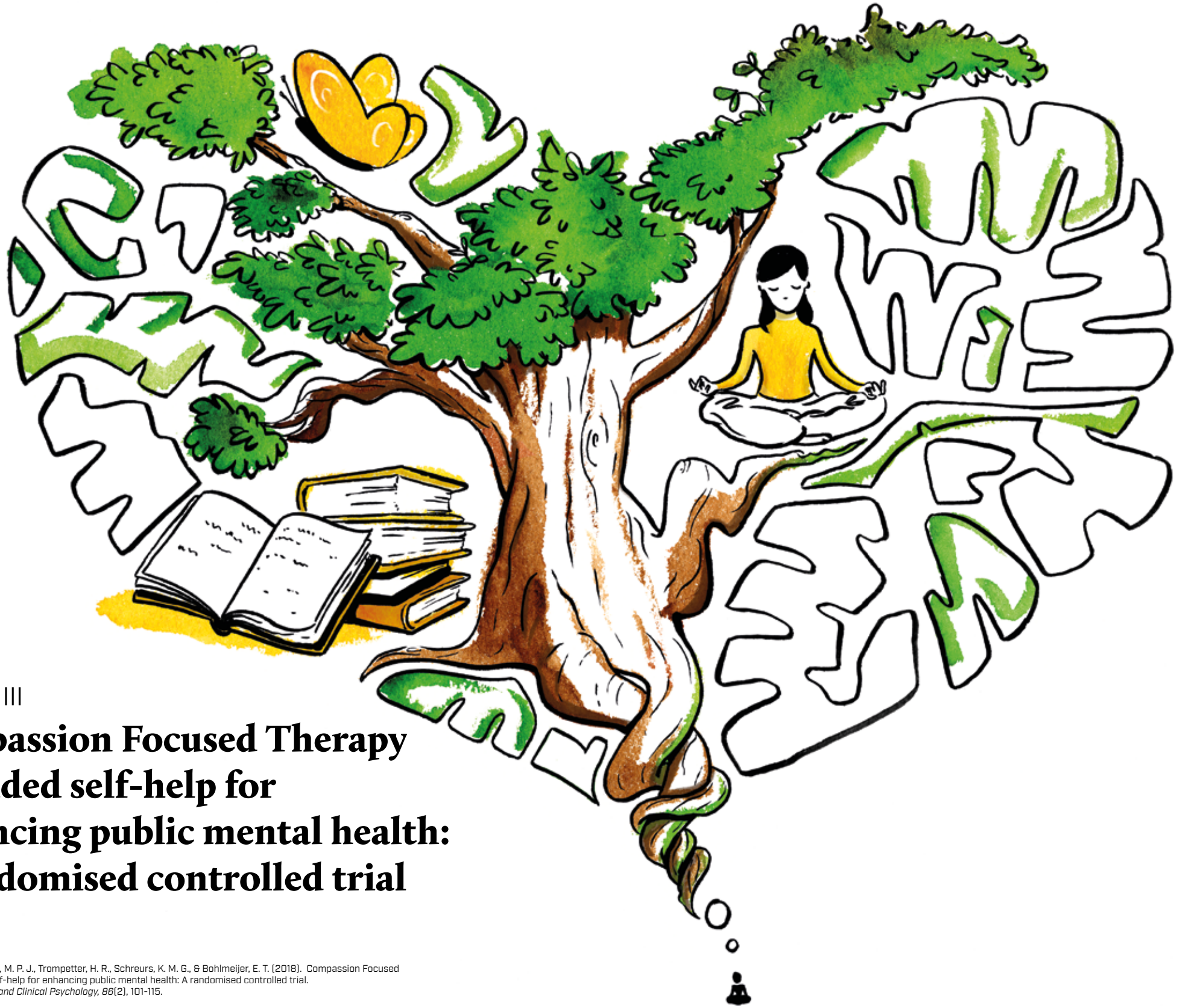
#1 (mindfulness OR acceptance OR meditation)
#2 (online OR Internet OR e-health OR computer OR web OR app)
#3 (intervention OR therapy OR treatment OR program)
#4 #1 AND #2 AND #3

Search strategy: www.isrctn.com

#1 (mindfulness OR acceptance OR meditation)
#2 (online OR Internet OR e-health OR computer OR web-based OR app)
#3 (intervention OR therapy OR treatment OR program)
#4 #1 AND #2 AND #3

Search strategy: www.clinicaltrials.gov

#1 (mindfulness OR acceptance OR meditation)
#2 (online OR Internet OR e-health OR computer OR web)
#3 (RCT OR random OR control)
#4 #1 AND #2 AND #3
#5 #4 (Filters: closed studies, interventional studies, adult, senior)



Chapter III

Compassion Focused Therapy as guided self-help for enhancing public mental health: A randomised controlled trial

Sommers-Spijkerman, M. P. J., Trompetter, H. R., Schreurs, K. M. G., & Bohlmeijer, E. T. (2018). Compassion Focused Therapy as guided self-help for enhancing public mental health: A randomised controlled trial. *Journal of Consulting and Clinical Psychology, 86*(2), 101-115.

Abstract

Despite promising results for Compassion Focused Therapy (CFT) as self-help, larger-scale trials including long-term follow-up data are needed to establish its effectiveness in the context of public mental health. Empirical evidence supporting its effectiveness in improving well-being is lacking. In a randomised controlled trial, the effects of CFT as guided self-help on well-being were evaluated. Adults (mean age = 52.87, *SD* = 9.99, 74.8% female) with low to moderate levels of well-being were recruited in the Dutch population and randomised to CFT (*n* = 120) or a waitlist control group (*n* = 122). Participants completed the Mental Health Continuum–Short Form (well-being), Hospital Anxiety and Depression Scale (depression and anxiety), Perceived Stress Scale (stress), Self-Compassion Scale–Short Form (self-compassion), Forms of Self-Criticising/Attacking and Reassuring Scale (self-criticism and self-reassurance), Positive and Negative Affect Schedule (positive/negative affect), and Gratitude Questionnaire (gratitude) at baseline, post-intervention (3 months), three- and nine-month follow-up. Compared with the waitlist control group, the CFT group showed superior improvement on well-being at post-intervention, $d = .51$, 95% CI [.25, .77], $p < .001$, and three-month follow-up, $d = .39$, 95% CI [.13, .65], $p < .001$. No significant moderators were found. On all secondary outcome measures but positive affect, the intervention group showed significantly greater improvements up to three-month follow-up. At nine-month follow-up, improvements on all measures were retained or amplified among CFT participants. CFT as guided self-help shows promise as a public mental health strategy for enhancing well-being and reducing psychological distress.

Introduction

Two avenues for achieving public mental health can be distinguished: reducing psychological distress and promoting well-being. Along with growing evidence that distress and well-being are two distinct continua (Huppert & Whittington, 2003; Keyes, 2005; Lamers, Westerhof, Glas, & Bohlmeijer, 2015), in the field of public mental health, the notion that both distress and well-being oriented efforts should be pursued is increasingly recognised and embraced (Slade, 2010). While emphasis has been on illness prevention for many years, over the past decades, an impetus has been given to the promotion of well-being. A growing number of studies underscore the need for promoting well-being and flourishing from a public mental health perspective. High levels of well-being have been shown repeatedly to have a beneficial impact on, among others, the risk of mental illness, quality of life, longevity and health care use (Howell, Kern, & Lyubomirsky, 2007; Huppert, 2004, 2009; Keyes, 2007; Keyes, Dhingra, & Simoes, 2010; Keyes et al., 2012; Lamers et al., 2015; Ryff, 2014; Schotanus-Dijkstra, ten Have, Lamers, de Graaf, & Bohlmeijer, 2017; Wood & Joseph, 2010).

A rapidly emerging form of psychotherapy which suits the two-continua approach is Compassion Focused Therapy (CFT; Gilbert, 2014). A core process in CFT involves cultivating compassion, the ability to be sensitive to the suffering of self and others combined with a commitment to try to alleviate or prevent it (Gilbert, 2014; Kirby, 2017). Key to compassion is self-reassurance, that is, individuals' ability to generate feelings of warmth, soothing and reassurance toward themselves in response to setbacks or failures (Gilbert, Clarke, Hempel, Miles, & Irons, 2004). Although cultivating compassion can be thought of as the primary mechanism of change underlying CFT, it is assumed that the development of compassion – and particularly self-reassurance – facilitates secondary mechanisms of change, most notably the ability to reduce self-critical styles of thinking characterized by the tendency to negatively evaluate and judge aspects of the self (Gilbert, 2014).

Over the past decade, a number of studies have begun to explore the effectiveness of CFT and CFT-based approaches in terms of mental health outcomes. In a recent review (Kirby, 2017), five randomised controlled trials were identified, yielding promising preliminary evidence for the effectiveness of CFT – either as group-based intervention administered by a therapist or as unguided self-help – in both clinical samples (Braehler et al., 2013: schizophrenia-spectrum disorder; Kelly & Carter, 2015: binge eating disorder) and non-clinical samples (Arimitsu, 2016: low self-compassionate people; Kelly, Zuroff, Foa, & Gilbert, 2010: smokers seeking to quit; Shapira & Mongrain, 2010: non-specific adult sample).

Given that CFT offers opportunity for both relieving distress and improving well-being, this type of intervention may be particularly suitable to address public mental health on a large scale. Hence, it seems a worthwhile endeavor to explore possibilities to extend the

reach of CFT. One possibility involves the use of self-help formats, which have the potential to increase the accessibility and scalability of CFT against limited costs (Chamberlain, Heaps, & Robert, 2008; Cuijpers & Schuurmans, 2007). Three previous trials have tested the effectiveness of (unguided) CFT-based self-help (Kelly & Carter, 2015; Kelly et al., 2010; Shapira & Mongrain, 2010). Although these studies demonstrate that CFT elicits positive effects on self-compassion, depressive symptoms and emotional well-being, they are constrained by a small sample size (n = 41, Kelly & Carter, 2015), a lack of follow-up data (Kelly & Carter, 2015; Kelly et al., 2010) and/or a very brief intervention period (1 week; Shapira & Mongrain, 2010). In an era where self-help receives increasing interest among health care practitioners, there is need for more large-scale and methodologically sound trials to further establish the effectiveness of CFT-based self-help interventions, especially in terms of improving well-being. Indeed, whereas multiple reviews and meta-analyses indicated that psychological self-help interventions have favourable effects on common psychological symptoms such as depression and anxiety (Cavanagh, Strauss, Forder, & Jones, 2014; Cuijpers & Schuurmans, 2007), there is still a paucity of empirical literature supporting its effectiveness in improving well-being.

To our knowledge, the present study is the first large-scale trial to examine the effectiveness of CFT as guided self-help in the context of public mental health, including long-term follow-up data. The primary aim was to evaluate the effects of a CFT self-help intervention with email counselling on well-being in non-flourishers, that is, adults with suboptimal levels of well-being, as a population at risk (Schotanus-Dijkstra, ten Have, et al., 2017), as compared with a waitlist control group. A secondary aim was to explore the effects of the intervention on psychological distress. CFT was hypothesized to be superior to a waitlist condition in improving well-being (primary outcome), flourishing, depressive and anxiety symptoms, stress, self-compassion, self-criticism, positive and negative affect, and gratitude (secondary outcomes).

Additionally, we sought to explore whether certain subgroups are more or less likely to benefit from CFT in terms of improving well-being. Previous research has indicated that the effectiveness of interventions aimed at increasing well-being is moderated by several sociodemographic characteristics (e.g., age) and psychological resources (e.g., baseline levels of depression and affect; Lyubomirsky & Layous, 2013). Other research has indicated that life-events are associated with well-being (Keyes, 2007; Schotanus-Dijkstra et al., 2015). More specifically, in relation to compassion-focused interventions, a few existing studies indicate that its effects are moderated by baseline levels of self-criticism (Leaviss & Uttley, 2015). Other than that, little is known about moderators of the effects of compassion-focused interventions. In the current study, we explored the moderating impact of several sociodemographic characteristics, psychological resources and the occurrence of positive/negative life events before baseline on the effectiveness of CFT in the experimental group versus the waitlist control group. Finally, as previous studies have shown that guided self-help is more effective than unguided self-help (Cuijpers & Schuurmans, 2007; Gellatly et al., 2007), we aimed to preliminary test the added value of the email counselling in terms of effectiveness of the CFT self-help intervention.

Method

Study design

The study concerned a two-arm randomised controlled trial (RCT) with one intervention group and one waitlist control group. Assessments took place before the start of the intervention (baseline), directly after the intervention (post-intervention; 3 months after baseline), and at three- and nine-month follow-up (6 and 12 months after baseline, respectively), by means of online self-administered questionnaires. This study was approved by the Faculty of Behavioural Sciences Ethics Committee at the University of Twente and registered in the Netherlands Trial Register (NTR5413). The findings of this RCT are reported conform the Consolidated Standards of Reporting Trials (CONSORT) guidelines (Schulz, Altman, & Moher, 2010) and the Journal Article Reporting Standards (JARS) for research in psychology (APA Publications and Communications Board Working Group on Journal Article Reporting Standards, 2008).

Participants and recruitment

In September 2015, participants were recruited through advertisements in two national Dutch newspapers. The advertisements contained a link to the research web page where the study purpose was explained in more detail and where people could sign up by filling out an online screening questionnaire.

Participants were eligible for participation if they: (a) were 18 years or older; (b) had low to moderate levels of well-being, as determined by the Mental Health Continuum-Short Form (MHC-SF; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011); (c) had access to a computer or tablet with a good Internet connection; (d) possessed an email address; (e) had sufficient proficiency of the Dutch language; and (f) provided informed consent. Participants who were flourishing, as determined by the MHC-SF (Lamers et al., 2011) were not eligible for participation as this does not leave enough room for improvement on the primary outcome. Additionally, participants who reported moderate to severe depressive and/or anxiety symptoms, as indicated by a score > 11 on the depression or anxiety subscale of the Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983), were excluded because this requires more intensive treatment. They were advised to contact their general practitioner.

Figure 1 displays the flow of participants. A total of 470 participants started the online screening questionnaire, of whom 254 met the eligibility criteria and were invited to complete the baseline assessment. Of the 216 excluded participants, most were excluded because of high anxiety and/or depression scores (n = 132). Of the 245 participants who completed the baseline assessment, two participants were excluded due to incorrect completing of questionnaires. This resulted in the enrolment of 243 participants who were randomly assigned to the intervention (n = 121) or waitlist control condition (n = 122). One participant withdrew from the study prior to the start of the intervention, hence was excluded from the analyses. Demographic characteristics of the participants are presented in Table 1. Participants had a mean age of 52.87 years (SD = 9.99, range: 20 – 78). The majority was female (74.8%) and highly educated (88.0%). Most participants had paid employment (76.0%), were married (54.1%) and cohabited with a partner (65.7%). More than a quarter of the participants consulted a general practitioner (28.1%) and nearly 15% consulted a mental health professional in the four weeks prior to the study. Independent samples t-tests and chi-squared tests indicated that the intervention group and the waitlist control group did not significantly differ regarding demographics, health care use or outcome measures at baseline (p > .06), indicating a successful randomisation.

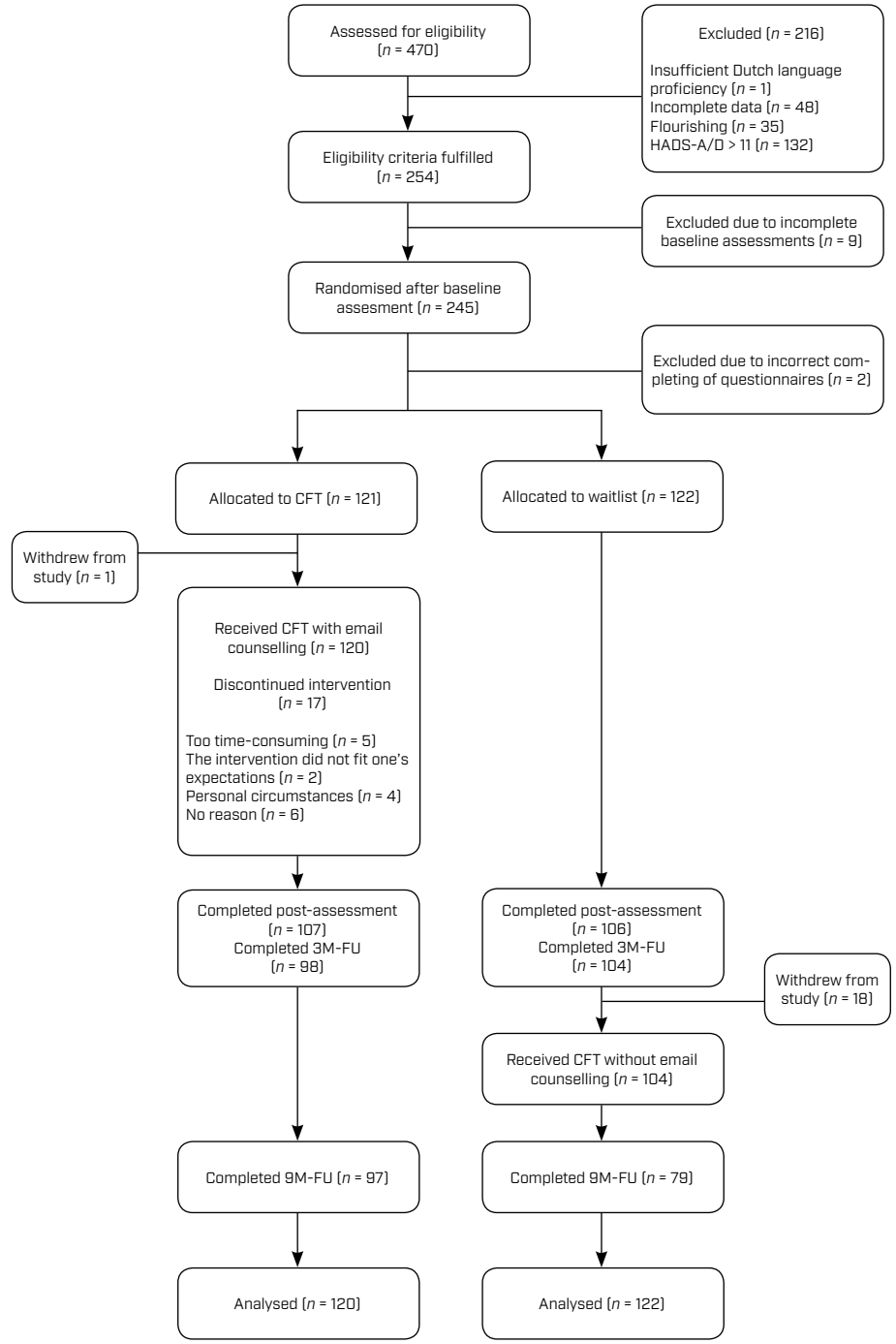


Figure 1. Flowchart of study participants and drop-outs.

Table 1. Baseline characteristics of the participants (*N* = 242)

	Total (*N* = 242)	CFT (*n* = 120)	WLC (*n* = 122)
Age, years			
Mean (*SD*)	52.87 (9.99)	52.83 (9.78)	52.90 (10.22)
Range	20 – 78	20 – 78	26 – 78
Gender, *n* (%)			
Male	61 (25.2)	24 (20.0)	37 (30.3)
Female	181 (74.8)	96 (80.0)	85 (69.7)
Nationality, *n* (%)			
Dutch	242 (100.0)	120 (100.0)	122 (100.0)
Other	-	-	-
Marital status, *n* (%)			
Married/registered partnership	131 (54.1)	62 (51.7)	69 (56.6)
Not married (never married, divorced, widowed)	111 (45.9)	58 (48.3)	53 (43.4)
Living situation, *n* (%)			
With partner	159 (65.7)	76 (63.3)	83 (68.0)
Without partner	83 (34.3)	44 (36.7)	39 (32.0)
Education level (highest level completed), *n* (%)			
Low (primary school, lower vocational education)	1 (0.4)	-	1 (0.8)
Intermediate (secondary school, vocational education)	28 (11.6)	17 (14.2)	11 (9.0)
High (higher vocational education, university)	213 (88.0)	103 (85.8)	110 (90.2)
Work situation, *n* (%)			
Paid employment	184 (76.0)	92 (76.7)	92 (75.4)
No paid employment	53 (21.9)	25 (20.8)	28 (23.0)
Student	5 (2.1)	3 (2.5)	2 (1.6)
Healthcare use in four weeks prior to baseline, *n* (%)			
General practitioner	68 (28.1)	32 (26.7)	36 (29.5)
Company doctor	13 (5.4)	8 (6.7)	5 (4.1)
Psychologist, psychiatrist or mental health service	35 (14.5)	14 (11.7)	21 (17.2)
Self-help group	3 (1.2)	1 (0.8)	2 (1.6)
Social worker	3 (1.2)	2 (1.7)	1 (0.8)
Addiction care	-	-	-
Alternative healer	38 (15.7)	17 (14.2)	21 (17.2)

Note. CFT = Compassion Focused Therapy; WLC = waitlist control group.

Intervention

Self-help book

Participants in the experimental condition received the self-help book *Compassion as key to happiness* (Hulsbergen & Bohlmeijer, 2015) at their home address. The book comprises seven lessons based on the CFT approach (Gilbert, 2014). The main focus of the intervention was to promote well-being through strengthening compassionate attributes and skills, such as the motivation to care for one's own well-being and the ability to tolerate distress. Each lesson consists of psycho-educational information on an important aspect of compassion and several exercises (see Table 2 for an overview). A broad variety of self-reflective and experiential exercises were offered to participants. Some examples include mindful breathing, keeping a diary of self-critical thoughts, visualising one's ideal compassionate self and writing a letter wherein one expresses compassion for someone else. Per lesson, one exercise was suggested as core exercise. The core exercises of the first four chapters were also offered in the form of audio exercises via email. Participants were instructed to complete one lesson per week in sequential order and had nine weeks in total to work through the book. Although they were encouraged to try different exercises, participants were free to choose whatever exercises they felt were appropriate given their personal situation as well as to decide how much time to spend on these exercises.

Table 2. Schematic overview of the CFT intervention

Lessons	Objectives	Exercises
1. Chronic stress and the importance of compassion	To gain insight into the concept and relevance of compassion.	Exercises that aim to provide more insight into your stress level and what compassion entails (e.g., body scan).
2. Emotion systems and their link to compassion	To learn that at the core of compassion is the need to balance the three emotion systems.	Exercises to learn relaxation techniques in order to soothe oneself in the face of stress (e.g., soothing breathing).
3. From self-criticism to self-kindness	To gain knowledge about self-criticism and its relation to stress and well-being.	Exercises aimed at learning to recognise and change self-critical thinking (e.g., loving self-correction, diary of self-critical thoughts).
4. Identifying and using resources for compassion	To gain insight into resources underlying compassion. In particular, attention is paid to the concept of gratitude.	Exercises focused on cultivating and strengthening a supportive and loving attitude towards oneself (e.g., compassionate imagery, 3 good things).
5. Compassion for childhood experiences	To gain awareness how childhood experiences contribute to the ways in which we act/respond in particular situations.	Exercises to learn to be compassionate towards painful emotions and to recognise and change dysfunctional reaction patterns (e.g., forgiving others).
6. Addressing circumstances that contribute to chronic stress	To become more sensitive to our own needs and distress and engage in self-compassionate behaviours. Specific attention is paid to compassionate communication with others.	Exercises aimed at gaining insight into one's personal needs, learning to communicate effectively about these needs and undertaking actions to change adverse life circumstances (e.g., visualising life changes). Other exercises invite participants to be playful and explorative again.
7. Compassion for others	To gain awareness how self-compassion fosters compassion for others, which, in turn, further enhances happiness and well-being.	Exercises aimed at acquiring skills to facilitate more compassionate attitudes and behaviours towards others (e.g., act of kindness).

Email guidance

Participants in the intervention group received weekly email guidance, with the goal to improve adherence and encourage participants to practice compassion in everyday life. Multiple studies have demonstrated that psychological self-help with minimal guidance is more effective compared to unguided self-help (Cuijpers & Schuurmans, 2007; Gellatly et al., 2007). Email guidance was found successful in several previous studies (Fledderus, Bohlmeijer, Pieterse, & Schreurs, 2012; Schotanus-Dijkstra, Drossaert et al., 2017).

Email guidance was provided by M. P. J. Sommers-Spijkerman, two psychology graduates and two psychology master's students, who were trained and supervised by two experienced health care psychologists (third and last author). To warrant intervention integrity, the counsellors and supervisors met once a week for supervision, during the intervention phase, to discuss specific topics as well as cases brought in by the counsellors. Allocation of the counsellors to participants was randomised (www.random.org).

The participants were asked to introduce themselves before the email sessions started. Subsequently, participants were requested to send an email about their progress and experiences once a week, generally after completing a lesson. There was no fixed format for the emails and participants could decide for themselves which experiences they wanted to share and which not. Participants were informed that they would receive a response from their counsellor on a fixed day of the week (each Wednesday). In an attempt to reduce intervention drop-out, the counsellor sent the participant a maximum of two reminders when no email was received. The emails were aimed at: (a) positively reinforcing the participant; (b) answering questions about the information or exercises; (c) advising participants on how to cope with particular struggles; and (d) introducing next week's theme.

Waitlist control condition

Participants in the waiting list control group were not offered an intervention, but were free to access other forms of self-help/treatment, as were all participants. After the three-month follow-up, participants in this group received the CFT self-help intervention without email counselling to be able to test the added value of the email counselling in terms of effectiveness of the intervention.

Measures

Primary outcome

Well-being in the past month was measured with the 14-item Mental Health Continuum–Short Form (MHC–SF; Keyes, 2002; Lamers et al., 2011). The MHC–SF measures three dimensions of well-being: (1) *emotional well-being* (3 items), which relates to positive emotions and life satisfaction; (2) *psychological well-being* (6 items), which relates to optimal individual functioning; and (3) *social well-being* (5 items), which relates to one's functioning in society. Responses are rated on a six-point Likert scale. In this study, the total scale scores as well as the independent subscale scores were used. Higher scores indicate a greater sense of well-being. Also a categorical scoring was used, whereby people were divided into *flourishers* (i.e., score of 4 or 5 on ≥ 1 items of the emotional well-being scale and score of 4 or 5 on ≥ 6 items of the social and psychological well-being scales) and *non-flourishers*. Previous research showed good psychometric properties for the MHC–SF (Lamers et al., 2011).

Secondary outcomes

The frequency of depressive and anxiety symptoms over the past week was assessed with the 14-item Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). For both the depression and anxiety subscale, total scores range from 0 to 21. Higher scores indicate more depressive or anxiety symptoms. The HADS has been shown to be a valid and reliable instrument (Spinhoven et al., 1997; Stern, 2014).

The 10-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983) was used to measure stress in the past month (total score 0 – 40). A higher score reflects a higher level of stress. Previous research indicates satisfactory psychometric properties (Lee, 2012).

The Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004) was used to examine overall levels of self-criticism and self-reassurance. The scale consists of three subscales: (1) *inadequate self* (9 items, total score 0 – 36), defined in terms of feelings of inadequacy and inferiority; (2) *hated self* (5 items, total score 0 – 20), defined in terms of feelings of self-hatred and self-contempt; and (3) *reassured self* (8 items, total score 0 – 32), defined as the ability to soothe oneself when encountering stress or failure. Higher scores indicate a higher level of self-criticism or self-reassurance. Multiple studies indicate that the FSCRS has good reliability and construct validity (Baião, Gilbert, McEwan, & Carvalho, 2015; Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2004; Kupeli, Chilcot, Schmidt, Campbell, & Troop, 2013).

The extent to which participants generally feel compassionate towards themselves was assessed with the 12-item Self-Compassion Scale–Short Form (SCS–SF; Neff, 2003; Raes, Pommier, Neff, & Van Gucht, 2011). The total score varies between 12 and 84, with higher scores reflecting higher levels of self-compassion. In this study, separate scores for the positively and negatively formulated items were calculated as well (López et al., 2015). Previous research has shown that the SCS–SF has adequate psychometric qualities (Raes et al., 2011).

The extent to which participants generally experience positive and negative affect in daily life was examined with the 20-item Positive and Negative Affect Schedule which has shown adequate internal consistency, test-retest reliability and construct validity (PANAS; Boon & Peeters, 1999; Crawford & Henry, 2004; Peeters, Ponds, & Vermeeren, 1996; Watson,

Clark, & Tellegen, 1988). The scale consists of two subscales measuring positive and negative affect (both 10 items). Subscale scores range from 10 to 50.

The 6-item Gratitude Questionnaire (GQ6) was used to measure the overall experience of gratitude in participants' daily life (Jans-Beken, Lataster, Leontjevas, & Jacobs, 2015). Scores range from 6 to 42, with higher scores indicating a greater sense of gratitude. Previous research shows that the GQ6 has satisfactory reliability and construct validity (Jans-Beken et al., 2015).

Adherence and satisfaction with the intervention

Participants were considered adherent if they completed all seven lessons. To gain insight in adherence as well as the feasibility and acceptability of the intervention, several questions were administered among the intervention group at post-intervention. These questions relate to among others satisfaction with the contents of the intervention, time spent on the intervention per week, completion of each lesson, barriers and facilitators to completion of the intervention, and perceived changes over the course of the intervention. Overall satisfaction with the information in the self-help book, exercises, email guidance and intervention as a whole was rated on a Likert scale ranging from 1 (*extremely poor*) to 10 (*excellent*). In addition, participants were invited to provide suggestions for improvement of the intervention. At nine-month follow-up, a similar evaluation questionnaire was administered among the control condition who received the intervention after three-month follow-up.

Healthcare use

Healthcare use was examined at baseline, post-intervention and three-month follow-up using a modified version of the iMTA Medical Consumption Questionnaire (Bouwmans et al., 2013). Participants were asked to indicate whether or not they used one of the following healthcare services in the past four weeks: general practitioner, company doctor, mental health professional (e.g., psychologist, psychiatrist), self-help group, social worker, addiction care or alternative healer (e.g., acupuncturist).

Moderators

Multiple baseline characteristics were explored as potential moderators of the effects of the intervention in the experimental group versus the control group, including socio-demographic characteristics (i.e., age, gender, marital status, living- and work situation, educational level), psychological resources (i.e., levels of primary and secondary outcomes), and the occurrence of positive and negative life events in the past twelve months as determined with a modified version of the Brugha Life-events section (Brugha, Bebbington, Tennant, & Hurry, 1985).

Sample size

Using G*Power 3.1.9.2, a minimum sample size of 164 (82 per group) was estimated for detecting a small time * group interaction effect (Cohen's d = 0.20) for the primary outcome in a repeated measures analysis of variance (ANOVA) with two groups and three points of measurement (i.e., baseline to three-month follow-up), assuming 80% power, a significance level of 5% and a correlation of 0.5 between measures. Anticipating a 20% drop-out rate, 206 participants were needed.

To minimise drop out from the study, different strategies were used, such as sending email reminders for completing questionnaires. Additionally, five gift cards worth 50 euros, twenty gift cards worth 20 euros and fifty gift cards worth 10 euros to be spent at an online store were raffled among participants who completed all assessments, regardless of allocation group.

Randomisation and blinding

Randomisation in a 1:1 ratio took place following the baseline assessment, and was carried out by the first author using an a-priori computer-generated random allocation sequence (www.random.org). Blinding of participants was not possible as participants needed to be informed whether they could start with the intervention immediately or after six months.

Statistical analyses

Analyses were conducted using SPSS version 23.0 unless otherwise indicated. There were no missing data at baseline. At post-intervention and three- and nine-month follow-up, the total percentage of missing data was 12.0%, 16.5% and 27.3%, respectively. Independent samples t-tests and chi-squared tests were used to determine baseline differences between participants with and without missing values on any of the assessments. For each measurement, chi-square tests were used to test whether the number of drop-outs differed between the experimental and control condition.

Because both conditions could access other treatment and self-help resources, we assessed the rate of such usage per condition and tested whether usage rates significantly differed per condition using chi-square tests. Participants with missing values were excluded from these analyses.

The intervention outcomes were analysed according to the intention-to-treat (ITT) principle, whereby missing data on the continuous measures at post-intervention and three- and nine-month follow-up were imputed with the expectation-maximisation method (Dempster, Laird, & Rubin, 1977; El-Masri & Fox-Wasylyshyn, 2005), as well as for completers only (i.e., excluding participants with missing values). We only report ITT findings, unless completers analyses revealed considerably divergent results.

For each outcome measure, the effectiveness of the compassion intervention relative to

waiting list was examined by means of repeated measures analysis of variance (ANOVA). To determine differential changes from baseline to post-intervention and from baseline to three-month follow-up, a 2 (time) * 2 (group) ANOVA and a 3 (time) * 2 (group) ANOVA was used, respectively. As additional analyses, using transformed data of PANAS, HADS and FSCRS subscales showing substantial positive skewness at the first three measurements, showed similar results, we only report the former. To indicate the magnitude of the difference between the experimental group (exp) and the waitlist control group (ctr) with regard to primary and secondary outcome measures, effect sizes (Cohen's *d*) were calculated per assessment (except for the nine-month follow-up) using the following formula: $(M_{exp} - M_{ctr}) / \sqrt{[(SD^2_{exp} + SD^2_{ctr}) / 2]}$. The corresponding 95% confidence intervals (CIs) were calculated using the compute.es package in R version 3.3.1. Effect sizes up to .32 were considered small, .33 to .55 moderate and .56 to 1.20 large (Lipsey & Wilson, 1993).

Following recommendations of Jacobson and Truax (1991) and Evans, Margison, and Barkham (1998), we also examined reliable and clinically significant changes at the individual level with respect to our primary outcome. Within-person changes on the MHC–SF (total well-being) from baseline to post-intervention (three-month follow-up) were evaluated using the reliable change index (RCI). The RCI indicates whether changes in MHC–SF scores are beyond changes that could be due to measurement error and is calculated as $1.96 * S_{diff}$, wherein S_{diff} is the standard error of the difference between the participant's baseline and post-intervention (three-month follow-up) score. S_{diff} was computed as follows: $SD_1 * \sqrt{2} * \sqrt{(1-\alpha)}$, where α is Cronbach's alpha coefficient of the MHC–SF at baseline and SD_1 is the standard deviation of the entire sample at baseline. In the present study, the RCI for the MHC–SF was .72. Consequently, changes, up or down, greater than .72 were regarded as reliable. Additionally, we determined the proportion of participants who showed a clinically meaningful change on the MHC–SF, through evaluating participants' post-intervention (three-month follow-up) scores on total well-being against the normative data of a large, representative sample of 1662 Dutch respondents as reported in Lamers et al. (2011). A cut-off score of 3.09 was computed, using the formula $(M_1 * SD_2 + M_2 * SD_1) / (SD_1 + SD_2)$ (i.e., criterion *C* in Evans et al., 1998). M_1 and SD_1, respectively, are the baseline mean and *SD* of the sample in the present study while M_2 and SD_2 are the mean and *SD* of the normative sample. If a participant obtained a MHC–SF score ≥ 3.09 at post-intervention or three-month follow-up, it was deemed likely that he or she moved to the normative distribution, hence clinically meaningful improvement was assumed. To compare the proportion of participants who showed both reliable and clinically meaningful improvement on the MHC–SF per condition at post-intervention and three-month follow-up, chi-square tests were performed and odds ratios (*OR*) were calculated. Similarly, we compared the proportion of flourishing participants per condition at baseline, post-intervention and three-month follow-up.

