Journal of Happiness Studies
https://doi.org/10.1007/s10902-019-00217-4

RESEARCH PAPER

The Relationship Among the Components of Self-compassion: A Pilot Study Using a Compassionate Writing Intervention to Enhance Self-kindness, Common Humanity, and Mindfulness

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Abstract
Self-compassion has been theorized to have three components, each with a positive pole and a negative pole: self-kindness versus self-judgment, common humanity versus isolation, and mindfulness versus over-identification. Neff (Self Identity 2:85–101, 2003a) proposes that they mutually influence each other, however, this proposition has not been tested yet. We conducted a pilot study to see if improvements from training one component spilled over to the other two—and whether these trainings had an impact on well-being. 80 participants completed 8 weeks of self-compassionate writing exercises to enhance either self-kindness, common humanity, or mindfulness. Trait self-compassion was assessed using the six-factor model of the self-compassion scale. To address issues of alpha-error-inflation, the false discovery rate was fixed at 5%, and critical p values were adjusted accordingly. Participants in the mindfulness condition reported increased total self-compassion ($p = .009$), which was accompanied by increased self-kindness ($p = .027$) and lower isolation ($p = .045$). Participants in the common humanity condition reported improved total self-compassion ($p = .018$), lower over-identification ($p = .045$), and higher life-satisfaction ($p = .049$). The training in self-kindness failed to improve self-kindness or any other factor. These findings provide initial evidence that the components of self-compassion mutually enhance each other. They also emphasize the importance of mindfulness within the conceptualization of self-compassion.

Keywords Self-compassion · Self-kindness · Common humanity · Mindfulness · Compassionate writing exercises · Well-being

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Published online: 19 January 2020

1 Introduction

In Buddhist philosophy, compassion means being touched by suffering and having the wish to help, regardless of whether the object of compassion is the self or someone else (Davidson and Harrington 2002). However, since Buddhist thought also rejects the idea of the self, it is unsurprising that Western cultures mostly associate compassion with compassion for others (Varela et al. 1991). When Neff (2003a) introduced self-compassion as a kind and understanding attitude towards the *self* in times of personal failure or emotional pain, the concept quickly gained popularity in scientific journals.

Systematic reviews and meta-analyses have linked self-compassion with various important outcomes of psychological functioning, such as positive affect, optimism, and overall well-being (Ferrari et al. 2019; Zessin et al. 2015). Moreover, self-compassion has been associated with less anxiety, depression, and stress (López et al. 2018; MacBeth and Gumley 2012). In addition, self-compassion has been found to be an effective buffer against distressing experiences, such that the more self-compassionate individuals are, the less strain they experience when faced with failure, rejection, or embarrassment (Leary et al. 2007). Other studies have related self-compassion to less procrastination (Williams et al. 2008), more mastery-oriented rather than achievement-oriented goals (Neff et al. 2005), and a higher motivation towards self-improvement (Breines and Chen 2012). While the body of evidence proclaiming the usefulness of self-compassion has been growing continuously, few studies have attempted to further the understanding of the construct itself and of its facets (Barnard and Curry 2011; for exceptions, see Körner et al. 2015; Phillips 2019).

According to Neff (2003a), self-compassion has three components: Self-kindness, common humanity, and mindfulness. Self-kindness is a kind attitude towards the self in painful moments rather than harsh self-criticism and self-degradation. Common humanity refers to framing one's suffering as part of being human and as an experience that connects the self to others rather than isolating oneself from them. Mindfulness means holding suffering in balanced awareness without being completely absorbed by negative feelings. Each component of self-compassion constitutes sets of positive and negative cognitions and behaviors, where the positive set should be present (i.e. self-kindness, common humanity, and mindfulness), and the negative set should be absent (i.e. self-judgment, isolation, and over-identification). Together, they form a six-factor model of self-compassion (Neff 2003a), which are measured with the self-compassion scale (SCS, Neff 2003b; Neff and Dahm 2015). Some authors have questioned the six-factorial structure and the interpretation of the instrument, yet the scale continues to be used in its original form and interpretation (for a debate about the validity and factor structure of the scale, see López et al. 2015; Neff 2018; Neff et al. 2017, 2018, 2019; Pfattheicher et al. 2017).

The three components are distinct, but overlapping aspects that, in sum, define self-compassionate behavior. In line with their theoretical conceptualization, previous studies have reported moderate to high inter-correlations of the six factors ranging from $r = .34$ to $r = .97$ (Neff 2003b; Neff et al. 2017). Using latent profile analysis, Phillips (2019) found that the components of self-compassion operate together and form three unique self-compassion mindsets (uncompassionate self-responding, moderately self-compassionate, and highly self-compassionate). As can be expected from Neff's (2003a) theory, people with uncompassionate self-responding are high on self-judgment, isolation, and over-identification, and low on self-kindness, common humanity, and mindfulness. People who are highly compassionate, on the other hand, are high on the positive

and low and the negative subfactors, while the moderately self-compassionate mindset is in between the other two mindsets.

Importantly, self-compassion can be trained. A recent meta-analysis by Ferrari et al. (2019) has found that randomized controlled trials (RCTs) targeting self-compassion are effective at improving all components of self-compassion, with large effects for over-identification, moderate effects for self-kindness, self-judgment, common humanity and isolation, and small effects for mindfulness. However, whether and how the components interact with each other remains unclear (Barnard and Curry 2011). With the present research, we investigate whether the components reciprocally influence each other and whether training one component spills over to improvements in the other components. In doing so, we hope to contribute to a better theoretical understanding of self-compassion.

In order to address these questions, we used a self-compassionate writing intervention based on Neff and Germer (2018). The exercise asks participants to write about a distressing event, its causes, who was present, what happened, and how they felt. Next, participants receive writing prompts to address all three components of self-compassion, with common humanity first ("list ways in which other people also experience similar events"), followed by self-kindness ("write a paragraph expressing understanding, kindness, and concern to [yourself] in the same way that [you] might express concern to a friend who had undergone the experience"), and mindfulness ("describe [your] feelings about the event in an objective and unemotional fashion"). Ferrari et al.'s (2019) meta-analysis identified four studies using this or a similar exercise as an effective tool for improving self-compassion (Johnson and O'Brien 2013; Mosewich et al. 2013; Przezdziecki and Sherman 2016; Wong and Mak 2016). A different exercise, the "How would you treat a friend exercise" (Neff and Germer 2013), which addresses only self-kindness, has been used in two additional studies. In this exercise, participants are asked to write a compassionate paragraph to themselves as if they were addressing a distressed friend (Breines and Chen 2012; Shapira and Mongrain 2010). Studies using writing exercises targeting self-compassion are typically contrasted with a passive control group that does nothing or an active control group, which is asked to write about a topic unrelated to self-compassion (e.g. "remember three things from your last evening"). One study also compared the self-compassion writing intervention to an expressive writing intervention (Pennebaker et al. 1990) to find differentiated effects on outcomes such as depression or happiness (e.g. Johnson and O'Brien 2013). However, none of these studies reported scores for the six factors of self-compassion leaving a research gap for writing intervention targeting self-compassion with the six factors as outcomes.

To address these issues and to test the empirical links between the three components of self-compassion, we conducted a randomized online intervention of compassionate writing exercises. We also explored whether the interventions had an impact on overall self-compassion and well-being. The next section examines the components in detail and then summarizes current empirical and theoretical research concerning the relationships among the components and how they may influence each other.

1.1 The Three Components of Self-compassion

1.1.1 Component 1: Self-kindness and Self-judgment

Self-kindness refers to a kind attitude towards the self in times of suffering (Neff 2003a). Perceived failure and moments of emotional pain are met with empathy, warmth, and understanding. The idea of self-kindness resembles unconditional positive regard (Rogers

1951) and other humanistic approaches like B-perception—the belief that objects, like the self, have value simply by existing (Maslow 1968), unconditional self-acceptance (Ellis 1973), or unconditional self-kindness (Smith et al. 2018). In these approaches, individuals believe that they deserve to be loved, understood, and valued, regardless of external factors such as success, social status, or appearance.

