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REVIEW

Self-Compassion and Coping: a Meta-Analysis

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Abstract

Objectives Self-compassion, a positive and caring attitude toward oneself, has been identified as an important correlate of coping in stressful situations. High self-compassion is related to higher use of adaptive and less maladaptive coping in demanding or painful situations. However, estimates of these relations in terms of specific adaptive and maladaptive coping strategies have remained inconclusive. Therefore, the present meta-analysis investigates the relation between self-compassion and different forms of adaptive and maladaptive coping. It also takes into account potential moderators such as age, gender, and regional background.

Methods A systematic literature search resulted in $k = 136$ samples with an overall sample size of $N = 38{,}913$. Random-effects models were used to integrate the z-transformed Pearson correlation coefficients.

Results Analyses yielded a positive correlation between self-compassion and adaptive coping ($r = .306$) and a negative correlation between self-compassion and maladaptive coping ($r = -.500$). The association of self-compassion with emotional approach coping was positive ($r = .340$), as was the association with problem-focused coping ($r = .205$). Participants' age appeared to be a significant moderator of the relation between self-compassion and coping.

Conclusions Self-compassion is important for understanding the mechanisms involved in coping with stress and demanding life events. The size and direction of correlations depend on the coping strategies considered, with protective effects of self-compassion with respect to maladaptive coping being the most pronounced. Further research should examine the relation between self-compassion and coping in more detail and focus on additional moderators.

Trial Registration The registration identifier is CRD42018104926.

Keywords Meta-analysis · Self-compassion · Coping · Stress regulation

Throughout our lives, we experience many acute and chronic stressors that influence us physiologically and psychologically. There are substantial individual differences in how people cope with these challenges (Larsen 2000), which have been analyzed with respect to broad personality factors such as the Big Five (Carver and Connor-Smith 2010; Connor-Smith and Flachsbart 2007). More recently, Eastern personality concepts have been explored in this context, as well. One of these concepts is self-compassion, which can be described as a caring attitude toward oneself in potentially threatening situations (Neff 2003b). There is a large body of research indicating associations between self-compassion, individuals' evaluations of potentially threatening situations, and the ways they then respond to these stressful situations. Moreover, meta-analytic evidence suggests that self-compassion is a protective factor in relation to psychopathology and to enhancing well-being in general (MacBeth and Gumley 2012; Muris and Petrocchi 2017; Zessin et al. 2015). In addition, it is well known that the way people cope with stress is crucial for their mental and physical health (Littleton et al. 2007). Research on the relation between self-compassion and coping mostly indicated positive associations of self-compassion with adaptive coping strategies and negative relations with maladaptive coping strategies (Costa and Pinto-Gouveia 2013; Leary et al. 2007; Neff et al. 2005). However, so far, there has been no quantitative integration of evidence on the association between self-compassion and coping.

Self-compassion has recently received increased attention, especially in the exploration of psychological functioning while living a stressful life. Neff (2003b, p. 87) defined it as "being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's

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suffering, and to heal oneself with kindness." Self-compassion encompasses three interrelated elements (Neff 2003a; Leary et al. 2007): self-kindness versus self-judgment, a sense of common humanity versus isolation, and mindfulness versus over-identification. Self-kindness includes forgiveness, empathy, sensitivity, warmth, and patience toward all aspects of oneself in times of suffering, accompanied by complete acceptance of one's own fallibility and the desire to care for oneself in moments of grief and pain. A sense of common humanity brings with it feelings of social connectedness amid suffering and seeing failures, and shortcomings as part of being human and as something that all people may experience in life. Mindfulness describes a balanced awareness of painful experiences between the two extremes of avoiding vs over-identification. Mindfulness enables one to deeply experience one's own fallibilities without suffering from distracting worries and strong self-evaluations. All three facets of self-compassion are thought to interact and create a mindset that is characterized by an openness to one's feelings in demanding life situations with the intention to care for oneself instead of criticizing one's own mistakes or failures.

Confronted with stressful situations, individuals try to alleviate stress by reducing stressors, regulating negative emotions, and re-establishing their inner balance, that is, they engage in coping. The most commonly used definition of coping by Lazarus and Folkman (1984) described it as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Much of the research on coping originated from Lazarus' (1966) transactional model of stress and coping. According to the model, stress is a bidirectional process: Not only do appraisals influence coping efforts, but the effectiveness of coping efforts, in turn, impacts how individuals perceive a situation and their own ability to cope with the associated demands. In the stage of primary appraisal, individuals classify a situation as potentially threatening, challenging, or harmless. Simultaneously, individuals assess the resources that are required to minimize, tolerate, or eradicate the potential stressor and the stress it produces (secondary appraisal). If resources are evaluated as being insufficient, a stress reaction is triggered. Once this is the case, the coping process comes into play. Coping attempts are assumed to affect further primary and secondary appraisals (i.e., reappraisal). Then, individuals re-evaluate whether new information has changed the interaction between their personal and environmental conditions. Since the definition of Lazarus and Folkman (1984), the construct of coping has been broadened and is now viewed as the regulation of a broader range of functions in reaction to stress (Compas et al. 2017).

Several taxonomies to classify coping strategies have been proposed (for an overview, see Compas et al. 2017; Compas et al. 2001). However, none of these systems of classification integrates all coping strategies or fully accounts for the complexity of coping (Carver and Connor-Smith 2010; Compas et al. 2001; Skinner et al. 2003). In the present meta-analysis, a hierarchical model integrating two popular coping categorization approaches—namely (1) problem-focused vs. emotion-focused coping (Carver and Connor-Smith 2010; Connor-Smith and Flachsbart 2007; Roth and Cohen 1986) and (2) adaptive vs maladaptive coping (e.g., Carver and Connor-Smith 2010)—is used to structure and categorize the different coping strategies. The theoretical background for this coping structure is presented in detail below.