Moderation analyses were conducted using the PROCESS macro for SPSS (Hayes, 2012). Each potential moderator was grand mean centered in order to minimise the risk of multicollinearity (Aiken & West, 1991). MHC–SF change scores (baseline to post-intervention or baseline to three-month follow-up) were entered as the dependent variable. The intervention dummy variable (intervention = 1, waitlist = 0), the centered potential moderator in concern, and the intervention by centered moderator interaction term were entered as independent variables. In case of a significant interaction effect, the variable in concern was interpreted as a moderator of change.

Changes from three- to nine-month follow-up in the intervention group were analysed, using paired samples *t*-tests, in order to assess effect maintenance. As a sensitivity analysis, Wilcoxon signed-rank tests were conducted for the depression subscale of the HADS, the negative affect subscale of the PANAS and the hated self subscale of the FSCRS, which were shown substantially positively skewed at nine-month follow-up.

With regard to the effectiveness of CFT over a six-month interval, we explored the added value of the email counselling through comparing the effects of the *guided* CFT self-help intervention delivered to the experimental condition with the effects of the *unguided* CFT self-help intervention delivered to the waiting list control condition after the three-month follow-up measurement. Independent samples *t*-tests and two-stage hierarchical multiple regression analyses were conducted per outcome measure. Baseline to three-month follow-up change scores and three- to nine-month follow-up change scores were used as the dependent variable for the experimental condition (i.e., CFT with email counselling) and the waitlist control condition (i.e., CFT without email counselling), respectively. In the first step of the regression analysis, the intervention dummy variable (intervention = 1, waitlist = 0) was entered as independent variable. In the second step, the pre-intervention score on the respective outcome measure was entered as independent variable (i.e., control variable). Additionally, effect sizes were computed for both conditions separately as to indicate differences in the magnitude of the effects of CFT with and without email counselling. The following formula was used: $(M_{post} - M_{pre}) / \sqrt{[(SD^2_{post} + SD^2_{pre}) / 2]}$.

For all analyses, we used a significance level of $p < .05$.

Results

Attrition, adherence and satisfaction with the intervention

At post-intervention, three-month follow-up and nine-month follow-up, data were available for 213, 202 and 176 participants, respectively. While no significant differences in drop-out rates occurred at post-intervention, $\chi^2(1, 242) = .30$, $p = .585$, and three-month follow-up, $\chi^2(1, 242) = .56$, $p = .454$, at nine-month follow-up drop-out was significantly lower in the intervention group ($n = 23$) compared to the control group ($n = 43$), $\chi^2(1, 242) = 7.89$,

$p = .005$. There were no significant baseline differences between participants with and without missing values on any of the assessments ($p \geq .23$).

In the intervention group, the number of starters (107 versus 49, χ^2 (1, 185) = 47.18, $p < .001$) and adherers (89 versus 17, χ^2 (1, 185) = 72.14, $p < .001$) was significantly higher than in the control group when they received the intervention. Participants in the intervention group also spent significantly more time on the intervention, on average 3.1 hours a week ($SD = 1.8$, $n = 106$) compared to 2.2 hours a week ($SD = 2.4$, $n = 50$) in the control group, $t(154) = -2.83$, $p = .005$, and completed significantly more lessons ($M = 6.6$, $SD = 1.0$, $n = 106$) compared to participants in the waitlist control group ($M = 2.3$, $SD = 2.8$, $n = 79$), $t(93.7) = -13.09$, $p < .001$.

In the CFT group, the information in the self-help book, the exercises, the email guidance, and the intervention as a whole were rated with a 7.7 ($SD = 1.2$, $n = 107$), 7.2 ($SD = 1.3$, $n = 106$), 7.3 ($SD = 1.6$, $n = 106$) and 7.7 ($SD = 1.2$, $n = 106$), respectively.

Additional healthcare use

At baseline, post-intervention and three-month follow-up, the most frequently consulted healthcare services were the general practitioner (25.7% – 28.1%), followed by alternative healers (10.8% – 16.8%). Mental health professionals were seen by less than 15% of participants (10.9% – 14.5%). Chi-square tests revealed that there were no significant differences in reported healthcare use between the experimental condition and the control condition at baseline ($n = 242$, $p \geq .292$), post-intervention ($n = 213$, $p \geq .314$) and three-month follow-up ($n = 202$, $p \geq .100$).

Intervention effects and moderators

Between baseline and post-intervention, the intervention group improved significantly on all outcome measures ($p < .001$). The waitlist control group showed significant improvements on a number of outcomes, including anxiety, depression, negative affect, stress, self-reassurance, self-compassion and self-criticism (i.e., FSCRS–inadequate self and SCS-SF–negative subscale) ($p \leq .030$). For all outcomes, significant time * group interactions were found (Table 3) from baseline to post-intervention, whereby the intervention group improved significantly more on all outcome measures compared to the waitlist control group. Between baseline and three-month follow-up, the intervention group improved significantly on all outcome measures ($p < .001$) and the waitlist control group on nearly all outcomes ($p \leq .035$) except for hated self ($p = .172$). Only for positive affect, no significant time * group interaction was found between baseline and three-month follow-up, though the results almost reached statistical significance ($p = .051$). For most outcome measures, moderate to large effect sizes were observed for the intervention group relative to the waitlist control group. From post-intervention to three-month follow-up, the intervention group exhibited significant improvements on emotional well-being, $t(119) = -2.10$, $p = .038$, and self-criticism as measured with the inadequate self subscale of the FSCRS, $t(119) = 3.93$, $p < .001$, and the negative subscale of the SCS-SF, $t(119) = 2.29$, $p = .024$. With regard to the remaining outcome measures, no significant changes were observed, indicating that the initial effect was maintained. At both post-intervention ($p \geq .122$) and three-month follow-up ($p \geq .154$), no significant interaction effects were observed for any of the potential moderators (see Supplementary Table 6).

Reliable and clinically significant changes in well-being

With regard to the primary outcome, analyses at the individual level showed that 26 CFT participants (21.7%) showed reliable and clinical improvement at post-intervention (Table 4). In the waitlist control group, this was 8 (6.6%). At three-month follow-up, 22.5% ($n = 27$) showed a clinically meaningful and reliable change on well-being versus 11.5% ($n = 14$) in the control group. The proportion of participants who showed both reliable and clinically significant changes on the MHC–SF was significantly greater in the experimental condition at both post-intervention, $\chi^2(1, 242) = 11.44$, $p = .001$, and three-month follow-up, $\chi^2(1, 242) = 5.23$, $p = .02$. The corresponding odds ratios are 3.9, 95% CI [1.71, 9.11], and 2.2, 95% CI [1.11, 4.52], respectively.

A completers analysis revealed odds ratios of 5.8, 95% CI [2.12, 16.06], and 2.2, 95% CI [1.03, 4.72], for the post-intervention and three-month follow-up assessment, respectively.

Impact on flourishing

At baseline, the proportion of flourishers was smaller in the experimental group than in the control group (3.3% vs. 9.0%) although, this difference was not statistically significant, $\chi^2(1, 242) = 3.36$, $p = .067$. Significantly more flourishers were observed in the experimental group compared to the control group at post-intervention, 27.5% vs. 12.3%, $\chi^2(1, 242) = 8.80$, $p = .003$, as well as at three-month follow-up, 30.0% vs. 17.2%, $\chi^2(1, 242) = 5.49$, $p = .019$. The corresponding odds ratios are 2.7, 95% CI [1.37, 5.24], and 2.0, 95% CI [1.11, 3.75], respectively.

Long-term effects

ITT findings indicated significant improvements in the intervention group from three- to nine-month follow-up with regard to positive emotions, $t(119) = -2.65$, $p = .009$, and stress, $t(119) = 2.41$, $p = .017$. For depression, self-compassion (i.e., SCS-SF total score) and self-criticism (i.e., SCS-SF negative subscale score), paired samples t-tests did not indicate significant improvements ($p \geq .131$), as opposed to Wilcoxon signed-rank tests ($p \leq .018$). The remaining outcomes did not yield significant changes, indicating that the initial effects were sustained. In a completers analysis, significant improvements were only observed for stress, $t(91) = 2.30$, $p = .024$.

Table 3. Means, *SD*s, effect sizes and analysis of variance

Measures	Assessment	CFT (*n* = 120)	WLC (*n* = 122)	Cohen's *d* [95% CI]	ANOVA: *F*[a]		
		Mean (*SD*)	Mean (*SD*)		Time	Group	Time * group
MHC–total	Baseline	2.35 (.65)	2.48 (.66)				
	Post	2.94 (.73)	2.58 (.67)	.51 [.25, .77]	80.93***	2.23	41.74***
	3M-FU	3.01 (.71)	2.74 (.68)	.39 [.13, .65]	73.02***	5.06*	21.99***
	9M-FU	3.02 (.84)					
MHC–EW	Baseline	2.72 (.83)	2.81 (.75)				
	Post	3.24 (.78)	2.89 (.83)	.43 [.17, .69]	38.36***	2.04	20. 48***
	3M-FU	3.39 (.71)	3.08 (.80)	.41 [.15, .67]	44.34***	5.43*	11.85***
	9M-FU	3.39 (.95)					
MHC–PW	Baseline	2.42 (.77)	2.54 (.75)				
	Post	3.14 (.83)	2.66 (.79)	.59 [.33, .85]	85.33***	3.94*	43.66***
	3M-FU	3.18 (.81)	2.90 (.78)	.35 [.09, .61]	75.34***	6.11*	20.91***
	9M-FU	3.20 (.91)					
MHC–SW	Baseline	2.05 (.73)	2.21 (.79)				
	Post	2.52 (.83)	2.29 (.79)	.28 [.03, .53]	34.76***	.15	17.79***
	3M-FU	2.58 (.81)	2.34 (.78)	.30 [.05, .55]	28.62***	1.44	11.80***
	9M-FU	2.59 (.92)					
HADS–D	Baseline	6.39 (3.26)	6.30 (3.06)				
	Post	4.17 (3.33)	5.73 (3.42)	.46 [.20, .72]	44.40***	4.10*	15.58***
	3M-FU	4.05 (3.00)	5.11 (3.45)	.33 [.08, .58]	39.39***	6.14*	8.18***
	9M-FU	3.77 (3.47)					
HADS–A	Baseline	8.13 (2.94)	7.97 (2.99)				
	Post	6.01 (3.22)	7.26 (3.27)	.39 [.13, .65]	54.44***	2.39	13.54***
	3M-FU	5.57 (2.68)	6.85 (3.38)	.42 [.16, .68]	49.95***	5.74*	9.22***
	9M-FU	5.43 (3.04)					
PSS	Baseline	19.46 (5.09)	19.48 (4.99)				
	Post	15.45 (5.04)	18.14 (5.19)	.53 [.27, .79]	70.69***	5.63*	17.65***
	3M-FU	15.63 (4.53)	17.12 (5.65)	.29 [.04, .54]	51.95***	6.88**	8.28***
	9M-FU	14.55 (5.51)					
SCS–SF–total	Baseline	43.63 (11.56)	43.92 (12.59)				
	Post	54.50 (10.44)	48.05 (12.11)	.57 [.31, .83]	148.66***	5.04*	30.09***
	3M-FU	55.68 (10.59)	49.23 (12.41)	.56 [.30, .82]	127.04***	9.95**	21.73***
	9M-FU	56.76 (11.39)					
SCS–SF–pos	Baseline	24.46 (6.21)	24.63 (6.50)				
	Post	29.41 (5.35)	26.80 (6.12)	.45 [.19, .71]	101.39***	3.18	16.16***
	3M-FU	29.49 (5.43)	27.34 (6.26)	.37 [.11, .63]	78.65***	5.49*	9.85***
	9M-FU	30.24 (5.75)					

Table 3. Means, *SD*s, effect sizes and analysis of variance (*continued*)

Measures	Assessment	CFT (*n* = 120)	WLC (*n* = 122)	Cohen's *d* [95% CI]	ANOVA: *F*[a]		
		Mean (*SD*)	Mean (*SD*)		Time	Group	Time * group
SCS–SF–neg	Baseline	28.83 (7.38)	28.71 (7.67)				
	Post	23.08 (6.97)	26.78 (7.66)	.51 [.25, .77]	95.07***	4.37*	24.65***
	3M-FU	22.05 (7.12)	26.30 (7.99)	.56 [.30, .82]	89.66***	9.48**	22.13***
	9M-FU	21.47 (6.99)					
FSCRS–IS	Baseline	18. 47 (7.29)	18.46 (6.66)				
	Post	14.58 (6.03)	17.19 (6.97)	.40 [.14, .66]	43.93***	2.82	11.39**
	3M-FU	12.70 (5.85)	16.45 (7.67)	.55 [.29, .81]	54.21***	7.91**	12.87***
	9M-FU	12.79 (5.80)					
FSCRS–HS	Baseline	3.73 (3.13)	3.64 (2.76)				
	Post	2.44 (2.74)	3.27 (2.90)	.29 [.04, .54]	24.87***	1.25	7.80**
	3M-FU	2.29 (2.48)	3.31 (2.97)	.37 [.11, .63]	17.35***	3.63	6.27**
	9M-FU	2.25 (2.28)					
FSCRS–RS	Baseline	16.18 (4.99)	16.34 (5.03)				
	Post	19.46 (4.75)	17.20 (5.25)	.45 [.19, .71]	65.03***	3.15	22.03***
	3M-FU	20.04 (4.80)	17.75 (5.23)	.46 [.20, .72]	51.92***	6.76*	13.27***
	9M-FU	20.00 (4.95)					
PANAS–PA	Baseline	32.57 (5.80)	31.99 (6.06)				
	Post	35.00 (5.86)	32.67 (6.14)	.39 [.13, .65]	21.96***	4.41*	6.99**
	3M-FU	35.14 (5.12)	33.55 (5.80)	.29 [.04, .54]	17.97***	5.83*	3.01
	9M-FU	36.20 (5.47)					
PANAS–NA	Baseline	22.35 (6.07)	22.24 (5.69)				
	Post	19.12 (5.55)	21.12 (6.06)	.34 [.08, .60]	37.21***	2.05	8.67**
	3M-FU	18.55 (4.81)	20.45 (5.87)	.35 [.09, .61]	35.92***	4.26*	5.86**
	9M-FU	18.32 (5.81)					
GQ6–NL	Baseline	30.78 (5.68)	30.59 (5.89)				
	Post	33.29 (5.20)	31.28 (5.01)	.39 [.13, .65]	35.74***	2.88	11.46**
	3M-FU	34.05 (5.14)	31.73 (5.09)	.45 [.19, .71]	30.41***	6.34*	7.72**
	9M-FU	33.77 (4.74)					

Note. ANOVA = analysis of variance; 3M-FU = 3-month follow-up; 9M-FU = 9-month follow-up; CFT = Compassion Focused Therapy; CI = confidence interval; EW = emotional well-being; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; GQ6–NL = Gratitude Questionnaire; HADS-A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC–SF = Mental Health Continuum–Short Form; NA = negative affect; PA = positive affect; PANAS = Positive and Negative Affect Schedule; PSS = Perceived Stress Scale; PW = psychological well-being; RS = reassured self; SCS-SF = Self-Compassion Scale–Short Form; SW = social well-being; WLC = waitlist control group.
[a]When sphericity is not assumed, Greenhouse-Geisser results are reported.
*p < .05. **p < .01. ***p < .001.

At nine-month follow-up, 31.7% of CFT participants was flourishing (completers analysis: 39.1%). Clinically significant and reliable improvements in well-being were reported by 36 CFT participants (30.0%, see Table 4). In a completers analysis, this was 38.0%.

Effects of CFT with/without email counselling

Following three-month follow-up, participants in the waitlist control group received the CFT intervention without email counselling. Results showed that after six months (i.e., at nine-month follow-up), waitlist control participants showed significant improvements on nearly all outcomes ($p \leq .012$, Cohen's d = 0.19 – 0.63) except for gratitude ($t(121)$ = -1.56, p = .122). Participants in the intervention group – who had received CFT with email counselling – demonstrated significant improvements on all outcomes ($p < .001$) after six months, with effect sizes ranging between 0.47 and 1.09. A comparison of the effects of CFT with and without email counselling over a six-month interval (i.e., baseline to three-month follow-up changes in the intervention group versus three- to nine-month follow-up changes in the waitlist control group) revealed that those who received CFT with counselling (i.e., intervention group) reported significantly greater improvements on all outcome variables, except for hated self. When controlling for pre-intervention scores on the respective outcomes, participants who received CFT with email counselling (i.e., the intervention group) were found to exhibit significantly greater improvements on total/emotional/social well-being, anxiety, self-compassion and self-criticism (as measured with the SCS–SF), self-reassurance and gratitude. For the remaining outcomes, no significant differences were found between CFT with and without email counselling (see Table 5).

Table 4. Reliable and clinically significant changes on the MHC–SF (well-being)

Reliable and/or clinically significant change	CFT (n = 120)			WLC (n = 122)		
	Post	3M-FU	9M-FU	Post	3M-FU	9M-FU
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
Reliable change	50 (41.7)	52 (43.3)	64 (53.3)	25 (20.5)	30 (24.6)	49 (40.2)
Maintained reliable change[a]	-	32 (26.7)	44 (36.7)	-	12 (9.8)	24 (19.7)
Gained reliable change[a]	-	20 (16.7)	20 (16.7)	-	18 (14.8)	25 (20.5)
Did not improve on reliable change[a]	-	50 (41.7)	48 (40.0)	-	79 (64.8)	67 (54.9)
Lost reliable change[a]	-	18 (15.0)	13 (6.7)	-	13 (10.7)	6 (4.9)
Clinically significant change	47 (39.2)	46 (38.3)	52 (43.3)	27 (22.1)	38 (31.1)	37 (30.3)
Maintained clinically significant change[a]	-	34 (28.3)	37 (30.8)	-	17 (13.9)	23 (18.9)
Gained clinically significant change[a]	-	12 (10.0)	15 (12.5)	-	21 (17.2)	14 (11.5)
Did not improve on clinically significant change[a]	-	61 (50.8)	59 (49.2)	-	74 (60.7)	70 (57.4)
Lost clinically significant change[a]	-	13 (10.8)	9 (7.5)	-	10 (8.2)	15 (12.3)
Reliable and clinically significant change	26 (21.7)	27 (22.5)	36 (30.0)	8 (6.6)	14 (11.5)	20 (16.4)
Maintained reliable and clinically significant change[a]	-	13 (10.8)	18 (15.0)	-	3 (2.5)	9 (7.4)
Gained reliable and clinically significant change[a]	-	14 (11.7)	18 (15.0)	-	11 (9.0)	11 (9.0)
Did not improve on reliable and clinically significant change[a]	-	80 (66.7)	75 (62.5)	-	103 (84.4)	97 (79.5)
Lost reliable and clinically significant change[a]	-	13 (10.8)	9 (7.5)	-	5 (4.1)	5 (4.1)

Note. 3M-FU = 3-month follow-up; 9M-FU = 9-month follow-up; CFT = Compassion Focused Therapy; MHC–SF = Mental Health Continuum–Short Form; WLC = waitlist control group.
[a]Compared with previous measurement.

Table 5. Hierarchical multiple regression analyses comparing CFT with and without email support over a six-month interval

Outcome variable[d]	Cohen's d [95% CI][a]		Regression: Model 1[b]				Regression: Model 2[c]			
	CFT with counselling (n = 120)	CFT without counselling (n = 122)	F	β[e]	t	R^2	F	β[e]	t	R^2
MHC–total	.97 [.70, 1.24]	.32 [.07, .57]	31.31***	.34	5.60***	.12	52.00***	.21	3.75***	.30
MHC–EW	.87 [.60, 1.14]	.31 [.06, .56]	16.99***	.26	4.12***	.07	81.36***	.13	2.53*	.41
MHC–PW	.96 [.69, 1.23]	.63 [.37, .89]	8.55**	.19	2.92**	.03	57.19***	.10	1.86	.32
MHC–SW	.69 [.43, 0.95]	.24 [-.01, .49]	15.21***	.24	3.90***	.06	41.10***	.16	2.77**	.26
HADS–D	.75 [.49, 1.01]	.34 [.09, .59]	8.54**	-.19	-2.92**	.03	65.77***	-.08	-1.46	.36
HADS–A	.91 [.64, 1.18]	.36 [.11, .61]	15.00***	-.24	-3.87***	.06	109.13***	-.11	-2.34*	.48
PSS	.79 [.53, 1.05]	.38 [.13, .63]	6.86**	-.17	-2.62**	.03	89.14***	-.03	-.58	.43
SCS–SF–total	1.09 [.82, 1.36]	.43 [.17, .69]	26.81***	.32	5.18***	.10	65.75***	.20	3.72***	.36
SCS–SF–pos	.86 [.59, 1.13]	.30 [.05, .55]	18.13***	.27	4.26***	.07	75.17***	.14	2.62**	.39
SCS–SF–neg	.94 [.67, 1.21]	.49 [.23, .75]	14.48***	-.24	-3.81***	.06	55.08***	-.16	-2.91**	.32
FSCRS–IS	.87 [.60, 1.14]	.51 [.25, .77]	7.50**	-.17	-2.74**	.17	105.68***	-.09	-1.78	.69
FSCRS–HS	.51 [.25, .77]	.47 [.21, .72]	.53	-.05	-.72	.002	116.78***	.002	.05	.49
FSCRS–RS	.79 [.53, 1.05]	.38 [.13, .63]	10.58**	.21	3.25**	.04	57.86***	.12	2.29*	.33
PANAS–PA	.47 [.21, .73]	.19 [-.06, .44]	4.48*	.14	2.12*	.02	60.68***	.09	1.66	.34
PANAS–NA	.69 [.43, .95]	.35 [.10, .60]	7.77**	-.18	-2.79**	.03	102.18***	-.07	-1.51	.46
GQ6–NL	.60 [.34, .86]	.13 [-.12, .38]	19.17***	.27	4.38***	.07	60.48***	.23	4.29***	.34

Note. CFT = Compassion Focused Therapy; CI = confidence interval; EW = emotional well-being; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; GQ6-NL = Gratitude Questionnaire; HADS–A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC–SF = Mental Health Continuum–Short Form; NA = negative affect; PA = positive affect; PANAS = Positive and Negative Affect Schedule; PSS = Perceived Stress Scale; PW = psychological well-being; RS = reassured self; SCS–SF = Self-Compassion Scale–Short Form; SW = social well-being.
[a]For the experimental condition (i.e., CFT with counselling), effect sizes were calculated for the change between baseline and three-month follow-up (six-month interval). For the waitlist control group (i.e., CFT without counselling), effect sizes were calculated for the change between three- and nine-month follow-up (six-month interval).
[b]Predictor: condition.
[c]Predictor: condition, controlled for pre-intervention score (i.e., baseline score for the experimental condition, three-month follow-up score for the waitlist control condition).
[d]For the experimental condition (CFT with email counselling), baseline to three-month follow-up change scores were used for the regression analyses. For the waitlist control condition (CFT without email counselling), three- to nine-month follow-up change scores were used for the regression analyses.
[e]Standardised beta values are reported.
*$p < .05$. **$p < .01$. ***$p < .001$.

Discussion

To our knowledge, this RCT is the first to evaluate the effectiveness of CFT as guided self-help in the context of public mental health. In a large adult community sample with low to moderate levels of well-being, as hypothesized, the intervention yielded significant, improvements on all outcome measures, compared to a waitlist control group. For all outcomes but positive affect, the CFT intervention was superior to the waitlist control condition up to six months after baseline. Among CFT participants, the observed positive effects remained stable or further improved until 12 months after baseline. Effect sizes were predominantly in the moderate range (d = .28 – .59). Whereas the pre-post effect size for well-being in the current study was equal to the effect on well-being found for compassion-based interventions, including but not limited to CFT, in a recent meta-analysis of RCTs (d = .51), effect sizes for indicators of psychological distress were somewhat smaller (depression: d = .46 vs. d = .64; anxiety: d = .39 vs. d = .49) (Kirby, Tellegen, & Steindl, 2017). Moderator analyses showed there is no reason to assume that particular subgroups profit more or less from the intervention, suggesting that the intervention is suitable for a broad and heterogeneous target population.

Whilst former studies have demonstrated the effectiveness of CFT mainly in the context of attenuating suffering (Gilbert & Procter, 2006; Kelly & Carter, 2015), our findings underscore the value of CFT as a public mental health intervention. Not only did psychological distress reduce significantly, also the number of flourishers in the CFT group increased considerably, to 31.7% at the final assessment. This is an important finding since higher levels of well-being have been shown to elicit positive effects on, among others, psychological symptomatology, quality of life, longevity and healthcare use (Chida & Steptoe, 2008; Howell et al., 2007; Keyes, 2007; Keyes et al., 2010; Lamers et al., 2015; Ryff, 2013; Wood & Joseph, 2010). The present study thus indicates that CFT is an adequate intervention to support people in enhancing their well-being while reducing psychological distress, thereby corroborating the notion that CFT operates through a two-continua model (Huppert & Whittington, 2003; Keyes, 2005; Lamers et al., 2015).

Although the intervention group was superior in enhancing well-being, the waitlist control group still exhibited significant improvements on several outcome measures at post-intervention and three-month follow-up. Similarly, albeit to a lesser extent, in the control group we found a substantial increase in the number of flourishers between baseline and three-month follow-up, from 9.0 to 17.2%. These findings may be partly attributable to a subject-expectancy effect. An offer of treatment is an offer of hope and may evoke certain outcome expectations, which, in turn, may have a powerful influence on (actual) treatment outcomes (Sotsky et al., 2006). Another possible explanation is that inclusion in the study may have urged participants to start thinking and acting in a more self-compassionate way before gaining access to the intervention.

Besides the use of a large sample and the inclusion of long-term follow-up data, a major strength of the current study lies in the feasibility and acceptability of the intervention. Participants were recruited in only two days, implying there is demand for such interventions. Furthermore, the vast majority completed the entire intervention suggesting high commitment. The relatively high adherence rate may be partly accounted for by the autonomy-supportive nature of the intervention and the weekly email guidance.

Regarding the latter, our data revealed that adherence was significantly higher among those who received the email counselling compared to those who did not. Moreover, the intervention group – who received CFT with email counselling – exhibited greater improvements on several outcomes including well-being when controlling for pre-intervention scores. The email counsellors may have contributed to adherence as well as the effectiveness of the intervention through showing compassion for the participants, which may re-activate the soothing and affiliation system, engendering a sense of support and building a sense of competence in participants. An alternative explanation for the high adherence rate has to do with the use of a self-selected sample. It is likely that participants were highly motivated and adopted positive outcome expectations prior to the intervention. This may have affected actual intervention outcomes (Sotsky et al., 2006) to the extent that (some of) the effects may have been overestimated.

Another selection bias may have been introduced into the study by only including people who are not flourishing and are also experiencing at most mild depressive or anxiety symptoms. As such, generalisability of the findings to people with more severe symptoms cannot be assumed at present. In this regard, it should also be noted that the most common reason for exclusion was a score > 11 on the depression and/or anxiety subscale of the HADS, suggesting that people with more serious depressive or anxiety symptoms also experience a need for a compassion-focused intervention. Previous research demonstrates that people with clinical symptoms, including depression and anxiety, may benefit from CFT or CFT-like interventions (Braehler et al., 2013; Gilbert & Procter, 2006; Lo, Ng, & Chan, 2015). One possible explanation is that CFT, through cultivating compassion, may help overcome or mitigate the impact of multiple transdiagnostic risk factors associated with adverse mental health, including self-criticism. A promising finding from our study was that CFT was effective in both cultivating self-reassurance and reducing self-criticism which are both deemed pivotal mechanisms of change targeted in CFT. Additionally, a number of studies have shown that people suffering from depression or anxiety benefit from self-help (Cavanagh et al., 2014; Cuijpers & Schuurmans, 2007; Den Boer, Wiersma, & Van Den Bosch, 2004; Haug, Nordgreen, Ost, & Havik, 2012; Hirai & Clum, 2006), whereby it should be noted that guided self-help is preferred over unguided self-help (Hanson, Webb, Sheeran, & Turpin, 2016). Consequently, we may have excluded a considerable subset of the people who are likely to seek and benefit from compassion-cultivating interventions in real life. Therefore, we encourage researchers in this field to include people with more severe symptoms in future trials.

Several other limitations should be recognised when interpreting the results. First, in accordance with earlier studies (e.g., Fledderus et al., 2012; Schotanus-Dijkstra, Drossaert, et al., 2017), high-educated females were overrepresented, thereby limiting the generalisability of the findings. Second, due to the use of a waitlist control group, we cannot rule out the influence of non-specific factors (Mohr et al., 2009). Moreover, we recognise that RCTs using a waitlist controlled design tend to overestimate effect sizes, thereby limiting the conclusiveness of our findings (Cuijpers, Cristea, Karyotaki, Reijnders, & Huibers, 2016; Kazdin, 2015). Third, owing to the design of the current trial, participants could not be blinded. Fourth, as we did not power a-priori for moderation analyses, these analyses were exploratory and should be interpreted with utmost caution. Fifth, despite preliminary indications of our data that the use of email guidance is successful in improving adherence and effectiveness of a self-help CFT intervention, these findings remain inconclusive regarding the role of the counsellor given that the comparison groups did not receive the intervention simultaneously. Not only the lack of support, but also the six-month waiting time may have had an impact on waitlist participants' motivation, adherence and perceived benefits from the intervention. Furthermore, we recognise that the use of this email component limits the potential of the intervention to be scaled up from a controlled trial to implementation on a larger scale so as to broaden its reach across populations that may benefit from this type of intervention. In this regard, it should be noted however that participants in the waitlist control group still exhibited significant, moderate improvements on most outcome measures after receiving the CFT self-help intervention without email counselling. This suggests that even when offered as pure self-help a lot of people may actually benefit from the intervention. As such, there appears to be a trade-off between the effectiveness and scalability of the CFT self-help intervention. While effects are likely to be smaller for unguided compared to guided CFT self-help interventions, pure self-help formats offer the opportunity to widen the reach of CFT at low cost.

Notwithstanding the caveats in our study, the findings indicate that CFT offers opportunity both as a well-being enhancing and as a distress-oriented approach suited to non-clinical populations with suboptimal levels of well-being. Considering that a complete state of mental health requires the absence of psychological symptoms and a state of emotional, psychological and social well-being, the intervention seems a valuable public mental health strategy. Given the burgeoning interest in compassion, additional trials, preferably with active comparison groups, are needed to provide more robust evidence for the utility of CFT. In the light of previous work indicating that psychological (guided) self-help interventions are also suitable and acceptable for people with clinical symptoms of depression and anxiety (Cavanagh et al., 2014; Cuijpers & Schuurmans, 2007; Den Boer et al., 2004; Haug et al., 2012; Hirai & Clum, 2006), it seems fruitful to investigate the effectiveness of CFT as guided self-help not only in non-clinical but also in clinical populations. Also, future research is warranted to shed further light on the circumstances under which this type of intervention works best as well as the mechanisms involved.

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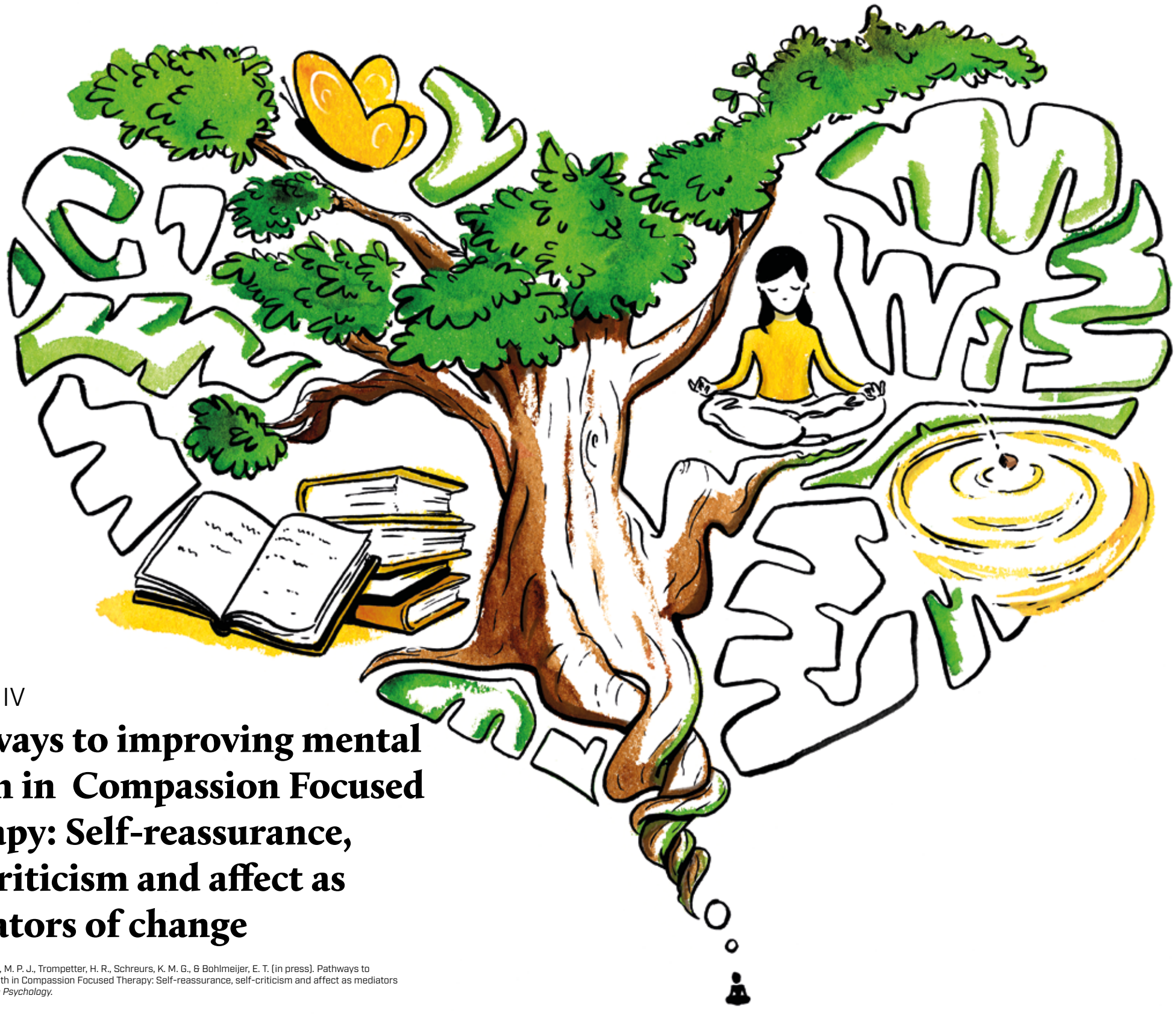
Supplementary material

Table 6. Moderator analyses of well-being (moderator * group interaction effects)

Moderator	Δ MHC-SF baseline to post-intervention				Δ MHC-SF baseline to 3M-FU			
	b	*t*	95% CI	*p*	*b*	*t*	95% CI	*p*
Demographics								
Age	.00	.02	-.02, .02	.986	-.01	-1.37	-.03, .01	.173
Gender	-.13	-.69	-.48, .23	.491	-.13	-.62	-.52, .27	.536
Marital status	.09	.58	-.22, .40	.565	.18	1.05	-.16, .51	.295
Living situation	-.01	-.08	-.33, .31	.935	.13	.74	-.22, .49	.462
Education level	-.41	-1.55	-.93, .11	.122	-.37	-1.26	-.94, .21	.209
Work situation	.09	.50	-.27, .46	.621	.19	.96	-.19, .56	.338
Psychological resources								
MHC–total	.07	.64	-.14, .27	.524	-.10	-.85	-.34, .14	.399
MHC–EW	.04	.39	-.15, .22	.695	-.07	-.63	-.28, .14	.530
MHC–PW	.09	.94	-.10, .27	.351	-.09	-.92	-.28, .10	.358
MHC–SW	.03	.34	-.14, .20	.735	-.02	-.22	-.24, .19	.823
HADS–D	.03	1.24	-.02, .08	.218	.03	.95	-.03, .08	.345
HADS–A	.00	.00	-.05, .05	.998	.02	.81	-.03, .07	.418
PSS	-.01	-.80	-.04, .02	.424	.02	1.36	-.01, .05	.176
SCS–SF–total	-.00	-.28	-.01, .01	.782	-.01	-1.27	-.02, .00	.205
SCS–SF–pos	-.01	-.74	-.03, .01	.460	-.01	-1.14	-.04, .01	.256
SCS–SF–neg	-.00	-.27	-.02, .02	.791	.01	.86	-.01, .03	.391
FSCRS–IS	-.01	-1.02	-.03, .01	.309	-.00	-.25	-.02, .02	.800
FSCRS–HS	-.01	-.47	-.06, .04	.641	.00	.09	-.05, .06	.930
FSCRS–RS	.02	1.14	-.01, .05	.257	-.00	-.13	-.03, .03	.896
PANAS–PA	.00	.21	-.02, .03	.837	-.01	-.41	-.03, .02	.682
PANAS–NA	-.02	-1.32	-.05, .01	.187	.01	.64	-.02, .04	.523
GQ6–NL	-.02	-1.52	-.05, .01	.130	-.02	-1.43	-.05, .01	.154
Life events								
Positive events in the past twelve months	-.08	-.51	-.41, .24	.612	-.12	-.66	-.49, .25	.513
Negative events in the past twelve months	-.03	-.14	-.38, .33	.889	-.10	-.48	-.51, .31	.634

Note. 3M-FU = three-month follow-up; CI = confidence interval; EW = emotional well-being; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; GQ6-NL = Gratitude Questionnaire; HADS-A = Hospital Anxiety and Depression Scale–Anxiety; HADS-D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC-SF = Mental Health Continuum–Short Form; NA = negative affect; PA = positive affect; PANAS = Positive and Negative Affect Schedule; PSS = Perceived Stress Scale; PW = psychological well-being; RS = reassured self; SCS-SF = Self-Compassion Scale–Short Form; SW = social well-being.