Self-judgment, on the other hand, involves acting towards the self with hostility, devaluation, and criticism (Neff 2003a). Constructs such as self-contempt, self-criticism, or self-attack have been used by other authors as close cousins to self-judgment or even as synonyms (Dunkley et al. 2003; Gilbert and Irons 2005; Whelton and Greenberg 2005). People who are judgmental about themselves tend to reject not only their emotions, thoughts, and actions but also their self-worth in general. One study comparing people high or low in self-criticism found that highly self-critical participants showed more disgust and contempt after recalling an experience of personal failure (Whelton and Greenberg 2005). Self-judgment has also been shown to lead to procrastination, rumination, and overall lower progress (Powers et al. 2007).

Developing self-kindness requires finding ways of reducing self-judgment, including not demoting one's self-worth, softening critical self-talk, and becoming less disapproving of perceived personal flaws. In sum, the first component (self-kindness and self-judgment), resembles other humanistic concepts, B-perception, or unconditional self-acceptance. However, since there are two other components of self-compassion, the construct remains conceptually different from these.

1.1.2 Component 2: Common Humanity and Isolation

The second component—common humanity—describes the degree to which individuals recognize that suffering is part of being human and therefore part of every person's life. A sense of common humanity involves realizing that all humans make mistakes and go through difficult times (Neff 2003a). In the Buddhist view, all humans are connected so that suffering is just one aspect of what it means to be human (Kornfield 1993). The need to belong and to feel socially accepted may partly explain how self-compassion benefits psychological health (Baumeister and Leary 1995). By reminding themselves that other people share their experiences, they identify more with others, and, in doing so, they strengthen their sense of belonging and their social identity (Tajfel and Turner 1979). Being part of a group, imagined or physically present, plays an important role in individuals' susceptibility to stress (Haslam et al. 2005; Häusser et al. 2012). The Mindful Self-Compassion (MSC) program encompasses common humanity to create this sense of belonging. A pilot study that evaluated an adapted version of the MSC program for adolescents (Making Friends with Yourself) has found that participants had an increased sense of connectedness after completing the program (Bluth et al. 2016).

The opposite of common humanity is isolation—a sense that emotional pain, flaws, or failures are inherent only to the self and a threat towards one's sense of belonging (Neff 2003a). Perceived isolation may propel individuals to hide their true personality and pretend to have different emotions because they fear rejection and further isolation (Barnard and Curry 2011). Displaying emotions that are not true is defined as emotional surface acting (Hochschild 1983), which can lead to stress and burnout (Brotheridge and Grandey 2002; Grandey et al. 2005; Zapf 2002; Zapf et al. 1999).

The second component of self-compassion requires developing a mindset wherein difficulties or personal flaws can strengthen a sense of belonging rather than foster isolation

and separateness. Common humanity is the component that mostly clearly distinguishes self-compassion from other self-related constructs such as self-pity or self-centeredness, shifting the focus from the self to how the self is connected to others.

1.1.3 Component 3: Mindfulness and Over-Identification

The third component of self-compassion is mindfulness. Mindfulness refers to taking a balanced and non-judgmental view towards one's perceived flaws or painful emotions. This conceptualization is different from traditional approaches as mindfulness in the context of self-compassion exclusively focuses on negative experiences. There are multiple definitions of mindfulness, but the most common one emphasizes focused awareness on the present moment and non-judgment of arising thoughts, emotions or events (Kabat-Zinn 1982). As self-compassion describes a friendly and non-judgmental attitude towards the self in times of suffering, it is unsurprising that the component mindfulness follows a narrower definition than traditional conceptualizations (Neff 2003a).

The negative pole of mindfulness is over-identification, wherein individuals focus exclusively on their suffering and are caught in rumination. Rumination implies a constant focus on problems and their associated negative emotions, causes, and consequences (Nolen-Hoeksema et al. 1998, 2008). Multiple studies have identified a ruminative response style to problems as a predictor of anxiety and depression (for a review, see Smith and Alloy 2009). Over-identifying persons understand they are suffering, but they dramatize their situation to a point where nothing else is important. Self-compassion implies just the opposite. Individuals hold their suffering in mindful awareness without over-identifying with it. It is worth noting that some authors have also named avoidance as an opposite pole of mindfulness (Barnard and Curry 2011). Avoidance means suppressing emotions, so that they remain outside of conscious awareness. Strategies such as denial, distraction, and numbing all involve an attempt to evade emotional pain. However, in the context of self-compassion, not being mindful only refers to over-identification, whereas avoidance is not part of the construct.

The third component of self-compassion requires holding suffering in balanced awareness without getting lost and over-identifying with the experience.

1.2 The Relations Among Self-kindness, Common Humanity, and Mindfulness

Barnard and Curry (2011) noted that research regarding the relationships among the components of self-compassion is scarce. Phillips (2019) wrote that before her own analysis of self-compassionate mindsets only one study has looked at the interactions between the components of self-compassion (see Körner et al. 2015). To our knowledge, no study has tried to test the interplay of the components in an empirical study as it was suggested by Neff (2003a). A few studies, however, have indicated that the positive and negative behaviors and cognitions of the three self-compassion components may reciprocally relate to each other. The next section summarizes the correlational and experimental research showing why improving one component may spill over to the other two.

1.2.1 Self-Kindness May Affect Common Humanity and Mindfulness

First, self-kindness may be linked to common humanity and isolation. Research on anxiety and depression shows that self-judgment is strongly associated with isolation (Boersma

et al. 2015; Ypsilanti 2018). Dunkley et al. (2003), for instance, assessed participants' trait self-critical perfectionism and employed a diary design to measure mood as well as several coping strategies. They found that self-critics displayed more negative affect and that they were more likely to report more criticism and less support from others. Other studies show that self-critics are less likely to seek social support and that they show fewer communal traits (i.e., a willingness to give to others without expecting immediate return of favors or overall agreeableness, Zuroff et al. 1999). One reason why self-judgmental people feel isolated may be their feelings of inadequacy and shame as well as their fear of social exclusion (Brown 2010). The failure to notice their common humanity then becomes toxic as it enforces a vicious cycle in which self-criticism leads to shame, which leads to less socially-oriented behavior, which, ultimately, leads to social exclusion.

If highly self-critical individuals could learn to understand and reduce their self-judgment and feelings of shame, they might also become more open towards others and receive more social support. When they experience suffering after learning to be more mindful of their inner critic and strengthening their social bonds, they can use common humanity more easily, remembering that all humans suffer sometimes. In fact, many compassion-based interventions already target self-criticism to alleviate isolation and foster belonging (e.g. Compassionate Mind Training, CMT, Gilbert and Procter 2006; Compassion-Focused Therapy, CFT, Gilbert 2009; or the Mindful Self-Compassion Program, MSC, Neff and Germer 2013). Meta-analyses for both compassion and self-compassion interventions have found moderate to large effects on psychosocial outcomes (Ferrari et al. 2019; Kirby et al. 2017). Taken together, these findings imply that self-judgment may be correlated or even lead to isolation, and that learning to reduce self-judgment may lead to more common humanity.

Self-kindness may also be related to mindfulness. Becoming more forgiving of one's own personal failures can free up mental capacity that was otherwise used for self-condemnation and rumination. This capacity can be used for more present-moment awareness (Neff 2003a). Depending on the definition of mindfulness, forgiveness itself could also lead to more mindfulness. Kabat-Zinn (1982) defines mindfulness as non-judgmental awareness of the present moment. If self-compassion and reduced self-criticism could be expanded to reduced judgmentalism in general, individuals could become more mindful. Note that the causality in this link is reversed; usually mindfulness is the predictor not the outcome—here, self-kindness is theorized to be the predictor and mindfulness to be the outcome (Neff 2003a).