While problem-focused coping attempts to influence the source of stress, emotion-focused coping attempts to diminish associated negative emotions by means of different strategies (Carver et al. 1989). Problem-focused coping is used to influence the stressor itself by removing it or reducing its impact if the stressor itself cannot be removed. For example, a student expecting an exam in a few weeks could actively prepare for this by creating a to-do list (planning), which could also help to prioritize studying before leisure activities (suppression of competing activities) and to schedule meetings with a fellow student to discuss problems with the learning material (instrumental social support). Problem-focused coping typically predicts higher psychological functioning and long-term mental health (Lazarus and Folkman 1984). Emotion-focused coping aims at minimizing emotional distress that comes with a challenging or threatening situation. Emotion-focused coping includes a wide range of strategies, such as self-soothing strategies (e.g., seeking emotional support), venting, avoiding stressful situations, or focusing on negative thoughts (e.g., rumination or worry). Emotion-focused strategies are traditionally considered helpful in the short term but predict poorer outcomes in the long run. (Connor-Smith and Flachsbart 2007; Lazarus and Folkman 1984). One reason could be that they might help in regulating acute negative emotions but not in overcoming the problem itself, resulting in more stress in the end. For example, a student might feel better avoiding studying for an exam for the moment, but by doing this, they might not have enough time in the end and fail the exam, causing more negative consequences. Emotion-focused coping strategies can be further differentiated into emotional approach coping (e.g., cognitive reframing or acceptance) and emotional avoidance coping (e.g., denial or wishful thinking) (e.g., Schnider et al. 2007). Emotional avoidance coping is nearly always dysfunctional, as it does not affect a threat's possible impact in the long run. In contrast, emotional approach coping is more adaptive and can sometimes result in more positive psychological adjustment than problem-focused strategies, especially when the threat is uncontrollable (e.g., a terminal disease) or a demanding, unchangeable event that has already happened in the past (e.g., the death of a close friend) (Carver and Connor-Smith 2010; Gillanders et al. 2015; Stanton et al. 2000).

Coping approaches, in general, have often been categorized into two dimensions for which an interchangeable nomenclature is used: While some authors distinguished between adaptive and maladaptive coping, others used the terms

"engagement and disengagement coping" or "approach and avoidance coping". However, these three two-dimensional distinctions are thought to be equivalent (Carver and Connor-Smith 2010; Connor-Smith, Compas, et al., 2000; Connor-Smith and Flachsbart 2007). For clarity of presentation, the present meta-analysis only refers to adaptive and maladaptive coping. Adaptive coping includes coping strategies aimed at actively dealing with the stressor or the associated emotions that are experienced in stressful situations. Adaptive coping thus contributes to more sustainable long-term solutions to problems. Maladaptive coping encompasses strategies to escape the stressor or associated emotions and can be seen as dysfunctional in terms of long-term solutions (Connor-Smith et al. 2000; Connor-Smith and Flachsbart 2007; Roth and Cohen 1986; Skinner et al. 2003; Tobin et al. 1989). This adaptive-maladaptive distinction focuses on the orientation toward or away from the stressor and thus overlaps with the distinction between problem-focused and emotion-focused coping. Adaptive coping comprises all problem-focused strategies (e.g., active coping) and all emotional approach strategies (e.g., positive reframing). Maladaptive coping comprises emotional avoidance coping strategies (e.g., denial) aimed at escape from the distressing feeling. Rumination and worry were introduced later in the literature and had not been included in traditional categorizations (Carver et al. 1989). However, the two concepts have also been subcategorized as maladaptive coping in newer coping literature, as their long-term outcome is less protective in terms of psychological health (Carver and Connor-Smith 2010).

Although the aforementioned ways of grouping coping strategies into broader categories are the two most commonly used, reviews have revealed more than 100 ways to describe the structure of coping (Carver and Connor-Smith 2010; Connor-Smith and Flachsbart 2007; Skinner et al. 2003). To model the coping construct, many of the common approaches employed a hierarchical structure to describe coping (Compas et al. 2017; Connor-Smith and Flachsbart 2007; Skinner et al. 2003). Such a hierarchical model can be imagined as similar to a pyramid and is used to structure the present meta-analysis: At the top of the pyramid, adaptive and maladaptive coping are differentiated into broad coping dimensions (Compas et al. 2017; Connor-Smith and Flachsbart 2007). On the next level, adaptive coping is further differentiated into problem-focused coping and emotional approach coping, whereas maladaptive coping entails emotional avoidance coping. The bottom level entails individual coping strategies. For a visualization of the taxonomy used in this work, see Fig. 1.

In recent years, self-compassion has gained immense interest in the field of stress processing. Conceptualizations of self-compassion describe it as an attitude helping individuals to maintain a balanced perspective in the face of failure. Thus, instead of avoiding painful feelings, individuals held them in awareness with a self-caring attitude and a sense of shared humanity (Costa and Pinto-Gouveia 2013; Gilbert and Procter 2006; Neff 2003b). Finlay-Jones (2017) found that being more self-compassionate in daily life may influence the nature of stressors to which individuals are exposed (e.g., through protective self-care behaviors), the appraisals of stressors that individuals encounter, physiological and affective responses to stress, and the strategies that individuals deploy when attempting to cope with stress. According to the model of Lazarus (1966), stress appraisal processes are influenced by specific environmental and personal factors (Lazarus and Folkman 1984). Thus, in line with Lazarus' (1966) stress theory, high levels of self-compassion can be seen as a personal resource that might help an individual to appraise stressful situations and personal weaknesses as less threatening when considering them in light of the shared human experience (Neff and Dahm 2015). Moreover, self-compassion can be thought of as a useful skill that helps individuals to maintain a balanced perspective in the face of failure, and which transforms negative emotions of shame and self-condemnation into more productive emotions of compassion for one's imperfect humanity. Thus, self-compassionate individuals might not engage in harsh self-criticism or overidentify with their flaws; instead, they may have more resources left to reappraise a demanding situation, activate self-care behaviors, and handle stressors actively by relating to oneself with kindness. Therefore, it is reasonable to assume that self-compassion is associated with coping behavior in many ways (Neff et al. 2005).

It can be assumed that self-compassion is negatively related to maladaptive (emotional avoidance-oriented) coping. A self-compassionate attitude might help someone take a stressor as it is instead of avoiding painful feelings or ruminating on their own sufferings and failures. Furthermore, it facilitates forgiveness of one's own weaknesses due to less self-blaming, which makes it less necessary to deny one's failures and shortcomings (Neff 2003b). In addition, a self-compassionate orientation may foster emotional approach coping because self-compassion entails the ability to experience one's feelings with clarity and help, therefore, to generate an accepting and balanced attitude toward one's own suffering, minimizing the tendency to construe negative experiences in a gloomy, self-destructive way (Chishima et al. 2018; Neff et al. 2005; Neff 2003b). Indeed, studies have already shown that self-compassion is negatively related to maladaptive coping forms and positively related to adaptive coping forms, especially to emotional approach coping strategies (Costa and Pinto-Gouveia 2013; Leary et al. 2007; Neff et al. 2005; Sirois et al. 2014).

