Review

Meta-analytic review on the differential effects of self-compassion components on well-being and psychological distress: The moderating role of dialecticism on self-compassion

Floria H.N. Chio [a], Winnie W.S. Mak [b,*], Ben C.L. Yu [b]

[a] Department of Counselling and Psychology, Hong Kong Shue Yan University, Hong Kong
[b] Department of Psychology, The Chinese University of Hong Kong, Shatin, NT, Hong Kong

A B S T R A C T

Although self-compassion has been extensively studied in the recent decades, the representation of self-compassion as a unitary measure or the presence of self-warmth (i.e., presence of the positive components: self-kindness, common humanity, and mindfulness) and self-coldness (i.e., presence of the negative components: self-judgment, isolation, and mindfulness) remains controversial. Moreover, the differential effects of the six components of self-compassion on mental well-being and psychological distress have not been systematically investigated. To synthesize the differential effects of the six components of self-compassion and to examine how people in different cultures may associate the positive and negative components of self-compassion differentially, the present meta-analysis synthesized 183 effect sizes across 27 cultures. Results showed that the negative components of self-compassion ($rs = 0.44$ to 0.45) showed greater effect sizes with psychological distress than the positive counterparts ($rs = -0.17$ to -0.29) whereas the positive components of SCS ($rs = 0.29$ to.39) showed greater effect sizes with mental well-being than the negative counterparts ($rs = -0.29$ to -0.36), with the exception of common humanity and isolation ($r = 0.29$ and -0.36). Cultural orientation of dialecticism moderated the association between the positive and the negative components of self-compassion, with dialectical cultures showing lower associations between the two opposing components. Findings have implications on the design and implementation of self-compassion interventions cross-culturally.

1. Introduction

A growing body of research has been conducted on self-compassion in the recent decades, particularly in examination of its salutary effect against psychopathology (MacBeth & Gumley, 2012; Muris & Petrocchi, 2017) and in the promotion of well-being (Zessin, Dickhäuser, & Garbade, 2015). Neff (2003) proposed that self-compassion comprises of three components, with two opposing dimensions in each of the component: (1) self-kindness versus self-judgment, which involves kind and understanding attitude toward the self versus being harshly critical in times of suffering; (2) common humanity versus isolation, which refers to the recognition of suffering and failure as shared human experience versus an isolated experience happening only to oneself, and (3) mindfulness versus over-identification, which involves a balanced approach to thoughts and feelings versus oppressing or exaggerating the painful experience. In two meta-analyses, self-compassion was found to

have moderate to large effect size on its protective role against psychopathology ($r = -0.54$, MacBeth & Gumley, 2012; $rs = -0.27$ to 0.50, Muris & Petrocchi, 2017). As well-being is not the mere absence of disease or infirmity but also includes positive states of functioning, a meta-analysis on self-compassion has also been conducted to examine its relations with well-being, which found a medium effect size on the association of self-compassion and well-being ($r = 0.47$; Zessin et al., 2015). People who are more self-compassionate are more likely to have better well-being, and the association of self-compassion with well-being remains to be the strongest even after accounting for perceived support and goal regulation (Neely, Schallert, Mohammed, Roberts, & Chen, 2009).

Despite growing evidence demonstrating the beneficial role of self-compassion on well-being, study findings are mixed as to whether self-compassion should be conceptualized as the presence of self-warmth (i.e., the presence of self-kindness, common humanity, and

mindfulness) and the absence of self-coldness (i.e., the absence of self-judgment, isolation, and over-identification) or whether self-compassion should be conceptualized as a totality with both its negative and positive aspects. This raised a theoretical and measurement debate on the conceptualization of self-compassion.

In the initial development of the 26-item Self-compassion Scale (Neff, 2003), three components were developed and each component was measured by both positively and negatively framed items (i.e., self-kindness and self-judgment, common humanity and isolation, mindfulness and over-identification). Neff (2003, 2016) asserted that the six subscales (i.e., self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification) could be used separately or summed as a total score to reflect the overall level of self-compassion. Consistent with this recommendation, some studies later have successfully replicated the six-factor structure in their studies (e.g., Azizi, Mohammadkhani, Lotfi, & Bahramkhani, 2013; Cunha, Xavier, & Castilho, 2016; Garcia-Campayo et al., 2014). Neff et al., (2019) also further examined the factor structure across 20 distinct cultures with an attempt to suggest that the use of one general factor score with all items being summed up or six separate primary factor scores constitute the most appropriate scoring method of the SCS.

Studies that are inconsistent with the one-factor score approach have also emerged. These researchers' findings suggested that the two-factor structure (i.e., self-warmth and self-coldness) can provide better goodness-of-fit than the one general factor structure for the SCS (Brenner, Heath, Vogel, & Credé, 2017; Costa, Marôco, Pinto-Gouveia, Ferreira, & Castilho, 2016; López et al., 2015). The two-factor structure includes the composite score of self-kindness, common humanity, and mindfulness (i.e., self-warmth) and the composite score of self-judgment, isolation, and over-identification (i.e., self-coldness). Controversy over the validity of factor structure remains a pressing issue to be addressed as it affects the conceptualization of self-compassion and the investigation of it as a unitary construct or two distinct factors.

Theory of social mentalities supports the two-factor approach of the SCS. In his theory, Gilbert (2005) suggested that self-compassion and self-criticism could involve two systems with different affective and physiological responses. The feelings of safeness and warmth are associated with the self-soothing system that is rooted in the parasympathetic nervous system, whereas the feelings of insecurity and self-criticism are linked to the threat system that is rooted in the sympathetic nervous system. Longe et al. (2010) also found that self-criticism and self-reassurance were associated with activation of different brain areas.

The distinct physiological responses involved in self-compassion and self-criticism are also consistent with findings that showed stronger association of self-coldness in predicting negative psychological outcomes such as depression, anxiety, and stress than self-warmth (Brenner et al., 2018; Muris & Petrocchi, 2017; Phillips & Ferguson, 2013; Yip, Mak, Chio, & Law, 2017) and the better predictability of self-warmth in positive psychological outcomes than self-coldness (Brenner et al., 2018; Phillips & Ferguson, 2013). Muris and Petrocchi (2017) also found that the negative components of the SCS were more strongly associated with psychopathology than the positive counterparts in their meta-analysis. Their studies contended that the inclusion of the negative components in the SCS might inflate the associations between self-compassion and psychopathology (Muris, 2016; Muris, Otgaar, & Pfattheicher, 2019; Muris & Petrocchi, 2017). Muris, van den Broek, Otgaar, Oudenhoven, and Lennartz (2018) also examined the face validity of the SCS items and found that psychologists and psychology students mainly regarded the items in the SCS negative components as indicative of psychological symptoms. Also, in their second study, they found that after taking into account of the negative components of the SCS in hierarchical linear regression analyses, the positive components did not show significant association with depression and anxiety (Muris et al., 2018). Furthermore, they found that the negative components accounted for almost three times more variance than the positive components in explaining the variance in anxiety symptoms. In addition, some studies showed a weak association between self-warmth and self-coldness (Coroiu et al., 2018; Seligowski, Miron, & Orcutt, 2015; Stolow, Zuroff, Young, Karlin, & Abela, 2016). All these findings together point to the possibility that self-warmth and self-coldness are distinct from one another and should be conceptualized separately.

As argued by Neff (2016), decomposing self-compassion into positive and negative factors may limit the ability to examine how each of the six separate components or processes of self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification may contribute to well-being. For instance, one study examined the predictive power for each of the six components in the SCS in depressive symptomatology among a group of community adults and found that isolation explained the highest variance (18%), followed by over-identification and self-kindness (2% variance each), and finally self-judgment, with common humanity being not significantly associated with depressive symptomatology after taking other SCS components into account (Körner et al., 2015). Neff (2016) conducted a series of stepwise regression to examine which of the six components of the SCS were predictive of different psychological outcomes among participants who have completed an 8-week mindful self-compassion program. Findings generally showed that an increase in level of self-kindness, common humanity, and mindfulness was associated with positive psychological outcomes, whereas a decrease in self-judgment, isolation, and over-identification was associated with reduction in negative psychological outcomes. However, she also noted that the outcome of anxiety is an exception for which self-kindness was its strongest predictor.

These discrepancies in research findings prompt a need to examine and summarize findings on the association of positive and negative components of the SCS and their associations with both aspects of well-being and psychological distress. The findings of such meta-analysis could better inform service providers on the development and implementation of self-compassion interventions for people with different needs. For instance, if the associations of the negative components of the SCS with psychological distress are found to be stronger, service providers may focus more on the reduction of the negative components among people who experience greater levels of psychological distress. Likewise, if the associations of the positive components of the SCS with psychological well-being are found to be stronger than the negative counterparts, service providers may focus more on the promotion of the positive components among people in the general population to enjoy better well-being. In view of this, one of the primary goals of the present study was to use a meta-analytic approach to examine the associations of the six factors of self-compassion on well-being and psychological distress.

1.1. Dialecticism as a moderator between the SCS components

As mentioned previously, controversy exists on the representation and factor structure of self-compassion as a unitary construct (e.g., Muris, Otgaar, & Pfattheicher, 2019; Neff, 2016). The inconsistent findings on the association between the positive and negative components in the SCS further raised doubts on the validity of self-compassion as a unitary construct. For instance, Neff et al. (2018) found moderate to large associations ($rs = 0.51$ and 0.70) between the positive and negative components of the SCS, whereas no significant association was found in the study conducted by Bengtsson et al. (2016; $r = -0.07$), Holden, Rollins, and Gonzalez (2021; $rs = -0.11$ to 0.10), Seo (2012; $rs = 0.04$ to 0.08), and Zhang et al. (2016; $rs = -0.08$ to -0.04). One possible explanation for these inconsistent results might be due to the way individuals with different cultural orientations conceptualize and represent different components of self-compassion.