1.2.2 Common Humanity May Affect Self-kindness and Mindfulness

It is easy to see why common humanity may be related to more self-kindness and less self-judgment. If individuals understand that personal failure and shortcomings are normal, aspects shared by everyone, self-criticism and shame lessen (Barnard and Curry 2011; Neff 2003a). There are many examples of how common humanity is used in real life. Gilbert (1992) incorporated the use of common and shared humanity in compassion-focused therapy (CFT) to lessen the pain of depression. Support groups such as Alcoholics Anonymous (AA) encourage members to speak up about personal suffering, sharing their story with other members (Kelly and Yeterian 2008). Feeling socially connected is assumed to make it easier to see one's own worth and to develop an attitude of self-kindness.

Little is known about potential causal effects of common humanity on self-kindness, mindfulness, and other outcomes because studies rarely target common humanity directly

and individually. Interventions like AA meetings or Compassion-Focused Therapy are backed by evidence (for AA, see Kaskutas 2009; for CFT, see Leaviss and Uttley 2014), but they are broad interventions targeting more than common humanity. Therefore, causal inference cannot be made at this point. There is a clear need for experimental studies addressing these gaps to further the understanding of self-compassion.

Lastly, an increased sense of common humanity may also help improve mindfulness in the same way that self-kindness might—because common humanity creates mental distance to the emotional pain, which allows for a more distanced view on one's own experience, thereby reducing over-identification (Neff 2003a).

1.2.3 Mindfulness May Affect Self-kindness and Common Humanity

Neff (2003a) points out that a certain level of mindfulness is necessary to create some distance from the experience of suffering. This distance can help develop the components self-kindness and common humanity. Several experimental and quasi-experimental studies found that mindfulness interventions improve overall self-compassion (Evans et al. 2018; Birnie et al. 2010; Raab et al. 2015; Gu et al. 2015; Neff and Dahm 2015). However, the mindfulness interventions that are used in most studies combine a variation of practices and go beyond present moment awareness, adding practices targeting other socio-cognitive skills like compassion, gratitude, perspective-taking, and non-judgmental awareness (Singer et al. 2016; Hildebrandt et al. 2017).

Engert et al. (2017) found that developing presence-related skills *first*, such as present moment and body awareness, increased the effectiveness of later trainings involving compassion for others and self-compassion regarding cortisol response buffering in a standardized stress measure. In another study within the same project, Hildebrandt et al. (2017) showed that presence-related skills are not enough to increase self-compassion, but that affect-oriented practices, such as the loving kindness meditation or contemplative dyads engaging in active storytelling and listening, are necessary to impact self-compassion and compassion for others. These findings provide initial evidence that mindfulness might serve as a precondition of self-compassion, but that specific self-compassion training is necessary to fully develop self-kindness and common humanity.

The process of *how* mindfulness might influence self-compassion is not well understood, but Neff (2003a) provides several theoretical considerations. For instance, becoming more mindful may correspond with better self-understanding, gaining access to multiple perspectives and thus less self-judgment and more self-kindness (Kabat-Zinn 1982; Langer 1989). Several studies provide evidence for this suggested link. Using fMRI technology, Goldin and Gross (2010) showed that patients with social anxiety disorder, who received the eight-week MBSR training had decreased activation in the amygdala (i.e. fear response), and increased activity in brain regions associated with attentional focus after being exposed to negative self-beliefs, suggesting improved cognitive coping capabilities. Another study showed that a brief mindfulness meditation successfully increased state self-esteem, defined as an individual's belief about his or her own worth (Pepping et al. 2013). Birnie et al. (2010) showed that after completing the MBSR intervention participants showed higher scores of self-kindness as well as lower scores of self-judgment.

Mindfulness may also lead to more common humanity because its detached nature has been hypothesized to take attention away from the self (Neff 2003a). In Buddhist cultures, mindful living is not only associated with present-moment awareness and non-judgment, but also with cultivating socially oriented values such as loving-kindness, compassion,

decreased egocentrism and empathetic joy (Nhat Hanh and Kornfield 2005; Sujiva 2007). Research on this specific link is scarce, because the few randomized trials that tried to understand the effects from mindfulness on self-compassion report total self-compassion and not the individual components (for example see Keng et al. 2012; Shapiro et al. 2007). In a notable exception, Birnie et al. (2010) showed that the MBSR training successfully increased the subcomponent common humanity and decreased isolation. In another MBSR study, the 8-week MBSR training has been shown to reduce loneliness (Creswell et al. 2012), which could be a mediator between mindfulness and common humanity. A meta-analytic study has linked mindfulness to prosocial emotions and behaviors, which could be a mediator between mindfulness and common humanity (Luberto et al. 2018).

In sum, the evidence strongly suggests that mindfulness is connected to both self-kindness and common humanity.

1.3 Overview of the Study

Because of the interrelatedness of the three self-compassion components and the initial evidence provided above, we sought to develop an intervention which trains only one component and to investigate whether this training causes a spillover to the respective other components. We predicted that a specific training in self-kindness, common humanity, or mindfulness would also create positive effects on the components that were not specifically addressed. We expected higher scores for self-kindness, common humanity, and mindfulness, as well as lower scores for self-judgment, isolation, and over-identification across all intervention groups.

To test these predictions, we conducted a pilot study using a randomized controlled design with three conditions and no control group and analyzed changes in pre-post comparisons. Participants in the study filled out a questionnaire and were then randomized into one of three groups (i.e., the self-kindness condition, the common humanity condition, and the mindfulness condition). Each group received 8 weeks of online writing exercises plus small homework assignments. After 8 weeks, all participants filled out a second questionnaire.

2 Method

2.1 Participants

We recruited participants using convenience sampling. In line with other papers using self-compassionate writing interventions we aimed for a minimum of 30 in each of the experimental conditions to reach medium effect sizes (Johnson and O'Brien 2013). The link to the first questionnaire was distributed via email to students at a large German university, who were then asked to share the study link with their friends. There were no exclusion criteria to participate in the study. The first questionnaire was filled out by 180 participants, who also agreed to participate in our intervention. Eighty-three took part in the intervention and answered the second questionnaire 8 weeks later (for a more detailed view on dropout and participation rate, see also Fig. 1). To match the data from the various measurement points, participants provided a five-digit code consisting of letters and numbers. Three answer sets could not be matched as some participants provided divergent codes, thus leaving a total of 80 participants for data analysis. The final sample included 17 men

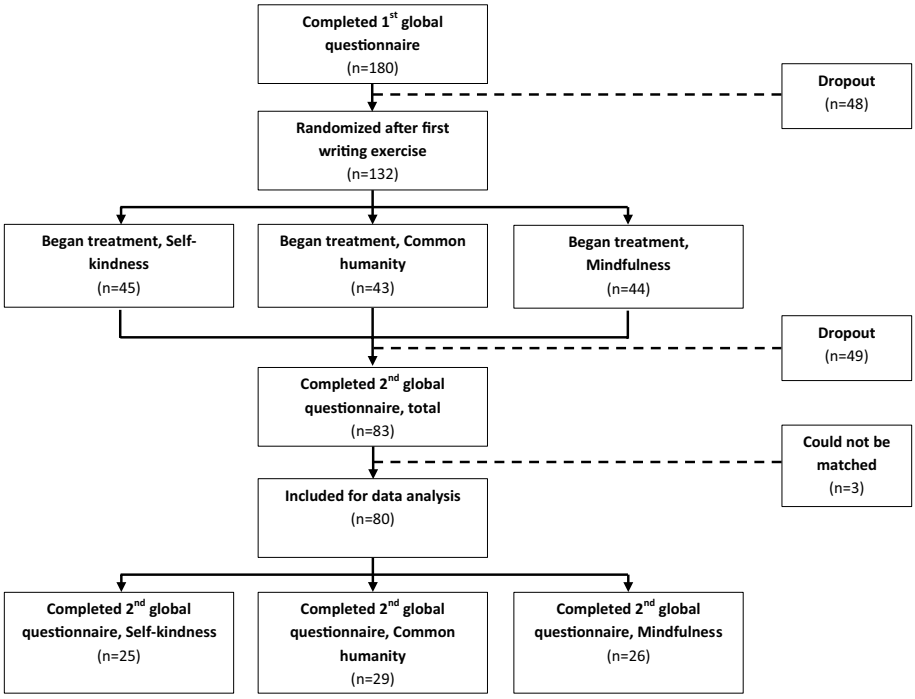

Fig. 1 Study design and dropout

and 63 women aged from 18 to 51 ($M = 24.67$, $SD = 3.31$). Seventy-six participants were students, four were employed. Compared to a representative German sample, the sample in this study had similar values for the positive factors of self-compassion (*sample* $M = 3.14$, $SD = .69$, *representative sample*: $M = 3.00$, $SD = .76$), but slightly higher values for the negative factors of self-compassion (*sample*: $M = 3.05$, $SD = .69$, *representative sample*: $M = 2.06$, $SD = .60$; Körner et al. 2015). Informed consent was obtained from all individual participants included in the study.