Despite the growing body of literature linking self-compassion with more adaptive and less maladaptive coping, research has been inconclusive with respect to the link between self-compassion and some of the specific coping

Fig. 1. Pyramid structure based on the underlying hierarchical coping structure used in this meta-analysis

strategies. While several studies have shown consistent benefits of self-compassion in applying emotional approach coping strategies like positive reframing and acceptance (Adams and Leary 2007; Costa and Pinto-Gouveia 2013; Gilbert and Procter 2006; Neff et al. 2007; Wong and Yeung 2017), research on the relation between self-compassion and certain problem-focused strategies (including active coping, planning, suppression of competing activities, and restraint coping) has yielded mixed results (Chishima et al. 2018; Exline et al. 2016; Gillanders et al. 2015). In their theoretical review of how people who were high in self-compassion tended to cope with stressful events, Allen and Leary (2010) only focused on a few coping strategies (cognitive reframing, problem solving, seeking support, avoidance, and distraction) due to a lack of studies at that time. They also reported quite inconsistent results regarding the relation between self-compassion and some coping strategies, in particular for the relation between self-compassion and problem-focused strategies. Moreover, recent research has suggested that the relation between self-compassion and problem-focused strategies might be influenced by two factors, namely the controllability of stressful situations and how threatening the stressor is perceived to be (Chishima et al. 2018). In addition, past studies often focused on dealing with a stressor that has already occurred and could not be changed, such as chronic illnesses or pain. Problem-focused strategies such as active coping, which involve efforts to remove or circumvent stressors, are of questionable utility in such circumstances (Brion et al. 2014; Costa and Pinto-Gouveia 2013; Sirois et al. 2014). Lastly, being self-compassionate means that individuals do not engage in harsh self-condemnation or over-identification with their dysfunctional thoughts; rather, they experience the emotional safety needed to face situations without running away from them. In the last few years, research on self-compassion and coping has grown immensely, especially for coping strategies associated with unhealthy self-criticism (e.g., rumination, and worry), which have not been reviewed in a systematic way (Armstrong and Rimes 2016; Mowlaie et al. 2016).

The present study aims to perform a meta-analysis on the relation between self-compassion and coping. Specifically, it aims to answer the following research questions: (1) How does self-compassion relate to different forms of coping? (2) Do selected moderators influence the relation between self-compassion and different forms of coping? The first research question was investigated at three different levels of detail: At the most aggregated level, we differentiated between adaptive and maladaptive coping to investigate relations with self-compassion. At the second level, we focused on the two adaptive coping styles (problem-focused and emotional approach coping). At the lowest level of aggregation, we examined the relation between self-compassion and individual coping strategies. We hypothesized that self-compassion is positively related to adaptive coping, including problem-focused and emotional approach coping strategies, and that self-compassion and maladaptive coping (emotional avoidance coping) are negatively related. Additionally, we hypothesized that the

relation between self-compassion and emotional approach coping is stronger than the relation between self-compassion and problem-focused coping. The second research question explored the impact of potential moderators on the relation between self-compassion and different forms of coping. Age, gender, and study region (as an indicator for cultural differences) have often been taken into account as potential moderators in psychological research (Connor-Smith and Flachsbart 2007; Sirois et al. 2014). Since there is still little research on the moderators of the relation between self-compassion and coping, age, gender, and study region were thus exploratively analyzed in the present meta-analysis. The main hypotheses were pre-registered at the international prospective register of systematic reviews PROSPERO. The registration identifier is CRD42018104926.

Method

Literature Search

This meta-analysis included published and unpublished studies. The literature search was conducted in Pubmed, PubPsych, PsycARTICLES, Psychology & Behavioral Science Collection, PsycINFO, PSYNDEX, MedPilot, and Google Scholar on literature written in English or German until the second week of February 2019. To find relevant publications, the following keywords and operators were used: In separate searches, the terms "compassion" or "self-compassion" or "Self-Compassion-Scale" were combined with one of the three following groups of search terms using the AND operator: (1) broader coping constructs, i.e., "adaptive coping" or "maladaptive coping" or "approach coping" or "avoidance coping" or "engagement coping" or "disengagement coping" or "problem-focused coping" or "emotional coping"; (2) frequently used coping scales measuring a variety of coping strategies, i.e., "COPE" or "Ways of Coping Checklist" or "Coping Strategies Questionnaire" or "Coping Inventory for Stressful Situations" or "Coping Response Inventory" or "Chronic Pain Coping Inventory"; (3) individual coping strategies, i.e., "active coping" or "planning" or "suppression of competing activities" or "restraint coping" or "instrumental social support" or "emotional social support" or "reframing" or "positive reinterpretation" or "acceptance" or "turning to religion" or "spirituality" or "problem solving" or "humor" or "humour" or "denial" or "behavioral disengagement" or "mental disengagement" or "self-distraction" or "venting (of and focus on negative emotions)" or "drug disengagement" or "alcohol disengagement" or "drug abuse" or "alcohol abuse" or "expressive suppression" or "experiential avoidance" or "self-blame" or "rumination" or "wishful thinking" or "worry." In addition, the reference sections of all published studies were scanned for additional published or unpublished studies.

To deal with possible influences due to publication bias, the following methods were used. First, authors of published articles were asked for missing data and for further unpublished material (e.g., theses, book chapters, and posters). Second, Kristin Neff's homepage (www.self-compassion.org), which gives an overview of works in this field of research, was checked for more information (e.g., papers, dissertations, and unpublished material). Third, the mailing list systems of the German Psychological Society, the Association for Research in Personality, and the European Association of Personality Psychology were used to ask researchers in the field for unpublished material. Using these three approaches, nine additional publications were found for further examination.

Selection of the Studies

We followed the guidelines of the PRISMA group (Moher et al. 2009) and used a PRISMA flow chart for visualization (see Fig. 2). The initial search produced 869 records after removing duplicates. In the next step, 592 studies were excluded based on the following criteria: (1) no measure of coping, (2) no measure of self-compassion, (3) review articles, (4) no empirical study. A total of 277 studies met the inclusion criteria for the first step, which were as follows: (1) measure of coping—at least one standardized measure of a single coping strategy had to be collected in a single study (see Appendix A in the supplementary materials); (2) measure of self-compassion (Self-Compassion Scale; Neff 2003a), its short form (Raes et al. 2011), or translations of these scales); and (3) participants aged ≥ 17. Next, an in-depth eligibility check was performed to include only studies (4) reporting baseline correlations of self-compassion and our target variables mentioned above. For studies not reporting correlation coefficients or showing other missing data, researchers were contacted (a maximum of three times). After the first inclusion of the 272 initially included full-text articles with 277 suitable studies, 130 studies with 136 samples remained for the quantitative analysis. The rest were excluded because of the following reasons: no quantitative data analysis was performed, studies seemed relevant, but the complete paper was not available or not written in English or German, or correlation coefficients were not reported in the papers and could not be obtained via e-mail request. For all studies, if data were reported separately for different subsamples, data were entered accordingly and then aggregated. Thus, for each analysis, only one effect size per study was used. Supplementary