Chapter IV

Pathways to improving mental health in Compassion Focused Therapy: Self-reassurance, self-criticism and affect as mediators of change

Sommers-Spijkerman, M. P. J., Trompetter, H. R., Schreurs, K. M. G., & Bohlmeijer, E. T. (in press). Pathways to improving mental health in Compassion Focused Therapy: Self-reassurance, self-criticism and affect as mediators of change. *Frontiers in Psychology.*

Abstract

The working mechanisms of Compassion Focused Therapy (CFT) remain understudied. Drawing on the theoretical model underlying CFT, we examined four putative working mechanisms – self-reassurance, self-criticism, positive/negative affect – in relation to changes in well-being and psychological distress. Data of a waitlist randomised controlled trial (N = 242) investigating the effectiveness of a self-help CFT-intervention in a non-clinical sample were analysed. Using single and multiple mediation models, we assessed if changes in self-reassurance, self-criticism and positive/negative affect during the intervention (three-month interval) mediated changes in well-being and depressive/anxiety symptoms from baseline to follow-up (six-month interval) compared to the waitlist condition. For each outcome, single analyses revealed that the effects of CFT were significantly mediated by self-reassurance and self-criticism. The mediating role of affect differed across outcomes. In combined models, self-reassurance emerged as a significant mediator for well-being and anxiety symptoms. Additionally, positive and negative affect were found significant mediators of the effects on depressive and anxiety symptoms, respectively. This study provides preliminary empirical evidence that CFT operates through cultivating self-reassurance, reducing self-criticism and regulating positive and negative affect in a non-clinical sample. To advance the development of CFT, further exploration of therapeutic change processes and their interplay is needed.

Introduction

Over the past decade, a growing body of empirical evidence has accumulated that testifies to the effectiveness of compassion-based interventions as a means of promoting mental health (Kirby, 2017; Kirby, Tellegen, & Steindl, 2017; Leaviss & Uttley, 2015). The most abundant evidence has come from studies investigating Compassion Focused Therapy (CFT), showing favourable effects over a wide range of well-being and distress outcomes (e.g., Braehler et al., 2013; Gilbert & Procter, 2006; Shapira & Mongrain, 2010). Yet what remains unclear is how and why CFT works. This is not specific to CFT, but is true for many clinical interventions (Kazdin, 2009; Kraemer, Wilson, Fairburn, & Agras, 2002).

Given the growing interest for CFT and other compassion-based interventions and a general renewed interest in change processes leading to psychotherapeutic change (Elliot, 2010; Laurenceau, Hayes, & Feldman, 2007), we believe exploring mediators and mechanisms underlying the effectiveness of CFT is a timely and fruitful area for investigation. Not only will this strengthen the existing theoretical framework of CFT, but also will it guide the development and refinement of CFT-based interventions, hence advance clinical practice and research in this burgeoning field.

CFT strives for a compassionate mind which includes the ability to be compassionate towards the self and others as well as to receive compassion from others. Compassion is viewed as a multidimensional construct encompassing two interrelated mindsets (Gilbert, 2014). The first mindset involves the ability to be sensitive to the suffering of self and others, relating to a multitude of attributes, such as the motivation to care and the capacity for feeling sympathy and empathy. The second mindset, commitment to alleviating suffering, requires a particular set of affiliative skills in the sphere of attention, cognition, behaviour and emotion conducive to the development of a compassionate mind. Examples include the ability to replace self-critical thoughts with compassionate self-correction and to generate compassionate feelings for the self and others.. Besides psycho-education on the human mind, CFT employs various techniques designed to build a compassionate mind, such as mindfulness techniques, compassionate imagery, expressive writing, practising soothing breathing rhythm, and practising compassionate ways of thinking (Gilbert, 2014).

Drawing on the evolutionary-based theoretical model underlying CFT, several mechanisms of change can be identified: (1) cultivating self-reassurance; (2) disengaging from self-critical thoughts; (3) stimulating attention for and processing of positive affect; and (4) improving distress tolerance and decreasing negative affect (Gilbert, 2014). Cultivating self-reassurance can be seen as the primary and central presumed mechanism of CFT, whereas the other three are secondary mechanisms that evolve from the development of self-reassurance. Together, these change processes are thought to facilitate increases in well-being and decreases in psychological distress.

Cultivating self-reassurance as the central mechanism of CFT reflects the ability to relate to the self in a warm, soothing and reassuring manner when encountering setbacks or failures (Gilbert et al., 2004). This is deemed a core facet of compassion toward the self. Matos, Duarte, Duarte, Gilbert, and Pinto-Gouveia (2017) showed that self-reassurance is positively associated with the ability to embody one's compassionate self in everyday life. Other research has shown that practising CFT has potential to improve self-reassurance (Gilbert & Procter, 2006; Lucre & Corten, 2013; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018), which, in turn, positively relates to well-being and negatively relates to psychopathology including stress, depressive and anxiety symptoms (Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2008; Sommers-Spijkerman, Trompetter, Ten Klooster, et al., 2018).

The CFT model presumes that the development of self-reassurance – among others – facilitates the ability to reduce self-critical thinking (Gilbert, 2014). Consistent with this notion, a recent study demonstrated that self-reassurance protects against the depressogenic effect of self-criticism (Petrocchi, Dentale, & Gilbert, 2018). Whereas previous research has shown that CFT leads to significant reductions in self-criticism (e.g., Gilbert & Procter, 2006), to our knowledge, no studies have assessed whether the beneficial effects of CFT on well-being and distress can be attributed to improvements in self-criticism.

The third and fourth mechanisms serve to affect regulation of both positive and negative emotions, another important treatment target of CFT. In CFT, compassion is related to an evolutionary functional analysis of emotions, distinguishing between three major affect regulation systems: (1) the threat protection system, which provides abilities to detect and respond to threat; (2) the drive and resource-seeking system, which provides information on the availability of resources and rewards; and (3) the soothing and affiliation system, which enables individuals to reassure and soothe themselves (Gilbert, 2009, 2014). CFT is thought to strengthen the capacity for experiencing and tolerating soothing emotions in the face of setbacks, thereby fostering positive affective states such as safeness, calmness and contentment, while alleviating negative affective states through enabling people to regulate and engage with unpleasant or feared emotions characteristic for the threat system, including anger, anxiety and guilt (Gilbert, 2009, 2014). Consistently, a number of experimental studies have corroborated the notion that practising compassion up-regulates positive affect (Engen & Singer, 2015) and down-regulates negative affect (Arimitsu & Hofmann, 2017; Diedrich, Burger, Kirchner, & Berking, 2016; Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Leary, Tate, Adams, Allen, & Hancock, 2007). In turn, positive affect has been positively associated with well-being and negatively associated with psychopathology in numerous studies, and vice versa for negative emotions (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009; Fredrickson, Cohn, Coffey, Pek, & Finkel, 2008; Lyubomirsky, King, & Diener, 2005; Lyubomirsky & Layous, 2013; Seaton & Beaumont, 2015).

Thus far, direct empirical evidence to support the mechanisms of change put forward in the theoretical framework of CFT is lacking, although existing randomised controlled trials (RCTs) offer ample opportunity for an initial exploration of potential mediators of CFT-induced changes in mental health. A recently conducted waitlist RCT showed that CFT as guided self-help elicits favourable effects on (among others) well-being, depression, anxiety, self-compassion, self-reassurance, self-criticism and affect in an adult community sample with low to moderate levels of well-being and mild distress (Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). Building on these findings, the aim of the current study was to examine the unique and combined indirect effects of the four putative working mechanisms or mediators outlined in the CFT model, namely self-reassurance, self-criticism and positive/negative affect, in changing levels of well-being and psychological distress in CFT, compared to a waitlist control condition. For well-being as well as depressive and anxiety symptoms, we examined the extent to which the four putative mediators independently and together mediated the effects of CFT over a six-month period. First, we tested the hypothesis that changes in self-reassurance, self-criticism, and positive and negative affect during the intervention significantly mediated the effects of CFT on well-being and depressive/anxiety symptoms, compared to the waitlist condition. Given the focus and contents of the CFT intervention, a second hypothesis was that changes in both levels of well-being and levels of depressive/anxiety symptoms at six months would be predominantly mediated by changes in self-reassurance during the intervention. Nonetheless, it was postulated that all mediators would play a role in the effectiveness of CFT regardless of outcome.

Materials and methods

Participants and procedure

The current study builds further upon the findings of a recently conducted RCT (Sommers-Spijkerman et al., 2018). The RCT was approved by the Faculty of Behavioural Sciences Ethics Committee at the University of Twente (BCE15354) and registered in the Netherlands Trial Register (NTR5413). The RCT sample consisted of adults with low to moderate levels of well-being recruited through advertisements in Dutch national newspapers. Eligibility criteria were: 1) an age of 18 years or older; 2) low to moderate levels of well-being according to the Mental Health Continuum–Short Form (MHC-SF; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011); 3) access to a computer or tablet with a good internet connection; 4) possession of an email address; 5) sufficient proficiency in the Dutch language (reading and writing); and 6) (online) informed consent. Applicants who were experiencing a high level of well-being (flourishing on the MHC-SF)

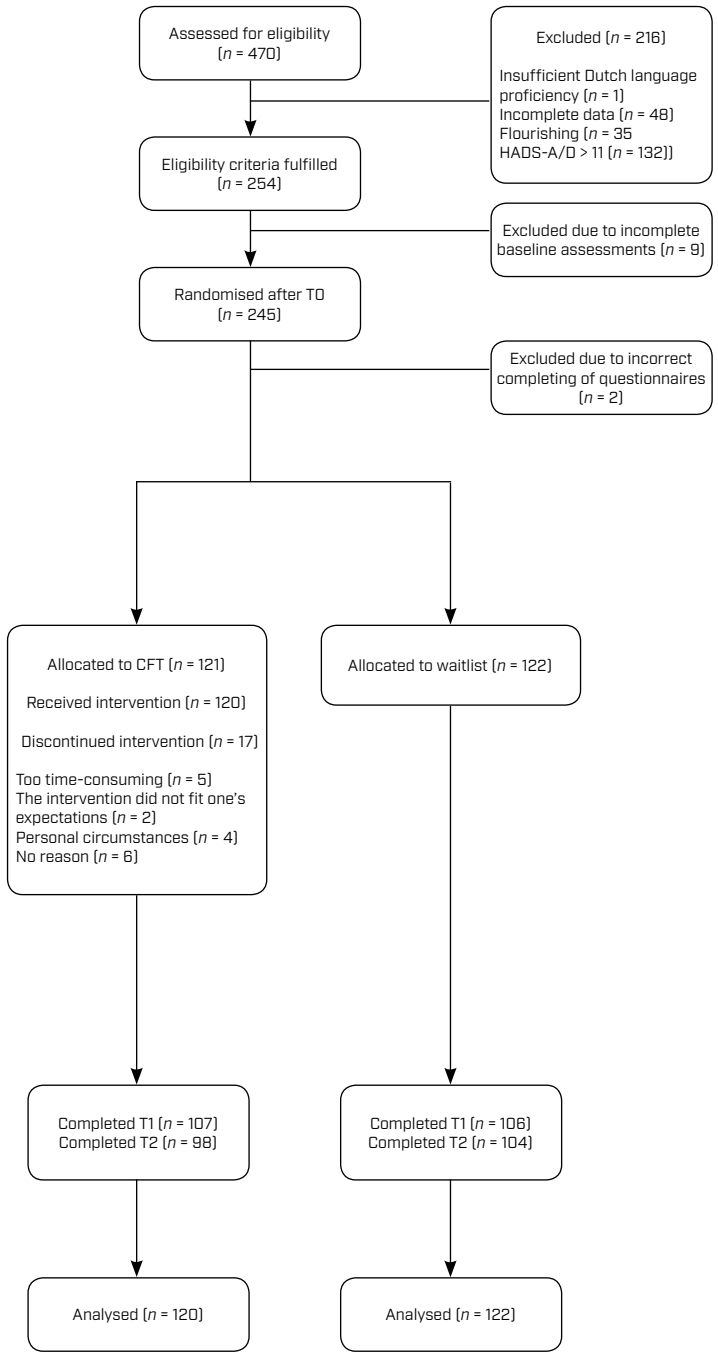


Figure 1. Flowchart of study participants and drop-outs.

Table 1. Baseline characteristics of the participants (*N* = 242)

	Total (*n* = 242)	CFT (*n* = 120)	WLC (*n* = 122)
Age, years			
Mean (*SD*)	52.87 (9.99)	52.83 (9.78)	52.90 (10.22)
Range	20 – 78	20 – 78	26 – 78
Gender, *n* (%)			
Male	61 (25.2)	24 (20.0)	37 (30.3)
Female	181 (74.8)	96 (80.0)	85 (69.7)
Nationality, *n* (%)			
Dutch	242 (100.0)	120 (100.0)	122 (100.0)
Other	-	-	-
Marital status, *n* (%)			
Married/registered partnership	131 (54.1)	62 (51.7)	69 (56.6)
Not married (never married, divorced, widowed)	111 (45.9)	58 (48.3)	53 (43.4)
Living situation, *n* (%)			
With partner	159 (65.7)	76 (63.3)	83 (68.0)
Without partner	83 (34.3)	44 (36.7)	39 (32.0)
Education level (highest level completed), *n* (%)			
Low (primary school, lower vocational education)	1 (0.4)	-	1 (0.8)
Intermediate (secondary school, vocational education)	28 (11.6)	17 (14.2)	11 (9.0)
High (higher vocational education, university)	213 (88.0)	103 (85.8)	110 (90.2)
Daily activities, *n* (%)			
Paid employment	184 (76.0)	92 (76.7)	92 (75.4)
No paid employment	53 (21.9)	25 (20.8)	28 (23.0)
Student	5 (2.1)	3 (2.5)	2 (1.6)

Note. CFT = Compassion Focused Therapy; WLC = waitlist control group.

(Lamers et al., 2011) or who had a score > 11 on the depression and/or anxiety subscale of the Hospital Anxiety and Depression Scale on initial screening (HADS; Zigmond & Snaith, 1983) were excluded. Of the 470 applicants assessed for eligibility, 243 participants were randomly allocated to either CFT (*n* = 121) or a waitlist control condition (*n* = 122). One participant in the CFT group withdrew from the study prior to the start of the intervention and was therefore not included in the analyses. The flow of participants through the study and baseline characteristics can be found in Figure 1 and Table 1, respectively. The conditions did not significantly differ on any of the demographic variables, process measures or outcomes at baseline ($p \geq .06$).

Intervention

The CFT-intervention consisted of a self-help book entitled *Compassion as key to happiness* (Hulsbergen & Bohlmeijer, 2015) that could be worked through in 7 to 9 weeks, with weekly email support from a trained counsellor. In seven lessons based on the CFT approach (Gilbert, 2014), psycho-education regarding compassion, self-reflective and experiential exercises and fictional narratives were used to cultivate compassionate attributes and skills. Downloadable audio exercises were part of the first four lessons. Although the intervention was self-administered, email guidance was offered for personal support, positive reinforcement and increasing adherence. A more extensive description of the intervention can be found in Sommers-Spijkerman et al. (2018).

Participants in the waitlist control group were not offered any intervention, but were free to access any other form of care. Six months after baseline, these participants were offered the CFT self-help book without email counselling.

Measures

In the present study, we used assessments from the RCT performed at baseline (T0), post-intervention at three months (T1), and three-month follow-up (T2; i.e., six months after baseline).

Outcome variables

Outcome measures were the Mental Health Continuum–Short Form (MHC–SF) and the Hospital Anxiety and Depression Scale (HADS). In this study, the baseline and three-month follow-up data were used.

The MHC–SF (14 items, score 0 – 5) measures well-being in three dimensions: 1) emotional well-being (3 items), defined in terms of experiencing positive emotions and life satisfaction; 2) psychological well-being (6 items), defined in terms of positive individual functioning; and 3) social well-being (5 items), defined in terms of positive functioning in society. Participants rated their well-being in the past month, with higher scores reflecting a higher level of well-being. The MHC–SF has been shown to be a valid and reliable instrument (Lamers et al., 2011). In the present study, internal consistency of the total scale was good for all measurements, with $\alpha \geq .84$.

The HADS was used to assess two indicators of psychological distress, i.e., depressive symptoms (HADS-D, 7 items, score 0 – 21) and anxiety symptoms (HADS-A, 7 items, score 0 – 21), in the previous week (Zigmond & Snaith, 1983). Higher scores indicate more depressive or anxiety symptoms. Previous research indicates satisfactory psychometric properties for the HADS (Bjelland, Dahl, Haug, & Neckelmann, 2002; Spinhoven et al., 1997; Stern, 2014). In the current study, internal consistency of both subscales was deemed acceptable for each assessment (HADS–D: $\alpha \geq .72$; HADS–A: $\alpha \geq .69$).

Mediators

The baseline and post-intervention data of the following two process outcome measures were used: the Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS) and the Positive and Negative Affect Schedule (PANAS).

The FSCRS comprises three subscales. The first subscale called *reassured self* measures feelings of soothing and reassurance (8 items, score 0 – 32). The second and third subscale assess self-criticism by measuring both feelings of inadequacy and inferiority (i.e., *inadequate self*, 9 items, score 0 – 36) and feelings of self-hatred and self-contempt (i.e., *hated self*, 5 items, score 0 – 20). In the present study, the reassured self subscale and inadequate self subscale were used to assess self-reassurance and self-criticism, respectively. Higher scores mean a higher level of self-reassurance or self-criticism. The hated self subscale was not used for several reasons. First, this subscale represents a more pathological form of self-criticism which was deemed less relevant in a non-clinical sample. Consistently, previous findings from the RCT (Sommers-Spijkerman et al., 2018) have shown a ceiling effect for hated self with low baseline scores leaving little room for improvement. Second, the CFT intervention evaluated in the RCT was not so much targeted at hated self but rather at inadequate self. Multiple studies have indicated that the FSCRS has good reliability and construct validity (Baião, Gilbert, McEwan, & Carvalho, 2015; Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2004; Kupeli, Chilcot, Schmidt, Campbell, & Troop, 2013). In the current study, internal consistency was satisfactory with alphas $\geq .79$ for self-reassurance and alphas $\geq .83$ for self-criticism.

The PANAS (20 items) examines positive affect (10 items, score 10 – 50) and negative affect (10 items, score 10 – 50), with higher scores reflecting greater levels of positive and negative affect, respectively. The PANAS has shown adequate internal consistency, test-retest reliability and construct validity (PANAS; Boon & Peeters, 1999; Peeters, Ponds, & Vermeeren, 1996; Watson, Clark, & Tellegen, 1988). In this study, we found alphas $\geq .85$ and $\geq .80$ for positive and negative affect, respectively.

Summary of RCT findings

As reported in Sommers-Spijkerman et al. (2018), analyses using repeated measures analysis of variance (ANOVA) indicated superior improvement in the CFT group relative to the waitlist control group at both three and six months on all outcome and process variables, except for positive affect for which superior improvement was only observed at post-intervention. Similar effect sizes were observed at post-intervention (d = .28 – .59) and three-month follow-up (d = 29 – .56). No significant moderators were found. Adherence was high; CFT participants completed on average 6.6 lessons (SD = 1.0) and 74% (n = 89) worked through all seven lessons. Taken together, the results suggest that CFT as bibliotherapy intervention with email support has both short-term and long-term beneficial effects on mental health.

Analyses

Statistical analyses were in agreement with the intention-to-treat (ITT) principle. Missing data were imputed by applying the expectation-maximisation (EM) algorithm (Dempster, Laird, & Rubin, 1977; El-Masri & Fox-Wasylyshyn, 2005). Available data was 100%, 88% and 83.5% at T0, T1 and T2, respectively. Before testing the mediation models, the interrelationships between the mediation variables (i.e., T0–T1 change scores on self-reassurance, self-criticism, positive affect and negative affect) and outcome variables (i.e., T0–T2 change scores on well-being and depressive/anxiety symptoms) were examined using Pearson's correlation coefficient (two-tailed). Correlations < .10 were considered weak, correlations between 0.10 and 0.30 were considered small, correlations between 0.30 and 0.50 were considered moderate and correlations between 0.50 and 1.00 were considered strong (Cohen, 1988). Mediational analyses were conducted using the PROCESS macro developed by Hayes (2012) in SPSS 23.0, following the regression-based path analysis framework of Preacher and Hayes (2004, 2008). First, the cross-product of the coefficient for the relationship between condition (X; CFT = 1, WLC = 0) and mediator (M) (*a*-path) was calculated. Then, the cross-product of the coefficient for the relationship between the mediator (M) and outcome variable (Y) while controlling for X (*b*-path) was calculated. Finally, the overall significance of the $a * b$ effect was tested. For each outcome measure (i.e., well-being, depressive symptoms and anxiety symptoms), we assessed whether changes from T0 to T2 in CFT compared to the waitlist control condition were indirectly affected by changes in self-reassurance, self-criticism and positive/negative affect from T0 to T1, correcting for baseline scores on both M and Y. Both simple and multiple mediation models were tested, wherein indirect effects (*ab*) as well as their corresponding bias-corrected 95% confidence intervals (CIs) were generated. All analyses were based on 5000 bootstrap samples. When the CI did not include zero, the indirect effect was considered significant. A simple mediation model was tested per outcome, wherein the T0–T2 change score on the respective outcome measure was entered as the dependent variable (Y), the dummy variable representing condition (CFT = 1, waitlist = 0) was entered as the independent variable (X), the T0–T1 change score on self-reassurance, self-criticism, positive affect or negative affect was entered as the mediator (M), and the baseline scores on Y and M were entered as covariates. For each outcome measure, multiple mediation models were also tested by simultaneously entering all putative mediators in the model.

Table 2. Means and *SD*s of mediating and outcome variables

Measures	Assessment	CFT (*n* = 120) Mean (*SD*)	WLC (*n* = 122) Mean (*SD*)
MHC-SF – well-being	Baseline	2.35 (0.65)	2.48 (0.65)
	Post	2.94 (0.73)	2.57 (0.67)
	3M-FU	3.01 (0.71)	2.74 (0.68)
HADS – depressive symptoms	Baseline	6.39 (3.26)	6.30 (3.06)
	Post	4.17 (3.33)	5.73 (3.42)
	3M-FU	4.05 (3.00)	5.12 (3.45)
HADS – anxiety symptoms	Baseline	8.13 (2.94)	7.97 (2.99)
	Post	6.01 (3.22)	7.26 (3.27)
	3M-FU	5.57 (2.68)	6.86 (3.38)
FSCRS – self-criticism	Baseline	18.47 (7.29)	18.46 (6.66)
	Post	14.58 (6.03)	17.19 (6.97)
	3M-FU	12.70 (5.85)	16.45 (7.67)
FSCRS – self-reassurance	Baseline	16.18 (4.99)	16.34 (5.03)
	Post	19.46 (4.75)	17.20 (5.25)
	3M-FU	20.04 (4.80)	17.75 (5.23)
PANAS – positive affect	Baseline	32.57 (5.80)	31.99 (6.06)
	Post	35.00 (5.86)	32.67 (6.14)
	3M-FU	35.14 (5.12)	33.55 (5.80)
PANAS – negative affect	Baseline	22.35 (6.07)	22.24 (5.69)
	Post	19.12 (5.55)	21.12 (6.06)
	3M-FU	18.55 (4.81)	20.45 (5.87)

Note. 3M-FU = 3-month follow-up; CFT = Compassion Focused Therapy; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; HADS = Hospital Anxiety and Depression Scale; MHC-SF = Mental Health Continuum–Short Form; PANAS = Positive and Negative Affect Schedule; WLC = waitlist control group.

Results

(Inter)correlations between mediators and outcomes

Means and *SD*s for all outcomes and mediators are presented in Table 2. T0–T1 changes in self-reassurance, self-criticism and positive/negative affect were found to be significantly correlated with one another (see Table 3). A strong correlation was observed between changes in self-reassurance and changes in positive affect. All remaining correlations were either moderate or small. T0–T2 changes in well-being showed a strong correlation with T0–T2 changes in depressive symptoms and a moderate correlation with T0–T2 changes in anxiety symptoms. Furthermore, a strong correlation was found between changes in depressive and anxiety symptoms. All three outcomes showed small correlations with T0–T1 changes in self-reassurance, self-criticism and positive/negative affect.

Table 3. (Inter)correlations between mediating and outcome variables (N = 242)

	1	2	3	4	5	6	7
1. Self-reassurance[a]	-						
2. Self-criticism[a]	-.382***	-					
3. Positive affect[a]	.518***	-.264***	-				
4. Negative affect[a]	-.341***	.373***	-.379***	-			
5. Well-being[b]	.257***	-.128*	.280***	-.199**	-		
6. Depressive symptoms[b]	-.227***	.185**	-.283***	.158*	-.579***	-	
7. Anxiety symptoms[b]	-.232***	.189**	-.163***	.253***	-.435***	.548***	-

[a]Change scores from T0 to T1.
[b]Change scores from T0 to T2.
*p < .05. **p < .01. ***p < .001.

Unique indirect effects of mediators on well-being and distress

Outcomes of the simple mediation models are shown in Table 4. All coefficients of the *c*-paths and *a*-paths were significant, indicating that CFT had a significant positive effect on all outcomes and mediators compared to the waitlist condition. Coefficients of the *b*-paths revealed that all four mediators were significantly associated with well-being and depressive

Table 4. Outcomes of simple mediation models assessing indirect effects of mediators on changes in well-being, depressive symptoms and anxiety symptoms compared to the waitlist control condition

CFT vs WLC	*c*-path[a]	*a*-path[a]	*b*-path[a]	Indirect effects	
				ab	95% CI
MHC-SF – well-being					
FSCRS – self-reassurance	.348***	2.520***	.040***	.101	.041, .182
FSCRS – self-criticism	.347***	-2.860***	-.015*	.044	.004, .106
PANAS – positive affect	.352***	2.088**	.025**	.053	.016, .115
PANAS – negative affect	.346***	-2.063**	-.018*	.036	.004, .091
HADS – depressive symptoms					
FSCRS – self-reassurance	-1.107**	2.372***	-.179***	-.424	-.790, -.170
FSCRS – self-criticism	-1.106**	-2.636***	.096**	-.253	-.541, -.069
PANAS – positive affect	-1.107**	2.023**	-.145***	-.294	-.636, -.091
PANAS – negative affect	-1.106**	-2.061**	.082*	-.169	-.491, .002
HADS – anxiety symptoms					
FSCRS – self-reassurance	-1.367***	2.387***	-.157**	-.375	-.685, -.150
FSCRS – self-criticism	-1.369***	-2.659***	.073*	-.195	-.489, -.017
PANAS – positive affect	-1.356***	1.989**	-.069	-.137	-.370, .010
PANAS – negative affect	-1.362***	-2.098**	.125***	-.263	-.601, -.062

Note. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; HADS–A = Hospital Anxiety and Depression Scale–anxiety subscale; HADS–D = Hospital Anxiety and Depression Scale–depression subscale; PANAS = Positive and Negative Affect Schedule.
[a]Values are unstandardised betas.
*p < .05. **p < .01. ***p < .001.

symptoms, though the magnitude of the association differed across outcomes and mediators. For anxiety symptoms, a significant relationship was found with all mediators but positive affect (p = .061). For well-being, the 95% CIs of the indirect effects did not contain zero in any model, indicating that the effects of CFT versus waitlist on well-being were significantly mediated through T0–T1 changes in self-reassurance, self-criticism, positive affect and negative affect. With regard to psychological distress, the 95% CIs of the indirect effects revealed that the effects on both depressive and anxiety symptoms were significantly mediated by changes in self-reassurance and self-criticism. Also affect was found to play a mediating role in the effectiveness of the CFT intervention in improving psychological distress, whereby effects on depressive symptoms were found to be mediated by changes in positive affect and effects on anxiety symptoms were found to be mediated by changes in negative affect.

Combined indirect effects of mediators on well-being and distress

For each outcome, additional mediational analyses were conducted wherein all mediators were simultaneously added to the model. Coefficients of the *c*-paths and *a*-paths were similar to those in the simple mediation models. As for the simple models, coefficients of the *b*-paths were similar for well-being but considerably smaller for depressive and anxiety symptoms (see Figures 2, 3 and 4).

In a combined mediation model, only T0-T1 changes in self-reassurance remained a significant mediator of the intervention effect on well-being (*ab* = .075, 95% CI [.003, .163]). For depressive symptoms, only changes in positive affect were found to account for the effectiveness of the intervention (*ab* = -.188, 95% CI [-.503, -.001]). Changes in self-reassurance (*ab* = -.287, 95% CI [-.658, -.005]) and negative affect (*ab* = -.222, 95% CI [-.555, -.035]) simultaneously mediated the effect of CFT relative to the waitlist condition on anxiety symptoms.

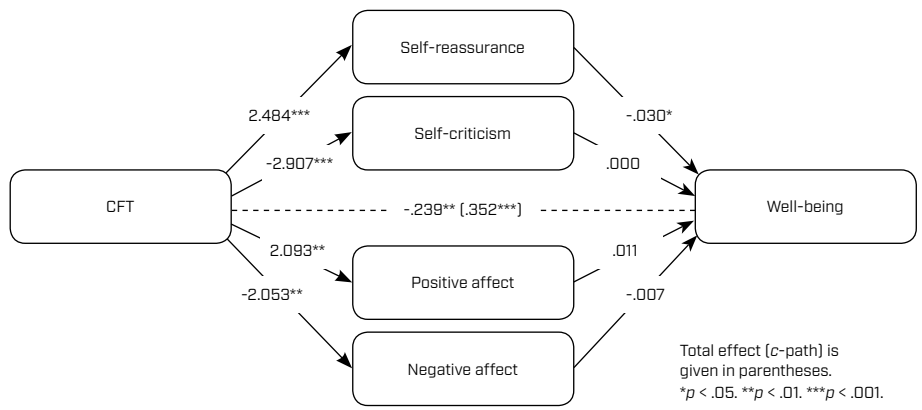


Figure 2. Outcomes of multiple mediation models assessing indirect effects of mediators on changes in well-being compared to the waitlist control condition.

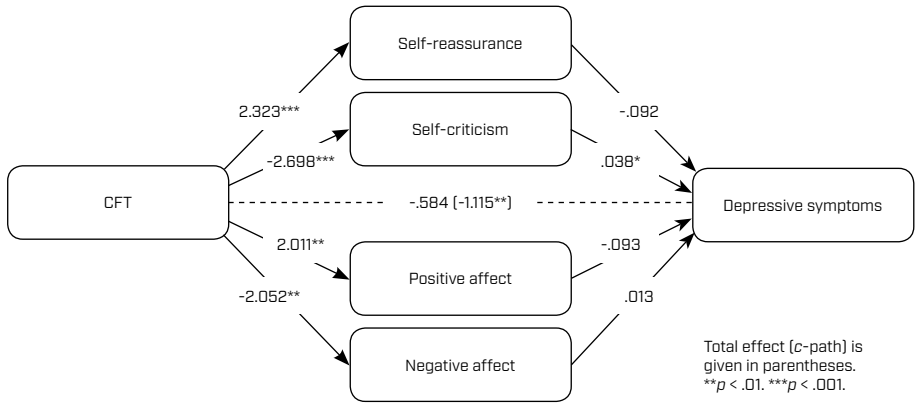


Figure 3. Outcomes of multiple mediation models assessing indirect effects of mediators on changes in depressive symptoms compared to the waitlist control condition.

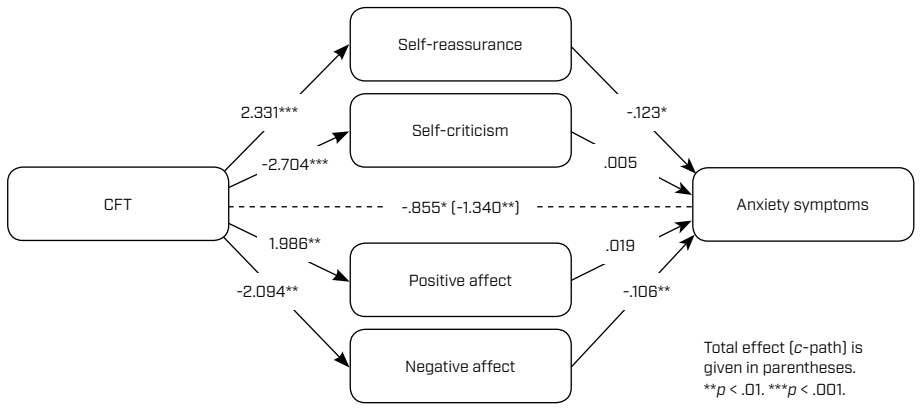


Figure 4. Outcomes of multiple mediation models assessing indirect effects of mediators on changes in anxiety symptoms compared to the waitlist control condition.

Discussion

The present study was the first to examine the mediating role of self-reassurance, self-criticism and positive/negative affect in explaining the effectiveness of CFT, using data from a waitlisted RCT investigating the effectiveness of a guided self-help CFT intervention in an adult community sample with low to moderate levels of well-being and mild distress (Sommers-Spijkerman et al., 2018). In doing so, this study sought to gain empirical support for four theoretical mechanisms of change underlying CFT. Previous findings from the RCT demonstrated that CFT participants significantly improved in terms of well-being as well as several domains of psychological distress, including depression and anxiety, compared to the waitlist control condition. Additionally, significant pre-post improvements were observed in self-reassurance, self-criticism, positive affect and negative affect, which relate to four major therapeutic change processes outlined in the CFT model (Sommers-Spijkerman et al., 2018). Those findings were corroborated in the current study.