2.2 Procedure

Participants began the study by filling out a battery of questions (the global questionnaire) and provided consent to their participation. Afterwards, each participant received instructions about the study in a phone conversation. The researchers explained the procedure and emphasized that answers from the writing intervention were anonymous and could not be matched to the participants during data analysis. It was stressed that it was important to complete all exercises for the intervention to influence the goals of the study.

Using block randomization, participants were then randomized into one of three treatment groups: Self-kindness, common humanity, or mindfulness. Participants were not told that there were other conditions in the study. In addition, it was stressed to not talk about the interventions in the study. After 1 week, participants received a link to an online diary questionnaire containing two parts and a homework task. In part one, they participants recalled a difficult experience. All groups were asked to reflect on their previous week and

remember one or more events of the past week that caused them distress or emotional pain. We guided their answers with three questions: "Please think of your past week. What happened that has caused you distress during the last week? Did anything happen that made you criticize yourself? What was emotionally painful for you? These questions are suggestions, you do not have to answer all of them. Please describe concrete situations and thoughts. It is enough to have a few concrete examples." Participants were told to write about these events for 3–5 min.

In part two, each group received different instructions and a condition-specific homework task. According to their treatment condition, participants were instructed to address the distressing events with 7–10 min of self-compassionate writing directed at improving either self-kindness, common humanity, or mindfulness (independent variable: Treatment condition). These instructions were taken from Neff and Germer (2018) and translated into German. All groups completed one weekly writing exercise for a total duration of 8 weeks. All interventions required the same amount of writing time per week and the homework tasks were highly similar. One week after the last writing exercise participants completed the global questionnaire for a second time. The study then ended for all participants. On average, participants completed 7.02 out of 8 diaries ($SD = 1.12$; range from 4 to 8) with minor, non-significant differences in completed diaries across the different conditions (F (2, 79) = 0.19, $p = 0.827$). All student participants were eligible for course credit as a reward for their participation.

2.2.1 Self-kindness Condition

Participants in the self-kindness condition were asked to write kind and understanding words while addressing themselves in the second person. They should express that they are important to themselves using a soothing and friendly tone. The following instructions were provided to the participants:

> Now, please try to express kindness for yourself. Please address yourself in the second person. Write kind, understanding and soothing words. Express that you are important to yourself and try to find a kind and soothing tone ("It's okay. You messed up, but this isn't the end of the world. I understand that you were frustrated and then snapped. I know how important it is for you to be kind to others and that you're suffering right now. Perhaps you can be more patient with the waiter/waitress in the restaurant in the next week…"). This may feel a bit odd at the beginning. Try to engage in the exercise and see what happens.

As a homework task, we told the participants to try to meet themselves with kindness whenever they faced difficult situations in the next week. They should be mindful of their inner critic and try to not let it control their thoughts and actions.

2.2.2 Common Humanity Condition

Participants in the common humanity condition were instructed to reflect on how their painful events connected them to other people. They should remind themselves how others may experience the same emotions, thoughts or situations and that suffering is part of human life. We also asked them to think about reasons and circumstances of the painful experiences and how they influenced their emotions and behavior, and how other people

would have felt or behaved in a similar way. The following instructions were provided to the participants:

> How do these events connect you with other people? Please express in what way these events connect you with other people. When you remember these painful events and emotions, consider how other people may have felt or behaved in a similar fashion. ("Difficult times and painful emotions are part of life, everyone can overreact sometimes, that is only human", or "I made a mistake, but this happens to everyone from time to time"). Please also think about the reasons and circumstances of the difficult events, emotions or self-criticism. Was has brought you to behave and feel like this? ("I was annoyed because I was already late for my doctor's appointment at the other end of town and then headed into heavy traffic. If the circumstances had been different, I would have reacted differently as well. Anyone would have been stressed in this situation").

For the following week, as a homework exercise, we told them to remind themselves that everyone has setbacks or unpleasant emotions from time to time and that they are not alone in their experience.

2.2.3 Mindfulness Condition

In the mindfulness condition, participants tried to describe their painful emotions that occurred from self-criticism or the difficult situation. We told them to bring awareness to their emotions by writing about how they felt (e.g., sad, ashamed, anxious, stressed). To also work with the perspective taking aspect of mindfulness, they were instructed to try to accept their experiences in the writing exercise. Emotions, thoughts, or situations should not be condemned, belittled, or dramatized. Instead, participants should try to let them be as they were. The following instructions were provided to the participants:

> Try to become aware of the events, emotions, and thoughts in a neutral way. Try to be mindful of any painful emotions that resulted from self-criticism or difficult circumstances. Now, simply write down how you felt: Sad, ashamed, afraid, stressed, and so on. While writing, try to be accepting of your experience. Don't condemn, downplay, or overly dramatize the experience (e.g. "I was frustrated because I was so slow. I was angry, then overreacted and felt laughable at the end."). If this feels a bit odd at the beginning, just try to engage in the exercise and see what happens.

As a homework task, we invited participants to engage their emotions of the next week with open awareness without trying to suppress them ("I feel sadness right now and that is okay"). The original German version for all instructions can be obtained from the first-author of this publication upon request,

2.3 Measures

2.3.1 Self-compassion

Trait level self-compassion was assessed using the German form of the Self-Compassion Scale (Hupfield and Ruffieux 2011; Neff 2003b). The scale consists of 26 items that measure how often people behave in a self-compassionate way, rated from 1 to 5 ("almost never" to "almost always"). According to the three-component model with its positive and

negative poles there are six sub scales: Self-kindness (SK; "When I'm going through a very hard time, I give myself the caring and tenderness I need.", $\alpha_{t1} = .88$, $\alpha_{t2} = .88$) versus self-judgment (SJ; "I'm disapproving and judgmental about my own flaws and inadequacies.", $\alpha_{t1} = .80$, $\alpha_{t2} = .81$), common humanity (CH; "When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.", $\alpha_{t1} = .74$, $\alpha_{t2} = .76$) versus isolation (I; "When I fail at something that's important to me I tend to feel alone in my failure.", $\alpha_{t1} = .83$, $\alpha_{t2} = .73$), and mindfulness (M; "When something painful happens I try to take a balanced view of the situation.", $\alpha_{t1} = .67$, $\alpha_{t2} = .63$) versus over-identification (OVI; "When I'm feeling down I tend to obsess and fixate on everything that's wrong.", $\alpha_{t1} = .71$, $\alpha_{t2} = .69$). The scale can be interpreted by computing subscale means or by using a total score (Neff 2003b). Improvement in self-compassion is reflected in higher scores in the three positive sub-scales of self-kindness, common humanity, and mindfulness. Conversely, for the three negative sub-scales of self-judgment, isolation and over-identification, lower scores imply improvement in self-compassion. Cronbach's alpha at baseline was 0.92; for post-assessment it was 0.92.

2.3.2 Psychological Well-Being

The World Health Organization Index (WHO-5; WHO 1998) was used to assess psychological well-being. The scale has been translated into 30 languages and is widely used to screen for depression (Topp et al. 2015). It assesses mood, vitality, and interest using five items. Participants indicated how often they felt a certain way ranging from 1 to 6 (never to the whole time). An example item is "I have felt cheerful and in good spirits". Cronbach's alpha at baseline was 0.76; for the post-assessment it was 0.78.