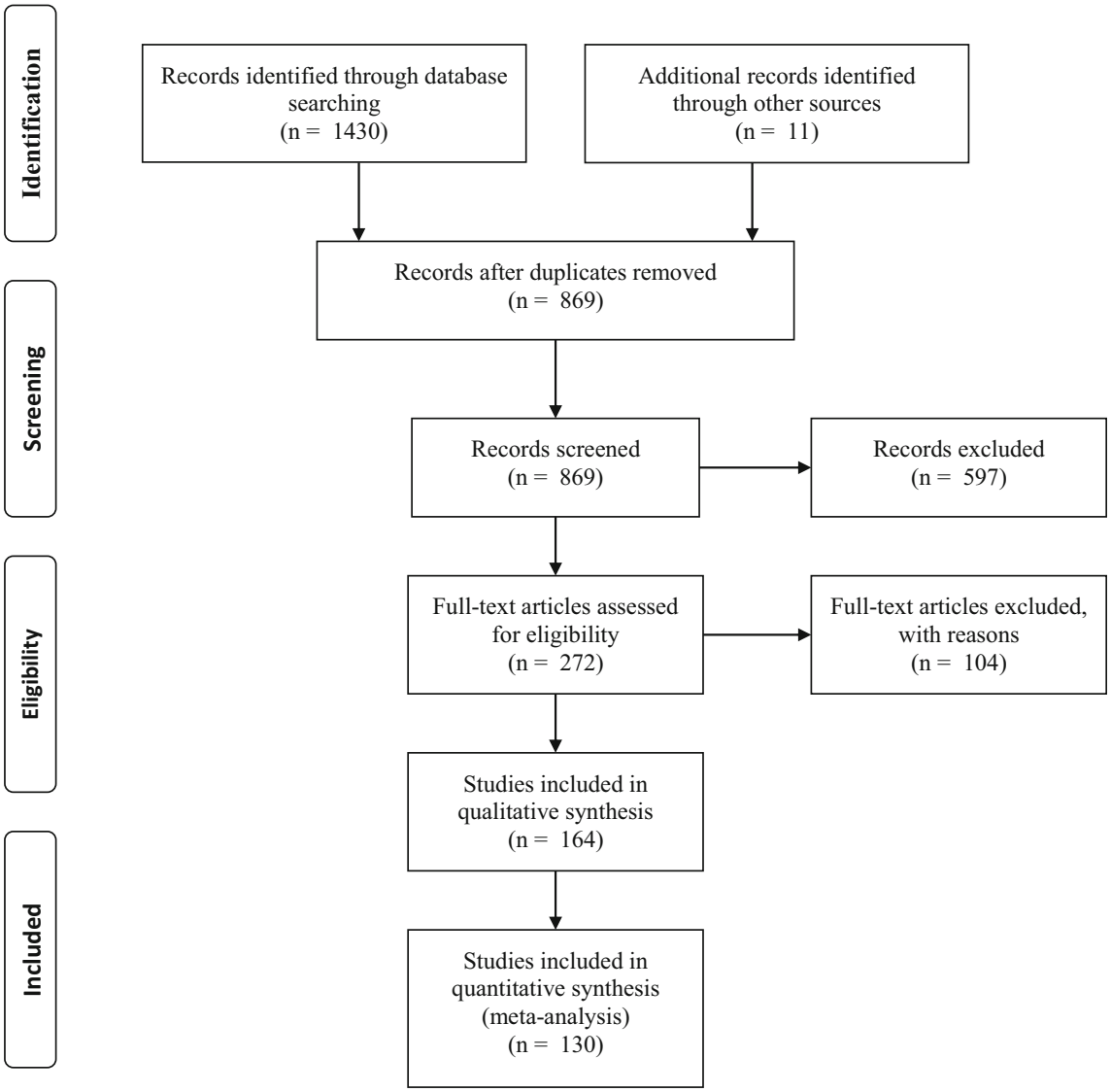

Fig. 2. PRISMA flow diagram depicting the sample development through the selection process

materials for this meta-analysis is provided at https://osf.io/27d43/

Coding of Study Characteristics, Measurements, and Correlations

In the first step, the following study characteristics were coded. Names of authors and year of publication were reported in the beginning. Afterwards, several sample characteristics were coded, such as sample size, the sample's mean age and standard deviation, gender (percentage of female participants per study), and region (Western and Eastern). In a second step, measurement characteristics were coded. Coping was classified in three different ways. First, all coping strategies were categorized into the two broader subgroups of overall adaptive coping and overall maladaptive coping. Second, adaptive coping strategies were coded into the subcategories of problem-focused coping and emotional approach coping. Third, each individual coping strategy was coded. Finally, the Pearson correlation (r) coefficients between self-compassion and the different categorizations of coping were coded. For the few studies that measured the underlying constructs in the opposite direction (e.g., psychological flexibility instead of experiential avoidance), it was necessary that the theoretically incongruent effect sizes were multiplied by − 1 for further analyses. Coding was performed by the first author and afterwards independently by the second author for 30% of the studies in order to analyze intra-coder and inter-coder reliability to evaluate the coding process. Inter-coder agreement (two coders used the same code on one occasion) and intra-coder agreement (a single coder did two rounds of coding on the same studies) were calculated (Cohen's kappa). For all

variables, the intra-coder and inter-coder agreement rates were higher than $\kappa = .95$, except for the intra-coder agreement rate of coping ($\kappa = .904$). Every study characteristic was initially coded by the first author and afterwards independently by the second author. Differences between coders were solved via discussion.

Data Analyses

In the case of multiple effect sizes for the same coping strategy (e.g., if results for several measures were reported), effect sizes were first aggregated into one effect size using a random-effect assumption. For analyses on higher-order categories (e.g., adaptive/maladaptive or problem-focused/emotional approach coping), we then additionally aggregated all coping strategies allocated in the respective category. Thus, each analysis only included one effect size per sample (Schmidt and Hunter 2014). For aggregation, all Pearson's correlation coefficients of each sample were weighted by their corresponding sample size, and the inverse-weighted means were transformed into Fisher's z (Hedges and Olkin 1985).

First, two primary meta-analyses were conducted to compute the main effects on all studies reporting associations between self-compassion and overall adaptive coping, as well as between self-compassion and overall maladaptive coping. Second, meta-analyses were carried out for problem-focused and emotional approach coping. Due to the structure of coping that was adopted in the present study, overall maladaptive coping and emotional avoidance coping were treated as equivalent, and thus only results for overall maladaptive coping are reported. Third, separate meta-analyses were conducted for each individual coping strategy if at least three studies were available. We used random-effects models because of the expected and statistically confirmed heterogeneity between studies. Furthermore, random-effects models consider the variability in study effect sizes due to the population variability in effect sizes (Card, 2012), which allows for generalization of the results beyond the set of studies analyzed in the meta-analysis (Hedges and Vevea 1998). Raw effect sizes, given as Pearson's r, were transformed to Fisher's z scale prior to meta-analytic syntheses for variance stabilization (Borenstein 2009). After completion of the analyses, they were converted back to Pearson's r for interpretive purposes. We used the Wald test (Wald 1943) to test the statistical significance of the model coefficients. Additionally, 95% confidence intervals were reported.