In the simple mediation models, changes in well-being and psychological distress in the CFT group versus the waitlist group were significantly mediated by improvements in self-reassurance and self-criticism. Additionally, changes in positive affect were found a significant mediator of the intervention effect on well-being and depressive symptoms while changes in negative affect were found a significant mediator of the intervention effect on well-being and anxiety symptoms. The combined mediation models revealed that the effects of the CFT intervention on well-being were mediated merely through improvements in self-reassurance. With regard to psychological distress, the impact of CFT relative to the waitlist condition on anxiety symptoms was found to be simultaneously mediated by pre-post changes in self-reassurance and negative affect, while changes in positive affect emerged as the sole significant mediator of the intervention effect on depressive symptoms. Thus, it seems that all four variables – self-reassurance, self-criticism and positive/negative affect – mediated the effectiveness of the CFT intervention, but which mechanism mattered most varied per outcome.

A number of findings are worth highlighting. One is that self-reassurance appears a primary mechanism through which CFT operates when it comes to two out of three outcomes (i.e., well-being and anxiety symptoms), thereby lending support for the theoretical framework of CFT. According to Gilbert (2014), the CFT approach comprises several major steps, including: (1) cultivating and building compassionate attributes and skills conducive to the experience of a compassionate self; (2) developing a compassionate sense of self using a range of exercises and techniques including imagery, breathing and voice tones; and (3) using one's compassionate self to engage with and tackle specific problems, such as self-criticism, shame or depressive symptoms. The cultivation of self-reassurance is assumed crucial to the change process during CFT, which is reflected by the first two steps.

Nonetheless, our analyses with depressive symptoms do not corroborate the notion that the cultivation of the ability to reassure oneself in the face of setbacks is the primary and central working mechanism in CFT. A combined mediation model indicated that effects of the CFT self-help intervention on depressive symptoms were solely mediated by changes in positive affect. A caveat here is that pre-post changes in positive affect and self-reassurance strongly correlated with one another (r = .52). Unfortunately, our data are inconclusive regarding the direction of this relationship. Although the theoretical model underlying CFT presumes that changes in (the processing of) positive affect evolve from the cultivation of self-reassurance, this relationship might work the other way around as well. Drawing on

the broaden-and-build theory (Fredrickson, 1998), it is not unlikely that the experience of positive affect encourages people to build compassionate skills. Future research may provide more clarity as to how these change processes relate to one another.

In support of our finding that positive affect has a mediating impact on the effects of CFT on depressive symptoms, multiple studies have demonstrated that psychological interventions fostering positive affect are effective in treating depression (Santos et al., 2013). Nonetheless, this finding is contradictory with a recent experimental study which concluded that compassion-focused interventions may reduce depressive symptoms especially by improving individuals' ability to tolerate negative affect (Diedrich et al., 2016). In this regard it should be noted, however, that the study by Diedrich et al. (2016) was conducted in a clinically depressed sample. It is very well possible that the working mechanisms of CFT function differently in clinical populations versus subclinical populations such as our sample. For instance, while it may be possible to address all four mechanisms simultaneously in a subclinical sample with only mild psychological symptoms, in a clinical sample with more severe levels of distress, it can be expected that self-criticism and negative affect must be mitigated first as to make 'space' for developing self-reassurance and positive affect. In more severely distressed samples, yet also in non-clinical samples such as in our study, it may be crucial as well to address fears, blocks and resistances to compassion which is also a core part of CFT (Gilbert, 2009). Previous work suggests that fear of self-compassion and of receiving compassion from others may impede experiences of warmth, soothing and reassurance and fuel depressive and anxiety symptoms (Gilbert, McEwan, Catarino, Baiao, & Palmeira, 2014; Gilbert, McEwan, Matos, & Rivis, 2011; Hermanto et al., 2016; Matos, Duarte, & Pinto-Gouveia, 2017; Trindade et al., 2018).

Strikingly, self-criticism came out as the least important working mechanism. In the combined models, neither changes in well-being nor psychological distress were found to be mediated by improvements in self-criticism, even though self-critical thinking was also rather actively targeted during the intervention. One possible explanation is that an increase in self-reassurance is a prerequisite to effective coping with self-criticism. As mirrored in step 3 above, self-reassurance is thought to play a key role in activating secondary working mechanisms, including self-criticism. Following the theoretical underpinnings of CFT, participants are likely to adopt a more compassionate or reassuring sense of self as they learn the attributes and skills of compassion, which, in turn, enables them to step out of (habitual) self-critical patterns of thinking and to respond to unpleasant or feared emotions with sympathy, empathy and non-judgment (Gilbert, 2014). Another possible explanation is that participants adopt skills for reducing feelings of personal inadequacy over a longer time interval than skills for a compassionate mind. This is consistent with earlier reported findings from the RCT by Sommers-Spijkerman et al. (2018) indicating that self-reassurance appeared rather stable once learned (at post-intervention) while self-criticism scores, as measured with the inadequate self subscale of the FSCRS, further improved between post-test and three-month follow-up. Finally, this finding may be accounted for by the use of a subclinical sample with relatively low baseline levels of self-criticism. Self-criticism might play a more vital role in clinical samples.

Single mediation analyses revealed that affect played a mediating role when examining the effects of CFT on well-being, as was the case when examining the effects on depressive and anxiety symptoms. In contrast to this finding, the combined models showed mediation by improvements in positive or negative affect when examining the effects on psychological distress but not when examining the effects on well-being, suggesting that changes in affect might constitute a major mechanism through which CFT helps reduce depressive and anxiety symptoms yet a second-order mechanism in the context of well-being. This inconsistency across outcome variables may be partly explained by the use of the PANAS to measure changes in affect. Whereas this self-report questionnaire measures only high arousal (positive and negative) emotions, it is presumed that improvements in well-being during CFT are mainly achieved through fostering low arousal positive affective states such as safeness, calmness and contentment. Due to the constraints of the measurement instrument, we cannot rule out that relevant changes in positive affective states underlying well-being that had been expected to occur among the participants could not have been detected. It is possible that the PANAS was better able to detect affective changes linked to improvements in psychological distress, notably anxiety. In this respect, it should be noted however that low and high arousal positive emotions are likely to cluster with one another. For instance, a study of Fredrickson et al. (2008) demonstrated that practising loving-kindness meditation (LKM), another compassion-based intervention, leads to improvements in both low arousal (e.g., contentment, love, gratitude) and high arousal positive affect (e.g., amusement, joy, pride). In this light, we believe it is reasonable to expect that CFT, like LKM, facilitates low arousal positive affect as well.

Based on the findings of the current study, it seems tenable that the working mechanisms of CFT may be dependent upon the intended outcome of therapy (i.e., increase in well-being or decrease in psychological distress). When the focus is on improving well-being, adopting a soothing and reassured sense of self is likely to matter most. In this case, strengthening the soothing and affiliation system, characterized by positive affective states of calmness, safeness and contentment, is at the core of CFT. However, when CFT is aimed at relieving psychological distress, it becomes equally or perhaps even more important to pay attention to negative affective states characteristic of the threat protection system such as anxiety, guilt or shame. Then, it seems especially important that participants learn to apply the acquired compassionate attributes and skills to regulate their affective states and process emotions in a more adaptive manner.

Limitations

The current study has several limitations. Firstly, compassion was not measured in all its different flows. We focused on self-compassion, and more specifically self-reassurance, for two reasons: 1) the RCT employed an intervention which is primarily focused on cultivating compassion for the self, and 2) at the time the RCT was designed there were no psychometrically valid and reliable measures available that examined compassion for and from others. Secondly, our data allowed for examining a small selection of possible mediating variables. Thirdly, as mediators were measured at baseline and post-test, but not during the intervention, we cannot establish whether the relationship between mediators and outcomes is causal in nature (Murphy, Cooper, Hollon, & Fairburn, 2009). Fourthly, it is likely that the intervention was not identical in every case, for several reasons. CFT was implemented in a flexible manner, adjusting to the circumstances, needs, preferences and progress of the participants. For instance, not every participant performed exactly the same exercises or performed the exercises at the same frequency or in the same order. Furthermore, the email support was provided by five different counsellors who may have used slightly different approaches. Due to these differences, not every mediator may have been targeted to the same extent across participants. To minimise the influence of the counsellor on intervention effects, participants were randomly assigned to a counsellor, all counsellors received the same instructions and counsellors participated in weekly supervision meetings. Fifthly, since the waitlist group received the intervention after the three-month follow-up, we were not able to explore mediators of changes at nine-month follow-up.

Future directions

CFT is increasingly implemented as therapeutic tool in clinical practice even though it remains as yet unclear how exactly it works. Although the current study provides preliminary evidence for four possible working mechanisms underlying the effectiveness of CFT, additional work is needed to replicate and build on these initial findings. To be able to further refine current CFT programs, optimize its effectiveness and tailor it for various target groups with differing characteristics, a vital step is to investigate the presumed mechanisms of change in more detail. Studies designed to measure both mediators and outcomes at multiple intervals over the course of the intervention are recommended to shed more light on the existence and course of therapeutic change processes as well as their interplay (Kraemer et al., 2002). Future research also needs to test the proposition that changes in self-reassurance occur first and subsequently facilitate changes in self-criticism and affect. However, future research should not be limited to achieving a deeper understanding of the mediating role of self-reassurance, self-criticism and positive/negative affect. Self-reassurance is only one facet of (self-)compassion. In order to provide a more complete picture of the mediating role of compassion, other facets of self-compassion as well as compassion to and from others should also be taken into account. From a practitioner's point of view, it would be worthwhile to elucidate which facets of compassion are likely to change by which parts of the intervention (e.g. by which types of exercises). Suitable methods for revealing the active ingredients of CFT can be found in, among others, experience sampling studies and dismantling studies. Alongside cultivating compassion, a main goal in CFT is to address fears of (receiving) compassion (Gilbert, 2014). This would be an important mediator to consider in future research, particularly in the context of growing evidence for the crucial role of fears of compassion in CFT and its impact on treatment outcome. As shown by Hermanto et al. (2016), the relationship between self-criticism and depression is moderated by fear of receiving compassion whereby high fear of compassion increases the depressogenic effect of self-criticism and vice versa for low fear of compassion. With regard to affect regulation as mechanism of change, physiological processes may also be of interest. Previous work has shown that practising compassion has a favourable impact on heartrate variability (Kirby, Doty, Petrocchi, & Gilbert, 2017; Matos, Duarte, & Pinto-Gouveia, 2017; Rockliff, Gilbert, McEwan, Lightman, & Glover, 2008) through increasing parasympathetic activity (Stellar, Cohen, Oveis, & Keltner, 2015) which is characteristic of the soothing and affiliation system. Moreover, CFT may build positive psychological resources such as hope, optimism and gratitude (Neff, Rude, & Kirkpatrick, 2007; Petrocchi & Couyoumdjian, 2015; Yang, Zhang, & Kou, 2016) and impact many other (transdiagnostic) processes underlying mental health including shame, rumination, experiential avoidance and psychological inflexibility (e.g. Boersma, Håkanson, Salomonsson, & Johansson, 2014). These and other relevant processes also deserve attention as possible mechanisms of change in CFT. Finally, the current study investigated mediators of changes in CFT in a non-clinical population. Future work may reveal whether improvements in well-being and distress during CFT follow similar or different trajectories in both non-clinical and clinical populations.

Conclusions

The present study provides preliminary empirical evidence that CFT operates through multiple mechanisms of change, namely through cultivating self-reassurance, reducing self-criticism and regulating positive and negative affect. Which of these mechanisms lies at the heart of the therapeutic change process seems to depend on the goal of CFT, i.e., improving well-being or relieving psychological distress. To further advance the development of CFT, there is a need for more research in this area applying more rigorous designs, such as dismantling studies, to replicate these findings, to further explore the interrelationships between relevant therapeutic change processes and to elucidate other active ingredients in CFT.

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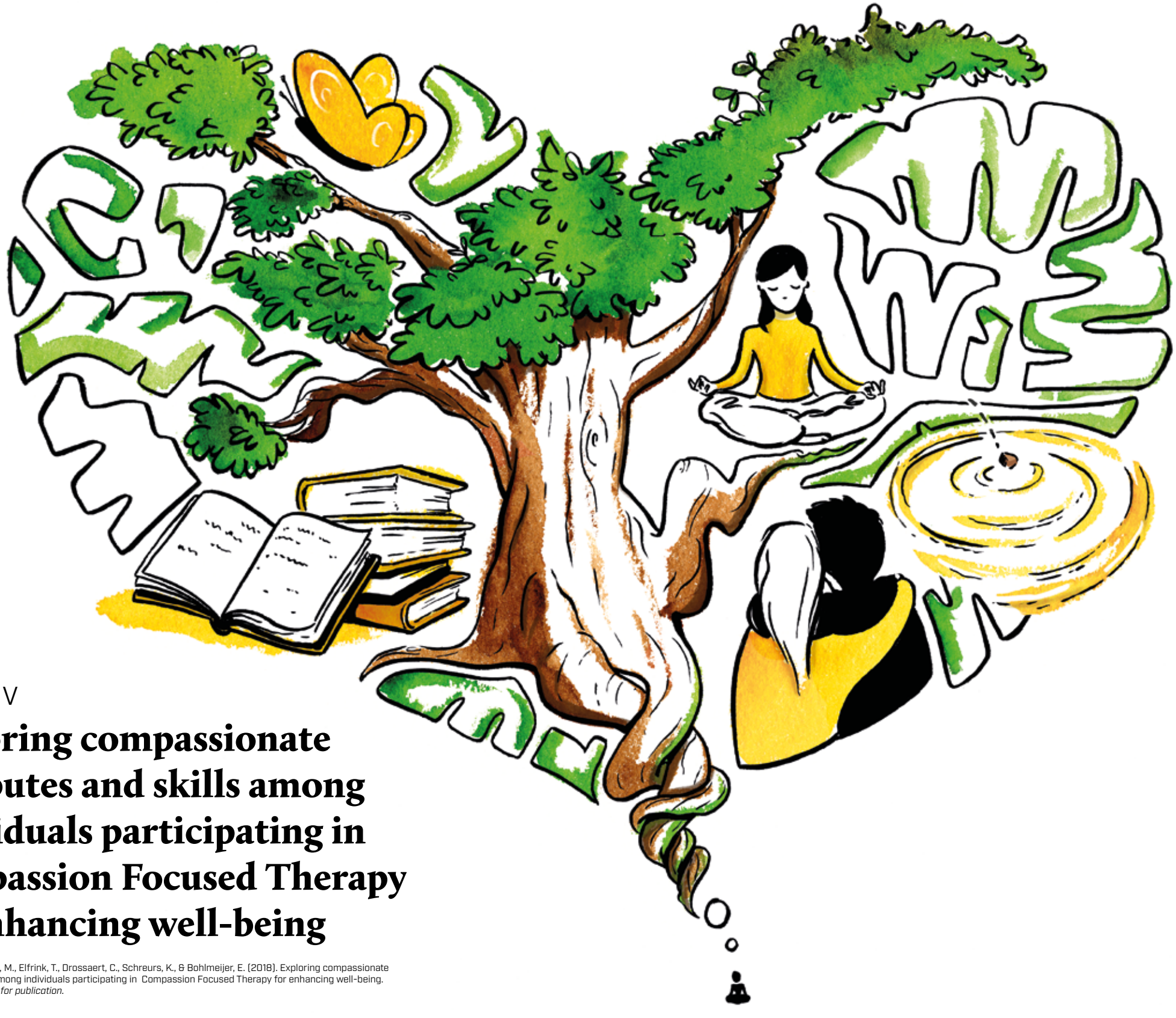

Chapter V

Exploring compassionate attributes and skills among individuals participating in Compassion Focused Therapy for enhancing well-being

Sommers-Spijkerman, M., Elfrink, T., Drossaert, C., Schreurs, K., & Bohlmeijer, E. (2018). Exploring compassionate attributes and skills among individuals participating in Compassion Focused Therapy for enhancing well-being. *Manuscript submitted for publication.*

Abstract

The conceptual approach of compassion underlying Compassion Focused Therapy (CFT) is based on theoretical rather than empirical grounds. The aim of the present study was to seek empirical support for components of compassion as outlined in the theoretical model underpinning CFT, and to explore which components, if any, matter most for improving well-being. A sequential exploratory mixed methods design was employed. Alongside a randomised controlled trial (RCT), we systematically examined 625 emails sent by 87 RCT participants to 5 counsellors during the course of a well-being enhancing CFT self-help intervention, to identify theoretically-based compassionate attributes and skills. Next, in a quantitative analysis, we compared participants who did and did not show clinically relevant improvement on well-being with regard to the occurrence of compassionate attributes and skills. Although the theoretical model of compassion integral to CFT was largely supported by the emails, it was slightly simplified so as to better fit the data. The adjusted model comprises five compassionate attributes (i.e., care for well-being, sensitivity, empathy, distress tolerance, common humanity) and four compassionate skills (i.e., compassionate attention, reasoning, behaviour and feeling/sensation). Three illustrative cases are presented to contribute to a better understanding of fundamental components of compassion. Quantitative analyses indicate that participants showing clinically relevant improvement on well-being expressed significantly more compassionate feeling/sensation compared to those who did not. We found preliminary evidence for the conceptualisation of compassion underlying CFT. Compassionate feeling/sensation bears particular interest when well-being is the intended outcome of CFT.

Introduction

Over recent years, increasing attention has been drawn to compassion as a key resource for mental health. In brief, compassion can be understood in terms of the ability to be sensitive to the suffering of self and others combined with a commitment to try to alleviate or prevent it (Gilbert, 2014b). The growing interest for compassion gave rise to the development and evaluation of various compassion-based interventions of which Compassion Focused Therapy (CFT; Gilbert, 2009; Gilbert, 2014b) currently is the best evaluated (Kirby, 2017; Kirby, Tellegen, & Steindl, 2017; Leaviss & Uttley, 2015). CFT has been shown to elicit favourable effects on psychological symptoms and well-being in multiple studies (e.g., Braehler et al., 2013; Gilbert & Procter, 2006; Shapira & Mongrain, 2010; Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018).

Although the cultivation of compassion has been postulated as the primary working mechanism behind the positive effects of CFT on mental health, there is as yet little empirical evidence to support this. Even more limited is research on change processes which account for improvements in compassion during CFT. Therapy change process research is deemed a valuable complement to effectiveness research in randomised controlled trials as it may shed further light on how and why CFT works in some individuals and not in others (Elliot, 2010). To aid advances in therapy change process research in this emerging field, it is essential to increase empirical knowledge of key processes of compassion.

In his dual theoretical model of compassion, Gilbert (2009, 2014b) outlines various underlying processes of compassion. The model posits that, to develop a compassionate self, one must adopt two mindsets or 'psychologies', encompassing a multitude of compassionate attributes and skills. The first mindset involves the motivation and ability to notice, engage with and make sense of the suffering of self and others. Six engagement attributes are distinguished pertaining to this first dimension of compassion (i.e., sensitivity to suffering), that is, (1) *care for well-being*, the motivation/willingness to address suffering and/or facilitate flourishing; (2) *sensitivity*, the ability to recognise suffering; (3) *sympathy*, the capacity to feel emotionally connected to suffering; (4) *distress tolerance*, the ability to stay with and tolerate rather than avoid or deny emotions evoked by suffering; (5) *empathy*, the ability to stand back from and understand suffering; and (6) *non-judgment*, the ability to take an accepting, non-critical and non-condemning approach. According to Gilbert's model, the second mindset of compassion involves the skills and wisdom to undertake actions toward preventing or alleviating suffering of the self and others. This requires a set of six transformative skills, including (1) *compassionate attention*, the ability to pay attention to what is helpful and supports us; (2) *compassionate reasoning*, the ability to use supportive, reassuring thought patterns; (3) *compassionate behaviour*, the ability to act upon suffering in a way that alleviates distress and facilitates development and growth;

(4) *compassionate imagery*, the ability to apply imagery and meditation-like practices in order to cultivate affiliative emotions; (5) *compassionate feeling*, the ability to experience emotions linked to compassion; and (6) *compassionate sensation*, the ability to generate physical states conducive to compassion.

Although several studies indicate that CFT may contribute to greater levels of compassion (Arimitsu, 2016; Matos et al., 2017), little empirical knowledge is available on these underlying attributes and skills. In recent years, a handful of studies have explored fundamental processes underlying the inner transformation from a self-critical towards a self-compassionate self, whether or not in relation to CFT (Lawrence & Lee, 2014; Waite, Knight, & Lee, 2015). Using interpretative phenomenological analysis of semi-structured interviews, these studies make the process of becoming self-compassionate more insightful, thereby touching upon some of the theory-driven attributes and skills of compassion such as distress tolerance and non-judgment. Yet, the observations made are based on very small samples and focus on rather specific, clinical populations, namely patients in recovery from psychosis (Waite et al., 2015) and patients with posttraumatic stress disorder (PTSD) who had completed a CFT course for trauma (Lawrence & Lee, 2014). Moreover, these studies do not comprehensively address all aspects of the theoretical model integral to CFT.

The present study sought to provide empirical support for the entire theoretical model of compassionate attributes and skills in a more generic population. In order to do so, the study builds upon a two-arm randomised controlled trial (RCT) investigating the effectiveness of CFT as guided self-help in a self-selected Dutch community sample with low to moderate levels of well-being (Sommers-Spijkerman et al., 2018). Findings from the RCT demonstrated that despite overall effectiveness of the intervention at group-level, individual participants responded differently to the intervention. Self-compassion emerged as a mediator of the effects of CFT on well-being (Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, in press). However, these findings remain inconclusive as to which compassionate processes precisely bring about improvements in well-being.

In the intervention group of the RCT, who followed a nine-week CFT-based self-help intervention with email counselling for enhancing well-being, we aimed to disclose aforementioned theoretically-based compassionate attributes and skills through analysing email narratives from participants to their counsellor so as to find preliminary support for the two mindsets of compassion integral to CFT. To provide a meaningful lens from which to understand the facets of compassion, a number of illustrative cases from the trial are presented. A secondary aim was to explore which compassionate attributes and skills, if any, matter most for improving well-being.

Materials and methods

Design

We use data collected in the context of a recent waitlist RCT investigating the effects of CFT as guided self-help on well-being in a Dutch community sample (Sommers-Spijkerman et al., 2018). CFT was offered as guided self-help including email counselling. The present study employed a sequential exploratory mixed methods design (Creswell & Plano Clark, 2007; Hanson, Creswell, Clark, Petska, & Creswell, 2005). In the first step, email messages sent from the participants in the CFT group to their counsellor throughout the intervention period were content analysed to identify compassionate attributes and skills as defined by Gilbert (2009, 2014b). A qualitative exploration of a number of individual cases serves to further deepen the reader's understanding of attributes and skills underlying compassion revealed by the content analysis. This is followed by the quantitative part of the study, in which we compared participants who did and did not show clinically relevant improvement on well-being with regard to the occurrence of the different attributes and skills.

This study was approved by the Faculty of Behavioural Sciences Ethics Committee at the University of Twente (BCE17382). Informed consent was obtained from all participants, also regarding the use of sent emails for scientific purposes.

Participants

The RCT sample comprised 242 participants with low to moderate levels of well-being, as determined by the Mental Health Continuum–Short Form (MHC–SF; Keyes, 2002; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011), of whom 120 were allocated to CFT and 122 to a waitlist control condition. For the current study, we used data from all participants in the CFT group who completed the CFT self-help intervention and reflected on each lesson in the email correspondence with the counsellor within a nine-week intervention period (n = 87). The majority of the sample was female (80.5%), high-educated (81.6%) and in paid employment (78.2%) (Table 1). Mean age of the participants was 51.92 years (SD = 9.63).

The intervention

The CFT intervention consisted of the self-help book *Compassion as key to happiness* (Hulsbergen & Bohlmeijer, 2015) and weekly email counselling. The book comprises seven lessons based on the CFT principles (Gilbert, 2014b) that had to be completed in nine weeks. Each lesson consists of psycho-educational information on a key component of compassion and a broad variety of self-reflective and experiential exercises to cultivate compassionate attributes and skills. Participants were instructed to complete one lesson per week in sequential order. They received email guidance from a counsellor on a weekly basis. All participants were randomly assigned to one of five counsellors. Counsellors were MSS, TE,

Table 1. Socio-demographic characteristics of the participants (*n* = 87)

Socio-demographics	Total (*n* =87)	Improvers[a] (*n* =42)	Non-improvers[b] (*n* =45)	*p*[c]
Age, years				.815
M (*SD*)	51.92 (9.63)	51.67 (10.58)	52.16 (8.77)	
Range	20 – 69	20 – 69	33 – 68	
Gender, *n* (%)				.332
Male	17 (19.5)	10 (23.8)	7 (15.6)	
Female	70 (80.5)	32 (76.2)	38 (84.4)	
Nationality, *n* (%)				-
Dutch	87 (100.0)	42 (100.0)	45 (100.0)	
Other	-	-	-	
Marital status, *n* (%)				.906
Married/registered partnership	45 (51.7)	22 (52.4)	23 (51.1)	
Not married (never married, divorced, widowed)	42 (48.3)	20 (47.6)	22 (48.9)	
Living situation, *n* (%)				.362
With partner	56 (64.4)	25 (59.5)	31 (68.9)	
Without partner	31 (35.6)	17 (40.5)	14 (31.1)	
Education level (highest level completed), *n* (%)				.879
Low (primary school, lower vocational education)	-	-	-	
Intermediate (secondary school, vocational education)	16 (18.4)	8 (19.0)	8 (17.8)	
High (higher vocational education, university)	71 (81.6)	34 (81.0)	37 (82.2)	
Work situation, *n* (%)				.540
Paid employment	68 (78.2)	34 (81.0)	34 (75.6)	
No paid employment	16 (18.4)	6 (14.3)	10 (22.2)	
Student	3 (3.4)	2 (4.8)	1 (2.2)	

Note. [a]Improvers are participants who showed a clinically relevant improvement on well-being between baseline and post-intervention. [b]Non-improvers are participants who did not show a clinically relevant improvement on well-being between baseline and post-intervention. [c]*p*-values of chi-square tests and independent *t*-tests comparing improvers and non-improvers.

one graduated psychologist and two Master students Psychology. All five counsellors were trained and supervised by two experienced healthcare psychologists (KS and EB). Counsellors and supervisors met once a week for supervision, during the intervention phase, to discuss specific topics and cases brought in by the counsellors. Participants were asked to introduce themselves in the first email. Subsequently, participants were requested to send an email about their progress and experiences once a week, generally after completing a lesson. Participants received a response from their counsellor on a fixed day of the week. The counsellors were instructed to positively reinforce participants, to provide feedback, to answer questions, to prompt participants who did not send an email, and to introduce the theme of the next lesson. A more extensive description of the intervention can be found in (Sommers-Spijkerman et al., 2018).

Data analyses

The data consisted of 625 email messages sent by 87 CFT participants to their counsellors during the nine-week intervention period. Participants sent on average 7.18 email messages to their counsellor (*SD* = .67, range: 5 – 9). The emails were analysed using both qualitative and quantitative techniques.

Content analysis

Directed qualitative content analysis (Hsieh & Shannon, 2005) was used with the aim to identify attributes and skills underlying compassion reflected in the participants' email messages and ultimately find evidence for the theoretical model underlying CFT. Participants' emails were systematically organised using a coding scheme. This coding scheme was developed using a deductive approach, that is, we used predefined compassionate attributes and skills derived from the theoretical model outlined in Gilbert (2014b). For relevant data that could not be coded using these predetermined categories, it was determined whether they represent a new category. Prior to the coding, all email correspondence was anonymously saved in word documents labelled with a unique respondent number. All information that is traceable to the participant was removed from the email conversations, e.g., participants' own or family-member names and places of residence. MSS created a draft coding scheme. This draft coding scheme was tested by MSS and TE, independently from one another, on 58 emails written by eight random participants, whereby each attribute and skill was counted once per email message (1 = present, 0 = absent), with a maximum count of 9.

In this and subsequent coding rounds, respondent numbers were randomly drawn by CD or KS. Both coders were blind to the identity of the counsellor as well as to intervention outcomes. After the first coding round, the scheme was adjusted and tested again by both coders on the emails (*n* = 42) of six other participants. In a similar third coding round, consensus was reached regarding the coding scheme and interrater reliability was deemed satisfactory (Cohen's kappa = 0.68; Landis & Koch, 1977). The final coding scheme (see Tables 2 and 3) was applied by MSS to code all email messages written by the participants to their counsellor. For each participant, messages were analysed in chronological order. Two emails sent briefly after one another, without a response from the counsellor in between, were counted as one message. Email messages concerning illness or delay, in which the participant did not relate to the contents of the intervention, were not analysed. When there was doubt about the assignment of a particular code, TE was consulted.

Multiple case study

To gain a better understanding of how the attributes and skills underlying compassion were manifested in the emails, a multiple case study approach was employed. Following the diverse case method (Seawright & Gerring, 2008), three illustrative cases with diverse

backgrounds and motivations to participate in the study were drawn from the total sample. MSS and CD read through the emails of each case, repeatedly. Independently from one another, both authors took notes of their impressions and thoughts, thereby focusing on: the participant's background and motivation to follow the intervention, the participant's process of (re)constructing a compassionate self (e.g., which compassionate attributes/skills are helpful for the participant and how do these evolve over the course of the intervention), and outcomes of the intervention from the perspective of compassion. Next, MSS and CD discussed the content of the emails, compared notes and produced consensual descriptions of the three cases. In this paper, the cases are presented in narrative form, using fictitious names. The purpose of these qualitative case descriptions is not so much to present a complete picture of the participants' experiences with compassion, but rather to provide a meaningful lens from which to understand the phenomenon of compassion. Each case exemplifies multiple compassionate attributes and skills and altogether the cases illustrate the range of deductively generated compassionate attributes and skills.

Quantitative analyses

To facilitate quantitative analyses, per participant and per attribute/skill an average frequency per message was calculated. First, the total frequency of the respective compassionate attribute/skill was determined by summing the number of counts per participant over the course of the intervention. Next, the total frequency of the attribute/skill was divided by the total number of email messages sent by the participant. From now on, when using the term *frequencies*, we refer to average frequencies.

We assessed intercorrelations across frequencies of compassionate attributes and skills using Spearman's rho (two-sided, $p < .05$). Correlations were deemed weak (< .10), small (0.10 – 0.30), moderate (0.30 – 0.50), or strong (0.50 – 1.00) (Cohen, 1988).

With regard to frequencies of compassionate attributes and skills, a comparison was made between improvers and non-improvers in terms of well-being. The RCT findings (Sommers-Spijkerman et al., 2018) indicate that 42 out of the 87 eligible CFT participants (48.3%) showed clinically significant changes in well-being from baseline to post-intervention. These participants were therefore categorised as *improvers*. The remaining 45 participants (51.7%) did not exhibit clinically significant change, hence were labelled as *non-improvers*. Improvers and non-improvers did not significantly differ with regard to any of the demographics (see Table 1). Fisher's Exact test (two-sided) indicated no significant differences in study drop-out ($p = 1.000$) and intervention adherence ($p = 1.000$) between improvers and non-improvers. There was also no significant difference in the number of emails sent by improvers ($n = 301$, $M = 7.17$, $SD = .66$, range: 6 – 9) and non-improvers ($n = 324$, $M = 7.20$, $SD = .69$, range: 5 – 9), $t(85) = .23$, $p = .819$.

Independent samples *t*-tests ($p < .05$) were conducted for each attribute/skill, separately.

Due to the large number of comparisons in the correlational analyses and *t*-tests, the Benjamini-Hochberg procedure was employed to control the false discovery rate (FDR, i.e., expected ratio of *n* erroneous rejections to *n* rejections) (Benjamini & Hochberg, 1995; Thissen, Steinberg, & Kuang, 2002). The largest observed *p*-value which was smaller than its FDR-corrected *p*-value and all *p*-values smaller than that were deemed significant. Only FDR-corrected *p*-values are reported. The FDR was set at .05. All quantitative analyses were conducted using SPSS version 24.0.

Results

Testing the theoretical model of compassion

During the qualitative content analysis, several adaptations were made to the original theoretical model underlying CFT in order to better fit the data. First, given that *sympathy* was generally expressed simultaneously with *empathy* and rarely on its own (i.e., without *empathy*), the definition of *empathy* was broadened to a two-dimensional attribute distinguishing between cognitive and emotional *empathy*. Second, based on the data at hand, reflecting on suffering of ourselves and others from a non-judgmental view is considered a form of compassionate reasoning, hence *non-judgment* was integrated in the definition of *compassionate reasoning*. Third, it was found difficult to distinguish between emotional and bodily feelings of compassion, i.e., *compassionate feeling* and *compassionate sensation*. For instance, when participants reported feeling calm, content, grateful or relaxed, it was often unclear whether this concerns physiological sensations such as a reduced heart rate or breathing, emotional sensations, or both. Therefore, *compassionate feeling* and *compassionate sensation* were merged into *compassionate feeling/sensation*. Fourth, in the context of the trial, for many participants, *compassionate behaviour* involved conducting exercises from the intervention. Since the intervention incorporates several visualisation and meditation exercises, *compassionate imagery* may be considered a specific form of *compassionate behaviour*. *Compassionate imagery* was therefore integrated into *compassionate behaviour*. Finally, one additional compassionate attribute emerged from the emails, namely *common humanity*, which relates to the ability to recognise that suffering is part of the human experience and that we are not alone in our suffering.

Aforementioned modifications resulted in a slightly less nuanced model with five compassionate attributes and four compassionate skills, all of which were reflected in the emails. Conceptualisations of the compassionate attributes and skills are provided in Table 2. For the attributes, *sensitivity* was most frequently expressed and *common humanity* the least frequent. The most and least frequently manifested skills were *compassionate behaviour* and *compassionate attention*, respectively. Participants showed on average 3.39 different

attributes (*SD* = .83, range: 1 – 5) and 3.74 different skills (*SD* = .58, range: 1 – 4). Out of 87 participants, 4 (4.6%) exhibited all attributes and 69 (79.3%) exhibited all skills. Over the course of the intervention, three participants (3.4%) expressed all five attributes and all four skills in the emails.

Table 2. Compassionate attributes and skills

Compassionate attribute/skill	Definition	%		
		Total	I	NI
Care for well-being	Motivation/intention to be caring for the purpose of alleviating suffering and facilitating flourishing of the self or others.	36.3	36.2	36.4
Sensitivity	Ability to be attentive to and recognise (stimuli that trigger) suffering of the self or others (e.g., unpleasant feelings).	53.1	49.2	56.8
Distress tolerance	Ability to contain, stay with and tolerate suffering/distress (e.g., unpleasant feelings, memories or situations) rather than avoid, fearfully divert from, close down, contradict, invalidate or deny them.	7.8	10.0	5.9
Empathy	Ability to stand back from and view our own or others' suffering and its causes from the perspective of someone else or different parts of ourselves (*cognitive empathy*) and/or to emotionally connect with the suffering of self or others (*emotional empathy/sympathy*). This concerns a reflection on thoughts and feelings underlying suffering/distress and does not involve a shift in thinking styles.	46.2	45.5	46.9
Common humanity	Ability to recognise that suffering is part of the human experience and that we are not alone in our suffering.	3.0	4.0	2.2
Compassionate attention	The process of becoming aware of or focus one's attention on things that are helpful and supportive.	30.2	31.6	29.0
Compassionate reasoning	Thinking about and reflecting on the world, ourselves and others from a balanced perspective with the purpose of alleviating or preventing suffering, and to experience these thoughts as kind, supportive and helpful. This includes *non-judgment*, that is, taking an accepting, non-critical and non-condemning view/attitude towards ourselves and others.	46.2	51.8	41.0
Compassionate behaviour	Engaging in activities/behaviours that help to alleviate or prevent suffering and facilitate positive feelings, development and growth. This may involve both passive and active actions (e.g., using imagery/meditation to generate compassionate feelings for the self and others).	76.8	77.7	75.9
Compassionate feeling/ sensation	Experiencing emotional and/or bodily feelings of warmth, kindness and soothing when being compassionate, experiencing compassion from others or being self-compassionate.	35.0	42.5	28.1

Note. I = improvers. NI = non-improvers. The percentages give the proportion of email messages wherein a particular attribute is expressed within the total number of sent email messages. For example, care for well-being was expressed in 36.2% of all messages sent by improvers to their counsellor.