With these inconsistent findings left unsolved, self-compassion interventions on well-being promotion and reduction of psychological distress may not produce the desired effects as intended. For instance, if self-warmth and self-coldness are found to be independent from each other, this could imply that service providers might not be able to reduce

self-coldness by merely focusing on the cultivation of self-warmth. In other words, with the assumption that the promotion of the positive components can reduce its negative counterparts, and vice versa, treatment effectiveness could be limited if self-coldness and self-warmth were indeed independent. In an attempt to identify possible factors that may affect the relationships between the components of the SCS as well as to reconcile and shed light on the arguments to represent self-compassion as a unitary measure or distinct constructs of its positive and negative components, another main objective of the present study was to examine the moderating role of cultural orientation of dialecticism on the association between the positive and negative components of SCS.

Dialecticism can be conceptualized by its three principles: (1) the principle of contradiction (i.e., two contradictory propositions could both be true) (2) the principle of change (i.e., everything in the universe keeps changing), and (3) the principle of holism (i.e., everything in the universe is interrelated and the part needs to be understood with its whole; Peng & Nisbett, 1999). People in dialectical cultures might have self-views that are inconsistent across contexts and their behaviors might change contingent on the situations (e.g., I feel energetic when I am with my friends but depressed when I am with my colleagues). Instead of decontextualizing oneself from the environment, people in dialectical cultures (e.g., Chinese) are also more sensitive to one's relations with the environment than people in non-dialectical cultures (English & Chen, 2007; Spencer-Rodgers, Boucher, Peng, & Wang, 2009). As attitudes and behaviors might change based on different contexts, contradictions are also inevitable. In describing the self, it has been found that Chinese used more contradictory self-statements (e.g., "I am lazy and a hard worker at times"; Spencer-Rodgers et al., 2009, p. 32) than European Americans. Similarly, another study also showed that Koreans showed less consistent self-concepts than Americans (Choi & Choi, 2002). Cross-cultural studies also supported that dialecticism is linked to tolerance and acceptance of contradiction or opposing traits within oneself (Schimmack, Oishi, & Diener, 2002; Spencer-Rodgers, Peng, Wang, & Hou, 2004). One study suggested that priming of dialecticism significantly increased self-evaluative ambivalence (i.e., evaluating the self as both positive and negative). Given the bidimensional representation of self-attitudes among dialectical cultures, the authors further highlighted the need to assess both the positive and negative appraisals, in addition to global judgments, when measuring evaluations of the self in dialectical cultures (Spencer-Rodgers et al., 2004).

As the SCS was developed with two opposing dimensions on each of the components, it is possible that individuals in dialectical culture may be less likely to respond in a unitary way, such that the presence of positive components does not necessarily represent the absence of its counterparts. Instead, people in dialectical culture may be more likely to construe self-warmth and self-coldness as two distinct constructs that can coexist concurrently. In other words, the two constructs can share no relationship with each other in dialectical cultures. In view of this, it was hypothesized that the association between the positive components and their negative counterparts in the SCS would be moderated by dialecticism.

1.2. Moderators on the relationship between SCS and mental well-being/psychological distress

1.2.1. Collectivism

Different from dialecticism, collectivism refers to "a society in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetime, continue to protect them in exchange for unquestioning loyalty" (Hofstede, 2001, p. 225). People in the collectivistic culture are more likely to define themselves in relations with others (i.e., interdependent self-construal; Markus & Kitayama, 1991). A research study showed that the correlation between interdependent self-construal and dialectical thinking was 0.07 (Hui, Fok, & Bond, 2009), demonstrating that they are different constructs.

Research has argued that self-critical attitude is adaptive to individuals in collectivistic cultures as it serves as a process for self-improvement, which is crucial in maintaining group harmony (Heine, 2003). Unlike individualistic cultures that stressed on personal competence, it has also been suggested that in collectivistic cultures such as Japan, it was the absence of negative features, rather that the presence of positive ones, that contributes to well-being (Kitayama & Karasawa, 1995; Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). As self-critical attitude may be considered as a way to improve oneself through eliminating one's negative qualities as perceived by others, the presence of self-coldness may not have the same negative effects and meanings among individuals living in collectivistic cultures as those in the individualistic cultures. In other words, the strength of association of SCS's negative components on well-being and psychological distress in collectivistic cultures may be attenuated, compared to the associations in individualistic cultures. The present study would examine the moderating role of collectivism in the association of self-compassion on well-being and psychological distress.

1.2.2. Gender

Past meta-analysis showed no gender difference on the effect size of the self-compassion general score on well-being (MacBeth & Gumley, 2012). When examining the differential effects of the six components of the SCS on well-being, findings showed that the effects of self-kindness and common humanity on well-being were more salutary among women than men, whereas self-judgment and mindfulness were found to be more strongly and positively associated with well-being among men than women (Sun, Chan, & Chan, 2016). As traditional gender norms expect men to be strong and tough and women to be meek and gentle, men might benefit less from possessing gentle qualities and be less negatively affected by passing harsh judgment on themselves than women. Nevertheless, another study found that gender did not moderate the association between self-compassion components and well-being (Bluth & Blanton, 2015). With the mixed findings on the role of gender, the present study explored the moderating role of gender on the association between self-compassion components with well-being and psychological distress.

1.2.3. Age

As argued by Hwang, Kim, Yang, and Yang (2016), older adults are more likely to be facing various life circumstances that may be concomitant with aging, such as decline in physical health and death of ailing loved ones, compared to younger adults, and self-acceptance might especially be more beneficial among older adults to buffer against the adverse impact of these life events. Supporting this argument, they found that age moderated the association between self-compassion and subjective well-being, with middle-aged adults showing stronger beneficial effects from self-compassion than their younger counterparts. However, other studies suggested that despite facing different losses among older adults, they have better emotion regulation strategies than younger adults and have better well-being (Urry & Gross, 2010). This suggests that the beneficial effect of self-compassion on well-being might be less prominent among older adults who already have better emotion regulation strategies. In addition, with the realization of limited time left in life among older adults, they are more motivated to pursue emotional goals by optimizing positive emotional experiences and avoiding negative ones. In contrast, younger adults are more motivated to pursue for knowledge even at the expense of well-being (Carstensen, Isaacowitz, & Charles, 1999). With knowledge-related goals among younger adults, the exploration of the world might engender failure and rejection that a self-compassionate attitude might help in shielding them from the negative impact of failure. Compared to the older adults who are more motivated to select experience to optimize positive emotional experience, self-compassion might be more beneficial and protective to younger adults in buffering negative emotions in their exploration of the world. In other words, the

relationships between self-compassion with well-being or psychological distress might be strengthened among younger individuals. Little research has examined the moderating role of age and findings have been inconclusive. In the present meta-analysis, the moderating role of age on the association between the six components of SCS with well-being and psychological distress was explored.

1.3. Measurement characteristics

Measurement variation (i.e., long or short version of SCS) (Raes, Pommier, Neff, & Van Gucht, 2011), types of well-being (i.e., hedonic or eudaimonic well-being), and types of psychological distress (i.e., stress, anxiety, and depression) were also investigated to examine whether the associations between SCS components with well-being and distress vary by these factors.

1.4. Aims of the present study

Past meta-analysis on self-compassion mainly focused on the association of well-being with the overall score of self-compassion (MacBeth & Gumley, 2012; Zessin et al., 2015). Although Muris and Petrocchi (2017) have conducted a meta-analysis on the six components of the SCS, they focused only on the association of self-compassion and psychopathology without looking at their associations with mental well-being and examining any moderators. As noted by Neff (2016), it is possible that the main way that self-compassion is conducive to mental well-being is through the increase in self-kindness, common humanity, and mindfulness, while the main way that it reduces psychopathology is through the decrease in self-judgment, isolation, and over-identification. The current meta-analysis attempted to summarize the magnitude of association of the six components of self-compassion with mental well-being and psychological distress and hypothesized that the positive components of the SCS would show greater association with mental well-being than the negative components, whereas the negative components of the SCS would show greater association with psychological distress than the positive components. The moderating role of dialecticism on the relationship between positive and negative components of the SCS and collectivism on the relationship between SCS components on well-being and psychological distress would be investigated in the attempt to explain existing disparate findings across cultures. Other possible moderators (i.e., gender, age, measurements, and types of well-being and psychological distress) on the association between SCS components and well-being and psychological distress would be explored.

2. Method

2.1. Identification of studies

Studies were identified by searching the keyword "self-compassion" OR "self compassion" between the time the SCS was first developed and published in 2003 to 26 March 2020 in the following databases: Web of Science, EbscoHost, PsychINFO, and ProQuest (with dissertations included). To minimize selection bias, dissertations or any unpublished studies that fit into the inclusion and exclusion criteria were also included. When we contacted the authors for any missing information, we also requested if they had any further unpublished work that we could include in the meta-analysis.