In the case of significant between-study heterogeneity, indicated by a significant Q statistic, moderator analyses were performed to identify sources of heterogeneity. The effects of moderator variables on effect sizes were analyzed with random-effect meta-regression analyses for all variables: the proportion of women, mean age of participants, geographic region of the sample, and coping style. For that, the two dichotomous variables were dummy-coded prior to analysis: geographical region of the sample (Western = 0, Eastern = 1) and coping style (problem-focused coping = 0, emotion-focused coping = 1). Meta-regression models using all studies that allow the amount of residual heterogeneity to be different in each subgroup were performed (Rubio-Aparicio et al. 2020). To detect meaningful differences, moderator analyses separately for all broader coping categories and for individual coping strategies when at least ten studies were available (Borenstein 2009). Weighted mean effect sizes, study heterogeneity, sensitivity analyses, and subsequent moderator analyses were calculated (Quintana 2015). In the sensitivity analysis, we first used the Baujat plot (Baujat et al. 2002) to detect outliers visually. The impact of any outliers was also addressed by the influence function (for further explanation, see Baujat et al. 2002; Viechtbauer and Cheung 2010). Potential publication bias of the meta-analysis was evaluated in two ways: (1) inspection of funnel plots (i.e., a scatter plot of the effect sizes relative to their corresponding sample size, Light and Pillemer 1984; Sterne and Egger 2001) and, if publication bias was indicated, (2) via rank correlation test (Begg and Mazumdar 1994) and Egger's regression test (Egger et al. 1997), the latter being more suitable for smaller meta-analyses. Publication bias and sensitivity analyses were performed in all analyses that included at least ten samples. With fewer studies, the statistical test power is too low to be able to distinguish chance from real asymmetry (Higgins and Green 2011). If publication bias was indicated, the trim and fill method was applied, giving a plausible approximation of "missing effect sizes" (Duval and Tweedie 2000).

Results

Descriptive Information

In total, the meta-analysis included effect sizes from 130 studies with 136 samples. Except for one study (Neff et al. 2005), all studies included in the meta-analysis had been published since 2009. Most samples were recruited in Western countries ($k = 126$); only ten came from Eastern countries (e.g., Japan, Iran). In total, the meta-analysis comprised 38,913 participants with a mean age weighted by the sample size of 30.16 years (SD = 14.21). The proportion of female participants was on average 66% (SD = 14.63).

Association between Self-Compassion and Coping

Table 1 gives an overview of the results of the meta-analyses for the broader categories and all individual coping strategies. Self-compassion and overall coping forms were significantly related: The correlation between self-compassion and overall adaptive coping was $r = .306$, $p < .001$. The association between self-compassion and overall maladaptive coping was $r = -.500$, $p < .001$. When examining the relation between self-compassion and adaptive coping in more detail, we found a stronger association for emotional approach coping ($r = .340$, $p < .001$) than for problem-focused coping ($r = .205$, $p < .01$). To test whether the relation between self-compassion and emotional approach coping was significantly stronger than the relation between self-compassion and problem-focused coping, a moderation analysis was performed. As expected, meta-regression showed a significant moderation effect (QM = 4.473, $p < 0.05$, $z = 2.115$).

Self-compassion and the individual problem-focused coping strategies (active coping, planning, instrumental support, religious coping) were significantly positively related (ranging from $r = .141$ to $r = .250$, $ps < .05$). Considering emotional approach coping strategies (emotional support, acceptance, positive reframing, humor), all of them except humor showed a significantly positive association with self-compassion (ranging from $r = .141$ to $r = .396$, $ps < .05$). Furthermore, the emotional avoidance coping strategies of behavioral disengagement, denial, experiential avoidance, rumination, worry, self-blame, and substance use were significantly negatively associated with self-compassion, with correlations ranging from $r = -.117$ to $r = -.606$ ($ps < .001$), while expressive suppression, venting, and distraction did not show a significant

Table 1 Meta-analytic results on the association between self-compassion and coping and descriptive statistics of sample characteristics

	k	*n*	*r*	*z*	95% CI	*Q*	I^2	T^2	Female %	Mean age	Region
Adaptive coping	42	15,240	.306	7.926***	0.226, 0.363	564.697***	94.754	0.056	59.13	32.26	36:6
Problem-focused coping	21	10,957	.205	4.448**	0.166, 0.291	259.046***	94.477	0.041	57.15	26.35	16:5
Emotional approach coping	30	7542	.340	7.403***	0.254, 0.420	308.941***	93.550	0.062	60.77	34.00	27:3
Active coping	5	1987	.250	2.669**	0.068, 0.416	51.039***	93.811	0.042	66.21	27.63	4:1
Planning	6	2390	.218	2.427*	0.043, 0.381	71.395***	94.545	0.047	67.83	32.01	5:1
Religious coping	12	8576	.158	3.233**	0.063, 0.251	82.626***	92.323	0.024	60.85	24.61	10:2
Instrumental support coping	6	2320	.141	2.651**	0.037, 0.242	24.858***	83.138	0.014	59.13	25.92	4:2
Humor	5	1748	.096	1.851	−0.006, 0.196	15.928***	72.500	0.009	68.49	23.00	3:2
Emotional support coping	5	1995	.141	2.234*	0.017, 0.260	24.143***	85.631	0.016	43.46	21.57	3:2
Acceptance	15	3893	.312	5.718***	0.209, 0.408	141.053***	90.946	0.041	72.99	35.26	14:1
Positive reframing	13	4458	.396	8.201***	0.309, 0.477	111.989***	90.468	0.029	70.55	31.18	12:1
Maladaptive coping	103	27,537	−.505	−22.480***	−0.551, −0.468	1761.191***	93.245	0.053	68.09	32.93	97:5
Behavioral disengagement	5	1987	−.261	−4.511***	−0.365, −0.150	23.583**	83.377	0.041	66.21	27.63	4:1
Denial	5	1982	−.212	−4.910***	−0.292, −0.129	14.858**	69.101	0.006	71.41	28.19	4:1
Experiential avoidance	29	6256	−.555	−12.799***	−0.617, −0.485	351.879***	92.443	0.059	69.09	28.46	28:0
Expressive suppression	3	1195	−.123	−1.548	−0.274, 0.033	14.495***	83.428	6.034	62.40	37.22	3:0
Rumination	48	12,491	−.534	−20.463***	−0.574, −0.492	338.005***	88.112	0.031	68.88	34.04	45:3
Self-blame	8	2931	−.467	−9.843***	−0.542, −0.385	46.210***	95.898	0.064	69.39	30.97	7:1
Worry	16	3723	−.606	−18.285***	−0.556, −0.661	73.326***	76.883	0.015	68.58	31.33	15:1
Venting	4	1662	−.143	−1.822	−0.289, 0.011	30.169***	88.219	0.021	60.89	22.39	3:1
Distraction	3	1552	−.050	−0.828	−0.165, 0.068	7.458*	79.748	0.008	64.19	23.26	2:1
Substance use	9	5263	−.117	−6.874***	−0.150, −0.084	9.820	22.258	< 0.001	66.98	26.56	7:2