2.3.3 Life Satisfaction

Overall life satisfaction was measured with the German version of the Satisfaction with Life Scale (Janke and Glöckner-Rist 2014). The scale is the most commonly used instrument to measure life satisfaction using 5 items to assess a cognitive judgment of overall life satisfaction. Participants provided answers to what extend they agree with statements concerning evaluations of their life ranging from 1 to 5 ("don't agree at all" to "very much agree"). Responses were averaged, higher scores indicating higher life satisfaction. An example item is "In most ways my life is close to my ideal". Cronbach's alpha at baseline was 0.81; for post-assessment it was 0.82.

2.3.4 Physical Well-Being

To measure physical well-being, we also included the Giessen Symptom Questionnaire (Brähler et al. 2000). It measures how often participants experienced pain and other physical symptoms in the last 2 weeks such as stomach-ache, feeling of faintness, headache, rapid heartbeat, dizziness, heartburn and neck or shoulder pain. A total of eight somatic symptoms were obtained using a five-point scale ranging from 1 to 5 ("never" to "always"), higher scores signaling lower levels of physical well-being. An example item is "dizziness". Cronbach's alpha at baseline was 0.74; for the post-assessment it was 0.67.

2.3.5 Additional Measures

We also included the German version of the Big Five Inventory (BFI-10, Rammstedt et al. 2014) and 1-item measures for group identification, social support and collective self-efficacy, but these constructs were not part of the present project and will not be reported in this paper.

2.4 Data Analyses

Data analyses were conducted using SPSS v.24 (IBM Corp. 2016). Effect sizes were transformed into Cohen's *d* (between 0.2 and 0.5 for small, between 0.5 and 0.8 for medium, and for larger than 0.8 large effects). To determine whether changes from pre-test to post-treatment occurred on any of the six factors of self-compassion, we conducted a multivariate analysis for variance for repeated measures (MANOVA) with Time as the within-subject factor and Treatment as the between-subjects factor. The MANOVA was also used to check if there was a significant interaction effect between the three groups over time. After conducting the MANOVA, we conducted analyses of variance for repeated measures (ANOVA), again with Time as the within- and Treatment as the between-subjects factor, for each of six dependent variables.[1] To account for alpha error accumulation in these ANOVAs, we used Benjamini and Hochberg's (1995) approach of controlling the false discovery rate. Adjusted *p* values were set such that the overall number of false positive discoveries was less than 5%. Finally, for any dependent variables that showed significant or marginally significant time effects on the previous steps, we conducted one-tailed paired *t* tests in the three conditions. Again, to account for alpha error accumulation in these post hoc tests, we set the false discovery rate for these *t* tests at 5%. For the well-being outcomes, we conducted ANOVAs and proceeded to conduct paired *t* tests for each condition if the ANOVA yielded a significant Time effect. We treated dropouts of the study as missing at random and only used complete cases. (See Table 1 for bivariate correlations in the study)[2]

3 Results

3.1 Quality of Writings from Participants

In total, 737 writings from participants were collected. We read these writings and coded them as 1 (written as intended) or 0 (not written as intended) according to the instructions in each condition. 674 of these writings were written as intended (91.5%), whereas 63 were not as intended (8.5%). Most of the writings that were not as intended were among the common

[1] The study was designed such that it was powered for within-subject effects, not for between-subject effects or the within-between interaction effects.

[2] To check the robustness of the results, we reconducted the analyses with different methods. We used maximum likelihood estimation (ML) using the data of the 132 participants who were randomized and then conducted the linear mixed models procedure in SPSS. We also imputed missing values from the data sets using multiple imputation, then conducted repeated measures ANOVAs, and pooled the results using the SPSS macro developed by van Ginkel (2010a, b). The three methods—listwise exclusion, multiple imputation, and mixed models ML—produced nearly identical results (see Table 3 in Appendix).

Table 1 Correlations at baseline and post-intervention measures across all interventions

	M	*SD*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1 SC_{t1}	3.09	0.42	–																			
2 SK_{t1}	3.03	0.91	.77**	–																		
3 SJ_{t1}	3.10	0.83	−.75**	−.78**	–																	
4 CH_{t1}	3.14	0.85	.55**	.47**	−.44**	–																
5 I_{t1}	2.80	1.02	−.78**	−.44**	.51**	−.42**	–															
6 M_{t1}	3.26	0.75	.80**	.56**	−.46**	.45**	−.49**	–														
7 OVI_{t1}	3.26	0.82	−.71**	−.42**	.55**	−.42**	.55**	−.54**	–													
8 WH_{t1}	3.42	0.84	.44**	.32**	−.41**	.25*	−.46**	.25*	−.23*	–												
9 LS_{t1}	3.55	0.78	.59**	.36**	−.52**	.50**	−.59**	.32**	−.57**	.39**	–											
10 SS_{t1}	2.41	0.66	−.38**	−.29**	.37**	−.22*	.30**	−.21	.37**	−.38**	−.40**	–										
11 SC_{t2}	3.22	0.56	.80**	.62**	−.69**	.43**	−.53**	.51**	−.58**	.35**	.52**	−.27*	–									
12 SK_{t2}	3.32	0.85	.51**	.68**	−.63**	.27*	−.22	.28*	−.25*	.24*	.33**	−.10	.78**	–								
13 SJ_{t2}	2.98	0.80	−.47**	−.46**	.55**	−.11	.19	−.21	.29**	−.19	−.26*	.24*	−.76**	−.65**	–							
14 CH_{t2}	3.32	0.82	.35**	.32**	−.29*	.46**	−.14	.27*	−.23*	.16	.28*	.00	.66**	.54**	−.36**	–						
15 I_{t2}	2.46	0.82	−.67**	−.42**	.54**	−.30**	.63**	−.35**	.47**	−.41**	−.54**	.26*	−.74**	−.50**	.62**	−.33**	–					
16 M_{t2}	3.40	0.69	.58**	.43**	−.45**	.22	−.21	.54**	−.49**	.12	.20**	−.12	.75**	.51**	−.50**	.42**	−.39**	–				
17 OVI_{t2}	2.96	0.72	−.56**	−.19	.41**	−.26*	.24*	−.35**	.61**	−.20	−.42**	.33**	−.70**	−.32**	.54**	−.33**	.53**	−.62**	–			
18 WH_{t2}	3.58	0.87	.31**	.21	−.34**	.18	−.23*	.10	−.24*	.36**	.31**	−.25*	.44**	.35**	−.39**	.28*	−.40**	.21	−.39**	–		
19 LS_{t2}	3.67	0.73	.53**	.33**	−.45**	.37**	−.50**	.27*	−.42**	.36**	.73**	−.33**	.59**	.39**	−.39**	.39**	−.65**	.29*	−.43**	.41**	–	
20 SS_{t2}	2.36	0.58	−.36**	−.31**	.35**	−.22*	.20	−.19	.28*	−.33**	−.31**	.80**	−.33**	−.19	.34**	−.06	.35**	−.19	.38**	−.35**	−.34**	–

SC self-compassion total, *SK* self-kindness, *SJ* self-judgment, *CH* common humanity, *I* isolation, *M* mindfulness, *OVI* over-identification, *WH* WHO-5 World Health Organization Index, *LS* life satisfaction, *SS* somatic symptoms

* $p < 0.05$

** $p < 0.01$

humanity condition (78.3%). For the common humanity condition, participants sometimes elaborated more on their problem, and how it might resolve itself. Some participants in this condition tried to find the social component in their situation, but not so much how suffering is universal. They sometimes responded with self-pity and isolation rather than self-compassion. However, most answers indicated some level of self-compassion, even if they failed to write exactly as intended. Answers in the self-kindness condition clearly expressed kindness and understanding, although they sometimes used self-affirmations like "You can do it", "You are great", "Everything is okay" or "Keep going", which lacks the acknowledgement of distress. They did write as intended as we told them to affirm that they are important to themselves. The mindfulness prompt was very effective. Nearly all participants wrote about their emotions and tried to accept rather than overly-identify with them as they remembered the difficult situations. Some participants found it easier to describe emotions than to accept them. Overall, the quality of the writing samples among the conditions was high. Participant described their distressing situations in detail and then used the prompts to express compassion for themselves. Unsurprisingly, the average quality of the answers improved over time as several participants dropped out of the study.