2.2. Inclusion and exclusion criteria

Studies were identified based on the following inclusion criteria:

1. Studies with quantitative data were included;
2. Studies that included the Self-compassion Scale (Neff, 2003) or its short form (Raes et al., 2011) were included;
3. Studies with correlations of self-compassion subscales with measures related to mental well-being or psychological distress were included. Mental well-being was further coded as hedonic well-being or eudaimonic well-being. Hedonic well-being included the presence of positive or pleasant affective states or the positive evaluations of one's life (e.g., satisfaction with one's life); eudaimonic well-being described the achievement of human potential or meaningful life (e.g., flourishing, meaningfulness). Psychological distress included the presence of any negative or unpleasant affective states (e.g., anxiety, worry), or the presence of any negative psychological states (e.g., perceived stress, burnout).
4. Any study design could be included in the study. However, for experimental study, intervention study, and longitudinal study, only baseline data were included.
5. The study was included if sufficient information could be obtained from the articles or from personal contact for coding the effect sizes of the intercorrelation coefficients of the positive components and negative components of self-compassion (i.e., self-kindness versus self-judgment; common humanity versus isolation; mindfulness versus overidentification; self-warmth versus self-coldness) or their correlations with mental well-being or psychological distress measures.
6. Empirical articles written in Chinese or English were included.

Exclusion criteria:

1. Studies that were conducted in the form of meta-analysis, review, or qualitative analysis were excluded.
2. Studies with less than 11 participants were excluded as sample size smaller than 11 may have bias in the estimation (Hunter & Schmidt, 2004).

2.3. Data coding

All eligible studies were coded for the following information: (1) publication and sample characteristics such as publication year, authors' names, publication type, sample size, sample characteristics, participants' distribution of ethnicity, age, gender, and the country where the study was conducted (2) measurement characteristics such as number of items and names of the scales used for measuring mental well-being and psychological distress, (3) Pearson correlations between the six components of self-compassion with mental well-being and psychological distress, (4) intercorrelations between the positive and negative components of SCS, and (5) cultural dimensions of dialecticism and collectivism. Dialecticism index was based on Schimmack et al. (2002)'s findings on the correlations between frequency estimates of pleasant emotions (FPE) and frequency estimates of unpleasant emotions (FUE) across cultures. The FPE-FUE correlation scores showed the degree of co-occurrence of pleasant and unpleasant emotions across cultures and the association was proposed to reflect dialecticism. Collectivism score was based on Hofstede (2001) country index of individualism (vs.

collectivism) which measured the degree to which the country put more emphasis on independence or group cohesion. The country was identified based on location where the study was conducted and the ethnic distribution of the participants. If the ethnic distribution indicated a mix of different countries of origin and the distribution was evenly spread (i. e., <75% in any one country of origin), the studies were excluded from the moderating analyses. If the location and ethnic distribution of the participants were not provided and all authors showed the same affiliation, the country of the affiliation was coded.

2.4. Data analysis

Data were input into the Comprehensive Meta-Analysis (Borenstein, Hedges, Higgins, & Rothstein, 2005) for analysis. Effect sizes of the six components of the SCS with mental well-being and psychological distress were computed using random effects model, which assumes that the true effect sizes would vary across studies. Q statistics and I^2 statistics were also computed to reflect the heterogeneity of the effect sizes. A significant Q statistics implied heterogeneity of the effect sizes and I^2 statistics with value of 25, 50, and 75 suggested low, medium, and high heterogeneity, respectively (Higgins, Thompson, Deeks, & Altman, 2003).

If studies reported multiple effect sizes (e.g., correlations of self-compassion and multiple measures of depression in one single study), individual effect sizes within the study were aggregated to compute a composite mean effect size. If there were multiple independent samples within one single study, the effect size for each independent sample was calculated. Meta-regressions were conducted to examine if age, gender, and cultural variations were associated with effect sizes. Subgroup

analyses were also conducted to examine if effect sizes differ by the use of long or short form of the SCS, types of well-being, types of psychological distress, and types of publication (published or unpublished data to examine the risk of bias).

To further examine if the predictability of positive and negative components on mental well-being and psychological distress were different, method recommended by Steiger (1980) in comparing dependent correlations was used. This had been used in different meta-analyses for comparing dependent correlations (Ilies, Nahrgang, & Morgeson, 2007; Podsakoff, LePine, & LePine, 2007; Wang, Bowling, & Eschleman, 2010). To conduct Steiger's test in comparing the correlation coefficient, the following information was needed: (1) correlations between positive components of self-compassion and outcome variables (i.e., mental well-being and psychological distress), (2) correlations between negative components of self-compassion and outcome variables, (3) correlations between positive and negative components of self-compassion, and (4) sample size. All effect sizes were treated as positive in the Steiger's tests so as to compare if the strengths, instead of the directions, of the effect sizes were different.

Publication bias was assessed by conducting the Beg and Mazumdar's test (Begg & Mazumdar, 1994) that examines the possibility of significant correlation between the standardized effect estimates and the variances. Significant correlation suggested publication bias. The Egger's test (Egger, Davey Smith, Schneider, & Minder, 1997), which regresses the standardized effect size on the inverse of the standard error, was also used to examine publication bias. The trim and fill method (Duval & Tweedie, 2000) was also used to examine how many studies were missing to make the funnel plots symmetrical and the adjusted values were computed.
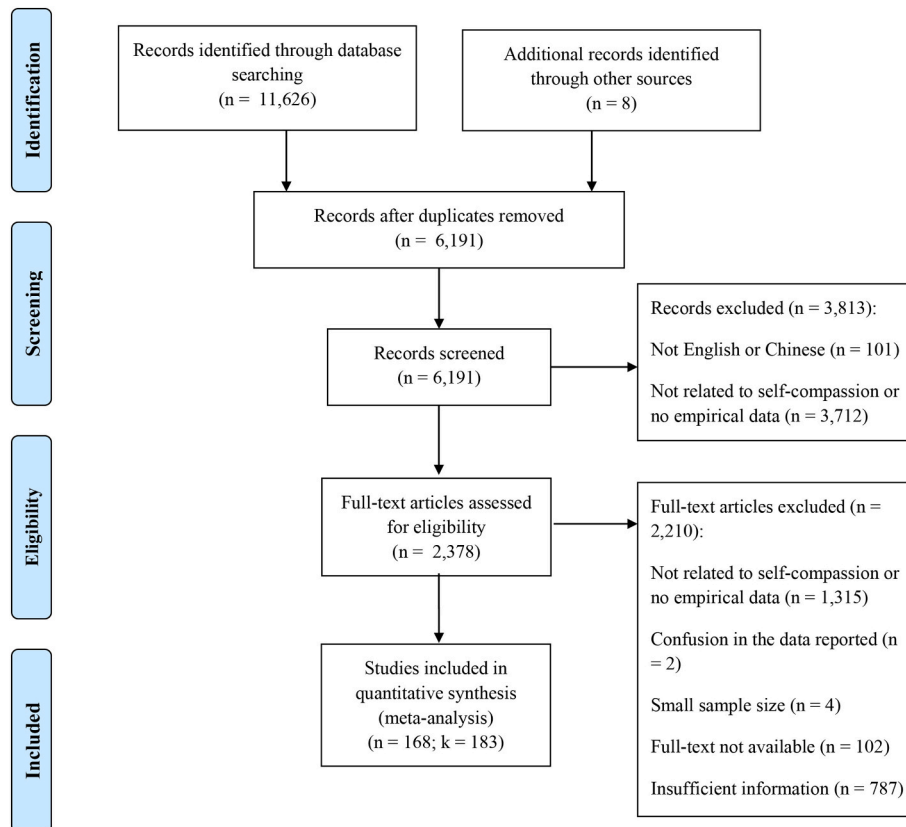

Fig. 1. Flow diagram of the study selection process.

3. Results

3.1. Study selection

Based on the selection criteria, a total of 168 studies (k = 183) across 27 unique cultures were identified in the current meta-analysis. Specifically, a total of 64 and 93 effect sizes were included in examining the associations of the six components of self-compassion with mental well-being and psychological distress, respectively. A total of 154, 148, and 148 effect sizes were included in examining the associations of self-kindness and self-judgment, common humanity and isolation, as well as mindfulness and over-identification, respectively. Results and study characteristics for studies that only included self-warmth and self-coldness (instead of the six components of SCS) were also shown in Appendix B to D. Details of the study selection process and reasons for exclusion were shown in Fig. 1.

3.2. Study characteristics

Mental well-being. A total of 64 effect sizes and approximately 28,788 participants were included in the examination of the six components of self-compassion and mental well-being. Among the 64 effect sizes identified, 80.95% (k = 51) were published papers. The mean age of the included studies was 35.72 and 62.89% were female. A total of 18 unique cultures were identified. The commonly used scales for measuring well-being were Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985), Positive and Negative Affect Schedule (Watson, Clark, & Tellegen, 1988), Professional Quality of Life Scale (Stamm, 2005), Warwick-Edinburgh Mental Well-being Scale (Tennant et al., 2007), and Psychological Well-being Scale (Ryff, 1989).

Psychological distress. Among the 93 effect sizes, approximately 38,097 participants and 19 unique cultures were identified. The mean age of the included studies was 33.46 and 65.19% of them were female. 77.42% (k = 72) were published papers. The commonly used scales for measuring psychological distress included Depression Anxiety Stress Scale (Lovibond & Lovibond, 1995), Positive and Negative Affect Schedule (Watson et al., 1988), Professional Quality of Life Scale (Compassion Fatigue & Burnout subscales; Stamm, 2005), Maslach Burnout Inventory (Maslach, Jackson, Leiter, Schaufeli, & Schwab, 1986), and Centre for Epidemiological Studies Depression Scale (Radloff, 1977).

Positive and negative components of the SCS. Among the 155 effect sizes included, 57,996, 57,569, and 57,562 participants were included in the examination of the association of self-kindness and self-judgment (k = 154), common humanity and isolation (k = 148), and mindfulness and over-identification (k = 148), respectively. Twenty-three unique cultures were identified and 79.35% (k = 123) of the studies were published data. The mean age of the participants of these 155 studies was 30.38 and 62.71% were female. A summary of the study characteristics was shown in Appendix A.