k, number of samples; *n*, sample size; *r*, average Pearson's correlation coefficient; *z*, *z* value, Wald test; *CI*, confidence interval; *Q*, Cochran's Q statistic for between-study heterogeneity; I^2, percentage of true between-study heterogeneity; T^2, estimate for total amount of study heterogeneity in effect sizes

Region—first digit, number of Western samples; second digit, number of Eastern samples

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

connection to self-compassion. The relations between self-compassion and three individual coping strategies (restraint coping, suppression of competing activities, and wishful thinking) could not be calculated due to a lack of studies. For visualization, forest plots are also reported in Appendix B (supplementary materials).

Heterogeneity of Studies

In all analyses including at least three studies, except for substance use ($Q = 9.820$, $p = .278$), heterogeneity was found as indicated by the Q statistic: The effect size estimates were highly heterogeneous for both overall adaptive coping ($Q = 564.697$, $p < .001$) and overall maladaptive coping ($Q = 1762.078$, $p < .001$). Approximately, 95% of the variance in effect sizes for overall adaptive coping and 93% of the variance in effect sizes for overall maladaptive coping can be attributed to between-study variance. For problem-focused coping ($Q = 259.046$, $p < .001$) and emotional approach coping ($Q = 308.941$, $p < .001$), the effect size estimates were also significantly heterogeneous. Except for substance use, the effect size estimates for all individual coping strategies were highly heterogeneous. For detailed information on study heterogeneity of the individual coping strategies, see Table 1.

Detection of Influential Cases and Outliers

Outlier and influential case diagnostics were performed whenever heterogeneity was present. For overall adaptive coping, for problem-focused coping, and for emotional approach coping, Huysmans and Clement (2017) contributed the most to heterogeneity, which was additionally found to be influential for the overall results (see influence functions in Appendix B, Figs. S 3, S6, S9). Thus, meta-analyses were carried out a second time after removing this study. Re-analyses revealed a similar overall effect size ($r = .309$, $p < .001$) as the original analysis ($r = .306$, $p < .001$), and were also statistically significant. The same applied to the relations between self-compassion and the two subcategories problem-focused coping ($r = .224$, $p < .001$, original $r = .205$, $p < .001$) as well as emotional approach coping ($r = .359$, $p < .001$, original $r = .340$, $p < .001$). As sensitivity analysis suggested that this single effect size had almost no effect on the whole meta-analysis, it was retained for the remainder of the analyses. Considering the relation between self-compassion and maladaptive coping, visual inspection of the Baujat plot identified the study by Brooks et al. (2012) as an outlier. However, the study did not influence the overall effect size in a relevant way, indicated by nonsignificant influence diagnostics.

Outlier and influence diagnostics were also performed on the analyses of single coping strategies if they contained at least ten studies. Outlying and influential studies were only found for the relations between self-compassion and religious coping (Birnie et al. 2010; Rouse 2012, Study 1). As for adaptive coping, the sensitivity analysis suggested only a modest effect on the effect size, and therefore the studies that represented outliers were retained for the rest of the analyses (for more information, see supplementary materials, Appendix B, Table S 2).

Publication Bias

For overall adaptive coping, no indications of publication bias could be found: Visual inspection of the funnel plot revealed a more or less equally dispersed distribution of study effect sizes on both sides of the overall mean effect size. Egger's regression test revealed no evidence of publication bias ($z = 0.789$, $p = .430$) or did the Rank correlation test ($\tau = 0.062$, $p = .566$). For overall maladaptive coping, a visual inspection of the funnel plot suggested an asymmetrical distribution (see Appendix B, Fig. S 24). However, neither Egger's regression test ($\tau = -0.486$, $p = .627$) nor the rank correlation test ($z = 0.036$, $p = 0.588$) were significant. The correlation effect size found by the trim and fill method ($r = -.498$, $p < .001$) did not differ much from the original one ($r = -.500$, $p < .001$) and was still highly significant. For the funnel plot giving a plausible approximation of "missing effect sizes," see Appendix B, Fig. S 25.

Furthermore, initial visual inspection and analyses revealed no potential bias for the relation between self-compassion and either of the two coping styles (problem-focused and emotional approach coping) or the individual coping strategies, except for the association with acceptance. For this association, Egger's regression test did show a significant result ($z = 1.984$, $p < .05$), indicating asymmetry in the funnel plot and, therefore, some evidence for publication bias in this relation. Funnel plots, fail-safe-N analyses, and if publication bias was indicated, Duval and Tweedie's (2000) trim and fill analyses are reported in the supplemental materials (see Appendix B).

Moderator Analyses on Demographic Variables

The study characteristics of mean age, proportion of females, and geographic region (Eastern and Western) were examined in moderator analyses to assess their potential impact on the relations between self-compassion and coping strategies when there were at least ten studies available.

The moderator analyses showed a significant effect of mean age for the relation between self-compassion and overall adaptive coping (QM = 19.263, $p < .001$), but not for the one between self-compassion and overall maladaptive coping (QM = 0.052, $p = .820$). Thus, higher age was

connected to a stronger relation between self-compassion and adaptive coping. The mean age of the participants also moderated the association between self-compassion and problem-focused coping (QM = 11.945, $p < .001$). In samples with higher age, the association between self-compassion and problem-focused coping was stronger. Additionally, the moderation analysis revealed a significant effect of mean age for the association between self-compassion and emotional approach coping (QM = 9.719, $p < .01$). When investigating individual coping strategies, mean age turned out to be a significant moderator for the relation between the problem-focused strategy of religious coping and self-compassion (QM = 5.404, $p < .05$), as well as between the emotional approach coping strategy positive reframing and self-compassion (QM = 4.580, $p < .01$), demonstrating that the association between self-compassion and these strategies are stronger among older individuals.

With one exception, no significant effects could be found for the other two moderators (i.e., percentage of females and geographical region) for the relation between self-compassion and all three levels of coping. The exception was a significant effect of gender moderating the association of self-compassion and religious coping (QM = 7.541, $p < .01$). In sum, we found little evidence for moderating effects of gender or geographical region influencing the connection between self-compassion and coping.