There was high variation regarding how many words participants wrote ($M = 239.57$, $SD = 188.38$). However, a meta-analysis by Smyth (1998) suggests that the length of the writing session does not influence outcomes. Frattaroli's (2006) meta-analysis showed that sessions longer than 15 min were sometimes more beneficial compared to less than 15 min. As we instructed our participants to write for a total of 10 to 15 min, differences in length likely had little effect on the outcomes. There were no significant differences between writing length among the conditions, $F(2, 736) = 0.71$, $p = .494$.

3.2 Check for Successful Randomization

After randomization and before the start of the intervention, groups did not differ in age ($F(2, 77) = 0.571$, $p = .568$), gender ratio ($\chi^2 = 0.802$, $p = .670$), and total self-compassion ($F\ (2, 77) = 0.392$, $p = .677$). Comparing the individual factors of self-compassion also revealed no significant differences between the three treatment groups.

3.3 Descriptive Statistics and Preliminary Analysis

Table 2 summarizes the means, standard deviations, effect sizes, and test statistics for all treatments. The means of all six subfactors of self-compassion changed in the expected directions across the three treatment conditions, although some changes were small. As intended, self-kindness, common humanity, and mindfulness scores increased, whereas scores for self-judgment, isolation, and over-identification decreased.

3.4 Main Effects of the Writing Interventions

An initial look at the data revealed that overall self-compassion increased in the study, $F(1, 77) = 10.77$, $p = .002$, suggesting that compassionate writing exercises can improve self-compassion. In follow-up t tests we found that overall self-compassion significantly increased in the common humanity, $t(28) = 2.21$, $p = .018$, and the mindfulness condition, $t(25) = 2.52$, $p = .009$, but not in the self-kindness condition, $t(24) = 0.93$, $p = .180$.

Table 2 Paired *t* tests results for dependent measures among the self-kindness, common humanity, and mindfulness condition

	M (SD)		*d*	*t*	*p*
	Pre	Pre			
Self-kindness group (n = 25)					
Total self-compassion	3.02 (.54)	3.03 (.40)	0.23	0.93	.180
Self-kindness	2.91 (.91)	3.16 (.93)	0.32	1.63	.058^{+}
Self-judgment	3.09 (.91)	3.08 (.73)	−0.01	*−0.06*	.478
Common humanity	2.93 (.81)	3.06 (.72)	0.18	*0.89*	.192
Isolation	2.84 (1.16)	2.51 (.83)	−0.34	−1.73	.058^{+}
Mindfulness	3.14 (.60)	3.24 (.65)	0.18	*.894*	.190
Over-identification	3.34 (.94)	3.04 (.70)	−0.39	−1.97	.045*
Life satisfaction	3.50 (.80)	3.54 (.74)	0.07	0.34	.737
WHO5	3.45 (.73)	3.50 (.77)	0.06	*0.32*	*.377*
Somatic symptoms	2.38 (.65)	2.29 (.53)	−0.12	*−1.30*	*.103*
Common humanity group (n = 29)					
Total self-compassion	3.13 (.37)	3.29 (.53)	0.55	2.21	.018*
Self-kindness	3.18 (.75)	3.43 (.77)	0.41	1.62	.058^{+}
Self-judgment	2.99 (.76)	2.89 (.76)	−0.13	*−0.68*	*.251*
Common humanity	3.19 (.84)	3.52 (.75)	0.43	*2.33*	*.014**
Isolation	2.74 (.83)	2.41 (.75)	−0.49	−2.63	.028*
Mindfulness	3.26 (.87)	3.34 (.74)	0.01	*0.51*	.306
Over-identification	3.24 (.74)	2.93 (.79)	−0.46	−2.49	.028*
Life satisfaction	3.69 (.59)	3.92 (.52)	0.37	2.06	.025*
WHO5	3.48 (.77)	3.66 (.82)	0.17	*0.87*	*.196*
Somatic symptoms	2.48 (.54)	2.46 (.54)	−0.05	*−0.22*	*.414*
Mindfulness group (n = 26)					
Total self-compassion	3.10 (.49)	3.27 (.61)	0.62	2.52	.009*
Self-kindness	2.98 (1.08)	3.35 (.87)	0.64	3.26	.014*
Self-judgment	3.23 (.83)	2.98 (.92)	−0.32	*−1.64*	*.056*
Common humanity	3.29 (.89)	3.35 (.94)	0.06	*0.31*	*.378*
Isolation	2.84 (1.10)	2.48 (.91)	−0.44	−2.26	.030*
Mindfulness	3.37 (.74)	3.62 (.63)	0.37	*1.89*	.035*
Over-identification	3.19 (.79)	2.90 (.68)	−0.45	−2.30	.030*
Life satisfaction	3.44 (.95)	3.53 (.86)	0.19	1.00	.327
WHO5	3.32 (1.02)	3.55 (1.02)	0.24	*1.22*	*.118*
Somatic symptoms	2.37 (.79)	2.31 (.67)	−0.08	*−0.64*	*.267*

All tests one-tailed, *p* values for the six sub-factors of self-compassion are adjusted using Benjamini and Hochberg's (1995) approach of controlling the false discovery rate in multiple testing at 5%. Univariate ANOVAs for self-judgment, common humanity, mindfulness, WHO5, and somatic symptoms showed no significant time effects. For the sake of completeness, test statistics and unadjusted *p* values of the post hoc tests of these variables were added in italics

*$p < 0.05$

$^{+}p < 0.10$

The results for the MANOVA show that there was a significant effect of Time on the six factors of self-compassion, $F(6, 72) = 3.86$, $p = .002$. Since the overall MANOVA was significant, we proceeded by conducting separate repeated measures ANOVAs (see Table 2). For Time, the results indicate that there was a significant effect for self-kindness, $F(1, 77) = 12.39$, $p = .001$, isolation, $F(1, 77) = 13.85$, $p = .001$, and for over-identification, $F(1, 77) = 15.02$, $p = .001$. There was no significant Time effect for self-judgment, $F(1, 77) = 1.90$, $p = .172$, common humanity, $F(1, 77) = 3.19$, $p = .094$, and mindfulness, $F(1, 77) = 3.33$, $p = .094$. Effect sizes in the common humanity and mindfulness condition were slightly larger than those in the self-kindness condition, with the mindfulness showing the largest effect sizes. However, there was no significant effect of Treatment, $F(12, 146) = 0.79$, $p = .661$, or of the Treatment × Time interaction $F(12, 146) = 0.53$, $p = .896$, suggesting that there were no differences in how effective or ineffective the treatments were.

We did not find significant Time effects in the ANOVAs for well-being, $F(1, 77) = 1.95$, $p = .166$, and somatic symptoms, $F(1, 77) = 1.46$, $p = .230$, as dependent variables. However, the Time effect for life satisfaction as the dependent variable was marginally significant, $F(1, 77) = 3.72$, $p = .058$. Paired t tests within the three conditions showed that participants in the common humanity condition reported higher levels of life satisfaction after the intervention, $t(28) = 2.06$, $p = .025$. Differences in the other conditions were not significant (self-kindness $p = .369$, mindfulness $p = .164$). As the Time effect for this analysis was only marginally significant, results from the follow-up tests should be interpreted with caution. There was no significant Time × Treatment interaction for any of the three well-being outcomes (*life satisfaction*: $F(2, 77) = 0.83$, $p = .439$; *WHO5:* $F(2, 77) = 0.21$, $p = .811$; *somatic symptoms*: $F(2, 77) = 0.25$, $p = .783$).

3.4.1 Self-kindness Condition

Changes for self-kindness were present, but they were only marginally significant, $t(24) = 1.63$, $p = .058$. Self-judgment was completely unaffected in this condition. Since there were no significant Time effects of the ANOVAs for common humanity or mindfulness, no follow-up tests were conducted for these dependent variables. However, there were tendencies for both within the self-kindness condition. Changes for isolation were present, but they were only marginally significant $t(24) = -1.73$, $p = .058$. Interestingly, the training led to significant decreases in over-identification, $t(24) = -1.97$, $p = .045$. In sum, the training failed to produce significant changes in self-kindness and self-judgment, and all other factors except over-identification.