Illustrative cases

To illustrate compassionate attributes and skills, we report three cases from the trial. Each case pertains to a different life domain: health, social relationships and work, respectively.

Case 1: female, 53 years, compassion in the context of health

Emma experiences chronic stress and fatigue. As a breast cancer survivor, she experiences a lot of stress surrounding illness and death. Emma is familiar with mindfulness. As a next step, she wishes to develop more self-compassion in order to be better able to deal with stress, hence her participation in the self-help intervention *[care for well-being]*. Over the course of the intervention, she becomes more aware of and attentive to her stress and underlying feelings of anxiety, guilt, anger and sadness, but also to the suffering of others *[sensitivity]*. At first, she finds this confronting, but throughout the course she gradually learns to embrace and accept these unpleasant feelings *[distress tolerance]*, leaving more room for feelings of calmness, contentment and relatedness *[compassionate feeling/sensation]*. The self-help book provides her with a lot of compassion resources which are increasingly integrated in her everyday life *[compassionate behaviour]*, helping her to gain a feeling of control over her stress. A significant moment is in the fifth week when she has her annual cancer check-up at the hospital. Emma describes how she applied several breathing and visualisation exercises learned during the course *[compassionate behaviour]*, enabling her to embrace feelings of restlessness, anxiety and insecurity *[distress tolerance]* and reduce stress.

Case 2: male, 65 years, compassion in the context of relationships

Paul struggles with experiences of loss and grief at the start of the self-help intervention, loss of health (prostate cancer), loss of job (recently retired), renewed grief over his deceased son, and most notably loss of his long-term relationship. He reports mixed feelings of sadness, anger, regret and revenge *[sensitivity]*. In the emails, he shows a change in perspective regarding his broken relationship, from a failure experience toward an enriching experience which enabled him to grow and become the person he is now *[compassionate reasoning]*, which is accompanied by feelings of kindness and gratitude *[compassionate feeling/sensation]*. Not only does Paul adopt a more kind and accepting view towards his self, he is also able to expand his compassion to others, even to his ex-girlfriend *[compassionate reasoning]*. As he lets go of his ex-girlfriend and becomes increasingly at peace with the break-up, he finds himself able to engage in and fully commit to existing and new meaningful friendships and relationships *[compassionate behaviour]*. Also, a shift in attention can be noticed from 'losses' to 'gains'. In the end, Paul focuses more on all the positive things in his life and seems to have regained a sense of purpose and meaning *[compassionate attention]*.

Case 3: female, 31 years, compassion in the context of work

From an early age, Lisa has been very self-critical and vulnerable to stress. She has the tendency to set the bar too high, to focus on her shortcomings rather than on her strengths and she does not allow herself to make mistakes. Central to her life story is the fear of not being good enough. Over the course of the intervention, Lisa becomes more and more

aware of her self-critical and self-condemning thoughts *[sensitivity]*. She realises that these unhealthy thought patterns can be traced back to early childhood experiences. She grew up in an unsafe neighbourhood, did not have a secure relationship with her mother, and experienced a lack of autonomy and parental support *[empathy]*. Lisa has the deep desire to feel more content with herself, and hopes to achieve this by participating in the self-help intervention *[care for well-being]*. From the emails, it becomes clear that especially in the work domain she feels stressed, frustrated and insecure, due to a negative and uninspiring atmosphere among colleagues *[sensitivity]*. The exercises contribute to a sense of empowerment. Step by step, Lisa gains the courage and confidence to undertake actions toward altering her work situation. Before the end of the course, she takes several major steps, e.g., applying for a job and exploring opportunities to start her own business *[compassionate behaviour]*.

Intercorrelations between compassionate attributes and skills

Intercorrelations of (frequencies of) compassionate attributes and skills are shown in Table 3. In general, most correlations were positive but insignificant. All significant correlations fell in the small to moderate range. It appears that compassionate skills are more intercorrelated than compassionate attributes. Only common humanity was not correlated with any of the other attributes or skills. Most correlations were found for *compassionate attention*, followed by *empathy* and *compassionate feeling/sensation*.

Table 3. Spearman intercorrelations of frequencies of compassionate attributes and skills

Compassionate attribute/skill	1	2	3	4	5	6	7	8	9
1. Care for well-being	-								
2. Sensitivity	.06	-							
3. Distress tolerance	.09	.12	-						
4. Empathy	.36*	.31*	.09	-					
5. Common humanity	-.15	.06	-.02	.07	-				
6. Compassionate attention	.02	.26*	.28*	.31*	.05	-			
7. Compassionate reasoning	.21	.08	.16	.03	.02	.28*	-		
8. Compassionate behaviour	.11	.24	.28*	.25	-.11	.30*	.03	-	
9. Compassionate feeling/sensation	.18	.32*	.23	.36*	.09	.42***	.25	.32*	-

Note. Benjamini-Hochberg false discovery rate-corrected *p*-values are used. *$p < .05$. ***$p < .001$.

A comparison of improvers and non-improvers

Compassionate attributes

All attributes were expressed in the emails of both improvers and non-improvers. For both improvers and non-improvers, *sensitivity* was the most commonly expressed compassionate attribute, followed by *empathy* (see Table 2). *Common humanity* was the least observed attribute in the email narratives, regardless of whether one profited from the intervention or not. None of the compassionate attributes yielded statistically significant differences in frequencies across improvers and non-improvers ($p \geq .297$). Also no statistically significant differences were found in the number of different attributes between improvers and non-improvers, $t(85) = .37$, $p = .716$. Improvers and non-improvers expressed minimum one and maximum five different attributes (improvers: $M = 3.36$, $SD = .82$; non-improvers: $M = 3.42$, $SD = .84$).

Compassionate skills

All four compassionate skills emerged in the emails of improvers and non-improvers. *Compassionate behaviour* was most frequently observed in the emails of both groups, that is, in more than three-quarters of all sent messages. The lowest-frequency skill for the improvers was *compassionate attention*. For non-improvers, the lowest-frequency skill was *compassionate feeling/sensation*, closely followed by *compassionate attention*. *Compassionate feeling/sensation* was more frequently expressed by improvers compared to non-improvers during the nine-week intervention period, $t(85) = -3.14$, $p = .018$. For the remaining skills, no significant differences in frequencies were found between improvers and non-improvers ($p \geq .171$). The diversity in compassionate skills did not significantly differ across groups, $t(75.7) = -1.55$, $p = .125$, with improvers showing 2 to 4 different skills ($M = 3.83$, $SD = .44$) and non-improvers showing 1 to 4 different skills ($M = 3.64$, $SD = .68$).

Discussion

To our knowledge, this is the first study that empirically explored components of compassion as outlined in the theoretical model underpinning CFT. In the intervention group of a recent RCT, who followed a CFT-based self-help intervention with email counselling for enhancing well-being, we sought support for the model through analysing email narratives from participants to their counsellor. While the model presumes that compassion involves six attributes and six skills, supposedly theoretical distinct, during the coding process it proved difficult to empirically distinguish all these attributes and skills. We slightly modi-

fied the original model to better fit the data, resulting in a simplified model including five compassionate attributes (i.e., *care for well-being, sensitivity, empathy, distress tolerance* and *common humanity*) and four compassionate skills (i.e., *compassionate attention, reasoning, behaviour* and *feeling*). All of these attributes and skills emerged in the emails. As such, our data largely support the theoretical model of compassion underlying CFT.

Whereas the five compassionate attributes identified in the current study have been acknowledged as facets of compassion in prior research, it seems that transformative skills of compassion have been largely ignored in existing definitions and measures of compassion (Strauss et al., 2016). In this light, an interesting observation in the current study was that a large proportion of participants expressed all four compassionate skills (79.3%), albeit only a few (n = 4, 4.6%) exhibited all five compassionate attributes. A potential explanation is that learning compassionate attributes takes place more implicitly, that is, outside people's awareness, while learning compassionate skills takes place more explicitly or inside people's awareness, leading participants to express skills more frequently than attributes. It is also possible that participants were less inclined to write about engagement attributes, because the intervention was more action-oriented, i.e., emphasis was on skills of compassion.

Our findings seem to suggest that, in the process of (re)constructing a compassionate self, some attributes and skills are more central than others. For the attributes, most outstanding were s*ensitivity*, the ability to recognise suffering, and *empathy*, the ability to feel sympathy or empathy for suffering. Of all compassionate attributes, these two emerged most frequently in the emails, which may be partly attributed to the email counselling. Writing emails to their counsellor gave participants the opportunity to review and reflect on their problems and struggles in everyday life. For *sensitivity* and *empathy*, a positive association was found with one or two attributes as well as with some of the compassionate skills, i.e., *compassionate attention* and *compassionate feeling/sensation*. As such, *sensitivity* and *empathy* seem to function as 'hubs' connecting the two mindsets of compassion. In the theoretical model, cognitive empathy is proposed as a higher-order attribute nourished by *sensitivity*, *sympathy* (i.e., emotional empathy) and *distress tolerance*. Being able to engage with and tolerate suffering is considered a prerequisite for being capable of having empathic insights (Gilbert, 2014). Our data confirm a link with *sensitivity*, but not with distress *tolerance*.

With regard to compassionate skills, *compassionate behaviour* was by far the most frequently reported skill. This is not surprising as practising exercises from the self-help intervention was coded as *compassionate behaviour*. Whereas some participants may have integrated the exercises and principles from the intervention in their daily lives, resulting in enduring behavioural changes, for others these may have been temporary behaviours which dissipated after the end of the intervention. Of greater interest are *compassionate attention* and *compassionate feeling/sensation*. *Compassionate attention*, being the only skill that showed a positive correlation with each of the other skills, seems to be at the heart of the second mindset of compassion. This concept may be regarded as the positive counterpart of *sensitivity*. It seems plausible that being attentive to helpful others, experiences or knowledge encourages participants to think, act and feel more compassionate towards oneself and others.

In relation to well-being, *compassionate feeling/sensation* bears particular interest. The comparison of improvers and non-improvers revealed that improvers express significantly more *compassionate feeling/sensation* than non-improvers, while no significant differences were observed for the remaining attributes and skills. These findings suggest that CFT may instigate well-being if a client is able to experience compassionate feelings for oneself and others. This suits with what is denoted as the central aim in CFT, namely to strengthen individuals' affect regulation system of soothing and affiliation, enabling individuals to reassure and soothe oneself (Gilbert, 2009, 2014b). It is possible that non-improvers experienced difficulties accessing the soothing and affiliation system, hence did not feel safe, secure or content when engaging in compassionate thoughts or practicing compassionate behaviours. Previous research affirms that perceived cognitive changes do not necessarily result in affective changes, which is commonly referred to as the 'cognition-emotion mismatch' (Stott, 2007). Thus, when generating helpful thoughts in CFT, it is important that participants not only understand the logic behind these thoughts but also emotionally experience these thoughts as kind, reassuring and soothing (Gilbert, 2009, 2014a). An alternative explanation for the finding that improvers express more *compassionate feeling/sensation* than non-improvers, is that improvers either felt more comfortable in disclosing feelings of compassion or were more capable in giving words to their feelings (Barak, Klein, & Proudfoot, 2009; Richards & Vigano, 2013).

Whereas compassionate *feeling/sensation* appears to matter most for improving well-being, other attributes and/or skills may be more important for decreasing *distress*. For instance, it seems reasonable that *distress tolerance* and *common humanity*, compassionate attributes which were infrequently used by our sample, are more relevant to (clinical) samples with higher levels of distress. In patients with psychosis, Waite et al. (2015) found that acceptance of the self and acceptance of psychosis as well as the distress associated with it (e.g., shame) are central to their recovery process, suggesting that *non-judgment* and *distress tolerance* are major compassionate attributes in this specific clinical population. Lawrence and Lee (2014) found that among others the experience of *common humanity* is crucial to PTSD patients' process of developing self-compassion. The awareness that other patients had similar struggles, led PTSD patients to accept that these were understandable responses to their experiences.

Strengths and limitations

A major strength of the study is that no fixed format was used for the email guidance, meaning that the emails reveal spontaneous self-disclosures of compassion. In this regard, it seems plausible that if one expressed a particular attribute or skill more often, one actually experienced or practised it more frequently, at least consciously.

Nonetheless, there are notable limitations to this study. First, we captured what the participants wrote in the emails rather than what they did in CFT. A second limitation is that we were only able to explore compassionate attributes and skills in the intervention group of the RCT and not in the waitlist control group who received CFT without email guidance. Because the process of writing emails to a counsellor may be therapeutic in itself (Richards & Vigano, 2013), we cannot rule out that (some of the) compassionate attributes and skills, as revealed in the content analysis, were cultivated by the email counselling rather than by the contents of the CFT intervention. In favour of this possibility, our RCT findings suggest that the self-help intervention is more effective in improving self-compassion when offered with email guidance (Sommers-Spijkerman et al., 2018). Third, we did not code how participants responded to the emails from the counsellor. Investigating the interaction between participants and counsellors may be informative as well. Fourth, we used a self-selected non-clinical sample with low to moderate levels of well-being and low levels of distress. As such, our findings may not be generalisable to clinical samples with more serious levels of distress. Different problems/symptomatologies or motives may require different sets of compassionate attributes and skills. Finally, interrater reliability was sufficient but not optimal, though disagreements were resolved by discussion.

Future directions

As our primary aim was to find preliminary support for the theoretical model underlying CFT, we used a deductive rather than an inductive approach when analysing the content of the emails. We recognise that additional attributes and skills may be involved that we are currently not aware of, hence encourage qualitative research in this area. Qualitative research wherein participants are explicitly asked about their experiences during CFT and helpful or hindering factors, e.g., using the change interview developed by Elliot, (2008, 2012), may reveal key processes that were not described in the emails.

In contrast to the theoretical notion that all compassionate attributes and skills are interdependent (Gilbert, 2014b), correlations across (frequencies of) compassionate attributes and skills were mostly low and insignificant. Although this may suggest that the attributes and skills reflect sufficiently distinct facets of compassion, stronger intercorrelations may be expected from components of a theory. Hence, the model may require further refinement and testing as to broaden its scientific applicability.

More work is needed to establish the theoretical and empirical distinctiveness of the identified compassionate attributes and skills. Following replication in future studies, these attributes and skills may form the basis for developing a more comprehensive measure of compassion.

Despite that our findings cast doubt upon the usefulness of a number of attributes and skills outlined in Gilbert's (2009, 2014b) model when applied to a non-clinical population (e.g., *distress tolerance*), future research may establish its applicability in clinical samples. From a more practical perspective, it would be useful to assess which compassionate attributes and skills can be cultivated by which CFT exercises.

Conclusion

In conclusion, we did find that the dual model of compassion underlying CFT is feasible and useful, albeit our data suggest that the set of attributes and skills underlying these two dimensions may be too nuanced for application in a non-clinical population. Furthermore, our data suggest that *compassionate feeling/sensation* may be of special interest when well-being is the intended outcome of therapy.

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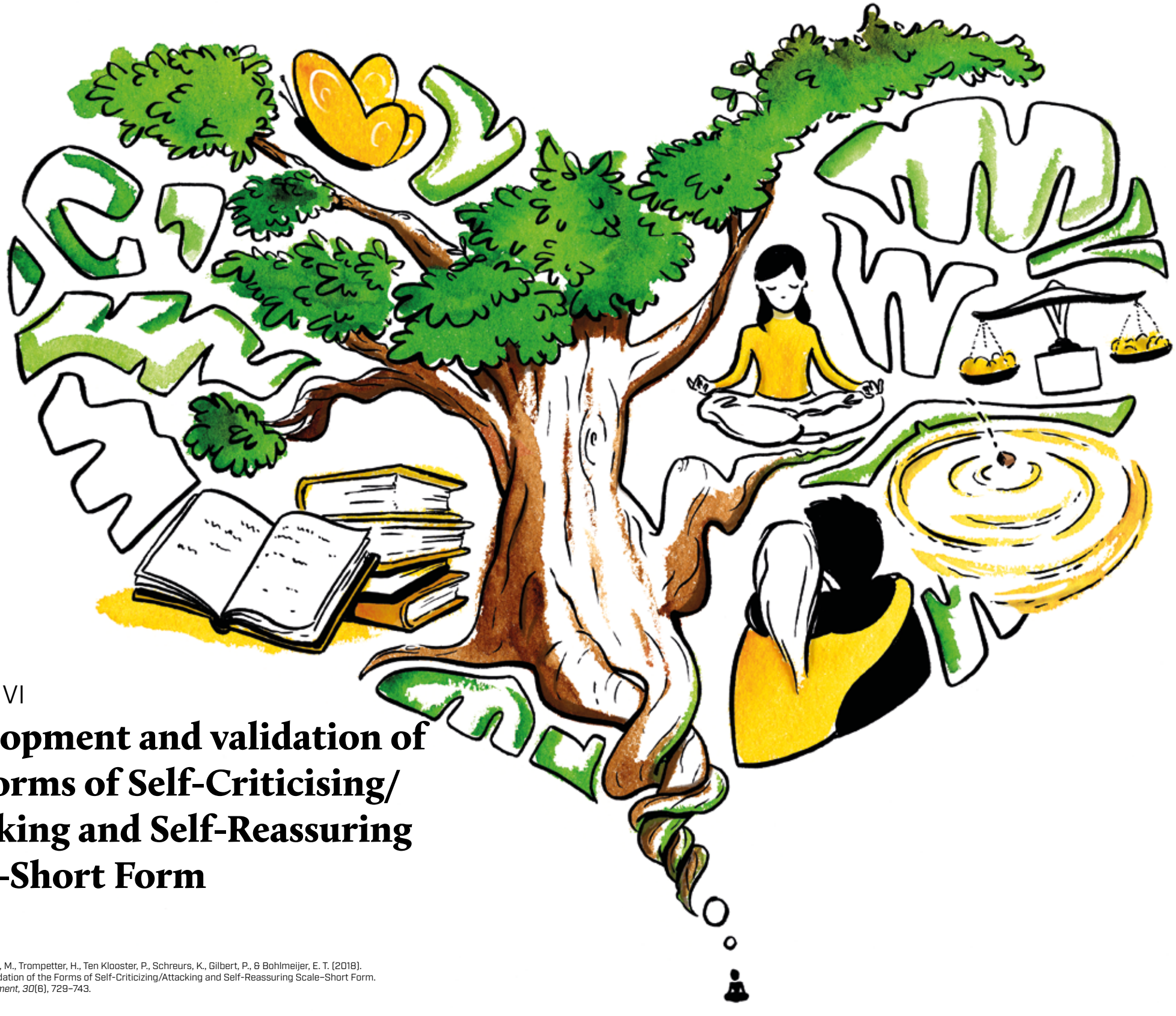

Chapter VI

Development and validation of the Forms of Self-Criticising/ Attacking and Self-Reassuring Scale–Short Form

Sommers-Spijkerman, M., Trompetter, H., Ten Klooster, P., Schreurs, K., Gilbert, P., & Bohlmeijer, E. T. (2018). Development and validation of the Forms of Self-Criticizing/Attacking and Self-Reassuring Scale–Short Form. *Psychological Assessment, 30*(6), 729–743.

Abstract

Studies investigating the effectiveness of Compassion Focused Therapy (CFT) are growing rapidly. As CFT is oriented toward helping people deal with internal processes of self-to-self-relating, having instruments to measure these processes is important. The 22-item Forms of Self-Criticising/Attacking and Self-Reassuring Scale (FSCRS) has been found a useful measure. In the present study, a 14-item short form of the FSCRS (FSCRS–SF) suited to studies requiring brief measures was developed and tested in a Dutch community sample (Study 1; $N = 363$), and cross-validated in a sample consisting of participants in a study on the effectiveness of a guided self-help compassion training (Study 11; $N = 243$). Confirmatory factor analysis (CFA) indicated acceptable to good fit of the FSCRS–SF items to a three-factor model. Findings regarding internal consistency were inconsistent, with Study 1 showing adequate internal consistency for all subscale scores and Study 11 demonstrating satisfactory internal consistency only for the reassured self (RS) subscale score. Furthermore, the results showed that the FSCRS–SF subscale scores had adequate test-retest reliability and satisfactory convergent validity estimates with theoretically related constructs. In addition, the FSCRS–SF subscale scores were found to be sensitive to changes in self-to-self relating over time. Despite mixed findings regarding its reliability requiring further investigation, the FSCRS–SF offers a valid and sensitive measure which shows promise as a complimentary shorter version to the original FSCRS suited to non-clinical populations. Given that the FSCRS is increasingly used as a process and outcome measure, further research on this short form in non-clinical and clinical populations is warranted.

Introduction

In the face of failure, distress, or setbacks, individuals use different styles of self-to-self relating. In other words, people differ in the way they think about and treat themselves (Gilbert, Clarke, Hempel, Miles, & Irons, 2004). Self-criticism, characterized by the tendency to negatively judge and scrutinize oneself (Shahar et al., 2012), can be described as a maladaptive way of self-to-self relating. Increasing empirical evidence suggests that self-criticism can be linked to various forms of psychopathology, including depression (Ehret, Joormann, & Berking, 2015), anxiety (Shahar, Doron, & Szepsenwol, 2015), posttraumatic stress disorder (Cox, MacPherson, Enns, & McWilliams, 2004), eating disorders (Noordenbos, Aliakbari, & Campbell, 2014), and self-injury (Gilbert et al., 2010; Glassman, Weierich, Hooley, Deliberto, & Nock, 2007). Self-reassurance, a major component of self-compassion, may be considered an adaptive form of self-to-self relating. This entails the ability to soothe or reassure oneself when things go wrong. Self-reassurance is characterized by a positive, warm, and accepting attitude toward the self (Gilbert et al., 2004). As opposed to self-criticism, self-reassurance contributes to mental health and well-being and protects against psychological distress (Ehret et al., 2015; Gilbert et al., 2008; Muris & Petrocchi, 2017; Zessin, Dickhäuser, & Garbade, 2015). From the above, it becomes clear that styles of self-to-self relating may drive or protect against several psychological difficulties, hence can be thought of as transdiagnostic processes. Transdiagnostic processes refer to shared mechanisms underlying various forms of psychopathology (Harvey, Watkins, Mansell, & Shafran, 2004; Watkins, 2015).

Recent developments in theoretical formulations (Gumley, Braehler, Laithwaite, MacBeth, & Gilbert, 2010) indicate self-to-self relating may be a critical process in recovery, as the relationship with the self may promote or hinder recovery. Self-to-self relating refers to the way in which individuals relate to themselves and can be considered their intrapersonal relationship.

Based on the premise that self-to-self relating plays an important role in the onset, maintenance, and recovery of common psychological disorders such as depression, CFT helps people relate to themselves in a more self-reassuring and less self-critical way (for a review, see Gilbert, 2009, 2014). There is increasing evidence for the beneficial effects of CFT on mental health and well-being (Braehler et al., 2013; Gilbert & Procter, 2006; Kirby, 2017; Leaviss & Uttley, 2015), which have been attributed to, in part, changing people's internal style of self-relating to one of compassion and self-assurance. The ways of measuring these changes have been through self-report scales, such as the FSCRS (Gilbert et al., 2004). This self-administered tool enables the assessment of three forms of self-to-self relating as a process measure. Two subscales represent maladaptive forms of self-to-self relating, namely, self-criticism induced by the desire to correct or improve certain aspects of the self, referred to as *inadequate self* (IS), and self-criticism arising from the desire to hurt, persecute, and

attack the self, referred to as *hated self* (HS). A third subscale, *reassured self* (RS), reflects the ability to reassure oneself. The FSCRS items were developed by collecting typical thoughts of depressed patients in clinical practice (Gilbert et al., 2004).

To date, a number of studies have provided support for the validity and reliability of the FSCRS in both clinical and non-clinical populations (Baião, Gilbert, McEwan, & Carvalho, 2015; Castilho, Pinto-Gouveia, & Duarte, 2015; Gilbert et al., 2004; Kupeli, Chilcot, Schmidt, Campbell, & Troop, 2013). The focus in these studies was primarily on basic psychometric properties including the factorial structure, reliability, and convergent validity of the scale. All of these studies concluded that a three-factor model, wherein each form of self-to-self relating represents an independent factor, shows an acceptable fit. Kupeli et al. (2013) and Castilho et al. (2015) demonstrated a poor fit for a one-factor and a two-factor solution. Furthermore, the FSCRS showed good internal consistency for each subscale (coefficient-α > .80). Also, it was explored how the FSCRS subscales performed against other self-criticism scales as well as instruments measuring related psychopathological symptoms such as depression, anxiety, and stress (Castilho et al., 2015; Gilbert et al., 2004). One study (Castilho et al., 2015) evaluated correlations with positive psychological constructs, including self-compassion and optimism. This is relevant, given that previous research has shown that positive and negative indicators of well-being are relatively independent from one another (Huppert & Whittington, 2003; Keyes, 2005). Therefore, using both positive and negative psychological measures to assess the validity of the FSCRS may offer additional insights. Overall, convergent validity of the FSCRS was largely supported.

Today, there are few studies exploring changes in self-to-self relating over time (following a psychological intervention). Establishing sensitivity to change of scales like the FSCRS is especially relevant from a research perspective. When the FSCRS is intended to demonstrate the effects of CFT as well as to study self-to-self relating as a potential working mechanism, sensitivity to change is a key property (Vermeersch, Lambert, & Burlingame, 2000).

Overview of the present study

Although the FSCRS has been found a useful scale for measuring forms of self-to-self relating, we wondered if a valid shortened version could be generated for use in studies using multiple instruments and assessment times and requiring brief scales. A shortened version may help to minimise the response burden for participants while increasing response rates (Deutskens, de Ruyter, Wetzels, & Oosterveld, 2004; Edwards et al., 2002; Fan & Yan, 2010). Accordingly, the present study sought to develop a short form of the FSCRS (i.e., FSCRS–SF) and to provide preliminary evidence of its construct validity, reliability and sensitivity to change. The FSCRS–SF was developed and tested using cross-sectional data gathered from a non-clinical convenience sample of Dutch participants (Study 1), and subsequently cross-validated in a sample consisting of participants in a two-arm randomised controlled trial (RCT) investigating the effectiveness of a guided self-help compassion training (Study 11).

Study 1

The aim of the first study was to develop a shortened, easy-to-administer version of the FSCRS, the FSCRS–SF, which (a) measures and preserves the content of the three FSCRS subscales, (b) reduces the length of the FSCRS by approximately one third (i.e., retains no more than 15 items, with a minimum of four items per subscale), (c) shows acceptable model fit for a three-factor structure similar to the original FSCRS, (d) has acceptable internal consistency, and (e) demonstrates similar convergent validity compared to the full version.

Multiple hypotheses were generated in this regard. We expected to confirm the three-factor structure of IS, HS, and RS of the full FSCRS to the sample data (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013). Furthermore, we predicted good internal consistency (coefficient-α > .70, coefficient-ω > .70) for all subscale scores of the FSCRS–SF (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013). With regard to convergent validity, we explored how the FSCRS–SF subscales performed against measures of self-compassion, well-being, stress, and depressive and anxiety symptoms. A strong and positive correlation was predicted between the IS and HS subscales (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004). Both forms of self-criticism were expected to show a strong and negative correlation with self-reassurance, as well as with self-compassion. At least moderate and positive correlations were predicted between self-criticism (both forms) and stress and depressive and anxiety symptoms. Moderate negative associations were expected between self-criticism and well-being. With regard to self-reassurance, a strong and positive correlation was expected with self-compassion, while a positive correlation of moderate size was predicted with well-being, with the strongest correlation expected for psychological well-being (Zessin et al., 2015). At least moderate, negative correlations were expected between self-reassurance and stress, depressive symptoms, and anxiety symptoms (Barnard & Curry, 2011; MacBeth & Gumley, 2012).

Method

Participants and procedure

The FSCRS–SF was developed and tested using cross-sectional data gathered from a sample of people from the Dutch population who participated in an online survey conducted be-

tween February and July 2015. Ethical approval for this study was obtained from the Faculty of Behavioural Sciences Ethics Committee at the University of Twente in the Netherlands. Participants were recruited by undergraduate psychology students in the context of a course in research methods. The students were instructed to recruit a heterogeneous convenience sample from their personal environment. Individuals interested in participation received an email with a link to the online survey that was programmed in the online survey tool Qualtrics. In total, 397 people opened the survey link in Qualtrics. Of those, 34 individuals did not start with the questionnaire and were therefore omitted from the analyses. We excluded four people who solely provided informed consent and 30 people who reported only socio-demographics. This resulted in an actual dataset of 363 participants. Mean age of the sample was 30.67 years (*SD* = 13.38, range: 15 – 81 years) and the majority was female (64.7%) and had an intermediate education level (63.4%). Additional characteristics are listed in Table 1, as well as mean scores on the various measures. Chi-square and Mann-Whitney *U* tests revealed that those who were removed from the analyses yet completed the socio-demographic questions (n = 30) did not significantly differ from those who were included (n = 363) on any of the demographic characteristics (age: U = 4696.00, Z = .88, p = .38; gender: $\chi^2(1, N = 393) = .34$, p = .56; marital status: $\chi^2(1, N = 393) = 1.12$, p = .29; educational level: $\chi^2(1, N = 393) = 2.60$, p = .11; work status: $\chi^2(1, N = 393) = .17$, p = .68).

Measures

Self-criticism and self-reassurance

The Dutch version of the 22-item FSCRS (Gilbert et al., 2004) was developed by two independent English/Dutch speakers. The original FSCRS was translated to Dutch, and subsequently translated back to English by an independent translator. Item content and wording of the Dutch version were compared with the original FSCRS, and the translation was evaluated positively for all items. The FSCRS assesses two forms of self-criticism: IS and HS, and the ability to self-reassure (i.e., RS). These different components represent three subscales consisting of nine, five, and eight items, respectively. Participants respond to a selection of statements, asking about how one thinks and reacts in the face of failures or setbacks, on a 5-point Likert scale ranging from 0 (*not like me at all*) to 4 (*extremely like me*). Higher scores indicate a greater sense of inadequacy (score 0 – 36), self-hate (score 0 –20), or self-reassurance (score 0 – 32). Multiple studies indicate that the FSCRS has good internal consistency and construct validity (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013).

Table 1. Background characteristics of participants in Study I and Study II

	Study I (N = 363)	Study II (N = 243)
Age, years		
M (*SD*)	30.67 (13.38)	52.88 (9.97)
Range	15 – 81	20 – 78
Gender, *n* (%)		
Male	128 (35.3)	62 (25.5)
Female	235 (64.7)	181 (74.5)
Marital status, *n* (%)		
Married/registered partnership	78 (21.5)	131 (53.9)
Divorced	20 (5.5)	49 (20.2)
Widowed	1 (0.3)	7 (2.9)
Never married	264 (72.7)	56 (23.0)
Educational level[a], *n* (%)		
Low (primary school, lower vocational education)	5 (1.4)	1 (0.4)
Intermediate (secondary school, vocational education)	230 (63.4)	29 (11.9)
High (higher vocational education, university)	128 (35.3)	213 (87.7)
Work status, *n* (%)		
Paid employment	147 (40.5)	185 (76.1)
No paid employment	45 (12.4)	53 (21.8)
Student	171 (47.1)	5 (2.1)
Self-criticism and self-reassurance (FSCRS), *M* (*SD*)		
Inadequate self	14.70 (7.16)	18.49 (6.96)
Hated self	2.93 (3.65)	3.70 (2.95)
Reassured self	21.50 (5.43)	16.22 (5.02)
Self-compassion (SCS–SF), *M* (*SD*)	52.61 (12.12)	43.72 (12.07)
Positive facets	26.71 (6.72)	24.53 (6.34)
Negative facets	22.10 (8.34)	28.81 (7.52)
Well-being (MHC–SF), *M* (*SD*)	3.07 (0.89)	2.41 (.65)
Emotional well-being	3.51 (1.01)	2.76 (.79)
Social well-being	2.53 (1.06)	2.13 (.76)
Psychological well-being	3.30 (.95)	2.47 (.76)
Stress (PSS), *M* (*SD*)	16.14 (6.31)	19.47 (5.02)
Depressive symptoms (HADS–D), *M* (*SD*)	4.26 (3.33)	6.37 (3.18)
Anxiety symptoms (HADS–A), *M* (*SD*)	6.51 (4.15)	8.05 (2.95)

Note. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; HADS–A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; MHC–SF = Mental Health Continuum–Short Form; PSS = Perceived Stress Scale; SCS–SF = Self-Compassion Scale–Short Form.
[a]Educational level refers to the highest level of education completed.

Self-compassion

Self-compassion was examined with the 12-item Self-Compassion Scale–Short Form (SCS–SF; Neff, 2003; Raes, Pommier, Neff, & Van Gucht, 2011). Items are rated on a 7-point Likert scale from 1 (*rarely or never*) to 7 (*almost always*). The total score ranges between 12 and 84, with higher scores reflecting higher levels of self-compassion. Following recommendations of López et al. (2015), we also calculated separate scores for the positively and negatively formulated items of the SCS–SF. Higher scores indicate more self-compassion or self-criticism, respectively. Previous research has shown that the SCS–SF has good psychometric qualities (Raes et al., 2011). In the present study, internal consistency was good for the total scale (α = .85) as well as for the positive and negative facets separately (α = .82 and α = .88, respectively).

Well-being

The Mental Health Continuum–Short Form (MHC–SF; Keyes, 2002; Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011) was used to measure three dimensions of well-being, namely, emotional well-being (3 items), social well-being (5 items), and psychological well-being (6 items). Respondents were asked to indicate how often they experienced particular feelings during the past month, on a 6-point Likert scale from 0 (*never*) to 5 (*every day*). Higher scores indicate better well-being (score 0 – 5). Previous research showed good psychometric properties for the MHC–SF (Lamers et al., 2011). In this study, internal consistency was good for both the total scale (α = .91) and the three subscales (α = .87, α = .77, and α = .85 for emotional, social, and psychological well-being, respectively).

Stress

Stress was measured with the Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983). This self-report questionnaire consists of 10 items about the experience of stress in daily life. Items are rated on a 5-point Likert scale from 0 (*never*) to 4 (*very often*). Higher scores reflect higher levels of stress (score 0 – 40). Previous research indicates adequate psychometric properties for the PSS scores, with coefficient alpha estimates between .78 and .91 (Lee, 2012). The present study indicates good internal consistency for the PSS (α = .83).

Depressive and anxiety symptoms

Depressive and anxiety symptoms were assessed using the 14-item Hospital Anxiety and Depression Scale (HADS; Zigmond & Snaith, 1983). Participants rate the frequency of depressive symptoms (HADS–D, 7 items, score 0 – 21) and anxiety symptoms (HADS–A, 7 items, score 0 – 21) over the past week on a 4-point scale (scores 0 – 3, with varying anchors). The HADS shows good dimensional structure and reliability in both clinical and non-clinical Dutch samples (Spinhoven et al., 1997; Zigmond & Snaith, 1983). Internal consistencies of the HADS–D and HADS–A scale scores in the present study were good (α = .78 and α = .86, respectively).