Results of the analyses of the potential moderators in the association between self-compassion and coping are presented in Table 2 and in Appendix C (supplementary materials) on the association between self-compassion and individual coping strategies.

Discussion

The Relation between Self-Compassion and Coping

This meta-analysis aimed to investigate the relation between self-compassion and different forms of coping. For that, coping was considered on three different levels, which were all significantly related to self-compassion. As expected, at the broadest level, self-compassion was strongly positively associated with overall adaptive coping. Therefore, self-compassion indeed seems to be a personal resource that provides a framework to handle demanding situations by relating to oneself with kindness, putting one's own difficulties into a larger human perspective, and encountering challenging emotions with balanced awareness. Thus, self-compassionate individuals might not engage in harsh self-criticism or overidentify with their flaws; instead, they may have more resources left to activate self-care behaviors and handle stressors and, subsequently, emotions (Neff et al. 2005; Folkman and Lazarus 1990). In contrast, self-compassion has demonstrated negative associations with maladaptive coping. Therefore, self-compassionate individuals appear to engage less in strategies that are dysfunctional for well-being in the long run, such as trying to act as if the stressor were not real and blaming themselves for causing the distressing situation.

Table 2 Moderator analysis on relationship between self-compassion and coping

	k	*n*	*QM*	b_1	*z*
Adaptive coping	42	15.240			
Age of participants	37	13.780	19.263***	0.011	4.389***
Percentage of females	42	15.240	0.044	0.000	0.210
Region	42	15.240	2.582	0.171	1.607
Maladaptive coping	103	27.537			
Age of participants	91	25.485	0.052	−0.000	−0.227
Percentage of females	100	27.066	0.033	−0.000	−0.181
Region	102	27.390	0.000	0.003	0.029
Problem-focused coping	21	10.957			
Age of participants	21	9651	11.945***	0.015	3.456***
Percentage of females	21	10.957	5.055	0.007	2.248
Region	21	10.957	0.247	0.055	0.496
Emotional approach coping	32	7542			
Age of participants	29	6770	9.719**	0.009	3.118**
Percentage of females	31	7542	0.000	0.000	0.020
Region	31	7542	1.657	0.201	1.287

k, number of samples; *n*, sample size; *QM*, test of moderators, omnibus test; b_1, slope; *z*, *z* value, Wald test
**$p < .01$; ***$p < .001$

Considering the two subordinated adaptive coping styles, self-compassion was positively related to both emotional approach coping and problem-focused coping, although the latter connection was somewhat weaker. Also, Neff (2003b) and colleagues (Diedrich et al. 2014) described a self-compassionate attitude rather as emotion-focused and as helpful in regulating negative emotions, in which pain and distressing feelings are not avoided but perceived with awareness, kindness, and a sense of common humanity. Thus, distressing feelings might be converted into more positive states. Nevertheless, the adaptive responses of self-compassionate individuals to stressful situations also seems to be composed of strategies aiming to regulate the source of the stressor (problem-focused strategies), indicating that a self-compassionate attitude facilitates dealing with demanding situations actively to overcome them and their impending negative emotions.

The pattern of results regarding individual coping strategies was similar to the findings on broader levels of coping. Except for humor, all adaptive coping strategies included in the analyses (i.e., active coping, planning, religious coping, instrumental support coping, emotional support coping, acceptance, and positive reframing) were significantly positively related to self-compassion. Mirroring the results of the broader coping styles mentioned above, positive reframing and acceptance (i.e., two emotional approach coping strategies) showed the highest associations with self-compassion. Therefore, the results suggested that self-compassionate individuals deal with stressful situations in a sustainable manner, especially through the reconstruction of a stressful situation in positive terms and acceptance of the current situation. All maladaptive coping strategies (behavioral disengagement, denial, experiential avoidance, expressive suppression, rumination, self-blame, worry, venting, distraction, substance use) were negatively correlated with self-compassion; however, correlations with expressive suppression, experiential avoidance, venting, and distraction were not significant. The strongest negative correlations with self-compassion were observed for the maladaptive coping strategies of self-blame, rumination, and worry. This indicates that a self-compassionate attitude particularly helps individuals to not engage in harsh self-condemnation or over-identification with their dysfunctional thoughts. All correlations can be seen as small to medium effect sizes, except for rumination, experiential avoidance, and worry with a large effect size estimate (Cohen 1988).

The findings of the present meta-analysis largely matched those of the review by Allen and Leary (2010); however, there were also some results that contradicted the findings presented in Allen and Leary's review. For example, the relation between social support and coping was significant in our meta-analysis, but seemed not relevant in the review. These contradictory results may be due to the fact that our meta-analysis included more studies with an Eastern cultural background. In particular, newer studies with this background (Jeon et al. 2016) that were not included in the preceding review revealed a significant and positive association. In contrast, older studies conducted exclusively in Western countries yielded mainly small and nonsignificant correlations. This indicates that cultural differences may play a role in this relation as well. However, since the association was rather small, the moderation analysis did not reach significance, and we could only include very few studies, further research is needed to clarify this. In addition, the present meta-analysis included questionnaires not only on seeking social support but also on receiving more social support from other people. As argued by Allen and Leary (2010), self-compassionate individuals may gain indirect social support, particularly from the knowledge that other people experience similar situations but do not necessarily seek support from others in stressful situations more frequently. Future research should, therefore, investigate the relation between self-compassion and different forms of social support coping.

This meta-analysis also investigated the influence of three different demographic moderators (age, gender, and region) on the relation between self-compassion and coping. With one exception, no significant moderation was found for gender and region. However, the age of the participants turned out to be a moderator of the relation between self-compassion and adaptive coping, problem-focused coping, and emotional approach coping, as well as several individual strategies (religious coping and positive reframing). These results indicated that the relation between self-compassion and coping was stronger among older people. This dovetails with findings from the meta-analysis of Zessin et al. (2015), in which age marginally influenced the association between self-compassion and psychological well-being. It is not clear why the protective effects of self-compassion were stronger in older individuals; thus future research may focus on the processes underlying this effect.

Limitations and Implications for Further Research

Some limitations should be mentioned in the following. A general problem with meta-analyses is a methodological one regarding unpublished data that could not be included in this meta-analysis. Moreover, over 50 studies would have been included via inclusion criteria except that relevant data for analysis were missing and could not be obtained by contacting the responsible researchers. Although publication bias was demonstrated for the association between self-compassion and maladaptive coping, even after correction for the bias with the trim and fill method, the resulting effect still showed a significant, negative association comparable to the original one. Therefore, it might be assumed that publication bias does not influence the overall result very much. Additionally, with very few exceptions, no publication bias was found, indicating

that the level of overall findings would probably not change if more unpublished studies were available.