3.4.2 Common Humanity Condition

In the common humanity condition, changes for the factor common humanity showed a tendency in the expected direction. However, as the univariate ANOVA showed insignificant Time effects for common humanity across the entire sample, no follow-up tests were conducted within the common humanity condition. As expected, participants in the common humanity condition had significantly lower scores in isolation, $t(28) = -2.63$, $p = .028$. This effect was accompanied by significantly lower scores in over-identification, $t(28) = -2.49$, $p = .028$, and higher overall self-compassion, $t(28) = 2.21$, $p = .018$. The group also showed a trend for higher scores for self-kindness and mindfulness, as well as lower scores for self-judgment. The results partially support the hypothesis that improvements in the component

common humanity also lead to improvements in parts of the self-kindness as well as the mindfulness component of self-compassion.

3.4.3 Mindfulness Condition

After completing the mindfulness treatment participants showed a trend of more mindfulness and less over-identification, indicating success of the treatment at improving the targeted component. Since the univariate ANOVA showed insignificant Time effects for the factor mindfulness, no follow-up tests were conducted for mindfulness. Within the mindfulness condition differences for over-identification were significant, $t(25) = -2.30$, $p = .030$. These changes were accompanied by higher scores in self-kindness, $t(25) = 3.26$, $p = .014$, lower scores in isolation, $t(25) = -2.26$, $p = .030$, and higher scores in overall self-compassion, $t(25) = 2.52$, $p = .009$. Common humanity was unaffected. Self-judgment was also lower in the post-measurement in the mindfulness condition, but again no follow-up tests were conducted because of insignificant Time effects of the ANOVA for self-judgment. The results provide strong support for the hypothesis that training mindfulness simultaneously improves the other components of self-compassion.

4 Discussion

Neff (2003a) theorized that the components of self-compassion are conceptually different and yet remain connected. This theory, however, was never empirically tested before. In our study, we used an online writing intervention to train one component of self-compassion to test whether improvements in the targeted component spilled over to the other components. We also sought to investigate whether training the components individually would impact well-being. Overall, our results support the assumption that improvements in one component go hand-in-hand with improvements in other components.

4.1 Self-kindness and Its Impact on the Other Components

The results in the self-kindness condition are difficult to interpret because we observed changes for self-kindness and other factors (isolation and over-identification) but it is impossible to infer if these changes were insignificant because of a lack of power or other reasons. It is also possible that the training was unspecific or ineffective as self-judgment was virtually unaffected. Qualitative analysis of the writing samples from the participants in the self-kindness condition indicates that participants wrote as intended, but it may still have been strange for them to address themselves in this way (e.g. “It’s okay, I know you are upset. You are a kind person who usually doesn’t get angry easily”). Cultural barriers to developing self-kindness and letting go of self-judgment exist and may have created skepticism. For example, Germer (2009) notes that learning to respond to failure and feelings of inadequacy with kindness rather than judgment can lead to backdraft. Backdraft is the painful sensation that can arise when individuals who have not received love and compassion for a long time suddenly open their hearts and find themselves confronted with years of trauma and bottled-up emotions like anger, bitterness or grief. Since the three components are theorized to work together (Neff 2003a) self-compassion writing interventions usually include prompts for addressing mindfulness and common humanity as well, which may facilitate acceptance of the self-kindness prompt.

Another aspect about self-kindness is worth noting. Neff (2003a) explains that some level of mindfulness is needed to develop feelings of self-kindness. To learn effective strategies of dealing with emotional distress, unpleasant emotions first need to be noticed and acknowledged. Only then can they be addressed with kind behavior or be regarded as something all humans go through at times. Furthermore, many people find it difficult to develop self-kindness, especially when they have been self-critical for most of their lives. The average effect size in the self-kindness condition was lower than in the mindfulness condition, perhaps indicating that trainings in self-kindness without simultaneous training in mindfulness are less effective. For depressed individuals or self-critics, mindfulness can be a first step towards becoming more self-compassionate when self-kindness is too overwhelming as a place to start (Segal et al. 2002; Carson and Langer 2006). One avenue for future research could be to investigate how trait mindfulness or experience with meditation moderates the effectiveness of compassion-related trainings like MSC.

4.2 Common Humanity and Its Impact on the Other Components

The training in common humanity was successful such that participants in this condition reported higher common humanity as well as higher overall self-compassion. Specifically, participants in this condition had lower scores for isolation. The factor common humanity also increased but these changes were not tested for significance in the common humanity condition as the overall MANOVA showed no significant Time effect for this dependent variable. Improvements in this group were accompanied by decreases in over-identification. Individuals who learn to frame difficult experiences as a normal aspect of life can create mental distance to painful emotions and unpleasant situations (Neff 2003a). This distance allows for less rumination and a better response to the present moment.

Changes in self-kindness after the training in common humanity showed a trend towards significance. This could mean that self-kindness can be improved by targeting common humanity, but further research is needed to investigate whether this trend can be replicated and become significant in larger study populations.

The training in common humanity was also linked to more life satisfaction. Humans have a basic need to belong (Baumeister and Leary 1995), and this need is directly addressed by common humanity. When people learn to see their suffering as something that connects them to others rather than something that isolates them, their sense of belonging is strengthened. Organizations and support groups can use our findings to illustrate the healing potential of common humanity in interventions. It would be interesting to see future research targeting common humanity individually as a remedy for depression or loneliness.

4.3 Mindfulness and Its Impact on the Other Components

The training in mindfulness was successful such that participants in this condition reported higher scores for component of mindfulness as well as overall self-compassion. The subfactor over-identification decreased and changes in mindfulness were observed in the expected direction. These effects successfully spilled over to changes in self-kindness and isolation. Changes for self-judgment were observed in the expected direction. Our results complement other studies that have shown the importance of mindfulness as an important part and cause of self-compassion (Birnie et al. 2010; Keng et al. 2012; Shapiro et al.

2007). Practitioners like therapists, coaches, or teachers could use mindfulness interventions to also improve self-compassion for their clients.

Self-acceptance is fundamental for self-compassion, and mindfulness is an effective tool for learning this stance towards the self (Gilbert and Irons 2005). Becoming more accepting of one's flaws and developing a more balanced view on failures or suffering is a consequence of a detached view on the present moment in general (Kornfield 1993; Neff 2003a). We asked participants in the mindfulness condition to reflect on painful situations and to then meet these emotions with curiosity rather than fight them with suppression or denial, so they would learn to be less judgmental about themselves. Other studies have also linked mindfulness to decreased loneliness, which may explain why participants also experienced less isolation after the mindfulness training (Birnie et al. 2010; Creswell et al. 2012).

4.4 Self-compassionate Writing

The present study also supports the efficacy of compassionate writing exercises. After the exercise scores improved for total self-compassion as well as several factors, providing evidence for compassionate writing in general. We adapted the writing exercises suggested by Neff and Germer (2018) to target specific components of self-compassion and provide an alternative to the one used by Leary et al. (2007). The writing interventions for the common humanity and the mindfulness condition were effective in our study. Perhaps a combination of all, as suggested by Neff and Germer (2018), works best.

4.5 Future Directions

For researchers who wish to use compassionate writing exercises we would like to offer several recommendations. First, it is important to ask participants to have a paragraph that acknowledges the difficult event or emotions with mindful awareness (e.g. "Ouch, this hurts" or "This is a really difficult situation for me right now", see self-compassion break, Neff and Germer (2018). The writing samples in the self-kindness condition of our study had no explicit mindfulness component. Because of that responses were sometimes awkward as they did not fully acknowledge the difficult situation but rather said that "everything was fine". Second, clarity is required for the common humanity prompt. We asked participants to think about how the distressing events connected them to other people and how other people would have felt or acted in a similar way. Some participants used this prompt to write about other people, what they did, how they related to the incident, or even how it isolates them, rather than looking at the emotional pain and difficult situations as part of the shared human experience. Leary et al. (2007) told participants to "list ways in which other people also experience similar events". Common humanity go can beyond imagining how other people experience similar events and tap into realizations such as that human existence is imperfect and that feelings of inadequacy and failure are universal.