3.3. Effect sizes of the relationships between SCS components, mental well-being and psychological distress

Mental well-being. Both positive and negative components of the SCS showed moderate associations with mental well-being (*rs* for positive components = 0.29 to 0.39; *rs* for negative components = −0.29 to −0.36). Cochran's Q and I^2 value suggested that the effect sizes of the studies were highly heterogeneous. Table 1 showed a summary of the effect sizes.

Psychological distress. The positive components of the SCS showed small to moderate effect sizes (*rs* = −0.17 to −0.29) with psychological distress, whereas the negative components of the SCS showed moderate effect sizes with it (*rs* = 0.44 to 0.45). Cochran's Q and I^2 value suggested that the effect sizes were highly heterogeneous for all six components of the SCS. Table 1 showed a summary of the effect sizes.

Positive and negative components of the SCS. Results showed that the positive components of the SCS showed moderate effect size with the negative components (*rs* = −0.24 to −0.46). Effect sizes were heterogeneous in all three pairs of associations. Please refer to Table 1 for a summary of the effect sizes.

3.4. Comparison of the effect sizes of the positive and negative components of self-compassion

To compare possible differential predictability of positive and negative components of self-compassion on mental well-being and psychological distress, Steiger's (1980) tests were conducted for adjustment of dependent correlations. The intercorrelations between positive and negative components of self-compassion were needed to adjust for comparison of dependent correlations. To adjust for dependency, we used the effect sizes found between the positive and the

Table 1
Effect sizes of the included studies.

	k	N	r	Z	95% CI	P	Q	I^2
Well-being								
Self-kindness	64	28,788	0.39	15.69	0.35 to 0.44	<0.001	1122.61***	94.39
Common humanity	57	27,850	0.29	10.10	0.23 to 0.34	<0.001	1182.48***	95.26
Mindfulness	57	27,873	0.39	15.49	0.34 to 0.43	<0.001	969.40***	94.22
Self-judgment	60	26,026	−0.29	−11.33	−0.33 to −0.24	<0.001	926.76***	93.63
Isolation	55	25,493	−0.36	−13.87	−0.40 to −0.31	<0.001	896.30***	93.98
Over-identification	55	23,827	−0.32	−12.73	−0.36 to −0.27	<0.001	761.28***	92.91
Psychological distress								
Self-kindness	93	38,097	−0.29	−16.41	−0.32 to −0.26	<0.001	995.61***	90.76
Common humanity	88	37,909	−0.17	−10.55	−0.20 to −0.14	<0.001	743.02***	88.29
Mindfulness	87	37,720	−0.28	−17.62	−0.31 to −0.25	<0.001	759.39***	88.68
Self-judgment	90	35,723	0.44	29.72	0.41 to 0.46	<0.001	673.04***	88.78
Isolation	85	35,357	0.45	29.70	0.43 to 0.48	<0.001	688.73***	87.80
Over-identification	84	34,489	0.45	29.78	0.42 to 0.47	<0.001	653.06***	87.29
Self-compassion								
Self-kindness and self-judgment	154	57,996	−0.46	−19.53	−0.50 to −0.42	<0.001	5438.03***	97.19
Common humanity and isolation	148	57,569	−0.24	−12.45	−0.28 to −0.21	<0.001	3058.59***	95.19
Mindfulness and over-identification	148	57,562	−0.37	−16.45	−0.41 to −0.33	<0.001	4530.87***	96.76

*** *p* < .001.

negative components of the SCS (i.e., self-kindness and self-judgment = −0.46, common humanity and isolation = −0.24; mindfulness and overidentification = −0.37). Results showed that all the negative components showed significantly stronger effect sizes with psychological distress than the positive counterparts. In particular, after accounting for the dependent correlations, self-judgment ($r = 0.44$) showed a larger effect size than self-kindness ($r = -0.29$; $z = 30.11$, $p < .001$), isolation ($r = 0.45$) showed a larger effect size than common humanity ($r = -0.17$; $z = 46.62$, $p < .001$), and over-identification (r = 0.45) showed a larger effect size than mindfulness ($r = -0.28$; $z = 31.19$, $p < .001$) in predicting psychological distress.

For the association with mental well-being, we found that self-kindness (r = 0.39) showed a larger effect size than self-judgment (r = −0.29; z = 16.85, $p < .001$), and mindfulness (r = 0.39) showed a larger effect size than over-identification ($r = -0.32$; z = 11.40, $p < .001$). Contrary to our hypothesis, common humanity ($r = 0.29$) showed a significantly smaller effect size than isolation ($r = -0.36$; z = −9.82, $p < .001$).

3.5. Risk of bias across studies

Mental well-being. Subgroup analysis showed no significant difference between published articles and non-published articles. The Beg and Mazumdar's test and the Egger's test also showed non-significant results, which did not indicate publication bias. Results from Duval and Tweedie's trim and fill method did not indicate any missing studies in the opposite direction.

Psychological distress. Subgroup analysis did not show significant difference between published and unpublished results. The Begg and Mazumdar's test did not suggest publication bias for all the components, whereas the Egger's tests indicated significant intercept for self-kindness (intercept = −1.57, $t = 2.40$, $p < .05$), self-judgment (intercept = 1.54, $t = 2.74$, $p < .01$), common humanity (intercept = −1.60, $t = 2.62$, $p < .05$), and mindfulness (intercept = −1.41, $t = 2.24$, $p < .05$). Using Duval and Tweedie's trim and fill method, 10 studies were needed to make the funnel plots of overidentification symmetrical but the adjusted effect size was similar ($r = 0.42$).

Positive and negative components of the SCS. Subgroup analysis did not show significant difference in effect sizes between published and unpublished papers. The Begg and Mazumdar's test suggested publication bias for the effect size between common humanity and isolation (tau = −0.12, $p < .05$). The Egger's test suggested publication bias for self-kindness and self-judgment (intercept = −4.39, $t = 4.60$, $p < .001$), common humanity and isolation (intercept = −3.15, $t = 4.16$, $p < .001$), and mindfulness and over-identification (intercept = −3.40, $t = 3.65$, $p < .001$). Duval and Tweedie's trim and fill method showed that 30 studies were missing to make the funnel plots of mindfulness and over-identification to be symmetrical and the adjusted effect sizes was −0.29.

3.6. Moderators

Mental well-being. Using the random effects model, results showed that both eudaimonic well-being and hedonic well-being showed similar effect sizes and the cultural orientation of collectivism did not moderate the effect sizes as hypothesized. Meta-regression and subgroup analyses on mental well-being were shown in Tables 2 and 4.

Psychological distress. Meta-regression showed that gender moderated the effect sizes of self-kindness, common humanity, and mindfulness, with women showing larger effect sizes. In addition, age also moderated the effect sizes of self-judgment, with older people showing smaller effect sizes. Subgroup analyses showed that the short form of the SCS showed significantly smaller effect sizes for common humanity. Also, self-compassion showed similar effect sizes across different types of psychological distress (depression, anxiety, and stress) and across cultures with different levels of collectivism. Meta-regression and subgroup analyses on psychological distress were shown in Tables 3 and 5.

Positive and negative components of the SCS. Results on meta-regression showed that dialecticism moderated all three pairs of the positive and negative components of SCS, with cultures that are more dialectical showing weaker associations of self-kindness and self-judgment (slope = 0.71, Z = 4.66, $R^2 = 0.16$, $p < .001$, k = 118), common humanity and isolation (slope = 0.45, Z = 3.56, $R^2 = 0.11$, $p < .001$, k = 115), as well as mindfulness and over-identification (slope = 0.38, Z = 2.65, $R^2 = 0.06$, $p < .01$, k = 114). In addition, effect sizes with the use of long form versus short form of the SCS for self-kindness and self-judgment, $r = -0.48$, k = 138, $p < .001$ versus $r = -0.30$, k = 16 $p < .001$; common humanity and isolation, $r = -0.26$, k = 133, $p < .001$ versus $r = -0.09$, k = 15, $p = .05$; as well as mindfulness and overidentification, $r = -0.39$, k = 132, $p < .001$ versus $r = -0.19$, k = 16, $p < .001$, were significantly different, with the short form SCS showing significantly weaker associations, Qs > 9.72, ps <0.01.

3.7. Additional analyses

In all the analyses, studies that used the SCS-SF were included so as to summarize all available data and to examine whether SCS-SF would show different strengths of associations as compared to the long form. However, with the measurement concern and with the SCS-SF showing significantly different results in examining the associations between the positive and negative components of the SCS, as well as between common humanity and psychological distress, we conducted another moderating analyses by excluding the studies that used the SCS-SF in these pairs of associations. Particularly, we found that dialecticism still moderated the association between self-kindness and self-judgment (slope = 0.70, Z = 4.04, $R^2 = 0.14$, $p<.001$, k = 105), the association between common humanity and isolation (slope = 0.37, Z = 2.57, $R^2 = 0.07$, $p < .05$, k = 103), as well as the association between

Table 2
Meta-regression on the associations of the six components of SCS and well-being.

	Age					% of female					Collectivism				
	k	Slope	SE	Z	R^2	k	Slope	SE	Z	R^2	k	Slope	SE	Z	R^2
Self-kindness	49	−0.00	0.00	−1.93	0.10	59	−0.04	0.14	−0.27	0.00	60	−0.00	0.00	−1.96	0.07
Common humanity	45	−0.00	0.00	−1.10	0.04	54	0.21	0.18	1.20	0.03	53	−0.00	0.00	−0.95	0.02
Mindfulness	45	−0.00	0.00	−0.74	0.02	54	−0.05	0.15	−0.33	0.00	53	−0.00	0.00	−1.79	0.07
Self-judgment	45	0.00	0.00	0.88	0.02	55	−0.03	0.18	−0.17	0.00	56	0.00	0.00	0.93	0.02
Isolation	43	0.00	0.00	0.47	0.01	52	−0.05	0.19	−0.27	0.00	51	0.00	0.00	1.01	0.03
Over-identification	43	0.00	0.00	0.15	0.00	52	0.10	0.19	0.51	0.00	51	0.00	0.00	1.93	0.08

Table 3
Meta-regression on the associations of the six components of SCS and psychological distress.