Development of the short form

Prior to the development of the FSCRS–SF, missing values analyses were performed. No data was missing for any of the socio-demographic characteristics or for the FSCRS. The proportion of missing values on the SCS–SF, MHC–SF, PSS, and HADS items varied between 4.1% and 8.5%. In total, 31 participants had one or more missing values. Missing data were imputed using the expectation-maximisation algorithm in SPSS version 23.0.

Testing the psychometric properties of the FSCRS

As a first step in the development of the short form, the psychometric properties of the full FSCRS were tested. Factorial structure, internal consistency, intercorrelations between the subscale scores, and convergent validity were assessed using the same procedures and standards as described for the FSCRS–SF below.

Selection of items for the short form

In the next step, we applied multiple criteria for selecting items for the FSCRS–SF in line with Marsh, Ellis, Parada, Richards, and Heubeck (2005). We identified items that (a) best measured the underlying construct, on the basis of standardised factor loadings in the three-factor confirmatory factor analysis (CFA) model; (b) demonstrated minimal cross-loadings as evidenced by the CFA modification indices; and (c) exhibited minimal error correlations with other items. When two items had substantial error correlations, only one item was maintained. Usually, the item with the lowest factor loading was removed.

Testing the psychometric properties of the FSCRS–SF

For CFA, we used the robust maximum likelihood estimation method which corrects for non-normally distributed data by using the asymptotic covariance matrix. The variance of the factors was fixed to 1 and each item was restricted to load on only one latent factor. The model's fit was examined using multiple indices, including the Satorra-Bentler (SB) scaled chi-square statistic (χ^2), the non-normed fit index (NNFI), the comparative fit index (CFI), the standardised root-mean-square residual (SRMR) and the root-mean-square error of approximation (RMSEA; Hu & Bentler, 1998). While an acceptable model fit is assumed when NNFI ≥ .90, CFI ≥ .90, SRMR ≤ .10, and RMSEA ≤ .08, a good model fit is obtained when NNFI ≥ .95, CFI ≥ .95, SRMR ≤ .08, and RMSEA ≤ .06 (Browne & Cudeck, 1993; Hu & Bentler, 1999).

Internal consistencies of the FSCRS–SF subscale scores were assessed through computing Cronbach's alpha (α) and McDonald's omega (ω; Dunn, Baguley, & Brunsden, 2014; McDonald, 1999) with 95% bias-corrected and accelerated bootstrap confidence intervals (CIs) based on 1,000 bootstrap samples (Kelley & Pornprasertmanit, 2016). Values ≥ .70 and ≥ .80 reflect acceptable and good internal consistency, respectively (Cicchetti, 1994; Field, 2005).

Since the data were not normally distributed, intercorrelations between the subscale scores were calculated using Spearman's correlation coefficient (one-tailed). Correlations < .10 were considered weak, correlations between .10 and .30 were considered small, correlations between .30 and .50 were considered moderate and correlations between .50 and 1.00 were considered strong (Cohen, 1988). We used an arbitrary cutoff point of < .70 to reflect related but sufficiently distinct subscales.

Similarly, convergent validity was assessed by computing Spearman correlations (one-tailed) between the FSCRS–SF sub-scale scores and scores on self-report measures of theoretically related constructs (i.e., SCS–SF, MHC–SF, PSS, HADS–D, and HADS–A).

Equivalence of the FSCRS–SF subscale scores was examined through computing Spearman correlations with the FSCRS subscale scores. Since correlations between the long and the short form based on a single administration of the same instrument will be inflated, a correction was applied which adjusts for the shared measurement error between the two versions, using the ω coefficients as the reliability index (Levy, 1967). Both uncorrected (r_s) and corrected correlation coefficients (r_c) are reported. Strong correlations ($r_s > .90$, $r_c > .80$) indicate substantial overlap between the constructs as measured by the FSCRS and the FSCRS–SF.

CFAs were performed with LISREL 8.80 (Jöreskog & Sörbom, 1993), internal consistency was examined using the MBESS package in R version 3.3.1 (R Foundation for Statistical Computing, Vienna, Austria), and all remaining descriptive and standard psychometric analyses were conducted in SPSS 23.0 (IBM SPSS statistics).

Results

Testing the psychometric properties of the FSCRS

The findings demonstrated good fit of the three-factor model to the data ($SB\chi^2(206) = 350.73$; NNFI = .99; CFI = .99; SRMR = .07; RMSEA = .04, 90% CI [.04, .05]) with factor loadings between .50 and .88, good internal consistency (α and ω values > .80, Table 2) and adequate convergent validity (Table 3). A more detailed description of the psychometric properties of the full FSCRS can be found in supplementary material A.

Selection of items for the FSCRS–SF

Aforementioned considerations for item selection (see the Method section) resulted in the iterative removal of eight items with high cross-loadings or high error correlations with other items. The content coverage of the remaining items was discussed between the authors to assure sufficient coverage of the concepts measured by the instrument. This resulted in a 14-item short form, with five IS items, four HS items, and five RS items (see supplementary material B). Normality tests revealed that responses to most FSCRS–SF items were not normally distributed, with skewness values ranging between –.81 and 2.83 and kurtosis values ranging between –.96 and 7.39.

Table 2. Internal consistency, Means, *SD*s and Spearman intercorrelations of the FSCRS(–SF) subscales in Study 1 (*N* = 363)

	N items	Cronbach's α [95% BCa CI]	McDonald's ω [95% BCa CI]	*M* (*SD*)	IS	HS	RS
FSCRS							
IS	9	.86 [.83, .88]	.86 [.83, .88]	14.70 (7.16)	–		
HS	5	.80 [.75, .85]	.80 [.75, .85]	2.93 (3.65)	.59***	–	
RS	8	.82 [.78, .85]	.82 [.79, .85]	21.50 (5.43)	-.54***	-.52***	–
FSCRS–SF							
IS	5	.73 [.69, .78]	.74 [.69, .78]	8.66 (4.13)	–		
HS	4	.78 [.72, .83]	.79 [.74, .84]	2.22 (2.94)	.53***	–	
RS	5	.76 [.71, .80]	.76 [.72, .80]	13.29 (3.78)	-.43***	-.46***	–

Note. BCa CI = bias-corrected and accelerated confidence interval; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HADS–A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC-SF = Mental Health Continuum–Short Form; PSS = Perceived Stress Scale; RS = reassured self; SCS-SF = Self-Compassion Scale–Short Form.
***p* < .01. ****p* < .001.

Table 3. Spearman correlations between the FSCRS(-SF) subscales and other psychological constructs in Study 1 (*N* = 363)

	IS		HS		RS	
	FSCRS	FSCRS–SF	FSCRS	FSCRS–SF	FSCRS	FSCRS–SF
Self-compassion (SCS–SF)	-.66***	-.59***	-.54***	-.48***	.63***	.61***
Positive facets	-.38***	-.35***	-.37***	-.32***	.49***	.46***
Negative facets	.67***	.59***	.48***	.45***	-.56***	-.55***
Well-being (MHC–SF)	-.48***	-.45***	-.36***	-.33***	.54***	.53***
Emotional well-being	-.49***	-.45***	-.40***	-.37***	.52***	.52***
Social well-being	-.33***	-.33***	-.17**	-.16**	.40***	.36***
Psychological well-being	-.47***	-.44***	-.41***	-.36***	.54***	.54***
Stress (PSS)	.60***	.54***	.53***	.50***	-.54***	-.53***
Depressive symptoms (HADS–D)	.42***	.37***	.45***	.43***	-.48***	-.51***
Anxiety symptoms (HADS–A)	.58***	.51***	.49***	.48***	-.46***	-.44***

Note. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HADS–A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC-SF = Mental Health Continuum–Short Form; PSS = Perceived Stress Scale; RS = reassured self; SCS-SF = Self-Compassion Scale–Short Form.
***p* < .01. ****p* < .001.

Psychometric properties of the FSCRS–SF

Factor structure of the FSCRS–SF

As with the full FSCRS, all indices demonstrated good fit of the three-factor model to the data: SB$\chi^2(74) = 97.30$; NNFI = .99; CFI = .99; SRMR = .05; RMSEA = .03, 90% CI [.01, .04]. Factor loadings were substantial, ranging from .49 to .92 (Figure 1).

Internal consistency and intercorrelations between FSCRS–SF subscale scores

The alphas, omegas, means, *SD*s, and intercorrelations of the FSCRS–SF subscales are shown in Table 2. The removal of items resulted in slightly lower internal consistency for all subscale scores. The internal consistency of each subscale score remained acceptable, however, with α and ω coefficients above .70. As with the original FSCRS, IS and HS scores remained strongly and positively correlated (see Table 2). RS scores were found to be negatively and moderately to strongly correlated with both IS and HS scores. While the latent correlations (see Figure 1) suggest that there is substantial overlap between the IS and HS factors, the correlations between the sum scores of the subscales (see Table 2) indicate that the FSCRS–SF measures three strongly intercorrelated but sufficiently distinct constructs.

Convergent validity of the FSCRS–SF

Correlations of the FSCRS–SF subscale scores with other theoretically related constructs were similar to those of the full FSCRS scores and most hypotheses were met (see Table 3). Whereas IS and RS scores were most strongly associated with self-compassion, HS scores showed the highest correlation with stress. The magnitude of the association between HS scores and self-compassion was also smaller than expected. IS scores demonstrated moderate correlations in the hypothesized direction with all dimensions of well-being. HS scores were moderately associated with emotional and psychological well-being and showed only a weak association with social well-being. Positive associations of at least moderate magnitude were observed between self-criticism scores (both forms) and stress, depressive symptoms, and anxiety symptoms. RS scores were strongly rather than moderately associated with well-being and (as predicted) showed the strongest correlation with psychological well-being. In line with our hypotheses, moderate to strong negative correlations were found between RS scores, on the one hand, and stress, depressive symptoms and anxiety symptoms on the other hand.

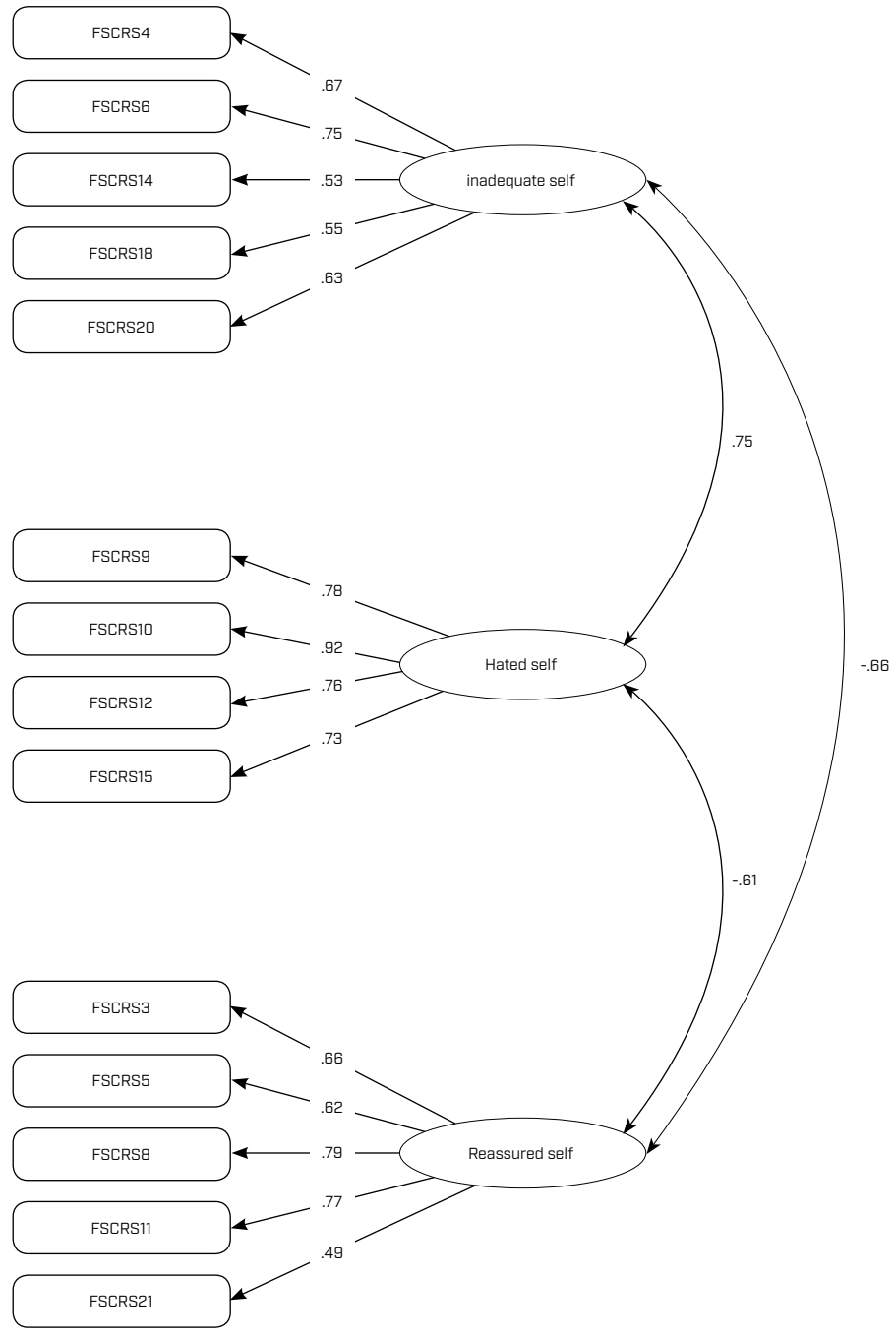

Figure 1. Confirmatory factor analysis of a three-factor solution of the Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form in Study 1.

Correlations between FSCRS and FSCRS–SF subscale scores

The subscale scores of the FSCRS–SF were strongly correlated with the subscale scores of the full FSCRS, with $r_s = .94$ ($p < .001$), $r_s = .94$ ($p < .001$) and $r_s = .95$ ($p < .001$) for IS, HS and RS, respectively. The corrected correlation coefficients were slightly lower than the defined standard (.79, .77, and .78, respectively), but still indicated substantial overlap.

Conclusion

The aim of the first study was to develop and test a short form of the FSCRS in a Dutch community sample. A 14-item FSCRS–SF was proposed. Compared with the original FSCRS, similar findings were achieved for construct validity. CFA showed good fit for a three-factor solution with IS, HS, and RS as correlated latent factors. Although slightly lower than in the long form, internal consistency was satisfactory for all three subscale scores. In general, correlations with theoretically related measures were consistent with our predictions, suggesting adequate convergent validity.

Study II

In the second study, the FSCRS-SF was validated using baseline data from all participants in a two-arm RCT on the effectiveness of a guided self-help compassion training in improving well-being (Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018). Regarding factorial structure, internal consistency and convergent validity, the same hypotheses were tested as in Study I. Additionally, test-retest reliability, known-groups validity, and sensitivity to change were examined. Regarding test-retest reliability of the FSCRS-SF subscales within a three-month time interval, we expected relatively strong correlations between the waitlist controls' baseline and post-test scores. For known-groups validity, the cross-validation sample was expected to score lower on self-reassurance and higher on self-criticism (both forms) than the sample in Study I, since the recruitment of the RCT was specifically targeted at people high in self-criticism. With respect to sensitivity to change, the experimental group was predicted to exhibit significantly greater changes on all FSCRS–SF subscales, compared to the waitlist control group, given that they had followed an intervention which is expected to decrease self-criticism and improve self-reassurance. As CFT is assumed to alleviate psychological distress, such as depressive symptoms, through substituting self-critical with more self-reassuring forms of self-to-self relating, we expected those who showed improved depressive symptoms to exhibit the greatest (positive) changes on the FSCRS–SF subscales, compared with those who demonstrated unchanged or worsened depressive symptoms.

Method

Participants and procedure

In September 2015, participants were recruited through advertisements in national Dutch newspapers. The advertisements contained a link to the research web page. On this web page, the goal of the study was explained in more detail and visitors were able to apply through completing an online screening questionnaire. Participants were included if they: (a) were 18 years or older; (b) had low to moderate levels of well-being, as determined by the MHC–SF (Keyes, 2002; Lamers et al., 2011); (c) had access to a computer or tablet with a good Internet connection; (d) possessed an email address; (e) had sufficient proficiency of the Dutch language (reading and writing); and (f) provided informed consent. Exclusion criteria were: (a) flourishing, as determined by the MHC–SF (Keyes, 2002; Lamers et al., 2011); and (b) moderate to severe depressive and/or anxiety symptoms, as indicated by a score > 11 on the Depression or Anxiety subscale of the HADS (Zigmond & Snaith, 1983).

A total of 470 participants started the online screening questionnaire, of whom 254 met the eligibility criteria and were invited to complete the baseline assessment. Of the 216 excluded participants, most were excluded due to high anxiety and/or depression scores ($n = 134$). Other reasons for exclusion were: insufficient Dutch language proficiency ($n = 1$), too high level of well-being ($n = 33$), and incomplete data ($n = 48$). The baseline assessment was completed by 245 participants. Two participants (one in each condition) were excluded due to incorrect completing of questionnaires. Hence, a total of 243 participants were randomly assigned to the self-help compassion training ($n = 121$) or the waitlist control condition ($n = 122$). The majority of the sample was female (74.5%) and highly educated (87.7%). Mean age of the participants was 52.88 years ($SD = 9.97$, range: 20 – 78 years). Sample characteristics and mean scores on the FSCRS subscales and other measures are provided in Table 1.

Intervention

Participants in the experimental condition received the self-help book titled *Compassie als sleutel tot geluk* (Compassion as key to happiness; Hulsbergen & Bohlmeijer, 2015) by mail at their home address. The book consists of seven lessons, each of which draws on CFT (Gilbert, 2009, 2014). Each lesson includes psycho-educational information regarding compassion and a variety of self-reflective and experiential exercises (e.g., soothing breathing exercises, imagining your ideal compassionate self, visualising desired life changes). Participants were instructed to complete one lesson per week and had 9 weeks in total to complete the intervention. They received weekly email guidance from a personal counsellor. Each participant was randomly assigned to one out of five personal counsellors. Two graduated psychologists, two master students of psychology and the first author provided the counselling.

They were trained by two experienced health care psychologists (fourth and last author). During their training, the counsellors studied the self-help book, performed the exercises, and practised writing emails in the roles of both participant and counsellor. To warrant intervention integrity, counsellors also attended weekly supervision meetings. Participants were requested to send an email about their progress and experiences after completing a lesson. The counsellor responded to the participants' emails on a fixed day of the week. The aims of the emails were: (a) to positively reinforce/encourage the participant, (b) to answer questions about the information or the exercises in the book, (c) to advise participants on how to deal with particular struggles, and (d) to introduce next week's central theme. All communication between counsellor and participant took place via email.

Measures

Participants were asked to fill out a questionnaire package at multiple time points: before the intervention (i.e., baseline), after completion of the intervention (i.e., three months after baseline), and at three-month follow-up (i.e., six months after baseline). Self-report measures were administered online. As in Study 1, the FSCRS, SCS–SF (Total scale: α = .88; Positive subscale: α = .83; Negative subscale: α = .86), MHC–SF (Total scale: α = .84; Emotional well-being subscale: α = .75; Social well-being subscale: α = .61; Psychological well-being subscale: α = .75), PSS (α = .79), and HADS (HADS–D: α = .72; HADS–A: α = .69) were filled out by the participants. FSCRS–SF subscale scores were obtained from the FSCRS.

Testing the psychometric properties of the FSCRS-SF

Analyses were conducted using the same software as in Study 1. There were no missing data. The statistical procedures used for evaluating the factorial structure, internal consistency, intercorrelations between the FSCRS–SF subscale scores, convergent validity, as well as the equivalence of the FSCRS–SF were identical to those in Study 1. In addition, test–retest reliability, known-groups validity, and sensitivity to change were examined. Except for test–retest reliability analysis, all analyses were conducted with the data from both trial arms. Since the ultimate goal of the present study was to create a short form of the FSCRS with similar psychometric properties as the original, psychometric properties are reported for both the FSCRS–SF and the full FSCRS and compared with one another.

Test-retest reliability

Test-retest reliability was assessed with the data collected from the waitlist control group (n = 122) in two consecutive measurements. Participants in this condition were expected to yield relatively stable scores given that they did not receive the intervention yet. Spearman's correlation coefficients and intraclass correlation coefficients (ICC) for single measures (two-way mixed effects model, absolute agreement) were used to estimate test-retest reliability of each FSCRS subscale score within a three-month time interval (baseline to post-test). Test-retest reliability coefficients can be interpreted in a similar manner as internal consistency coefficients, with values > .70 and > .80 indicating acceptable and good test-retest reliability, respectively.

Known-groups validity

Since several variables did not show a normal distribution, non-parametric tests were used. Chi-square and Mann-Whitney U tests showed that the cross-validation sample significantly differed from the sample in Study 1 in terms of several socio-demographic and clinical characteristics. The cross-validation sample exhibited significantly higher scores on depressive and anxiety symptoms and stress and significantly lower scores on self-compassion and well-being. Furthermore, the cross-validation sample was significantly older and counted significantly more females, married and high-educated people, and people with paid employment. Mann-Whitney U tests were conducted to evaluate whether mean scores on IS, HS, and RS differ between the samples.

Sensitivity to change

Finally, sensitivity to change, that is, the ability of the FSCRS–SF to accurately detect changes in self-criticism and self-reassurance over time, was evaluated. This was done in two ways, using non-parametric tests. First, we compared the absolute measured changes in IS, HS, and RS scores in the experimental and waitlist control group. For both groups, Wilcoxon signed-ranks test were conducted to assess changes in FSCRS–SF subscale scores at post-test (i.e., three months after baseline) compared with baseline. To compare the magnitude of changes in FSCRS–SF scores in the intervention group and the waitlist control group, pre-to-post effect sizes (Cohen's d) were calculated per condition, with effect sizes from .00 to .32 reflecting small changes, effect sizes from .33 to .55 reflecting moderate changes, and effect sizes above .55 reflecting large changes (Lipsey & Wilson, 1993). Effect sizes were calculated as $M_1 - M_0 / SD_{pooled}$, where M_1 is the post-test mean, M_0 is the baseline mean, and SD_{pooled} is the pooled standard deviation. SD_{pooled} was calculated as $\sqrt{[(SD_0^2 + SD_1^2) / 2]}$.

Second, we examined whether the scores on the FSCRS–SF subscales changed in the theoretically proposed direction, using depressive symptoms as a criterion standard. Previous research has shown a significant positive relationship between depression and self-criticism (e.g., Dunkley, Sanislow, Grilo, & McGlashan, 2009; Ehret et al., 2015; Mongrain & Leather, 2006) and a significant negative relationship between depression and self-compassion (e.g., Barnard & Curry, 2011; Ehret et al., 2015; MacBeth & Gumley, 2012), which was also found in Study 1 and discussed in this article. HADS–D scores at baseline and post-test were used to divide the total sample in three subgroups with improved depressive symptoms, unchanged depressive symptoms, and worsened depressive symptoms. The mean HADS–D

change score was −1.42, with an *SD* of 3.38. Change scores more than 1 *SD* below the mean (< −4.80) were classified as *improved depressive symptoms*, changes scores 1 *SD* or less below or above the mean (−4.80 to −1.96) were classified as *unchanged depressive symptoms*, and change scores more than 1 *SD* above the mean (> 1.96) were classified as *worsened depressive symptoms*. For each of the three groups, Wilcoxon signed-ranks test were conducted to test for significant changes in FSCRS–SF subscale scores between baseline and posttest. Subsequently, we compared the effect sizes of the IS, HS, and RS change scores in those three groups.

Results

Factor structure of the FSCRS–SF

Three out of four indices showed good fit of the three-factor model to the data ($SB\chi^2(74) = 146.94$; NNFI = .96; CFI = .96), whereas the remaining indices suggested acceptable model fit (SRMR = .09; RMSEA = .06, 90% CI [.05, .08]). Factor loadings ranged from .43 to .79 (Figure 2). For the full FSCRS, all indices demonstrated good fit of the three-factor model to the data ($SB\chi^2(206) = 367.96$; NNFI = .97; CFI = .98; SRMR = .08; RMSEA = .06, 90% CI [.05, .07], and factor loadings ranged between .26 and .83.

Internal consistency and intercorrelations between FSCRS–SF subscale scores

Compared with the original FSCRS, internal consistency was substantially lower for IS and HS scores. As shown in Table 4, both reliability estimates indicated weak to moderate internal consistency for both self-criticism subscale scores and adequate internal consistency for RS scores. Similar to the full FSCRS, IS and HS scores showed a strong and positive correlation with one another and a negative moderate to strong correlation with RS scores.

With values ≤ .70, the correlations between the sum scores of the FSCRS–SF subscales indicate related but sufficiently distinct subscales, whereas the latent correlations (see Figure 2) suggest that there is substantial overlap between the IS and HS factors.

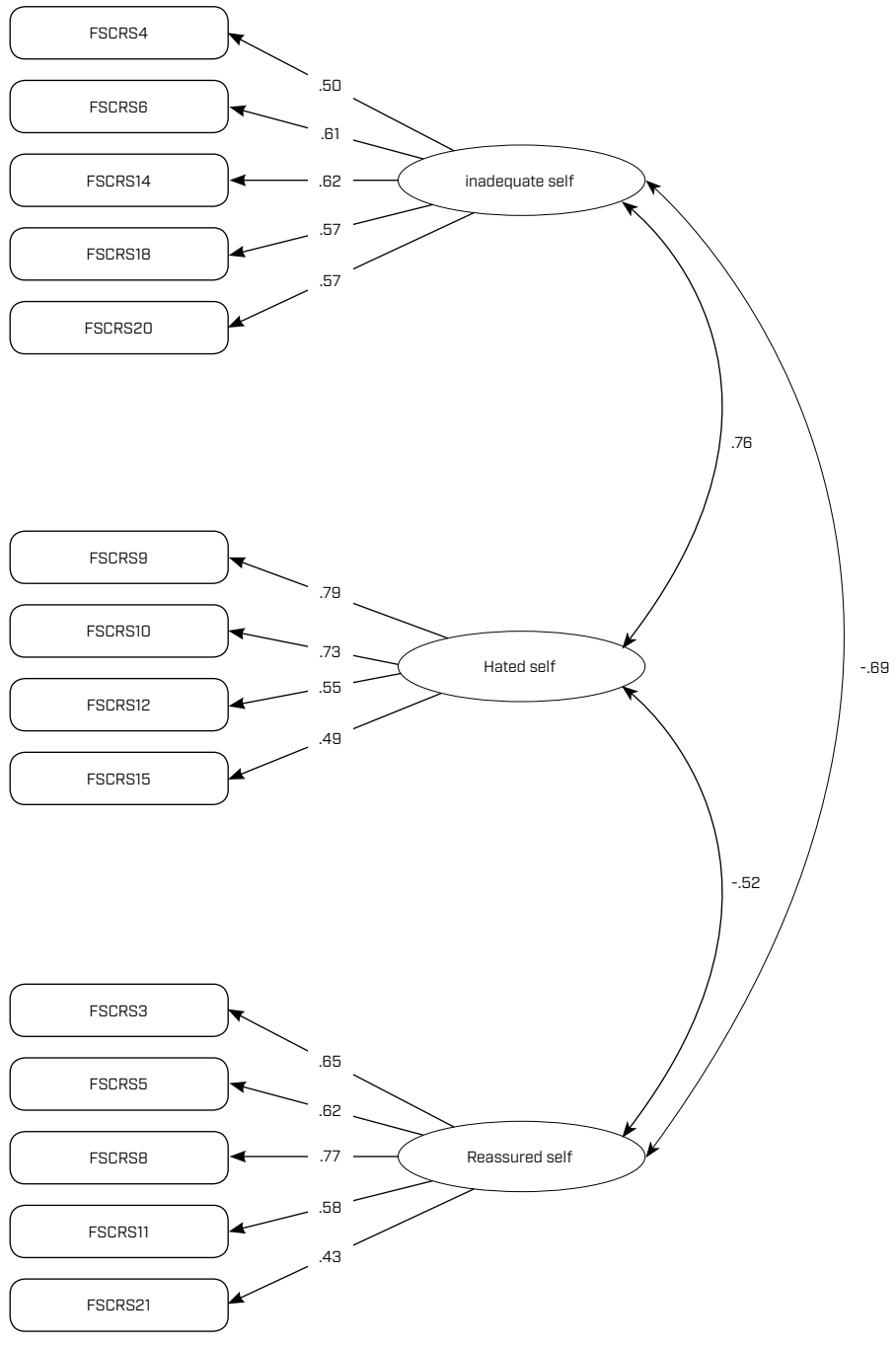

Figure 2. Confirmatory factor analysis of a three-factor solution of the Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form in Study II.

Table 4. Internal consistency, Means, *SD*s and Spearman intercorrelations of the FSCRS–SF subscales in Study II (*N* = 243)

	N items	Cronbach's α (95% BCa CI)	McDonald's ω (95% BCa CI)	*M* (*SD*)	IS	HS	RS
FSCRS							
IS	9	.83 (.80 – .86)	.84 (.80 – .87)	18.49 (6.96)	-		
HS	5	.62 (.54 – .70)	.62 (.46 – .70)	3.70 (2.95)	.61***	-	
RS	8	.79 (.74 – .82)	.80 (.76 – .84)	16.22 (5.02)	-.55***	-.57***	-
FSCRS–SF							
IS	5	.66 (.58 – .73)	.66 (.58 – .72)	10.47 (3.83)	-		
HS	4	.52 (.40 – .64)	.49 (.35 – .62)	2.61 (2.29)	.56***	-	
RS	5	.72 (.65 – .77)	.72 (.66 – .77)	10.08 (3.45)	-.44***	-.49***	-

Note. BCa CI = bias-corrected and accelerated confidence interval; FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HS = hated self; IS = inadequate self; RS = reassured self.
***$p < .001$.

Test-retest reliability of the FSCRS-SF

Test-retest reliability was assessed with the data collected from the waitlist control group (n = 122) in two consecutive measurements (Table 5). For all FSCRS–SF subscales, baseline scores were strongly correlated with the scores three months later. All correlations reached statistical significance ($p < .001$) and were nearly identical to those found for the long form ($r_s = .66$, $r_s = .60$, and $r_s = .74$, respectively). Also, substantial ICC values were demonstrated, which were again nearly identical to those of the full FSCRS (.69, .65, and .71, respectively). Values for the RS subscale are ≥ 0.7 and < 0.8, and hence indicate acceptable reliability. Taking into account the long period between the two measurements, however, test-retest reliability was also deemed acceptable for the remaining two subscales. Similar findings were observed for both the full FSCRS and the short form.

Table 5. Test-retest reliability of the FSCRS(–SF) subscales in Study II (n = 122)

	Spearman correlation coefficient (r_s)	ICC (95% CI)
FSCRS		
IS	.66	.69 (.58 – .77)
HS	.60	.65 (.53 – .74)
RS	.74	.71 (.61 – .79)
FSCRS–SF		
IS	.59	.65 (.53 – .74)
HS	.58	.64 (.52 – .73)
RS	.72	.68(.57 – .77)

Note. CI = confidence interval; ICC = intra-class correlation coefficient; FSCRS = Forms of Self-criticising/attacking and Self-reassuring Scale; FSCRS–SF = Forms of Self-criticising/attacking and Self-reassuring Scale–Short Form; HS = hated self; ICC = intra-class correlation coefficient; IS = inadequate self; RS = reassured self. All values are statistically significant at $p < .001$.

Convergent validity of the FSCRS–SF

Overall, correlation patterns of the FSCRS–SF subscale scores were nearly identical to those of the FSCRS subscale scores (Table 6). All correlations were in the hypothesized direction, but the magnitude sometimes differed from our predictions. Each FSCRS–SF subscale score demonstrated the strongest association with self-compassion. As predicted, IS and HS scores were found to be significantly strongly and negatively associated with self-compassion. With regard to well-being, a small and negative correlation was found with IS scores. When distinguishing between the different forms of well-being, however, only psychological well-being was found to be significantly correlated with IS scores, and not emotional and social well-being. For HS scores, a significant and negative link was found with all dimensions of well-being. The magnitude of the association was small for social well-being, and moderate for emotional and psychological well-being. Stress, depressive symptoms, and anxiety symptoms were significantly and positively associated with both IS and HS scores. However, the magnitude of the association between IS scores and depressive symptoms, HS scores and depressive symptoms, and IS scores and anxiety symptoms was smaller than expected. In line with our expectations, RS scores were significantly strongly and positively correlated with self-compassion. A moderate and positive correlation was observed between RS scores and overall well-being. The strongest association was found for psychological well-being followed by emotional well-being and then social well-being. RS scores showed a moderate and negative correlation with stress and depressive symptoms, and (contrary to our hypothesis) a weak correlation with anxiety.

Table 6. Spearman correlations between the FSCRS(–SF) subscales and other psychological constructs in Study II (N = 243)

	IS		HS		RS	
	FSCRS	FSCRS–SF	FSCRS	FSCRS–SF	FSCRS	FSCRS–SF
Self-compassion (SCS–SF)	-.69***	-.64***	-.55***	-.53***	.69***	.67***
Positive facets	-.46***	-.43***	-.44***	-.42***	.65***	.64***
Negative facets	.76***	.69***	.53***	.52***	-.54***	-.52***
Well-being (MHC–SF)	-.25***	-.19**	-.36***	-.35***	.40***	.44***
Emotional well-being	-.16**	-.11	-.34***	-.33***	.36***	.36***
Social well-being	-.09	-.09	-.17**	-.18**	.21***	.26***
Psychological well-being	-.33***	-.26***	-.41***	-.38***	.45***	.47***
Stress (PSS)	.35***	.35***	.33***	.31***	-.36***	-.36***
Depression symptoms (HADS–D)	.23***	.19**	.32***	.29***	-.35***	-.34***
Anxiety symptoms (HADS–A)	.33***	.29***	.35***	.34***	-.28***	-.27***

Note. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HADS–A = Hospital Anxiety and Depression Scale–Anxiety; HADS–D = Hospital Anxiety and Depression Scale–Depression; HS = hated self; IS = inadequate self; MHC–SF = Mental Health Continuum–Short Form; PSS = Perceived Stress Scale; RS = reassured self; SCS–SF = Self-Compassion Scale–Short Form.
**$p < .01$. ***$p < .001$.

Known-groups validity

Comparison of the samples showed that Sample 2 scored significantly higher on IS and HS ($p < .001$) and significantly lower on RS ($p < .001$), irrespective of whether the long form or the short form was used. This finding was in line with our predictions.

Correlations between FSCRS and FSCRS–SF subscale scores

In the cross-validation sample, we found almost identical correlations for IS ($r_s = .92$), HS ($r_s = .93$), and RS ($r_s = .95$) scores, which all reached statistical significance at $p < .001$. The corrected correlation coefficient for HS scores was considerably lower than the defined standard ($r_c = .53$). For IS and RS scores, corrected correlation coefficients were also lower than the standard ($r_c = .73$ and $r_c = .76$, respectively), although both forms seem to measure very similar constructs.

Sensitivity to change of the FSCRS–SF

The intervention group showed significant improvements on all FSCRS–SF subscales from baseline to post-test (Table 7). Effect sizes were moderate for HS scores, and large for IS and RS scores. In the waitlist control group, weak and significant improvements were observed for IS and RS scores, but not for HS scores. All effect sizes were substantially larger in the intervention group compared with the waitlist control group, as indicated by Cohen's *d*. Using the HADS–D as a criterion standard, we observed the greatest changes in IS, HS, and RS in the *improved depressive symptoms* group, reflecting large improvements on all FSCRS–SF subscale scores (Table 8). The *unchanged depressive symptoms* group demonstrated significant but small improvements in HS and RS scores, and significant moderate improvements in IS scores. Changes in IS, HS, and RS scores in the *worsened depressive symptoms* group were weak and non-significant. These findings provide support for the sensitivity to change of the FSCRS–SF. As can be seen from Tables 7 and 8, the original and shortened version of the FSCRS were nearly equally sensitive to changes.