Future research may wish to explore the research question raised in this article using other methods. Time-lagged studies could investigate the effects of changes in the factors over time and see if they correspond with changes in the other factors. Laboratory experiments could use standardized environments to study focused treatments aimed at improving one component to see if these changes spill-over to the other components. Vignettes could be used to prime self-kindness, common humanity, and mindfulness from an observer perspective, and to study if an increased saliency of one component influences state-levels of self-compassion or ratings self-compassion in others. Validation studies can use our or

different writing prompts to explore if the components are related not only in samples consisting mostly of university students but also in other populations.

Although our findings about the interrelatedness of the three components are encouraging, it should be noted that our study had several limitations, which should be addressed in future research.

4.6 Limitations

One of the limitations of the study was its small sample size and subsequent power issues in detecting the postulated effects. As we applied rigorous *p*-level corrections for both the ANOVAs and the follow-up *t* tests due to multiple testing, it is possible that the changes among the dependent variables were due to the treatments, but with a sample size of eighty participants, our methods were not powerful enough to detect these effects. The self-kindness condition, for example, showed changes on all six factors, yet all became insignificant after hypotheses testing and alpha-corrections. Similarly, in the common humanity condition and mindfulness condition, we observed differences for common humanity, self-judgment, and mindfulness that might have become significant with a larger sample size. Increasing the sample size could resolve this issue in future research.

Another limitation was that the study had three treatment conditions but no control group. The study neither included a writing control group (a group that wrote about something else), or a control group that wrote about all three components at once. Differences in self-compassion scores may have been influenced by other factors than the treatment, such as increased saliency of self-compassion or other forms of systematic biases (Bialocerkowski and Bragge 2008). However, self-compassion has been demonstrated to be relatively stable over time and to not change due to repeated measuring (test–retest correlations in the original validation study ranged from $r = 0.80$ to 0.93 for total self-compassion and the six factors; Neff 2003b). In other words, changes in self-compassion usually require targeted interventions. Nevertheless, adding a control group to a future design would strengthen the empirical findings greatly.

As mentioned above, some participants misunderstood the common humanity writing prompt and wrote about other people related to the event or even how they felt that the event isolated them. In the self-kindness condition, some participants wrote self-affirmations rather than kind and understanding words to themselves that also acknowledged the difficult situation. Some participants may have found it strange to address themselves in the second person and write kind and understanding words. Our analyses showed that they wrote as intended but it is possible that they only wrote answers to the writing prompt without really engaging with their paragraph. Generally, adding a mindfulness paragraph is necessary for writing interventions targeting self-compassion. Of course, we did not include mindfulness on purpose because we wanted to target *only* self-kindness. Furthermore, we gave participants in the self-kindness group a homework task saying that they should try to not let the inner critic control their thoughts. This may have had a repression effect on participants, which could have made self-criticism stronger not weaker.

Self-compassion refers to a kind and non-judgmental attitude as well as to kind behavior towards the self in times of suffering. Since attitudes are often stable and behavior is often habitualized, strong interventions are required to create lasting changes. For instance, the Mindful Self-Compassion (MSC) Program and the Mindful Stress-Reduction (MBSR) Program are eight-week trainings including daily practices of 60 min, weekly meetings of 2.5 h plus a mini-retreat of 4 h. The writing exercises used

in our study created small to medium-sized effects. Nevertheless, small to medium-sized effects are good when the interventions are free, easy to implement, and without risks. Small interventions that boost self-compassion may be accepted more easily and can serve as pathways towards larger interventions.

Another limitation of the study was that the participants were predominantly women. Research has found that women have slightly lower trait-level self-compassion than men (Reilly et al. 2014; Yarnell et al. 2015, 2019). Interventions aimed at improving self-compassion could therefore have more potential with women, as was the case in this study.

Finally, only one participant indicated that a major negative experience occurred during the study ("separation from a loved one"), while all other participants reported no extraordinary times of suffering. The effects of our intervention may be therefore be larger in conditions in which participants experience more suffering in their lives (e.g. after a romantic break-up, losing a job, etc.). Consequently, an important next step could be to not only experimentally manipulate the intervention condition but to also manipulate whether participants experience difficult situations, and to then train them in self-kindness, common humanity, or mindfulness.

5 Conclusion

Taken together, the findings of our study provide initial empirical evidence that the components of self-compassion influence each other as Neff (2003a) and Barnard and Curry (2011) suggested. We believe that a better understanding of the construct and its facets will help practitioners and researchers to continue working on this important topic.

Acknowledgements Open Access funding provided by Projekt DEAL. We thank Joost van Ginkel and Johannes B. Heekerens for their helpful comments during data analysis.

Author Contributions AD designed and executed the study, analyzed the data, and wrote a first draft of the paper. NMJ helped rewrite the manuscript. RVD co-designed the study and provided feedback for the paper.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

Ethical Standards The ethics committee of the Psychology institute at Goethe University granted the study exemption from requiring ethics approval citing that no participants were caused discomfort above every-day experiences. The study was performed in accordance with the ethical standards of the 1964 Declaration of Helsinki.

Informed Consent All participants provided their written informed consent before participating in the study.

Appendix

See Table 3.

Table 3 *F* values and unadjusted significance levels for listwise exclusion repeated measures ANOVA, pooling of 5 imputation repeated measures ANOVA, and mixed models maximum likelihood estimation

	Listwise exclusion		5 imputations		Mixed models ML	
	F	*p*	*F*	*p*	*F*	*p*
Intercept						
Self-kindness	1216.89	**< 0.001**	667.08	**< 0.001**	2627.60	**< 0.001**
Self-judgment	1412.41	**< 0.001**	654.15	**< 0.001**	2818.69	**< 0.001**
Common humanity	1678.21	**< 0.001**	766.24	**< 0.001**	2964.45	**< 0.001**
Isolation	785.19	**< 0.001**	421.84	**< 0.001**	1543.77	**< 0.001**
Mindfulness	2270.81	**< 0.001**	906.70	**< 0.001**	4309.57	**< 0.001**
Over-identification	1584.18	**< 0.001**	908.52	**< 0.001**	3082.08	**< 0.001**
Treatment						
Self-kindness	0.71	0.493	0.56	0.570	1.11	0.330
Self-judgment	0.43	0.652	0.46	0.635	1.07	0.346
Common humanity	2.07	0.133	2.08	0.134	3.34	**0.037**
Isolation	0.12	0.890	0.28	0.754	0.48	0.622
Mindfulness	1.53	0.223	1.29	0.294	3.47	**0.033**
Over-identification	0.28	0.754	0.25	0.777	0.51	0.599
Time						
Self-kindness	12.40	**< 0.001**	3.43	0.073	6.50	**0.012**
Self-judgment	1.90	0.172	0.37	0.551	1.97	0.162
Common humanity	3.19	0.078	1.66	0.205	2.80	0.096
Isolation	13.85	**< 0.001**	6.70	**0.016**	8.63	**0.004**
Mindfulness	3.33	0.072	1.92	0.183	3.45	0.065
Over-identification	15.02	**< 0.001**	9.92	**0.003**	13.46	**< 0.001**
Time × Treatment						
Self-kindness	0.23	0.793	0.06	0.943	0.15	0.859
Self-judgment	0.62	0.543	0.34	0.715	0.13	0.874
Common humanity	0.67	0.515	0.23	0.793	0.26	0.774
Isolation	0.01	0.993	0.19	0.826	0.05	0.950
Mindfulness	0.48	0.620	0.13	0.878	0.18	0.835
Over-identification	0.01	0.993	0.04	0.957	0.02	0.984

Significant effects marked in bold. Statistical power of pooling ANOVA results increases as the number of imputations increases. Mixed models ML based on those participants who were randomized after the first writing exercise in week 2 ($n = 132$) and those who completed the second global questionnaire ($n = 80$)

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