	Age					% of female					Collectivism				
	k	Slope	SE	Z	R²	k	Slope	SE	Z	R²	k	Slope	SE	Z	R²
Self-kindness	81	0.00	0.00	1.74	0.06	88	−0.30***	0.09***	−3.32***	0.14***	90	0.00	0.00	0.11	0.00
Common humanity	78	0.00	0.00	1.12	0.03	84	−0.27**	0.09**	−3.07**	0.12**	86	−0.00	0.00	−0.97	0.01
Mindfulness	77	0.00	0.00	0.21	0.00	84	−0.23**	0.09**	−2.63**	0.10**	84	0.00	0.00	1.15	0.02
Self-judgment	78	−0.00***	0.00***	−3.70***	0.22**	85	−0.02	0.08	−0.26	0.00	88	0.00	0.00	1.52	0.04
Isolation	75	−0.00	0.00	−1.67	0.06	81	−0.12	0.09	−1.35	0.03	83	0.00	0.00	1.05	0.02
Over-identification	74	−0.00	0.00	−0.67	0.00	80	−0.15	0.10	−1.43	0.04	81	−0.00	0.00	−1.05	0.01

** $p < .01$.
*** $p < .001$.

Table 4
Sub group analysis for the association of the six components of SCS and well-being.

	SCS scale			Types of study			Types of well-being		
	Q	Long form	Short form	Q	Published	Unpublished	Q	Hedonic	Eudaimonic
Self-kindness	0.36			0.11			0.16		
k		55	9		52	12		27	14
r		0.39***	0.43***		0.40***	0.38***		0.40***	0.41***
95% CI		0.34 to 0.43	0.30 to 0.54		0.34 to 0.45	0.34 to 0.43		0.34 to 0.45	0.37 to 0.45
Common humanity	0.51			3.18			0.06		
k		48	9		45	12		25	13
r		0.30***	0.22		0.30***	0.22***		0.31***	0.32***
95% CI		0.25 to 0.34	−0.02 to 0.43		0.24 to 0.36	0.15 to 0.29		0.24 to 0.37	0.26 to 0.37
Mindfulness	0.07			1.28			0.63		
k		48	9		45	12		25	13
r		0.39***	0.40***		0.40***	0.36***		0.39***	0.42***
95% CI		0.34 to 0.43	0.27 to 0.53		0.34 to 0.45	0.31 to 0.40		0.34 to 0.45	0.38 to 0.46
Self-judgment	2.16			1.78			0.07		
k		51	9		48	12		26	12
r		−0.27***	−0.37***		−0.28***	−0.32***		−0.28***	−0.29***
95% CI		−0.32 to −0.23	−0.48 to −0.25		−0.33 to −0.22	−0.35 to −0.29		−0.35 to −0.20	−0.39 to −0.18
Isolation	0.67			0.10			0.51		
k		46	9		43	12		24	12
r		−0.35***	−0.41***		−0.36***	−0.37***		−0.33***	−0.38***
95% CI		−0.39 to −0.30	−0.53 to −0.27		−0.41 to −0.30	−0.41 to −0.33		−0.41 to −0.26	−0.46 to −0.29
Over-identification	1.88			0.01			0.51		
k		46	9		44	11		24	12
r		−0.30***	−0.39***		−0.32***	−0.32***		−0.28***	−0.33***
95% CI		−0.35 to −0.25	−0.50 to −0.27		−0.37 to −0.27	−0.36 to −0.27		−0.36 to −0.20	−0.42 to −0.23

*** $p < .001$.

mindfulness and overidentification (slope = 0.37, Z = 2.2, R² = 0.05, $p < .05$, k = 101); gender also moderated the association between common humanity and psychological distress (slope = −0.28, Z = −3.13, R² = 0.14, $p < .01$, k = 76). Results were highly similar to the analyses with the inclusion of the SCS-SF.

4. Discussion

The present meta-analysis showed that the six components of self-compassion showed small to moderate effect sizes with mental well-being and psychological distress. In addition, the associations between self-kindness and self-judgment, common humanity and isolation, as well as mindfulness and over-identification were moderated by dialecticism.

Specifically, the negative components of the SCS showed stronger effect sizes with psychological distress than the positive counterparts. Results were consistent with a previous meta-analysis that summarized 18 studies and found a stronger link of the negative components of the SCS in predicting psychological symptoms than the positive components ($rs = 0.47$ to 0.50 for the negative components versus $rs = −0.27$ to −0.34 for the positive components; Muris & Petrocchi, 2017). As negative emotions function as a way to narrow a person's attention to

threat-related information (Fredrickson, 2001), being harshly critical to oneself may heighten a person's vulnerability to psychological distress. The activation of the threat defense system due to self-critical attitudes make individuals prone to negative states of well-being (Gilbert, 2005), thus explaining the stronger associations of self-coldness with psychological distress.

Conversely, the positive components of the SCS showed greater associations with well-being than its negative counterparts (self-kindness versus self-judgment: 0.39 versus −0.29; mindfulness versus over-identification: 0.39 versus −0.32), with the exception of common humanity versus isolation (0.29 versus −0.36). It is possible that positive emotions that arise from treating oneself with warmth and kindness enable individuals to broaden their attention and build up personal resources that lead to positive states of well-being (Fredrickson, 2001) However, the effect size of common humanity was small. Finding on the small effect size of common humanity is consistent with another study, which found no association between common humanity and depressive symptomatology after accounting for the other five components of the SCS (Körner et al., 2015). In the present meta-analysis, common humanity was found to show the smallest effect size on mental well-being and psychological distress. Results also showed that the effect size of self-warmth (i.e., the average score of the positive components in SCS;

Table 5
Sub group analysis for the association of the six components of SCS and psychological distress.

	Q	Long form	Short form	Q	Published	Unpublished	Q	Depression	Anxiety	Stress
Self-kindness	0.01			0.00			0.30			
k		85	8		72	21		17	11	16
r		−0.29***	−0.29***		−0.29***	−0.29***		−0.31***	−0.30***	−0.33***
95% CI		−0.32 to −0.25	−0.37 to −0.20		−0.33 to −0.25	−0.34 to −0.24		−0.38 to −0.24	−0.41 to −0.19	−0.39 to −0.26
Common humanity	7.99**			0.87			0.14			
k		80	8		68	20		17	11	12
r		−0.18***	−0.07*		−0.18***	−14***		−0.17***	−0.18***	−0.18***
95% CI		−0.21 to −0.15	−0.14 to −0.00		−0.21 to −0.14	−0.21 to −0.07		−0.22 to −0.11	−0.28 to −0.07	−0.24 to −0.12
Mindfulness	1.35			0.62			5.08			
k		79	8		67	20		16	11	12
r		−0.29***	−0.26***		−0.29***	−0.27***		−0.23***	−0.30***	−0.33***
95% CI		−0.32 to −0.25	−0.30 to −0.21		−0.32 to −0.25	−0.31 to −0.22		−0.30 to −0.17	−0.40 to −0.19	−0.38 to −0.28
Self-judgment	0.39			1.83			0.30			
k		82	8		69	21		15	11	15
r		0.44***	0.41***		0.43***	0.46***		0.46***	0.46***	0.44***
95% CI		0.42 to 0.47	0.30 to 0.51		0.40 to 0.46	0.44 to 0.48		0.41 to 0.50	0.34 to 0.55	0.40 to 0.48
Isolation	1.20			0.01			1.56			
k		77	8		65	20		15	11	11
r		0.46***	0.40***		0.45***	0.45***		0.48***	0.45***	0.43***
95% CI		0.44 to 0.48	0.27 to 0.51		0.42 to 0.48	0.41 to 0.49		0.44 to 0.52	0.35 to 0.55	0.37 to 0.50
Over-identification	0.11			0.85			0.32			
k		76	8		64	20		15	10	11
r		0.45***	0.44***		0.46***	0.42***		0.48***	0.45***	0.46***
95% CI		0.42 to 0.48	0.39 to 0.49		0.43 to 0.48	0.36 to 0.49		0.43 to 0.51	0.34 to 0.56	0.40 to 0.51

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

$r = 0.38$) and self-coldness (i.e., the average score of the negative components in SCS; $r = -0.36$) with well-being were significantly different but the difference was small (for details of the results, please refer to Appendix B and D). We speculated that the weak predictability of common humanity might have dampened the overall predictability of self-warmth, which comprises of self-kindness, common humanity, and mindfulness, and therefore making the predictability of self-warmth and self-coldness with well-being to be similar.

Contrary to our hypothesis, collectivism did not moderate the association between self-compassion and well-being or psychological distress. Although some previous studies suggested that self-critical attitudes could be adaptive in collectivistic cultures (Heine, 2003), the present meta-analysis showed that the negative impacts of self-judgment, isolation, and over-identification on well-being and psychological distress were similar between collectivistic and individualistic cultures. As suggested by Gilbert (2005)'s evolutionary approach of social mentality theory, humans respond to internal stimuli similarly as external stimuli. In face of self-criticism, individuals respond to it as if it is a real external threat that activates the threat-defense system, which is linked to defensive emotions such as depression and anxiety. Even though self-criticism could be viewed as an adaptive trait in collectivistic cultures that may motivate people to improve oneself and contribute to group harmony, the present findings suggested that self-coldness may still be considered an internal threat that activates the threat-defense system, which in turn hamper mental well-being and aggravate psychological distress across cultures.