Conclusion

The second study aimed to cross-validate the FSCRS–SF in another Dutch community sample. Goodness of fit indices demonstrated acceptable to good model fit. Internal consistency was found acceptable for RS scores, but not for the self-criticism subscale scores, especially not for HS. Taking into account the long period between the two consecutive measurements, test-retest reliability of the subscale scores was deemed reasonable. Correlations were in the hypothesized direction, but the magnitude was sometimes smaller than expected. The sample used in Study 1 scored significantly better on IS, HS, and RS, suggesting that each subscale was able to discriminate between the two samples. Finally, assessment of sensitivity to change demonstrated that the FSCRS–SF was able to measure changes in self-to-self relating over time. Whereas the short form demonstrated substantially lower internal consistency compared to the long form, findings for test-retest reliability, convergent validity, known-groups validity, and sensitivity to change were similar for both forms.

Table 7. Sensitivity to change of the FSCRS(–SF) subscales in Study II ($N = 243$)

		Intervention ($N = 121$)			Waitlist ($N = 122$)			
		M (*SD*)	*Z*	*d*	*M* (*SD*)	*Z*	*d*	Δ*d*
FSCRS								
IS	Baseline	18.52 (7.28)			18.46 (6.66)			
	Post	14.58 (6.00)	-5.84***	0.59	17.20 (6.97)	-2.67**	0.18	0.41
HS	Baseline	3.76 (3.13)			3.64 (2.76)			
	Post	2.44 (2.73)	-5.05***	0.45	3.27 (2.90)	-1.78	0.13	0.32
RS	Baseline	16.11 (5.02)			16.34 (5.03)			
	Post	19.46 (4.73)	6.96***	0.69	17.20 (5.25)	2.72**	0.17	0.52
FSCRS–SF								
IS	Baseline	10.48 (3.96)			10.46 (3.71)			
	Post	8.25 (3.25)	-5.92***	0.62	9.74 (3.84)	-2.59*	0.19	0.43
HS	Baseline	2.69 (2.47)			2.52 (2.11)			
	Post	1.65 (2.13)	-5.29***	0.45	2.28 (2.27)	-1.82	0.11	0.34
RS	Baseline	10.07 (3.45)			10.09 (3.48)			
	Post	11.98 (3.00)	6.17***	0.59	10.77 (3.61)	2.81**	0.19	0.40

Note. Z-values are reported for Wilcoxon signed-rank tests. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HS = hated self; IS = inadequate self; RS = reassured self.
*$p < .05$. **$p < .01$. ***$p < .001$.

Table 8. Sensitivity to change of the FSCRS(–SF) subscales in Study II, using depressive symptoms as a criterion standard ($N = 243$)

		Improved depressive symptoms ($N = 41$)			Unchanged depressive symptoms ($N = 167$)			Worsened depressive symptoms ($N = 35$)		
		M (*SD*)	*Z*	*d*	*M* (*SD*)	*Z*	*d*	*M* (*SD*)	*Z*	*d*
FSCRS										
IS	Baseline	20.61 (6.10)			17.99 (7.10)			18.40 (6.99)		
	Post	15.13 (7.27)	-4.21***	0.82	15.48 (6.43)	-5.35***	0.37	18.74 (6.21)	-.62	0.05
HS	Baseline	4.76 (3.19)			3.46 (2.89)			3.63 (2.72)		
	Post	2.83 (3.27)	-3.76***	0.60	2.65 (2.61)	-4.33***	0.29	3.87 (3.22)	-.63	0.08
RS	Baseline	14.78 (4.29)			16.57 (5.13)			16.26 (5.07)		
	Post	20.19 (4.54)	5.31***	1.22	18.31 (5.13)	5.48***	0.34	16.25 (4.97)	.13	0.00
FSCRS–SF										
IS	Baseline	11.63 (3.55)			10.09 (3.82)			10.91 (3.94)		
	Post	8.39 (4.13)	-4.34***	0.84	8. 81 (3.44)	-4.93***	0.35	10.57 (3.56)	-.46	0.09
HS	Baseline	3.51 (2.64)			2.36 (2.17)			2.71 (2.19)		
	Post	2.02 (2.54)	-3.74***	0.57	1.81 (2.02)	-3.93***	0.26	2.65 (2.65)	-.41	0.02
RS	Baseline	9.00 (3.12)			10.31 (3.51)			10.23 (3.41)		
	Post	12.53 (2.90)	5.17***	1.17	11.40 (3.40)	5.01***	0.31	9.87 (3.21)	.88	0.11

Note. Z-values are reported for Wilcoxon signed-rank tests. FSCRS = Forms of Self-Criticising/Attacking and Self-Reassuring Scale; FSCRS–SF = Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form; HS = hated self; IS = inadequate self; RS = reassured self.
***$p < .001$.

General discussion

The FSCRS has been found to be a valid and reliable measure of self-to-self relating in several previous studies (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013). However, since many studies and trials use a battery of outcome measures on multiple occasions, we sought to develop a shorter form of the FSCRS and evaluate its psychometric properties in two independent samples.

In accordance with previous studies with the full FSCRS (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013), both the long form and the short form confirmed the arrangement of the items in the three subscales: IS, HS, and RS.

In Study 1, convergent validity of the FSCRS–SF was found comparable to the original as evidenced by a similar pattern of correlations of all three subscale scores with the SCS–SF, MHC–SF, PSS, and HADS scores. In Study 11, the pattern of correlations with the FSCRS–SF subscale scores was generally in line with our hypotheses, though we recognise that the magnitude of the correlations of IS, HS, and RS scores with PSS and HADS scores were considerably smaller than in Study 1. Correlations of IS and RS scores with MHC–SF scores were also substantially smaller. This was also the case for the long form.

In Study 11, test-retest reliability of the FSCRS–SF was found acceptable for RS scores, but not for IS and HS scores, when relying on correlations between the two consecutive measurements. Contradictory to these findings, Castilho et al. (2015) demonstrated satisfactory test-retest reliability for both self-criticism subscales of the full FSCRS, with $r = .72$ (IS) and $r = .78$ (HS), and weak test-retest reliability for RS ($r = .65$) within a four-week period. In the present study, ICC values suggested that none of the FSCRS–SF subscale scores had satisfactory test-retest reliability. Considering the three-month interval, however, variations in state-like constructs such as self-criticism are expected to occur within individuals. Hence, all three FSCRS–SF subscales are deemed reasonably stable. Furthermore, it was found that all subscales are able to measure changes over time. Clearly greater changes were observed in the intervention group as compared to the waitlist control group.

As predicted, the cross-validation sample scored significantly higher on IS and HS and significantly lower on RS, suggesting that all subscales were able to discriminate between the two samples, thereby providing further evidence for construct validity. In addition, the FSCRS–SF was able to differentiate between people with improved, unchanged, and worsened depressive symptoms within the cross-validation sample. In line with our hypothesis, we observed the greatest changes in IS, HS, and RS scores in the improved depressive symptoms group. The unchanged depressive symptoms group demonstrated significant changes of small to moderate size, and changes in the worsened depressive symptoms group were non-significant. Similar results were yielded with the full FSCRS. These findings imply high sensitivity to change, suggesting that the FSCRS–SF is an appropriate measure for establishing differences in processes of self-to-self relating at group level.

Despite the overall positive results for the FSCRS–SF, there are several indications that the HS subscale performs less well compared with the other two subscales. Whereas Study 1 shows adequate internal consistency for each subscale score, in Study 11, both reliability estimates suggest that the internal consistency was relatively low for IS scores and especially for HS scores. In the case of HS, it should be noted, however, that the findings obtained with the full FSCRS also indicated weak internal consistency. Albeit very little difference with IS scores, HS scores also showed the lowest test-retest reliability, both in the original and in the shortened version. In this light, researchers and clinicians who are interested in the distinction between the two types of self-criticism (i.e., IS and HS) may wish to use the full FSCRS.

An important finding from Study 2 was that HS and IS responded differently to the compassion intervention. The intervention had a greater influence on self-criticism based on feelings of inadequacy (IS) than on self-criticism based on feelings of self-hatred (HS), thereby providing further support for the multidimensional nature of self-criticism. Also when compared with RS, the HS subscale seems less responsive to changes over time. Looking at the means and standard deviations, this finding may be partly accounted for by a ceiling effect, characterized by relatively low baseline scores for HS which leave little room for improvement. This is not very surprising since the sample included here consisted of a non-clinical population with only mild to moderate depressive and anxiety symptoms. Higher levels of HS may be expected in clinical populations. In support of this notion, a previous study of Baião et al. (2015) found that clinical populations report significantly higher scores on IS and HS and lower scores on RS than non-clinical populations. Nonetheless, the findings of the current study suggest that the FSCRS–SF is still able to measure HS and to distinguish between populations with higher and lower levels of HS.

Although not a specific aim of the present study, we were interested to see if particular patterns could be observed when looking at the correlations of the FSCRS–SF subscale scores with positive versus negative indicators of well-being. As evidenced by multiple studies (Huppert & Whittington, 2003; Keyes, 2005), positive and negative indicators of well-being are related though independent from one another. Considering that the scales measuring positive psychological constructs in this study mainly use positively worded items whereas the scales measuring negative constructs mainly use negatively worded items, we anticipated that scores on the IS and HS subscales, which both contain only negatively worded items, would correlate more strongly with PSS and HADS scores than with SCS–SF and MHC–SF scores, and vice versa for RS scores. This has been raised as a concern with the SCS that mixes positive and negative constructs (López et al., 2015; Muris & Petrocchi, 2017). Hence, it is interesting that our findings did not reveal any substantial differences in correlation patterns with positive and negative constructs for either of the subscale scores. It was striking though that RS scores showed a stronger association with depressive

symptoms compared to IS and HS scores. This may suggest, first, that self-reassurance is measuring different constructs to that of kindness, mindfulness, and common humanity which are part of the measure of self-compassion as defined by Neff (2003). In other words, self-reassurance may be a different type of self-compassion. Second, helping people suffering from depressive symptoms relate to themselves in a more positive and reassuring manner that tends to focus on their strengths, such as liking oneself and reminding oneself of one's positive qualities, might be especially important to focus on rather than only addressing their self-critical thoughts. Consistently, an RCT, evaluating the effects of an eight-week compassion-mindfulness therapy program in individuals with recurrent depressive and anxiety symptoms, showed significant and large improvements in depressive symptoms compared with a waitlist control condition (Lo, Ng, & Chan, 2015). In addition, several other studies have demonstrated that cultivating compassion leads to a reduction in depressive symptoms in various populations (Braehler et al., 2013; Dodds et al., 2015; Gilbert & Procter, 2006).

Limitations

The present study has several limitations. First, males and lower educated people were underrepresented in both samples, hereby diminishing the generalisability of the findings. Second, the reduced variation of several variables and the lower reliability of the FSCRS–SF, HADS–A, and the social well-being subscale of the MHC–SF in the cross-validation sample might have led to somewhat deflated correlation coefficients while checking convergent validity. Third, as the FSCRS has not been independently administered as short form in either of the samples, but only as long form, no strong conclusions can be drawn about the use of the FSCRS–SF as a stand-alone instrument. The similarity between the FSCRS and FSCRS–SF may have been overestimated. To account for this, we used corrected correlation coefficients. The long form and the short form of the FSCRS did overlap considerably more in Study 1 than in Study 11. Fourth, the findings reveal substantial intercorrelations between the subscale scores, which indicates a risk for multicollinearity issues in regression analyses, as already stressed by Kupeli et al. (2013). This should be taken into consideration when studying (changes in) self-to-self relating as a predictor or mediator of mental health and well-being outcomes in CFT. Fifth, the FSCRS–SF was not assessed in a clinical sample.

Implications and recommendations for future research

Studies investigating the effectiveness of CFT interventions in different populations are growing rapidly. These, as well as many other therapies, including psychodynamic therapy, cognitive therapy, and emotion-focused therapy (Kannan & Levitt, 2013), are oriented toward helping people deal with internal processes of self-to-self-relating. Hence, having valid scales to measure these processes is important. The availability of different scales suited to different populations and studies may advance this research area. As HS showed small means and variances in both community samples, relative to IS and RS, the question arises whether the HS subscale, which measures a rather extreme form of self-criticism, is relevant and meaningful in non-clinical samples. Given that multiple previous studies have shown that the HS subscale had adequate psychometric properties in non-clinical populations, as yet there seems to be insufficient evidence to assume that no meaningful outcomes can be obtained in non-clinical populations with this particular subscale. We recommend further research on its psychometric properties in non-clinical and clinical samples. Additionally, it may be worthwhile to establish whether the FSCRS–SF subscales are measurement invariant across different samples. Measurement invariance refers to the degree to which scale items function similarly across different groups of people. It would be particularly interesting to see whether the functioning of the FSCRS–SF subscales is equivalent across non-clinical and clinical populations. Finally, future research may reveal whether the three subscales can be used independently from one another, thereby offering researchers the possibility of leaving out a subscale when using the FSCRS(–SF).

Conclusion

Aside from mixed findings regarding reliability, the proposed 14-item short form of the FSCRS demonstrated good psychometric properties comparable to the results obtained from the full FSCRS, including structural validity, convergent validity, known-groups validity, and sensitivity to change. As such, the FSCRS–SF seems a good complementary version to the original FSCRS for assessing forms of self-to-self-relating in non-clinical samples when shorter scales are required.

Given the fact that the FSCRS is increasingly used as both a process and an outcome measure, further research is required on this short form in non-clinical as well as clinical populations. This is particularly so in the latter where individuals tend to have much higher levels of self-criticism and where the short form HS subscale is likely to be less reliable and sensitive compared with the other subscales. Nonetheless, when working with non-clinical populations, the FSCRS–SF reported here offers a valid measure of negative and positive orientations to the self.

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Supplementary material A: Testing the psychometric properties of the FSCRS in Study 1

As a first step in the development of the short form, the psychometric properties of the full FSCRS (i.e., construct validity and reliability) were tested.

Factor structure of the FSCRS

Confirmatory factor analysis (CFA) was used to test whether the Dutch FSCRS also fits the correlated three-factor structure demonstrated in previous psychometric studies of the FSCRS (Baião et al., 2015; Castilho et al., 2015; Gilbert et al., 2004; Kupeli et al., 2013). We used the robust maximum likelihood estimation method which corrects for non-normally distributed data by using the asymptotic covariance matrix. The variance of the factors was fixed to 1 and each item was restricted to load on only one latent factor. The model's fit was examined using multiple indices, including the the non-normed fit index (NNFI), the comparative fit index (CFI), the standardised root mean square residual (SRMR) and the root mean square error of approximation (RMSEA) (Hu & Bentler, 1998). Whilst an acceptable model fit is assumed when NNFI ≥ .90, CFI ≥ .90, SRMR ≤ .10 and RMSEA ≤ .08, a good model fit is obtained when NNFI ≥ .95, CFI ≥ .95, SRMR ≤ .08 and RMSEA ≤ 0.06 (Browne & Cudeck, 1993; Hu & Bentler, 1999).

All indices demonstrated good fit of the three-factor model to the data: NNFI =.99; CFI = .99; SRMR = .07; RMSEA = .04, 90% CI [.04, .05]. The completely standardised solution showed that all FSCRS items had a high loading on their intended factor (IS, HS or RS), with factor loadings between .50 and .88.

Internal consistency and intercorrelations between FSCRS subscale scores

Internal consistency of the FSCRS subscale scores was assessed through computing Cronbach's alpha (α) and McDonald's omega (ω) (Dunn, Baguley, & Brunsden, 2014; McDonald, 1999) with 95% bias-corrected and accelerated bootstrap confidence intervals (CIs) based on 1000 bootstrap samples (Kelley & Pornprasertmanit, 2016). Values ≥ 0.70 and ≥ 0.80 reflect acceptable and good internal consistency, respectively (Cicchetti, 1994; Field, 2005).
Since the data were not normally distributed, intercorrelations between the subscale scores were calculated using Spearman's correlation coefficient (one-tailed). Correlations < .10 were considered weak, correlations between 0.10 and 0.30 were considered small, correlations between 0.30 and 0.50 were considered moderate and correlations between 0.50 and 1.00 were considered strong (Cohen, 1988). We used an arbitrary cut-off point of ≤ .70 to reflect related but sufficiently distinct subscales.

The FSCRS subscale scores showed good internal consistency, with α and ω values > .80 (Table 3). IS, HS and RS were found to be strongly intercorrelated though measuring sufficiently distinct constructs. As expected, IS and HS scores were found to be positively and strongly correlated, while a strong and negative association was observed with RS scores (Table 2). With intercorrelations < .70, the three subscales were deemed sufficiently distinct.

Convergent validity of the FSCRS

Given that the majority of measures were not normally distributed, convergent validity was assessed by computing Spearman correlations (one-tailed) between the FSCRS subscale scores and scores on self-report measures of theoretically related constructs (i.e., SCS-SF, MHC-SF, PSS, HADS-D and HADS-A).

All FSCRS subscale scores were most strongly associated with self-compassion. In line with our hypotheses, both IS and HS scores were found to be at least moderately and positively related to stress, depressive symptoms and anxiety symptoms, whereas RS scores were at least moderately and negatively associated with these constructs. Moderate and negative associations were found between both forms of self-criticism and well-being. A significant and negative link was found with all dimensions of well-being. Whilst emotional and psychological well-being were found to be moderately associated, social well-being showed only weak to small correlations. RS scores were most strongly correlated with psychological well-being, followed by emotional well-being and social-well-being.

Supplementary material B: Item content of the Forms of Self-Criticising/Attacking and Self-Reassuring Scale–Short Form

When things go wrong in our lives or don't work out as we hoped, and we feel we could have done better, we sometimes have negative and self-critical thoughts and feelings. These may take the form of feeling worthless, useless, or inferior, etc. However, people can also try to be supportive of themselves. Below are a series of thoughts and feelings that people sometimes have. Read each statement carefully and circle the number that best describes how much each statement is true for you. Please use the scale below.

0 = not at all like me
1 = a little bit like me
2 = moderately bit like me
3 = quite a bit like me
4 = extremely like me

When things go wrong for me:	
Item 1 (3).	I am able to remind myself of positive things about myself.
Item 2 (4).	I find it difficult to control my anger and frustration at myself.
Item 3 (5).	I find it easy to forgive myself.
Item 4 (6).	There is a part of me that feels I am not good enough.
Item 5 (8).	I still like being me.
Item 6 (9).	I have become so angry with myself that I want to hurt or injure myself.
Item 7 (10).	I have a sense of disgust with myself.
Item 8 (11).	I can still feel loveable and acceptable.
Item 9 (12).	I stop caring about myself.
Item 10 (14).	I remember and dwell on my failings.
Item 11 (15).	I call myself names.
Item 12 (18).	I think I deserve my self-criticism.
Item 13 (20).	There is a part of me that wants to get rid of the bits I don't like.
Item 14 (21).	I encourage myself for the future.

Note. Numbers in parentheses refer to the original item numbers of the full FSCRS.

Chapter VII

General discussion

Introduction

Over the past three decades, two movements became apparent in the field of psychotherapy: (1) a movement towards therapies targeting processes of mindfulness, acceptance and compassion, and (2) a movement towards therapies wherein well-being is an important target. The overarching aim of this thesis was to add to the empirical and theoretical evidence base underlying one specific intervention that suits both developments: Compassion Focused Therapy (CFT). In Chapters II to VI, three types of knowledge emerged, pertaining to (1) the effectiveness of CFT and related interventions in terms of mental health, specifically well-being, (2) potential processes of change in CFT, and (3) the conceptualisation and measurement of compassion in CFT. This final chapter starts with a summary of the key findings of this thesis. Subsequently, for each of the three aforementioned knowledge bases, relevant issues are brought to light thereby drawing upon the findings from this thesis and other research. Overall strengths and limitations of this thesis are noted, followed by a presentation of future directions for theory, research and practice. Finally, all findings are brought together in a concluding section with lessons to take home.

General conclusions

Starting in the 1970s, therapies focusing on mindfulness, values, acceptance and compassion have become increasingly popular. Common interventions in this sphere include Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), and Acceptance and Commitment Therapy (ACT). Numerous studies have demonstrated their utility in improving mental health. Also when delivered online, MBSR, MBCT and ACT are found effective in improving mental health in terms of both well-being and psychological distress (i.e., depressive and anxiety symptoms, stress), as evidenced by a meta-analysis in Chapter II.

In more recent years, compassion has become a target of therapeutic intervention. In this thesis, the focus was on one specific compassion intervention: Compassion Focused Therapy (CFT). Compared to its precursors – MBSR, MBCT and ACT – relatively little evidence has been accumulated for the effectiveness of CFT. In Chapter III, CFT, offered as bibliotherapy with email guidance, yielded favourable short-term and long-term outcomes regarding well-being, depressive and anxiety symptoms and stress in adults with low to moderate levels of well-being, as compared to a waitlist control group. Although the self-help intervention attracted primarily high-educated females, moderation analyses suggest that the intervention suits a broad and heterogeneous target population. Consistent with previous research, the use of email guidance was found successful in improving adherence to and effectiveness of the intervention.

As shown by the mediation analyses presented in Chapter IV, CFT seemed to impact mental health through cultivating compassion, reducing self-criticism and regulating positive and negative affect. These findings are in line with putative working mechanisms outlined in the theoretical model of CFT. A multiple mediation model revealed that cultivating compassion is the primary mechanism when well-being is the intended outcome of CFT. Drawing upon a comparison between CFT participants who did and did not show clinically relevant improvement on well-being, Chapter V suggested that compassionate feeling/sensation – a major skill reflected in the conceptualisation of compassion underlying CFT – matters most for enhancing well-being.

Not only compassionate feeling, but most theoretically-based compassionate attributes and skills proved empirically distinguishable in a content analysis of emails sent by CFT participants to their counsellors over the course of the intervention. To broaden its scientific applicability, a less fine-grained conceptual model of compassion was proposed, encompassing five compassionate attributes (i.e., care for well-being, sensitivity, empathy, distress tolerance and common humanity) and four compassionate skills (i.e., compassionate attention, reasoning, behaviour and feeling).

To further advance research in this area, suitable and preferably brief instruments to measure key processes in CFT are required. Chapter VI presented a short form of the Forms of Self-Criticising and Reassuring Scale, a valid and reliable instrument for measuring self-reassurance and self-criticism, two constructs relating to important mechanisms of change in CFT, suited to non-clinical populations.

Taken altogether, this thesis provided empirical support for CFT as a means to promote mental health as well as for the theoretical model underlying CFT.

Effectiveness of Compassion Focused Therapy and related interventions

Although this field of study is moving fast, the available evidence base for CFT is limited to small-scale pilot studies lacking comparison groups and long-term follow-up data. The RCT presented in Chapter III is of high quality and provides one of the most comprehensive tests of CFT to date in a Dutch general population sample with mild to moderate levels of well-being. Besides replicating earlier findings indicating that CFT contributes to lowering levels of distress, the trial adds to previous work in several ways. First, this study sets itself apart from previous research in this area by putting emphasis on well-being in the intervention as well as in its evaluation. Second, the study provides not only insight into the effects of CFT directly after the intervention, but also in the long-term effects up to one year after baseline.

Compassion Focused Therapy in the context of positive psychology

The two-continua model of mental health is increasingly integrated in psychological interventions. This model holds that the absence of psychopathology does not equal well-being and vice versa. Accordingly, in Chapters II and III, CFT and its precursors (i.e., MBSR, MBCT, ACT) were found to impact both psychological distress (i.e., depressive and anxiety symptoms, stress) and well-being. In addition, Chapter IV indicated that CFT operates through reducing barriers to mental health (i.e., self-criticism, negative affect) and cultivating resources for mental health (i.e., self-reassurance, positive affect). Our data showed that changes in well-being over the course of the intervention were strongly correlated with changes in depressive and anxiety symptoms, yet seem two sufficiently distinct processes. Taken together, our data confirm the two-continua model of mental health and beyond that imply that CFT ideally suits this model.

Chapter IV showed that although CFT impacts both continua through similar pathways, it differs for well-being and distress which mechanism matters most. Changes in (positive or negative) affect were found a central mechanism of change with regard to distress, but not with regard to well-being. Although our data show that CFT brings about improvements in well-being primarily through improving levels of self-reassurance, the positive psychology literature pinpoints several other possible determinants or working mechanisms, such as hope or gratitude.

Compassion and mindfulness are considered important topics in the field of positive psychology, yet interventions aimed at cultivating these psychological resources are usually not framed as positive psychological interventions (PPIs). Following Sin and Lyubomirsky (2009), it would make sense though to classify CFT, which is aimed at building positive, i.e., compassionate, cognitions, feelings and behaviours, as a PPI. Adding a bit more nuance, it may be argued that CFT suits both a positive psychological or well-being approach and a distress-oriented approach. In other words, CFT may be considered a PPI when applied with the aim of building resources for mental health, but not when used with the aim of tackling barriers to mental health.

Various positive psychological exercises could easily be integrated in CFT so as to strengthen particular compassionate attributes or skills, and vice versa, CFT exercises could be integrated in PPIs. The CFT self-help intervention studied in Chapter III shows various influences from positive psychology, e.g., the theme of gratitude is interwoven in the self-help book, which is reflected by exercises such as 'three good things' and 'writing a gratitude letter'. These gratitude exercises may facilitate compassionate feelings such as calmness or a sense of connectedness. Several other major themes in the field of positive psychology, such as optimism and positive emotions, can be linked to compassion (Neff, Rude, & Kirkpatrick, 2007).

Using a delivery format similar to the one in our RCT, Schotanus-Dijkstra, Drossaert, et al. (2017) showed that a multi-component PPI aimed at enhancing six putative well-being processes including self-compassion, was effective in improving (among others) self-compassion, and that improvements in self-compassion were a major mediator of the effects of the intervention on depressive and anxiety symptoms. These findings suggest that self-compassion may be a key process for reducing psychopathology, thereby corroborating findings of MacBeth and Gumley (2012). Remarkably, effect sizes for depressive and anxiety symptoms as well as well-being, found by Schotanus-Dijkstra, Drossaert, et al. (2017), were larger compared to the effect sizes found in our RCT. This may suggest that a combination of compassion exercises and positive psychological exercises targeting processes such as optimism, strengths, optimism and hope may be more effective for improving mental health in people with mild or moderate well-being than compassion exercises alone.

Compassion Focused Therapy in the context of public mental health

In this thesis, a number of observations have been made, underscoring the potential of CFT as a public mental health strategy. First, our RCT (Sommers-Spijkerman, Trompetter, Schreurs, & Bohlmeijer, 2018) replicates previous work showing that CFT is effective in alleviating common psychological symptoms such as depressive and anxiety symptoms in people with low to moderate levels of well-being (e.g., Braehler et al., 2013; Cuppage, Baird, Gibson, Booth, & Hevey, 2018; Gilbert & Procter, 2006). Reductions in depressive and anxiety symptoms were associated with improvements in well-being, as shown in Chapter IV. Well-being protects against mental illness in the long run, suggesting that CFT may both directly and indirectly contribute toward lowering the prevalence rate of common psychological disorders.

Second, our data reveal positive group-level as well as individual-level effects with regard to well-being. At group level, we found increases in mean scores on emotional, psychological, social and overall well-being, and decreases in mean scores on distress outcomes, suggesting that adopting a public mental health approach to CFT may shift population levels of well-being and distress in an upward and downward direction, respectively. At the individual level, our findings show that 39.2% of CFT participants relative to 22.1% in the waitlist control group had moved into the normative distribution of the MHC-SF (Lamers, Westerhof, Bohlmeijer, ten Klooster, & Keyes, 2011) at the end of the intervention. Also, an increase in the proportion of flourishers, i.e., people with optimal levels of well-being, was observed, with 27.5% of CFT participants versus 12.3% of waitlist participants moving into the category of flourishers over the course of the intervention. At the last follow-up, in the CFT group, the proportion of flourishers was nearly ten times higher than before the start of the intervention (31.7%) and approached the general Dutch population mean of 36.5% (Schotanus-Dijkstra et al., 2015). These are important findings from a public mental health perspective, since people with higher levels of well-being tend to be less vulnerable

for many mental disorders (e.g., Keyes, Dhingra, & Simoes, 2010; Lamers, Westerhof, Glas, & Bohlmeijer, 2015; Schotanus-Dijkstra, Ten Have, Lamers, de Graaf, & Bohlmeijer, 2017).

Third, our data offer preliminary indications that CFT as well-being-oriented intervention is feasible, acceptable and effective in a broad and heterogeneous target population, when offered as guided self-help but also when offered as pure self-help (i.e., without email guidance). Whereas our trial is among the first studies in this fast-growing field to implement CFT as self-help, several earlier studies have demonstrated that psychological competences like compassion, mindfulness and acceptance, can be learned through guided and unguided psychological self-help interventions, both offline and online, and that psychological self-help interventions targeting these competences are effective in alleviating common psychological symptoms and enhancing well-being (Cavanagh, Strauss, Forder, & Jones, 2014; Fledderus, Bohlmeijer, Pieterse, & Schreurs, 2012; Kelly & Carter, 2015; Pots et al., 2016; Shapira & Mongrain, 2010).

Processes of change in Compassion Focused Therapy: Theoretical claims and empirical support

Whereas CFT has shown promising effects over a wide range of well-being and distress outcomes, in this thesis (Sommers-Spijkerman et al., 2018) as well as in other studies (e.g., Cuppage et al., 2018; Matos et al., 2017), its working mechanisms remain less well understood. Chapter IV disclosed a number of interrelated change processes which, as presumed in the theoretical framework underlying CFT, bring about improvements in well-being and psychological distress during CFT. These processes, affective and/or cognitive in nature, relate to self-compassion/reassurance, self-criticism, and positive/negative affect. Our findings greatly contribute to the literature on CFT as previous studies investigating theory-driven processes of change are mostly cross-sectional in nature (Arimitsu & Hofmann, 2017; Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Petrocchi, Dentale, & Gilbert, 2018) and interventional studies addressing these processes are scarce.

Which mechanism(s) mattered most varied per outcome. For both well-being and anxiety symptoms, cultivating self-compassion/reassurance, seems a central mechanism of change. This is in line with the theoretical model underlying CFT which presumes that cultivating compassion is the primary working mechanism of CFT, which, in turn, helps people mitigate or tackle maladaptive forms of self-to-self relating, specifically self-criticism, use adaptive emotion regulation strategies, and engage with and tolerate unpleasant feelings characteristic of the threat system (Gilbert, 2009, 2014).

Our data suggest that changes in overall levels of positive or negative affect play a mediating role in the effect of CFT on depressive and anxiety symptoms, respectively. Although effects of CFT on well-being were not mediated through changes in overall levels of affect, Chapter V suggests that specific affective processes, i.e., compassionate feeling/sensation, may foster improvements in well-being. Whilst a number of experimental studies have demonstrated that practising compassion up-regulates positive affect (Engen & Singer, 2015) and down-regulates negative affect (Arimitsu & Hofmann, 2017; Diedrich, Burger, Kirchner, & Berking, 2016; Diedrich et al., 2014; Leary, Tate, Adams, Allen, & Hancock, 2007), no direct empirical evidence has been gathered for affect (regulation) as mechanism of change in CFT.

In line with the theoretical framework, self-criticism appeared a secondary working mechanism in Chapter IV, regardless of outcome. Reducing self-criticism is the sole mechanism of change that has been addressed in the context of compassion-based interventions. In a recent study, Johnson et al. (2018) found that a six-session compassion meditation program was effective in reducing depressive symptoms in suicidal African Americans through reducing levels of self-criticism. Consistently, Cuppage et al. (2018) found that across a transdiagnostic sample who completed a CFT group intervention, reductions in levels of psychopathology were predicted by among others changes in self-criticism.

What does CFT add to MBSR, MBCT and ACT?

When zooming in on the theoretical framework underlying CFT, it becomes clear that CFT shares a number of core processes with MBSR, MBCT and ACT, most notably mindfulness. The theoretical framework underlying CFT distinguishes between two mindsets of compassion. Mindfulness, that is, the ability to be attentive to and engage with thoughts, feelings and sensations in the present moment with an open and non-condemning view towards one's experiences (Bishop et al., 2004; Kabat-Zinn, 1990), appears to lie at the heart of the first mindset of compassion (Gilbert, 2015, p. 246). This is mirrored by a number of compassionate attributes, namely sensitivity, sympathy, and non-judgment. Mindfulness goes hand in hand with acceptance of distress, which is reflected in the CFT framework by the compassionate attribute of distress tolerance. This refers to the ability to tolerate rather than avoid or dissociate from negative thoughts, including self-critical and shaming thoughts, as well as unpleasant or feared emotions or feelings characteristic of the threat system (e.g., anxiety). In CFT, mindfulness and acceptance are thought of as prerequisites for the ability to recognise and reflect upon automatic cognitive and behavioural patterns, i.e., empathy (Gilbert, 2014). Our findings in Chapter V support a positive association between mindfulness (i.e., sensitivity to suffering) and empathy in CFT. In CFT, mindfulness, acceptance and empathic skills are thought to build a number of transformative skills conducive to compassion, namely compassionate reasoning, feeling and behaviour. These skills together constitute the second mindset of compassion. The idea of two mindsets, one engagement-oriented and one action-oriented mindset seems not unique to CFT. ACT, for in-

stance, integrates mindfulness and acceptance skills with the aim to facilitate values-based living. In this regard, compassion can be viewed as a universal core value.

Previous theoretical and empirical work indicating that CFT and existing mindfulness-based therapies such as MBSR, MBCT and ACT integrate similar basic psychological competences and target similar outcomes in similar populations, raises the question of what added value CFT brings to these longer existing therapies. CFT sets itself apart from MBSR, MBCT and ACT through not only changing automatic (maladaptive) thoughts in relation to self and others, but also enabling people to affectively experience these thoughts as warm, kind, soothing and reassuring. This seems a worthwhile therapeutic endeavour as previous research shows that cognitive changes not automatically instigate affective changes, sometimes referred to as the 'cognition-emotion mismatch' (Stott, 2007). The findings in Chapter V attest to the importance of compassionate feeling/sensation. Participants who showed clinically significant improvement on well-being at post-intervention were found to express significantly more compassionate feeling/sensation in the emails to their counsellor during the nine-week compassion intervention, while none of the remaining compassionate attributes/skills yielded significant differences.

Compassion: the construct and its measurement

Compassion as a concept has been operationalised in various ways. It has been thought of as an emotion, an emotion regulation strategy, a personality trait and a social mentality, to name a few. Paul Gilbert, founder of CFT, provided the most comprehensive definition of compassion available at present, with two mindsets representing six compassionate attributes and six compassionate skills (Gilbert, 2009, 2014). The first mindset of compassion in Gilbert's framework relates to the 'ability to engage, stay with, and understand sources of suffering' (Gilbert, 2015, p. 246). The second mindset of compassion is more action-oriented. Central to this mindset is self-reassurance, individuals' ability to soothe or reassure oneself in the face of setbacks or failures (Gilbert, Clarke, Hempel, Miles, & Irons, 2004).

When zooming in on existing definitions and measurement instruments of compassion, it strikes us that the first mindset of compassion receives considerable attention while the second mindset remains largely neglected. The 'reassured self' subscale of the Forms of Self-Criticising/attacking and Reassuring Scale (FSCRS; Gilbert et al., 2004) is one of the few available instruments, if not the only one, in which the focus is merely on the second mindset of compassion. The items mainly reflect processes of compassionate reasoning (e.g., I find it easy to forgive myself) and feeling (e.g., I can still feel lovable and acceptable), and to a lesser extent processes of compassionate attention (e.g., I am able to remind myself of positive things about myself) and behaviour (e.g., I am able to care and look after myself).