Second, for some coping strategies such as venting or distraction, only very few studies were available. Therefore, results regarding these individual strategies should be interpreted with caution. Still, we decided to include all strategies in the main analyses, not only to give a better insight into the link between self-compassion and coping, but also to provide a more complete overview of existing research and identify gaps in the literature. Results showed that it might be interesting to conduct more empirical studies, especially on problem-focused coping. We had originally planned to include other, mainly problem-focused, coping strategies (e.g., restrained coping or suppression of competitive activities), but this was not possible due to a lack of research on their connection with self-compassion. Thus, future research should focus on this rather understudied aspect.

Third, coping as a construct is very complex. As mentioned earlier, there is no structure of coping that is generally accepted or applicable. Consequently, coping terms including several individual coping strategies that have been examined in research are not always equivalent, which can impede comparability among these studies. This meta-analysis mainly focused on the two common classifications of coping strategies. However, other strategies that are not usually included in these classifications might also play an important role in coping with stress. For example, proactive coping and hope both have a problem-focused nature, allowing one to scan stressful episodes more easily before they arise and, if necessary, follow a different path to achieve the desired goals and a happier life. Still, we excluded these strategies in the present analysis in order to focus on popular and well-founded coping terms. However, these restrictions show that results have to be generalized carefully and it is recommended to always note the specific strategies included when regarding broader coping terms.

It should be mentioned that Neff's Self-Compassion Scale has been criticized in recent years. Several studies re-examining the factor structure of the SCS have been conducted in the context of validating translations of the scale (Mantzios et al. 2015; Petrocchi et al. 2014). The large majority of translations replicated the six-factor structure of the scale, but not all examined the second higher-order model; and those that did yielded inconsistent findings (Hupfeld and Ruffieux 2011; Petrocchi et al. 2014). However, a summary of new empirical evidence was provided using a bi-factor analysis by Neff et al. (2019), which indicates that at least 90% of the reliable variance in SCS scores can be explained by an overall self-compassion factor. The results justify the use of a total scale score, which was used in the present meta-analysis as well. Nevertheless, support for a six-factor structure of the SCS was also found. Research suggests that the exploration of positive and negative indicators of self-compassion could be helpful in identifying the "relevant" components of self-compassion (Muris and Petrocchi 2017; van Dam et al. 2011). Thus, more research focusing on the subscale level of self-compassion is clearly indicated. However, due to a lack of empirical studies on the subscale level of self-compassion, it was not possible to analyze the relation between the elements of self-compassion and coping in the present meta-analysis.

Furthermore, significant between-study heterogeneity was found for the relation between self-compassion and almost all coping forms in the present meta-analysis. The next step is to identify sources of heterogeneity. Study characteristics such as gender and age can be potential sources of heterogeneity (Bortz and Döring 2006), and moderator analyses were conducted to assess their impact on effect sizes, albeit with few significant findings. Therefore, it might be worthwhile to investigate further moderators once a larger number of studies are available. Future studies should investigate further moderators, such as the type of stressor (e.g., whether the relation between self-compassion and problem-focused strategies is stronger in controllable situations) and subpopulations (e.g., whether the relation between self-compassion and maladaptive coping is stronger in clinical or non-clinical populations).

Another limitation is that most of the included studies were conducted in North America and Europe, which creates a more Western perspective on the relation between self-compassion and coping. More studies from Eastern parts of the world are needed to investigate potential cultural differences. Due to differences in stress regulation, the relation between self-compassion and coping might differ between cultures (Oyserman et al. 2002).

Being a quantitative cross-sectional meta-analysis, the present study is not able to make a statement concerning the causality behind the correlations of self-compassion and coping. On the one hand, higher levels of self-compassion might favor adaptive coping and buffer against maladaptive coping. On the other hand, adaptive coping strategies (e.g., positive reframing or active coping) might help to increase self-compassion. In the current analysis, baseline correlations were used to ensure the comparability of the correlations extracted from different study designs (i.e., longitudinal vs. cross-sectional ones). Accordingly, variation and stability of the associations over time were not accounted for in this study. There has been research on a broad diversity of self-compassion trainings in the long term and experimental manipulations in the short term (e.g., Finlay-Jones 2017; Germer and Neff 2013; Smeets et al. 2014). However, there has been only a few studies using such experimental designs to investigate the causal relation between self-compassion and coping, focusing on the strategy of rumination (Johnson and O'Brien 2013; Odou and Brinker 2013, 2014).

Building on the results of our meta-analysis, future studies may want to expand the research question and analyze

links between concepts that are closely related to self-compassion (e.g., compassion) and coping (e.g., coping flexibility). Compassion can be described as "being touched by the suffering of others, opening one's awareness to others' pain and not avoiding or disconnecting from it, so that feelings of kindness toward others and the desire to alleviate their suffering emerge" (Neff 2003b, pp. 86–87). Given that self-compassion and compassion are overlapping but not identical constructs (Mills et al. 2018), it might be interesting to meta-analyze the compassion-coping link as well. Moreover, there is theory and empirical evidence stressing the benefits of coping flexibility (i.e., the ability to shift between different coping strategies to find the most effective response) as an adaptive response to stress (Kato 2012). The latest research has already shown the protective impact of mindfulness on situational coping variability in daily life (Keng et al. 2018). Thus, it might also be interesting to examine how self-compassion relates to coping flexibility. Given the overlap between mindfulness and self-compassion, it may be hypothesized that self-compassion is associated with more flexible situational coping, as well as an overall profile of more adaptive dispositional coping. Therefore, examining how self-compassion relates to coping flexibility might be beneficial for further understanding of how self-compassion exerts its positive relation with coping. Further research is thus needed to investigate the direction of causality and processes underlying the link between self-compassion and coping.

Summing up, this meta-analysis helps us to gain a deeper understanding of the relation between self-compassion and coping and stimulates new research questions. It was established that self-compassion was related to higher levels of adaptive coping and lower levels of maladaptive coping in general. Older age strengthened the relations between self-compassion and adaptive coping forms. Moreover, the differences between problem-focused and emotional approach coping strategies in the present analysis also emphasize the diversity within the broad construct of coping and support the usefulness of our approach of distinguishing between these different forms in our analyses. As self-compassion appears to exert positive effects on coping with difficult situations, questions regarding potential ways of influencing self-compassion arise. More research on the reasons for individual differences in self-compassion as well as on the different interventions focusing on self-compassion can provide further knowledge on how self-compassion might be influenced in order to influence coping. Additionally, future studies should investigate the impact of potential moderators, such as controllability of a stressor or coping flexibility, on both the broad self-compassion level and the subscale level, as well as causal mechanisms in the relation between self-compassion and coping.

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Compliance with Ethical Standards

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

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