In the present study across 27 cultures, the association between the positive and negative components of the SCS had moderate effect sizes. Consistent with our prediction, dialecticism moderated all three pairs of components in the SCS, with dialectical cultures showing weaker association between the positive and negative components. As dialectical culture encourages the acceptance of contradictory propositions and tolerance of both positive and negative emotions (Spencer-Rodgers et al., 2009), this may link to orthogonal, instead of unitary, representation of self-compassion. Although the present meta-analysis did not intend to examine the factor structure of the SCS across cultures, findings of the present study may elucidate possible reason that may undergird the inconsistent factor structures found in previous studies and on the conceptualization of SCS as a unitary construct or orthogonality of its positive and negative components. The weaker association of self-warmth and self-coldness in dialectical cultures may reflect their orthogonal representation of self-compassion as two distinct factors of self-warmth and self-coldness, whereas the stronger negative association between self-warmth and self-coldness in non-dialectical cultures may indicate their unitary yet bipolar representation of self-compassion. Given the differential associations found in the present meta-analysis, future studies may further validate if the representation of self-compassion differ between dialectical and non-dialectical cultures through the examination of its factor structure across cultures.

Results in the current meta-analysis showed that the use of short form and long form of the SCS moderated the effect size of common humanity and psychological distress, as well as the effect sizes between

positive and negative components of the SCS. The effect size was significantly stronger when using the long form than the short form. Raes et al. (2011) also stated that reliabilities of subscales in the shortened version were relatively low and therefore suggested the use of the full version when subscale scores, instead of the total score, were of interest. Given that the shortened version involves just two items per component and it has relatively lower reliability, we believe the use of the long form SCS could better capture the predictability of its different components on mental well-being and psychological distress.

Gender and age moderated several associations between self-compassion and mental well-being and psychological distress. Specifically, it was found that the effect sizes of self-kindness, common humanity, and mindfulness with psychological distress were stronger among females than males. Previous studies have found that women were more likely than men to engage in ruminative coping and it was associated with higher levels of depressive symptoms (Johnson & Whisman, 2013; Li, DiGiuseppe, & Froh, 2006). With regard to this, a kind and understanding attitude toward oneself in times of difficulties could therefore be especially beneficial to women in shielding them from distress. Another possibility is that traditional gender stereotypes expect men to be tough and women to be gentle. Men might benefit less from possessing these gentle qualities than women as they are expected to be tough in traditional societal norms. One study found that whereas self-compassion showed a mediating effect between mindfulness and burnout among women, men did not show such mediating effect as self-compassion was not significantly associated with burnout among men (Amemiya & Sakairi, 2020). Another study also showed that self-compassion was positively associated with better marital satisfaction among wives but it was associated with reduced marital satisfaction among husbands with low conscientiousness (Baker & McNulty, 2011). Findings in the current meta-analysis also suggested gender differences on the association of self-compassion components with psychological distress and future studies could further explore the specific mechanisms of self-compassion between men and women. In addition, among older people, it was found that self-judgment showed smaller effect size with psychological distress than younger people. It is possible that older adults might have developed better emotion regulation than younger adults (Urry & Gross, 2010), hence were less likely to be affected by self-judgment. However, most of the included studies in the present meta-analysis were conducted among college students and young adults. Future research is warranted to examine the effect of gender and age on self-compassion.

In general, we noticed differential strength on the predictability of the positive and negative components of the SCS, with positive components having stronger associations on mental well-being (except common humanity), whereas negative components having stronger associations with psychological distress. Furthermore, the positive components showed weaker associations with the negative components of the SCS in dialectical cultures. These findings have implications on interventions. For individuals who have high levels of psychological distress, service providers may consider focusing on the reduction of self-coldness to reduce psychological distress before strengthening their self-warmth to promote well-being. As to public mental health promotion strategies targeting the general population, services that target the enhancement of self-warmth may be more direct in building positive resources and well-being. Particularly for individuals from dialectical cultures, the cultivation of self-warmth and reduction of self-coldness may need to be treated separately. Service providers should be cognizant of the potential orthogonal representation of self-compassion among dialectical thinkers. Targeting interventions by solely promoting or focusing on the presence of self-warmth with the assumption that it will automatically reduce self-coldness may limit the effectiveness of self-compassion interventions in the reduction of psychological distress among dialectical thinkers.

The present study had several limitations. First, due to the lack of study that examined the differential effects of the six components of the SCS through intervention or experimental studies, only cross-sectional data were included and causality cannot be drawn from the studies. While self-compassion may contribute to the increase in mental well-being and decrease in psychological distress, the reverse associations may also be possible. More studies that use longitudinal, experimental, or intervention designs are needed to draw causality. Second, most past studies used the overall score of self-compassion and limited the examination on the associations of the six subscales. Although different authors who have published data using the overall level of self-compassion were contacted for further information on the subscales, a number of studies were being excluded in the current meta-analysis due to the lack of information. Third, in the examination of the associations between positive and negative components of the SCS across cultures, we did not investigate the factor structure of the SCS directly. Future meta-analytic studies are needed to further examine the factor structure of the SCS across cultures to validate if people in dialectical and non-dialectical cultures represent the constructs in different ways. Forth, the current meta-analysis only included studies that were written in English or Chinese. Studies written in other languages were excluded and this could have limited studies conducted in other cultures. In addition, we are unable to include language as a moderator in the analyses to examine the language effects because a number of studies did not explicitly state which language version of the SCS they had used in their studies. Despite these limitations, the present study extended from previous studies and shed light on the differential associations of the six components of the SCS with mental well-being and psychological distress and providing possible reason for the disparate findings on the association between self-coldness and self-warmth across cultures. These findings may provide implications for service providers in designing interventions suitable for individuals with different cultural orientation and psychological needs so as to maximize the effectiveness of self-compassion interventions across cultures.

Declaration of Competing Interest

All authors declare that they have no conflict of interest.

Acknowledgement

Appendix A. Characteristics of the included studies. Figures before the slash are the effect sizes with mental well-being and figures after the slash are the effect sizes with psychological distress

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Akin (2008)	Students	398	20.9	0.45	Turkey		UCLA Loneliness Scale	−/−0.37	−/0.44	−/−0.27	−/0.47	−/−0.30	−/0.42	−0.44	−0.10	−0.45
Akin (2012)	Students	299	21.6	0.55	Turkey									−0.33	−0.12	−0.33
Akin and Akin (2014)	Students	302	20.9	0.53	Turkey	Subjective Happiness Scale		0.45/−	−0.38/−	0.14/−	−0.37/−	0.43/−	−0.34/−	−0.41	−0.18	−0.33
Akin and Akin (2017)	Students	285	20.9	0.52	Turkey									−0.40	−0.32	−0.38
Akin and Eroglu (2013)	Students	338	20.7	0.47	Turkey									−0.60	−0.63	−0.64
Akin and Akin (2015a)	Students	278	–	0.55	Turkey	Flourishing Scale		0.57/−	−0.55/−	0.33/−	−0.52/−	0.54/−	−0.49/−	−0.46	−0.23	−0.42
Akin and Akin (2015c)	Students	299	21.6	0.51	Turkey									−0.52	−0.39	−0.51
Akin and Akin (2015e)	Students	401	20.5	0.53	Turkey									−0.25	−0.09	−0.32
Akin (2014)	Students	285	20.9	0.54	Turkey									−0.39	−0.18	−0.41
Akin and Akin (2015b)	Students	401	16.3	0.53	Turkey	Sense of Community Scale		0.34/−	−0.17/−	0.34/−	−0.18/−	0.35/−	−0.14/−	−0.28	−0.11	−0.21
Akin and Akin (2015d)	Students	408	20.1	0.49	Turkey									−0.45	−0.39	−0.52
Allen (2017)	People who are self-identified as transgender	234	33.9	0.43	United States		Depression Anxiety Stress Scale	−/−0.49	−/0.57	−/−0.47	−/0.65	−/−0.50	−/0.63	−0.71	−0.52	−0.65
Asensio-Martínez et al. (2019)	Community sample	797	49.2	0.56	Spain	SF-36 Questionnaire		0.30/−	−0.16/−	0.05/−	−0.34/−	0.31/−	−0.36/−			
Barnett and Sharp (2016) – Sample 1	Students	580	–	1	United States									−0.21	0.01	−0.13
Barnett and Sharp (2016) – Sample 2	Students	398	–	1	United States									−0.12	−0.19	−0.23
Barry, Loflin, and Doucette (2015)	Male adolescents who have dropped out of school	251	16.8	0	United States		Personality Inventory for Youth (Depression and fear & worry subscales)	−/−0.11	−/0.29	−/−0.02	−/0.23	−/−0.08	−/0.26			
Bartels-Velthuis et al. (2016)	Psychiatric outpatients	33	48.1	0.82	Netherlands									−0.68	−0.66	−0.54
Basharpoor, Mowlaie, and Sarafrazi (2021)	People with childhood abuse experience	190	28	0.66	Iran									−0.31	−0.22	−0.10
Beaumont, Durkin, Hollins Martin, and Carson (2016)	Students	54	–	–	United Kingdom	Professional Quality of Life Scale (compassion satisfaction subscale); Short-Warwick-and-Edinburgh-Mental-Well-Being-Scale	Professional Quality of Life Scale (Secondary traumatic stress & Burnout Subscales)	0.21/−0.34	−0.21/0.53	–	–	–	–			
Beaumont, Durkin, Martin, and Carson (2016)	Students	103	–	1	United Kingdom	Professional Quality of Life (Compassion Satisfaction subscale); Short-Warwick-and-Edinburgh-Mental-Well-Being-Scale	Professional Quality of Life Scale (Secondary traumatic stress & Burnout Subscales)	0.27/−0.17	−0.28/0.26	–	–	–	–			
Beekman (2016)	University students	153	19.2	1	United States		An adapted scale measuring negative affect	−/−0.42	−/0.38	−/−0.39	−/0.35	−/−0.35	−/−0.41	−0.68	−0.44	0.57
Beck and Verticchio (2018)	Students	44	22.9	0.95	United States									−0.68	−0.37	−0.61
Bengtsson et al. (2016)	Students	256	12.9	0.57	Sweden									0.08	0.01	0.03
	Students	168	23.4	0.73			Trait Anxiety Inventory	−/−0.57	−/0.62	−/−0.37	−/0.64	−/−0.55	−/0.56	−0.40	−0.19	−0.25