Chapter IV implies that these processes, which Gilbert (2014) refers to as 'transformative skills', play an important mediating role in the effect of CFT on well-being and depressive- and anxiety symptoms. As such, it seems valuable to include aforementioned compassionate skills into self-report measures of compassion.

In this regard, another observation worth mentioning is that compassionate skills relative to compassionate attributes emerged more frequently in the emails sent by CFT participants in our RCT to their counsellors. We believe this finding may be accounted for by the fact that compassionate attributes are likely to occur outside one's awareness, whereas compassionate skills are applied more consciously. This raises the question whether participants are better capable of (reliably) reporting on compassionate skills than on compassionate attributes, further underscoring the relevance of including compassionate skills in measurement instruments for compassion.

Strengths and limitations

As described in Chapters II to VI, the findings of each study included in this thesis should be interpreted in the light of several limitations. The main strong points and limitations of the thesis as a whole are listed here. The RCT, which has been used in Chapters III to VI, reveals both strengths and limitations. First and foremost, a major strength is that the RCT was conducted 'in real life' instead of an experimental setting, thereby increasing the external validity. In retrospect, some of the decisions made during the design of the RCT are highly pragmatic and less ideal from a scientific perspective. For instance, due to the use of a waitlist control group, effects may have been overestimated and active ingredients of the intervention could not be disentangled from non-specific effects such as duration of the intervention, delivery format and positive expectations of participants. Nonetheless, considering that the trial assessed the effectiveness of a newly developed CFT-based intervention, it may be argued that the use of a waitlist control group is appropriate (Mohr et al., 2009). Furthermore, outcome as well as process measures were only administered after the intervention, though interim assessments of process measures may facilitate a more valid assessment of mechanisms of change in CFT. It may be noted that the (self-report) measures of compassion used across the trial (i.e., FSCRS, SCS–SF) are not compatible with the multi-component theoretical model of compassion underlying CFT. This discrepancy can be accounted for by a lack of comprehensive measures of compassion (Strauss et al., 2016). Finally, although the analyses in Chapters III to VI are based on rather large sample sizes, both samples consisted of predominantly high-educated females and are therefore not representative for the general Dutch population. However, no indications were found that the intervention is not effective in particular subgroups.

Directions for theory, research and practice

Conceptual and theoretical considerations

Currently, further development of the field of compassion research is hampered by the lack of a universally accepted and 'workable' definition of compassion. Aggregation of existing conceptualisations and operationalisations may help this booming field move forward. Today, the most comprehensive operationalisation of compassion is offered by Gilbert (2009, 2014). In this thesis, we sought empirical support for the conceptualisation of compassion inherent in CFT. Whereas it is theorised that compassion captures a multitude of coherent conceptually distinct components (i.e., attributes and skills), our findings in Chapter V lend only limited empirical support for the theoretical structure of compassion. When empirically tested using the emails sent by CFT participants to their counsellors, some of the theoretically-based components of compassion proved hard to distinguish empirically, e.g., sympathy and compassionate sensation. A less fine-grained model may be broader applicable, particularly from a scientific perspective. Chapter V offers a good starting point for defining each of the two mindsets of compassion. In accordance with Strauss et al. (2016), we identified five attributes of compassion, i.e., care for well-being, sensitivity, empathy, distress tolerance and common humanity. We also propose a simplified second mindset of compassion incorporating four compassionate skills, namely compassionate attention, reasoning, feeling/sensation and behaviour. Future research may establish the theoretical and empirical distinctiveness of these attributes and skills, and examine their interrelations.

Research considerations

Since research on the effectiveness of CFT is still in its infancy, there is first and foremost need to replicate the observed effects in different samples and studies, using strong methodological designs. To improve the quality of effectiveness research in this field, we strongly recommend researchers and journals to adhere to the CONSORT statement (Schulz, Altman, & Moher, 2010), because otherwise the accumulation of replicable scientific knowledge will be unduly hampered. Based on our findings, we advocate to include well-being more frequently, if not always, as outcome in compassion-based interventions and evaluation studies. In addition, future research may establish if CFT is best used as stand-alone treatment or in combination with other (related) therapies. Therapy change process research is deemed a valuable complement to effectiveness research as a better understanding of processes of change during the course of CFT may enlighten how CFT works and for whom it is effective, and ultimately guide the development and refinement of CFT interventions in the future (Elliot, 2010; Laurenceau, Hayes, & Feldman, 2007). Dismantling or additive designs may help to disentangle the active ingredients of the intervention, as well as matching intervention and control participants on non-specific factors known to produce favourable outcomes (e.g., positive expectations). As CFT seems a promising public mental health strategy, implementation research is warranted to determine drivers and barriers for successfully implementing CFT 'in the real world'. Apart from this recapitulation of venues for further research, two specific recommendations are elaborated below, one relating to key processes of compassion and one relating to recruitment of participants in future studies.

Measuring affective processes of compassion

Compassionate feeling/sensation was found a core process in CFT and a potential indicator of improvements in well-being. Hence, we need valid and reliable measurement instruments for measuring emotional and bodily/sensory processes of compassion. Common self-report instruments for measuring compassion, such as the Self-Compassion Scale (K. D. Neff, 2003), merely address cognitive and behavioural processes of compassion and do not cover the full meaning of compassion. The FSCRS is one of the few available instruments that captures compassionate feelings, yet does not distinguish between emotional and bodily feelings of compassion. Based on the mixed methods study nested in our RCT, we anticipate that it may be difficult for participants to reliably report on compassionate sensations using self-report measures as this requires bodily awareness. Especially novice CFT users may not consciously experience bodily sensations of compassion. Physiological markers of soothing positive affect may offer additional opportunities for assessing compassion. There is some evidence that practising compassion may positively impact physiological parameters of mental health, most notably heartrate variability (Kirby, Doty, Petrocchi, & Gilbert, 2017; Matos et al., 2017; Rockliff, Gilbert, McEwan, Lightman, & Glover, 2008) through increasing parasympathetic activity (e.g., greater vagal activity; Stellar, Cohen, Oveis, & Keltner, 2015). As such, heartrate variability, may offer a valuable complement to subjective measures for assessing compassionate feelings/sensations (Kirby, Doty, et al., 2017). It is important to note here that changes in heartrate variability are not specific to CFT, but may also apply to related therapies such as MBSR and MBCT (e.g., Arredondo et al., 2017; Burg, Wolf, & Michalak, 2012). Therefore, researchers should not merely rely upon physiological parameters, but ideally use a combination of psychological and physiological measures of compassion.

Overcoming gender bias in recruitment to future studies

Consistent with previous studies, it proved hard to recruit men for participation in our RCT. Don't men need compassion? Although a meta-analysis by Yarnell et al. (2015) demonstrates that males score slightly higher on self-compassion compared to females, these differences are only marginal. The findings of our moderation analyses in Chapter III suggest that men may benefit just as much from CFT as women in terms of well-being. So, if men could

benefit from a self-help intervention like the one in our RCT, why were we only able to include a small proportion of males? As shown by our meta-analysis (Chapter II), our RCT (Chapter III) and a number of studies outside the scope of this thesis (e.g., Pots et al., 2016; Schotanus-Dijkstra, Drossaert, et al., 2017), (online) self-help interventions – and most likely the general idea of 'working on yourself' – appeal to women, especially high-educated women, and to a lesser extent to men. With regard to this observation, a number of reasons may be put forward. First, males may not be inclined to seek self-help as this may threaten their masculine identity (Seymour-Smith, 2008). Second, males may be more sceptical towards concepts like mindfulness and compassion which may evoke associations of deep meditations rather than simple daily exercises. In future trials, gender bias in recruitment of participants may be prevented through addressing legitimate reasons for both males and females to participate in self-help, using 'male' and 'female' recruitment channels, and using more implicit recruitment strategies, e.g., in the form of psycho-education. A better understanding of the benefits of compassion may persuade men to take part in such interventions. The general practitioner is often the first contact when people experience psychological symptoms, hence may play an important role herein.

Practical considerations

Self-help Compassion Focused Therapy as public mental health strategy

Chapter III demonstrated that offering CFT as self-help is feasible and effective. When offered without guidance (to the waitlist control group), effects were generally smaller but still significant. Self-help formats may be particularly useful for preventive purposes and, when needed, may function as a 'stepping stone' to other, more intensive forms of treatment.

Offering CFT as online self-help may enable practitioners in the field to increase its accessibility and scalability even further against limited costs (Chamberlain, Heaps, & Robert, 2008; Cuijpers & Schuurmans, 2007). Psychological interventions are increasingly offered through the Internet, with promising results (Barak, Klein, & Proudfoot, 2009). The meta-analysis presented in Chapter II showed that online mindfulness-based interventions have a significant beneficial impact on mental health outcomes, including well-being, depressive symptoms, anxiety symptoms and stress. Unfortunately, this thesis does not provide direct evidence on the effectiveness of online CFT since RCTs investigating the effectiveness of online CFT interventions were not available at the time the meta-analysis was initiated. However, considering that CFT, ACT, MBSR and MBCT operate through similar processes, it seems highly likely that CFT can be beneficial when delivered online. Briefly after our meta-analysis, a number of pilot studies have been published, indicating that online delivery of compassion interventions is indeed acceptable and feasible (Finlay-Jones, Kane, & Rees, 2017; Krieger, Martig, van den Brink, & Berger, 2016; McEwan & Gilbert, 2016).

Considering that the use of compassion as intervention is a quickly expanding field, it seems a worthwhile endeavour to further establish the effectiveness of CFT-based online interventions.

Moving toward compassion as a public mental health strategy does not only impose requirements on *how* it is being delivered, but also on *where* it is being delivered. The emails sent by participants to their counsellors suggest that compassion can be applied to various life domains, e.g., in the sphere of health, relationships and work (see Chapter V). At present, compassion receives considerable interest in the health domain, while other domains remain underexposed. A settings-based approach may facilitate implementation of CFT as public mental health intervention, meaning that principles of compassion are not only integrated in public mental health services (e.g., as early preventive intervention in stepped-care protocols for at-risk populations) but in various settings, such as workplaces, schools or forensic settings.

Cumulation of compassion-based interventions

The growing interest for compassion gave rise to the development and evaluation of a broad range of compassion-based interventions. Apart from CFT, examples include Mindful Self-Compassion (MSC; Neff & Germer, 2013), Compassion Cultivation Training (CCT; Jazaieri et al., 2013) and Cognitively-Based Compassion Training (CBCT; Pace et al., 2009). Despite nuances, these programs show considerable overlap, and, more importantly, all of these programs seem to yield positive effects on mental health (Kirby, Tellegen, & Steindl, 2017). As such, it may be questioned whether it is useful to continue developing compassion-based programs which are slightly different from the ones that already have been created. It may be more worthwhile to move towards integration of existing (compassion-based) programs. Integration of existing therapies should not be limited to compassion interventions per se. Also closely related therapies such as MBSR, MBCT and ACT lend themselves well for integration into compassion programs. Currently, a number of efforts have been undertaken to combine mindfulness and compassion-based programmes. For example, compassion-mindfulness therapy (C-MT; Lo, Ng, & Chan, 2015) combines MBCT with compassion training. Participants are taught basic mindfulness practices from MBSR/MBCT (e.g., body scan, mindful sitting) which serve as a foundation for compassion practices (e.g., compassionate blessings) taught in a later stage of the program (Lo et al., 2015).

Lessons to take home

This thesis described five studies which add to the theoretical and empirical evidence base for CFT and its precursors. It proved feasible, acceptable and effective to use CFT for improving well-being and relieving psychological distress in adults with low to moderate levels of well-being. Although the self-help intervention attracted primarily high-educated females, the findings suggest that CFT suits a broad and heterogeneous target population. (Online) self-help formats, either guided or unguided, offer opportunity for reaching its full potential as a scalable public mental health strategy. CFT was found to operate through multiple pathways which vary based upon its intended outcome, namely through fostering self-reassuring and reducing self-critical forms of self-to-self relating as well as through regulating positive and negative affect. When well-being is the intended outcome of CFT, cultivating compassion, and more specifically compassionate feeling/sensation, seems to matter most. The FSCRS offers a valid and reliable instrument for measuring two important processes during CFT: self-reassurance and self-criticism. To advance research in this area, a short form suited to non-clinical populations is now available as well.

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Summary

Summary

As stressed in *Chapter I*, since the 1970s, the field of psychotherapy has been subject to two major developments. First, psychological competences such as mindfulness, acceptance and compassion have become increasingly used as targets of therapeutic intervention. Second, in addition to the treatment of psychopathology, the pursuit of well-being has become an area of emphasis in many psychotherapeutic interventions. This is highly relevant from both an individual and a societal perspective. People with higher levels of well-being are less vulnerable to developing and maintaining mental disorders, have better physical health, are more productive and use less healthcare, to name a few benefits.

The overarching aim of this thesis was to add to the knowledge base of a relatively new form of psychotherapy which ideally suits both developments: *Compassion Focused Therapy* (*CFT*). The central aim of CFT is to build a compassionate mind. This encompasses two mindsets. The first mindset involves the capacity to notice, tolerate and empathize with suffering of self and others. The second mindset entails the commitment to tackle or mitigate (the impact of) suffering through focusing one's attention on the positives and generating self-reassuring thoughts and feelings.

Inherent in the first mindset of compassion is the ability to observe thoughts, feelings and sensations in the present moment without judgment, that is, *mindfulness*. Well-known mindfulness-based interventions are *Mindfulness-Based Stress Reduction* (*MBSR*), *Mindfulness-Based Cognitive Therapy* (*MBCT*), and *Acceptance and Commitment Therapy* (*ACT*). Numerous studies demonstrated the utility of these interventions in mentally or somatically ill as well as healthy samples. In more recent years, MBSR, MBCT and ACT are increasingly delivered through the Internet. The meta-analysis in *Chapter II* synthesized fifteen randomised controlled trials totalling 2360 participants to estimate the overall effects of online-delivered mindfulness-based interventions on mental health. A standardised effect size was calculated per study. Subsequently, effect sizes were pooled to assess the effects on well-being, mindfulness, depressive- and anxiety symptoms, and stress. A random effects model was used. The findings indicate that online MBIs have potential to contribute to improving well-being (Hedges' g = 0.23) and mindfulness (g = 0.32) and alleviating depressive and anxiety symptoms (g = 0.29 and g = 0.22, respectively). The largest effect was found for stress (g = 0.51). For stress and mindfulness, larger effects were observed when interventions were offered with therapist guidance. These effects should be interpreted with caution given the small number of studies and considerable variability across studies. Nonetheless, these findings are considered timely and important. Online (self-help) intervention formats receive increasing interest and enable practitioners in the field to increase the accessibility and scalability of mindfulness-based interventions.

Today, CFT receives growing interest from researchers and practitioners and is the main focal point of the remaining chapters. For CFT, it is as yet too early to explore the utility of online formats. At present, the field of CFT is thought to benefit most from further examining its potential beneficial effects on mental health, and identifying how and for whom it works. *Chapters III* and *IV* contributed toward overcoming these empirical knowledge gaps.

Chapter III described a large two-armed randomised controlled trial (RCT) to examine the effectiveness of a guided CFT self-help intervention in terms of mental health. The intervention consisted of the self-help book *Compassie als sleutel tot geluk* (Compassion as key to happiness) that could be worked through in 7 to 9 weeks with weekly email support from a trained counsellor. Each lesson comprised psycho-education and a variety of self-reflective and experiential exercises, such as soothing rhythm breathing, keeping a diary of self-critical thoughts, imagining your ideal compassionate self, compassionate letter writing and visualising desired life changes. Adults with low to moderate levels of well-being and mild depressive/anxiety symptoms were recruited from the general Dutch population and randomised to CFT (N = 120) or a waitlist control condition (N = 122). With the primary focus on well-being, i.e., the capacity to experience pleasant feelings and lead a meaningful personal and social life, this chapter added to previous research on the effectiveness of CFT which focuses predominantly on psychological distress. Secondary outcomes in the RCT were depressive and anxiety symptoms, stress, self-compassion, self-criticism, self-reassurance, positive and negative affect, and gratitude. All outcomes were administered at baseline, post-intervention, and three- and nine-month follow-up. Adherence was high, that is, 74% of CFT participants completed the entire intervention. At post-intervention, the CFT group improved significantly more on well-being (d = .51), depressive and anxiety symptoms (d = .46 and d = .39, respectively), stress (d = .53), self-compassion/self-reassurance (d = .45), self-criticism (d = .29 – .51), positive and negative affect (d = .39 and d = .34, respectively) and gratitude (d = .39) as compared to the waitlist control group. For all outcomes except for positive affect, effects were maintained up to three-month follow-up (i.e., 6 months after baseline). In the intervention group, improvements on all measures were maintained or amplified at nine-month follow-up. Although the self-help intervention attracted primarily high-educated females, no significant moderators were found for well-being, suggesting that a broad and heterogeneous target group could profit from the intervention. Participants in the waitlist control group received the CFT self-help intervention after six months without guidance, making it possible to test the added value of the email counselling in terms of effectiveness of the intervention. When offered email guidance, participants were more likely to start with the intervention, spent more time on the intervention, completed more lessons and improved significantly more on both well-being and distress outcomes over a six-month interval. Our findings suggest that CFT fosters (resources for) well-being and reduces (risks for) psychopathology, hence lends itself well for promoting public mental health. Given the profound and enduring benefits of CFT in terms of mental health, we proposed to conduct

additional trials with active control groups in order to gather more robust evidence for the utility of CFT.

Our findings warrant further investigation of potential working mechanisms of CFT. This type of research not only allows to strengthen the theoretical framework of CFT, but also to refine and optimise the effectiveness of CFT interventions. Accordingly, *Chapter IV* assessed four putative working mechanisms of CFT in relation to the observed changes in well-being and psychopathology (i.e., depressive and anxiety symptoms). In line with the theoretical model underlying CFT, mediation analyses suggest that CFT operates through cultivating self-reassurance, reducing self-criticism and regulating positive/negative affect. Which of these mechanisms matters most seems to depend on the intended outcome of CFT. For well-being and anxiety symptoms, self-reassurance emerged as a central mechanism of change. Changes in positive and negative affect over the course of the CFT self-help intervention were found significant mediators of the effects of CFT on depressive and anxiety symptoms, respectively. Although this study provides preliminary empirical evidence for multiple theoretically-based mechanisms of change, a major methodological drawback is that mediators were measured at baseline and post-intervention, but not during the intervention, making it impossible to draw conclusions about whether there is a causal relationship between mediators and outcomes. Future research is needed to shed more light on these and other mechanisms of change in CFT as well as their interplay.

The findings of *Chapters V* and *VI* relate to the conceptualisation and measurement of compassion. In the emails sent by CFT participants to their counsellors over the course of the CFT self-help intervention, we identified five attributes (i.e., care for well-being, sensitivity, empathy, distress tolerance, common humanity) and four skills (i.e., compassionate attention, reasoning, behaviour and feeling/sensation) underlying compassion which are addressed in *Chapter V*. These compassionate attributes and skills largely support the theoretical model underlying CFT. Additionally, it was found that participants showing clinically relevant improvement on well-being expressed significantly more *compassionate feeling/sensation* compared to those who did not, suggesting that this compassionate skill may be of special interest when well-being is the intended outcome of therapy. This is in line with the overarching goal of CFT, namely to strengthen individuals' capacity to reassure and soothe themselves when encountering setbacks or adversity.

Chapter VI focuses on the assessment of what are deemed to be important therapeutic change processes in CFT, so called self-to-self relating processes. This chapter presented a newly developed 14-item short form of the Forms of Self-Criticising and Reassuring Scale (FSCRS–SF), a self-administered questionnaire for measuring *self-reassurance*, i.e., the ability to reassure oneself in the face of setbacks, and two forms of self-criticism coined inadequate self and hated self. *Inadequate self* refers to self-criticism induced by the desire to correct or improve certain aspects of the self, whereas *hated self* refers to self-criticism arising from the desire to hurt, persecute and attack the self. The proposed short form was developed and tested in a Dutch community sample (N = 363), and cross-validated in the RCT sample. The FSCRS–SF showed adequate internal consistency for the self-reassurance subscale, while reliability findings were mixed for the self-criticism scales. Furthermore, the short form showed good psychometric properties comparable to those of the full FSCRS, including a good factor structure, convergent validity with theoretically related constructs (i.e., self-compassion, well-being, stress and depressive/anxiety symptoms), sensitivity to change, and known-groups validity. In terms of reliability, the FSCRS remains the preferable choice. Nonetheless, the FSCRS–SF seems a valid measure for assessing self-reassurance and self-criticism both as outcome and process measure in non-clinical interventional studies requiring brief scales to be administered on multiple occasions.

In sum, a number of lessons can be drawn from this thesis: (1) CFT as guided self-help has potential as a public mental health strategy, whereby (2) online delivery formats are deemed promising based on the outcomes of related interventions, and (3) works via multiple pathways, (4) most notably affective processes (5) which can be assessed adequately and briefly. As outlined in *Chapter VII*, opportunities for the field lie in replicating the observed effects on well-being and distress in other samples and settings, gaining a better understanding of (interrelationships between) processes of change, developing complementary measures for assessing compassionate skills, particularly affective skills, and cumulating existing definitions and interventions.

Samenvatting

Startend in de jaren 70 vonden twee belangrijke ontwikkelingen plaats binnen de psychotherapie. Ten eerste verschenen er steeds meer interventies gericht op het versterken van vaardigheden als mindfulness, acceptatie en compassie. Ten tweede zien we een verschuiving in aandacht van klacht naar kracht. Het nastreven van welbevinden is steeds vaker een primair doel in psychotherapeutische interventies. Welbevinden brengt veel voordelen met zich mee, zowel vanuit individueel als maatschappelijk perspectief. Mensen met een hogere mate van welbevinden zijn minder kwetsbaar voor het ontwikkelen van psychische stoornissen, zoals een depressie of angststoornis. Ook hebben ze een betere lichamelijke gezondheid, zijn ze productiever op hun werk en gebruiken ze minder zorg.

Zoals beschreven in *Hoofdstuk I*, was het overkoepelende doel van dit proefschrift om een bijdrage te leveren aan de beschikbare kennis over een relatief nieuwe vorm van psychotherapie die aansluit bij bovengenoemde ontwikkelingen: *Compassion Focused Therapy* (*CFT*). CFT richt zich primair op het vergroten van compassie. Compassie omvat twee mindsets. De eerste mindset heeft betrekking op het vermogen om lijden van je zelf en anderen op te merken, te tolereren en hierop te reflecteren. De tweede mindset van compassie gaat over de toewijding om je eigen lijden of dat van anderen te verminderen door aandacht te geven aan positieve dingen en geruststellende gedachten en gevoelens te genereren.

Een competentie die centraal staat binnen de eerste mindset van compassie is *mindfulness*, het vermogen om gedachten, gevoelens en sensaties te observeren in het moment zonder hierover te oordelen. Bekende interventies die gebruik maken van de principes van mindfulness zijn *Mindfulness-Based Stress Reduction* (*MBSR*), *Mindfulness-Based Cognitive Therapy* (*MBCT*), en *Acceptance & Commitment Therapy* (*ACT*). Diverse studies hebben de werkzaamheid van deze interventies aangetoond in populaties met mentale of lichamelijke stoornissen alsook in gezonde populaties. In recente jaren worden MBSR, MBCT en ACT steeds vaker aangeboden via het Internet. In *Hoofdstuk II* werden de effecten van online mindfulness-gebaseerde interventies op de mentale gezondheid in kaart gebracht door middel van een meta-analyse. Vijftien gerandomiseerde gecontrolleerde studies met een totaal van 2360 deelnemers werden geïncludeerd. Per studie werd een gestandaardiseerde effectmaat berekend. Vervolgens zijn de effecten gepoold om het totale effect in kaart te brengen voor welbevinden, mindfulness, depressieve- en angstklachten, en stress. Er is gebruik gemaakt van een random effects model. De resultaten laten zien dat online mindfulness-gebaseerde interventies effectief zijn in het vergroten van welbevinden (g = 0.23) en mindfulness (g = 0.32), en het verminderen van depressieve- en angstklachten (respectievelijk g = 0.29 en g = 0.22). Het grootste effect werd gevonden voor stress (g = 0.51). Voor stress en mindfulness geldt dat interventies die werden aangeboden met begeleiding door een therapeut een groter effect hadden vergeleken met interventies zonder begeleiding. Deze bevindingen dienen voorzichtig te worden geïnterpreteerd gezien het kleine aantal studies dat geïncludeerd kon worden en de diversiteit tussen de studies in termen van onder meer populaties en interventies. Desalniettemin kunnen de resultaten worden beschouwd als tijdig en relevant. Er is een snel toenemende belangstelling voor online (zelfhulp) interventies. Deze formats stellen professionals in staat om de toegankelijkheid en toepasbaarheid van mindfulness interventies te vergroten.

Momenteel is er groeiende belangstelling voor CFT, zowel vanuit onderzoek als vanuit de klinische praktijk. Voor CFT is het nog te vroeg om de werkzaamheid van online formats te onderzoeken. Met de huidige stand van zaken is dit veld het meest gebaat bij onderzoek naar de effectiviteit en werkingsmechanismen van CFT. *Hoofdstuk III* beschreef een grote gerandomiseerde gecontroleerde studie om de effectiviteit van een begeleide CFT zelfhulpinterventie te onderzoeken in termen van mentale gezondheid. De interventie bestond uit het zelfhulpboek *Compassie als sleutel tot geluk* dat in 7 tot 9 weken doorgewerkt kon worden met wekelijkse e-mailbegeleiding door een getrainde begeleider. Elke les bestond uit psycho-educatie en diverse reflectieve- en ervaringsoefeningen, zoals ademhalen met aandacht, het bijhouden van een dagboekje van zelfkritische gedachten, het inbeelden van je ideale compassievolle zelf, het schrijven van een compassievolle brief aan iemand die je dankbaar bent, en het visualiseren van gewenste veranderingen in je leven. Volwassenen met een laag tot matig niveau van welbevinden en milde depressieve- en angstklachten werden geworven in de algemene Nederlandse bevolking en willekeurig verdeeld over twee groepen: een CFT groep (N = 120) en een wachtlijstgroep (N = 122). De primaire uitkomstmaat was welbevinden, het vermogen om een plezierig, betrokken en betekenisvol leven te leiden, in tegenstelling tot voorgaande studies die zich voornamelijk richten op psychische klachten. Secundaire uitkomstmaten waren depressieve- en angstklachten, stress, zelfcompassie, zelfkritiek, positieve en negatieve emoties en dankbaarheid. Metingen vonden plaats vóór de start van de interventie, na afloop van de interventie en 3 en 9 maanden later. De adherentie (therapietrouw) was hoog; 74% van de deelnemers maakte de interventie af. Vergeleken met de wachtlijstgroep, ging de interventiegroep significant meer vooruit wat betreft welbevinden (d = .51), depressieve- en angstklachten (respectievelijk d = .46 en d = .39), stress (d = .53), zelfcompassie (d = .45), zelfkritiek (d = .29 – .51), positieve en negatieve emoties (respectievelijk d = .39 en d = .34) en dankbaarheid (d = .39). Deze effecten bleven behouden tot zes maanden na aanvang van de interventie, met uitzondering van de effecten op positieve emoties. In de interventiegroep bleven de positieve effecten van CFT zichtbaar tot negen maanden na het beëindigen van de interventie. Hoewel hoofdzakelijk hoogopgeleide vrouwen deelnamen aan het onderzoek, werden geen aanwijzingen gevonden dat bepaalde groepen minder of meer baat hebben bij de interventie. Geen van de onderzochte moderatoren – demografische en psychologische factoren – was significant. De wachtlijstgroep ontving de interventie na zes maanden zonder begeleiding wat het mogelijk maakte

om de toegevoegde waarde van de e-mail begeleiding te onderzoeken. Deelnemers die de interventie aangeboden kregen met e-mail begeleiding startten vaker met de interventie, besteedden meer tijd aan de interventie, maakten meer lessen af, en lieten significant grotere verbeteringen zien op zowel welbevinden als klachten over een tijdsinterval van 6 maanden, vergeleken met deelnemers die de interventie ontvingen zonder begeleiding. Onze resultaten suggereren dat CFT leidt tot een toename in (bronnen voor) welbevinden en een reductie in (risicofactoren voor) psychopathologie. Deze vorm van therapie is daarmee bij uitstek geschikt voor het bevorderen van de publieke geestelijke gezondheid. In het licht van de langdurige gunstige effecten van CFT voor de mentale gezondheid, stelden we voor om aanvullende studies uit te voeren met actieve controlegroepen om zo meer robuuste evidentie te vergaren ten aanzien van de werkzaamheid van CFT.

Onze bevindingen rechtvaardigen onderzoek naar mogelijke werkingsmechanismen van CFT. Dit type onderzoek draagt niet alleen bij aan de theoretische inkadering van CFT, maar helpt ook om de effectiviteit van CFT interventies te optimaliseren. *Hoofdstuk IV* onderzocht vier vermeende werkingsmechanismen van CFT in relatie tot veranderingen in welbevinden en psychopathologie (depressieve- en angstklachten). In overeenstemming met het theoretische model onderliggend aan CFT, suggereren mediatie analyses dat CFT werkt via het cultiveren van het vermogen van individuen om zichzelf te kalmeren en gerust te stellen wanneer men geconfronteerd wordt met tegenslag (*self-reassurance*), het verminderen van zelfkritiek en het reguleren van positieve en negatieve emoties. Welke van deze mechanismen er het meest toe doet verschilt per uitkomstmaat. Het cultiveren van het vermogen om zichzelf te kalmeren en gerust te stellen bleek een centraal mechanisme voor het vergroten van welbevinden en het verminderen van angstklachten. Effecten van CFT op depressieve- en angstklachten werden gemedieerd door veranderingen in positieve en negatieve emoties gedurende de interventie. Hoewel deze studie voorlopig bewijs levert voor meerdere mechanismen van verandering, is een belangrijke methodologische beperking dat mediatoren werden gemeten voor en na de interventie maar niet tijdens de interventie. Derhalve kunnen we op grond van deze studie niet bepalen of er sprake is van een causaal verband tussen mediatoren en uitkomsten. Aanvullend onderzoek is noodzakelijk om meer licht te werpen op bovengenoemde en andere werkingsmechanismen in CFT en hoe deze met elkaar interacteren.

De bevindingen in *Hoofdstuk V* en *VI* hebben betrekking op de conceptualisering en het meten van compassie. In de e-mails die de deelnemers verstuurden aan hun begeleider tijdens de CFT zelfhulpinterventie, identificeerden we vijf compassie attributen en vier compassie vaardigheden die het theoretische model van compassie onderliggend aan CFT grotendeels ondersteunen. Attributen zijn de motivatie om voor zichzelf te zorgen, het vermogen om lijden te herkennen, empathie, het vermogen om lijden te tolereren en gedeelde menselijkheid. Vaardigheden zijn vanuit compassie aandacht geven, denken, handelen en voelen. Deze attributen en vaardigheden werden beschreven in *Hoofdstuk V*. Daarnaast vonden we dat deelnemers die klinisch relevante verbetering toonden op welbevinden significant meer *compassievolle gevoelens/sensaties* uitten in de e-mails vergeleken met diegenen die geen klinisch relevante verbetering op welbevinden lieten zien. Dit impliceert dat compassie voelen een belangrijke vaardigheid is wanneer CFT gericht is op het vergroten van welbevinden.

Hoofdstuk VI richt zich op het meten van belangrijke processen in CFT gerelateerd aan de manier waarop mensen zich verhouden tot zichzelf (*self-to-self relating*). Dit hoofdstuk presenteert een nieuw ontwikkelde verkorte versie van de *Forms of Self-Criticising/Attacking and Self-Reassuring Scale* bestaande uit 14 items, de FSCRS–SF. Dit betreft een zelfrapportage vragenlijst voor het meten van het vermogen van individuen om zichzelf te kalmeren en gerust te stellen naast twee vormen van zelfkritiek, te weten een inadequaat zelf en een gehaat zelf. Een *inadequaat zelf* verwijst naar zelfkritiek die veroorzaakt wordt door de wens om bepaalde aspecten van het zelf te corrigeren of te verbeteren. Er is sprake van een *gehaat zelf* als een individu zichzelf wil straffen en/of pijn wil doen. De voorgestelde verkorte vragenlijst is ontwikkeld en getest in een Nederlandse gezonde populatie ($N = 363$), en gecrossvalideerd in de RCT studiepopulatie. Terwijl de FSCRS–SF een adequate betrouwbaarheid laat zien voor de subschaal over het vermogen van individuen om zichzelf te kalmeren en gerust te stellen, zijn de resultaten voor de subschalen over zelfkritiek gemengd. Verder vertoonde de vragenlijst goede psychometrische eigenschappen vergelijkbaar met de originele FSCRS waaronder een goede factorstructuur, convergente validiteit met theoretisch gerelateerde constructen (zelfcompassie, welbevinden, stress en depressieve- en angstklachten), gevoeligheid voor verandering, en bekende groepen validiteit. In termen van betrouwbaarheid blijft de originele FSCRS de voorkeur houden. Desondanks lijkt de FSCRS–SF een valide instrument voor het meten van het vermogen tot zelfgeruststelling en zelfkritiek, als uitkomst- dan wel procesmaat, in niet-klinische interventie studies die korte meetinstrumenten vereisen om op meerdere momenten in de tijd af te nemen.

Alles bij elkaar genomen kunnen uit deze these een aantal lessen worden afgeleid: (1) CFT als begeleide zelfhulp heeft potentie als publieke geestelijke gezondheid strategie, waarbij (2) online formats veelbelovend lijken op basis van de uitkomsten van aan CFT gerelateerde interventies, en (3) werkt via verschillende routes, (4) in het bijzonder via affectieve processen (5) welke adequaat en verkort gemeten kunnen worden. Zoals uiteengezet in *Hoofdstuk VII*, liggen kansen voor het veld in het repliceren van de waargenomen effecten op welbevinden en psychische klachten in andere populaties en settings, het verkrijgen van meer inzicht in (de interactie tussen) processen van verandering, het ontwikkelen van aanvullende meetinstrumenten voor het evalueren van (affectieve) compassie vaardigheden, en het cumuleren van bestaande compassie definities en interventies.

Curriculum Vitae

Curriculum Vitae

Marion Sommers-Spijkerman was born on the 10th of October 1987 in Nyköping, Sweden. In 2005, Marion graduated from high school (Atheneum) at the Mollerlyceum in Bergen op Zoom. Subsequently, she studied Nutrition and Dietetics for one year at the HAN University of Applied Sciences in Nijmegen where she discovered her interest in research and science. After obtaining her Bachelor's and Master's degree in health sciences (i.e., Health and Society) at Wageningen University in Wageningen, she started her career at the Netherlands Institute of Mental Health and Addiction (Trimbos Institute) in 2012. As a junior researcher at the department of Public Mental Health, Marion was involved in various projects, both practical and scientific. In September 2014, she started working as a researcher at the Department of Psychology, Health and Technology at the University of Twente in Enschede, and one year later she started her PhD project. During her PhD trajectory, Marion supervised several Bachelor's and Master's graduation students, tutored multiple student groups during the Bachelor course Research Methods and Research Project, coordinated the Master course Applied Positive Psychology, gave a number of presentations on the topic of compassion at both national and international scientific conferences, and was involved in several other research projects in the sphere of positive psychology. She continues her work at the Department of Psychology, Health and Technology at the University of Twente as an Assistant Professor.

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