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Bergen-Cico and Cheon (2014)					United States											
Blackie and Kocovski (2018) - Sample 1	Undergraduate students	156	19.7	0.76	Canada		Social Interaction Anxiety Scale	−/−0.27	−/0.38	−/−0.02	−/0.43	−/−0.17	−/0.35			
Blackie and Kocovski (2018) - Sample 2	Community sample	150	23.8	0.74	Canada		Social Phobia Inventory	−/−0.26	−/0.33	−/−0.27	−/0.40	−/−0.30	−/0.40			
Brenner et al. (2017)	Students	1115	19.4	0.56	United States		Depression Anxiety Stress Scale	−/−0.28	−/0.38	−/−0.18	−/0.38	−/−0.24	−/−0.38	−0.56	−0.29	−0.44
Brophy, Braehler, Hinz, Schmidt, and Korner (2020)	Community sample	2253	50.3	0.53	Germany	European Organization for Research and Treatment of Cancer Quality of Life Questionnaire	Beck Depression Inventory Fast Screen; European Organization for Research and Treatment of Cancer Quality of Life Questionnaire	0.03/−0.07	−0.18/0.32	−0.02/−0.02	−0.31/0.40	0.04/−0.06	−0.22/0.37	0.12	0.17	0.17
Brooks, Kay-Lambkin, Bowman, and Childs (2012)	People with alcohol dependence	77	–	0.45	Australia		Depression, Anxiety Stress Scale	−/0.41	−/0.45	−/0.27	−/0.40	−/0.22	−/0.32			
Brown, Hughes, Campbell, and Cherry (2020)	Survivors of breast cancer	184	51.5	1	United Kingdom		The Penn State Worry Questionnaire; The Hospital Anxiety and Depression Scale	−/−0.49		−/−0.31		−/−0.48				
Buceta, Bermejo, and Villacieros (2019)	Assistentially active health professionals	480	44.6	0.80	Spain	Professional Quality of Life Scale (compassion satisfaction subscale)	Professional Quality of Life Scale (burnout subscale)	0.39/−0.39	−0.24/0.43	0.20/−0.11	−0.33/0.44	0.38/−0.37	−0.32/0.44			
Carraça, Serpa, Rosado, Guerrero, & Magalhaes, 2019	Elite male soccer	57	25.7	0	Portugal		Brief Symptom Inventory - Anxiety	−/−0.06	−/0.39	−/0.11	−/0.43	−/−0.18	.−/56	−0.19	−0.09	−0.41
Castilho, Pinto-Gouveia, and Duarte (2015) – Sample 1	Community adults	1128	24.5	0.75	Portugal		General Health Questionnaire – 28	−/−0.47	−/0.61	−/−0.32	−/0.58	−/−0.44	−/0.58	−0.54	−0.44	−0.56
Castilho et al. (2015) – Sample 2	Patients with Axis I and Axis II disorders	316	28.7	0.80	Portugal		General Health Questionnaire – 28	−/−0.33	−/0.45	−/−0.21	−/0.43	−/−0.39	−/0.10	−0.62	−0.52	−0.66
Chan (2018)	Participants who belong to the LGBT community	1050	25.1	0.53	Hong Kong	Mental Health Continuum (Short Form)	Generalized Anxiety Disorder – 7; Patient Health Questionnaire - 9	0.41/−0.30	−0.37/0.48	0.11/0.01	−0.42/0.48	0.39/−0.29	−0.37/0.48	−0.37	0.07	−0.31
Chang et al. (2017)	Students	331	21.5	0.68	United States		Beck Depression Inventory - II	−/−0.33	−/0.36	−/−0.32	−/0.40	−/−0.34	−/0.39	−0.37	−0.09	−0.20
Chen and Chen (2019)	Community sample	854	35.3	0.57	Taiwan	Ryff's Psychological Well-being Scale	Depression Anxiety Stress Scale	0.40/−0.17	−0.37/0.33	0.46/−0.15	−0.56/0.42	0.43/−0.20	−0.51/0.39			
Cheng (2015)	Students	215	21.1	0.64	Hong Kong	Warwick-Edinburgh Mental well-being Scale; Peace of Mind Scale; Positive and Negative Affect Schedule; Social Connectedness Scale	Positive and Negative Affect Schedule	0.38/−0.24	−0.36/0.48	0.25/−0.14	−0.36/0.42	0.39/−0.29	−0.34/0.54	−0.17	0.02	−0.14
Cheng and Lin (2016)	Students	129	–	–	Taiwan	The Chinese Happiness Inventory		0.44/−	−0.45/−					−0.19	–	–
Chio (2018) – Sample 1	Community adults	326	20.2	0.66	Hong Kong	Mental Health Continuum (Short Form); Warwick-Edinburgh Mental Well-being Scale	Perceived Stress Scale; Generalized Anxiety Disorder – 7; Patient Health Questionnaire - 9	0.37/−0.29	−0.34/0.44	0.07/0.01	−0.32/0.41	0.24/−0.22	−0.35/0.47	−0.29	0.17	−0.11

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Chio (2018) – Sample 2	Students	498	19.9	0.70	Hong Kong	Mental Health Continuum (Short Form); Social Connectedness Scale	Generalized Anxiety Disorder-7; Patient Health Questionnaire - 7	0.29/ −0.19	−0.32/ 0.42	0.15/ −0.02	−0.40/ 0.47	0.21/ −0.15	−0.32/ 0.48	−0.14	0.15	−0.04
Choo and Marszalek (2019)	Students	208	21.9	0.77	United States	Ryff's Psychological Well-being Scale		0.51/−	−0.49/−	0.38/−	−0.55/−	0.44/−	−0.49/−	−0.58	−0.34	−0.46
Cleare, Gumley, Cleare, and O'Connor (2018)	Community adults	526	23.0	0.77	United Kingdom									−0.67	−0.39	−0.53
Cohen, Wolf, Panter, and Insko (2011)	Students	186	19.2	0.65	United States									−0.66	−0.26	−0.52
Costa and Pinto-Gouveia (2011)	Patients in primary care settings	104	60.2	0.79	Portugal		Depression, Anxiety and Stress Scale	−/−0.38	−/0.37	−/−0.39	−/0.50	−/−0.52	−/0.45	−0.65	−0.81	−0.56
Coroiu et al. (2018)	Community adults	2448	50.2	0.54	Germany		Patient Health Questionnaire – 9; Generalized Anxiety Disorder screener	−/−0.07	−/0.33	−/−0.01	−/0.40	−/−0.06	−/0.36	0.11	0.15	0.16
Cunha et al. (2016)	Students	3165	15.5	0.54	Portugal		Depression, Anxiety and Stress Scale	−/−0.16	−/0.43	−/−0.07	−/0.47	−/−0.20	−/0.47	−0.18	−0.04	−0.24
Døssing et al. (2015)	Patients with bipolar disorder	30	30.9	0.70	Denmark	Satisfaction with Life Scale		0.26/−	−0.42/−	0.35/−	−0.23/−	0.18/−	−0.25/−			
Dreisoerner, Junker, and van Dick (2021)	Community sample	80	24.7	0.84	Germany	Satisfaction with Life Scale		0.34/−	−0.47/−	0.38/−	−0.53/−	0.29/−	−0.41/−	−0.78	−0.42	−0.54
Duarte, Pinto-Gouveia, and Cruz (2016)	Nurses	280	37.7	0.81	Portugal	Professional Quality of Life (compassion satisfaction subscale)	Professional Quality of Life Scale (burnout and secondary traumatic stress subscales); Interpersonal Reactivity Index (personal distress subscale)	0.34/ −0.24	−0.16/ 0.33	0.30/ −0.09	−0.18/ 0.35	0.37/ −0.28	−0.11/ 0.34	−0.38	−0.17	−0.43
Dudley (2016)	People who hear voices	128	37.6	0.73	–									−0.56	−0.50	−0.57
Dundas, Svendsen, Wiker, Granli, and Schanche (2016)	Students	277	22.9	0.56	Norway		The Symptom Checklist – 90R (depression subscale)	−/−0.35	−/0.46	−/−0.28	−/0.59	−/−0.35	−/0.56	−0.52	−0.40	−0.33
Durkin, Beaumont, Martin, and Carson (2016)	Students (registered community nurses)	37	36.0	0.92	United Kingdom	Professional Quality of Life Scale (compassion satisfaction subscale); Short-Warwick-and-Edinburgh-Mental-Well-Being-Scale	Professional Quality of Life Scale (secondary traumatic stress & burnout subscales)	0.10/ −0.19	−0.01/ 0.26	–	–	–	–	−0.33	–	–
Eicher, Davis, and Lysaker (2013)	People diagnosed with schizophrenia or schizoaffective disorder	88	27.3	0.14	United States									−0.18	0.10	−0.12
Einabad, Dorban, and Nainian (2017)	Students	210	20.5	0.58	Iran		Trait Anxiety Inventory	−/−0.41	−/0.48	−/−0.21	−/0.46	−/−0.43	−/0.49	−0.41	−0.07	−0.20
Felder, Lemon, Shea, Kripke, and Dimidjian (2016)	People who were currently pregnant or less than 1 year postpartum	189	33.1	1	United States		The Edinburgh Postnatal Depression Scale; State Trait Anxiety Inventory	−/−0.45	−/0.45	−/−0.33	−/0.44	–	–	−0.75	−0.53	–
Ferguson and Schlegel (2013)	Students	76	18.5	0.74	United States	Positive affect (exact scale name not stated)	Negative affect (exact scale not stated)	0.28/ −0.25	−0.24/ 0.25	0.10/ −0.20	−0.31/ 0.18	0.36/ −0.22	−0.05/ 0.17	−0.33	−0.05	−0.29
		18	43.1	0.89										−0.70	−0.25	−0.50

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Flook, Goldberg, Pinger, Bonus, and Davidson (2013)	Teachers from public elementary school				United States	Maslach Burnout Inventory–Educators Survey (personal accomplishment subscale)	The Symptom Checklist – 90R; Maslach Burnout Inventory – Educators Survey (emotional exhaustion and depersonalization dimensions)	0.31/ −0.29	−0.22/ 0.36	0.37/ −0.29	−0.50/ 0.35	0.41/ −0.32	−0.28/ 0.28			
Fong and Loi (2016)	Students	306	25.2	0.78	–	Satisfaction with Life Scale; Flourishing Scale; Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Perceived Stress Scale; Maslach Burnout Inventory - Student Survey; Center for Epidemiological Studies Depression Scale - Revised	0.49/ −0.51	−0.43/ 0.57	0.41/ −0.38	−0.48/ 0.57	0.44/ −0.47	−0.40/ 0.57	−0.70	−0.43	−0.59
Ford, Klibert, Tarantino, and Lamis (2017)	Students	252	21.3	0.81	United States		Center for Epidemiological Studies Depression Scale	−/−0.27	−/0.51	−/−0.11	−/0.56	−/−0.24	−/0.54	−0.48	−0.26	−0.29
Forti (2011)	Clinical population - female survivors of breast cancer	133	59.6	1	United States	Functional Assessment of Cancer Therapy-Breast (FACT-B)		0.37/−	–	–	–	–	–			
Fresnics and Borders (2017)	Students	201	19.5	0.78	United States									−0.65	−0.34	−0.46
Garcia-Campayo et al. (2014)	Students	268	20.5	0.60	Spain		State-trait Anxiety Inventory; Beck Depression Inventory	−/−0.49	−/0.48	−/−0.48	−/0.46	−/−0.46	−/0.47			
Gedik (2019)	Students	423	19.8	0.68	Turkey									−0.41	−0.17	−0.42
Gerber and Anaki (2019)	Students	125	23	0.66	Israel									−0.50	−0.26	−0.54
Gilbertson (2016)	Students	338	–	0.62	United States									−0.54	−0.21	−0.39
Gill, Watson, Williams, and Chan (2018)	Students	298	14.8	0.47	United Kingdom		Social Phobia Inventory; Social Anxiety Scale for Adolescent (fear of negative evaluation subscale)	−/−0.26	−/0.62	−/−0.08	−/0.56	−/−0.20	−/0.60	−0.31	−0.04	−0.17
Gouveia, Carona, Canavarro, and Moreira (2016)	People who had 1–8 children	333	42.3	0.74	Portugal		Parenting Stress Index – Short Form (Parental Distress subscale)	−/−0.21	−/0.51	−/−0.12	−/0.57	−/−0.32	−/0.54	−0.16	−0.05	−0.36
Hailey (2014)	Human service providers working in faith-based contexts	276	–	0.57	United States	Maslach Burnout Inventory (personal accomplishment subscale)	Maslach Burnout Inventory (emotional exhaustion and depersonalization subscales)	0.32/ −0.27	−0.30/ 0.36	0.25/ −0.13	−0.40/ 0.33	0.41/ −0.22	−0.34/ 0.32	−0.50	−0.15	−0.50
Hardin and Larsen (2014)	Students	216	18.9	0.72	United States	Satisfaction with Life Scale; Multiple Adjective Affect Checklist		0.53/−	−0.25/−	–	–	–	–	−0.53	–	–
Hasking, Boyes, Finlay-Jones, McEvoy, and Rees (2019)	Students	415	21	0.77	Australia		Positive and Negative Affect Schedule	−/−0.28	−/0.46	−/−0.19	−/0.47	−/−0.25	−/0.47	−0.49	−0.19	−0.27
Hayter and Dorstyn (2014)	Community adults	97	40.1	0.66	Australia		Depression Anxiety Stress Scale	−/−0.08	−/0.17	–	–	–	–	−0.47	−0.36	−0.35
Held and Owens (2015)	Homeless male veterans	27	51.3	0	United States		Trauma-Related Guilt Inventory	−/−0.25	−/0.32	−/−0.02	−/0.42	−/−0.26	−/−0.09	−0.40	−0.02	−0.53
Hirsch et al. (2021)	Students	338	21.8	0.67	United States									−0.42	−0.13	−0.25
Hoffart, Øktedalen, and Langkaas (2015)	Patients with PTSD	65	45.2	0.58	Norway									−0.34	−0.31	0.04
	Adults	285	33.2	0.43	–									0.10	−0.11	0.01

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Holden et al. (2021)																
Hwang, Kim, Yang, and Yang (2016)	Community adults	1813	39.3	0.49	Korea	Concise Measure of Subjective Well-Being (life satisfaction and positive emotion subscales)	Student Depression Scale; Concise Measure of Subjective Well-Being (Negative emotion subscale);	0.39/−0.15	−0.27/0.43	0.27/−0.07	−0.37/0.50	0.43/−0.23	−0.38/0.52	−0.23	−0.18	−0.01
Imtiaz and Kamal (2016)	Elderly people	209	66.4	0.33	Pakistan	Warwick-Edinburgh Mental Well-being Scale		0.50/−	−0.22/−	0.16/−	−0.33/−	0.45/−	−0.36/−			
Iskender (2009)	Students	390	20.8	0.55	Turkey									−0.28	−0.07	−0.39
Iskender, Sar, Özçelik, Kocaman, and Yaldiran (2019)	Students	529	15.7	0.66	Turkey									−	−0.13	−0.19
Jannazzo (2009)	Students	92	22.1	0.64	United States									−0.71	−0.50	−0.70
Jing (2015)	Students	222	−	−	China									−0.34	−0.24	−0.32
Joeng et al. (2017)	Students	473	25.3	0.60	South Korea		Center for Epidemiological Studies – Depression Scale; Trait Anxiety Inventory	−/−0.33	−/0.59	−/−0.25	−/0.65	−/−0.30	−/0.59	−0.24	−0.15	−0.19
Joseph and Bance (2019)	Female children who were sexually abused	158	−	1	India									−0.91	−0.88	−0.74
Kao (2018)	People in recovery	103	37.4	0.85	Hong Kong	Brunnsviken Brief Quality of Life Scale		0.28/−	−0.48/−	0.20/−	−0.42/−	0.33/−	−0.39/−	−0.05	0.06	−0.05
Kelley et al. (2019)	Combat-wounded veterans	189	43.1	0.03	United States									−0.22	−	−0.24
Kemer, Demirtaş, Pope, and Ummak (2017)	Participants who belong to the LGBT community	310	24.2	0.46	Turkey	Satisfaction with Life Scale; Positive and Negative Affect Schedule	Positive and Negative Affect Schedule	0.38/−0.54	−0.26/0.63	0.21/−0.30	−0.32/0.56	0.40/−0.55	−0.25/0.59	−0.58	−0.21	−0.59
Klibert (2018) – Sample 1	Students	440	19.9	0.59	United States		Center for Epidemiological Studies Depression Scale; Burns Anxiety Inventory	−/−0.21	−/0.50	−/−0.07	−/0.51	−/−0.21	−/0.52	−0.31	−0.14	−0.23
Klibert (2018) – Sample 2	Students	329	−	0.67	United States		Center for Epidemiological Studies Depression Scale	−/−0.22	−/0.45	−/−0.08	−/0.53	−/−0.13	−/0.48	−0.52	−0.10	−0.21
Klibert (2018) – Sample 3	Students	592	20.5	0.72	United States	Flourishing (Exact scale not stated)	Center for Epidemiological Studies Depression Scale	0.44/−0.39	−0.25/0.50	0.36/−0.26	−0.27/0.54	0.41/−0.33	−0.19/0.51	−0.59	−0.25	−0.42
Klein et al. (2020)	People with bleeding disorders	86	29.7	0.38	United States	Pediatric Quality of Life Inventory – core generic form		0.37/−	−0.44/−	0.01/−	−0.35/−	0.20/−	−0.45/−	−0.62	−0.20	−0.49
Kwan (2014)	Students	183	20.2	0.75	Hong Kong	Mental Health Continuum (Short Form)		0.52/−	−0.39/−	0.30/−	−0.50/−	0.46/−	−0.44/−	−0.49	−0.16	−0.27
Lai and Su (2015)	Students	345	−	0.52	Taiwan	Satisfaction with Life Scale; Positive Affects (adapted from Kuppens, van Mechelen, & Rijmen, 2008)	Negative Affects (adapted from Kuppens, van Mechelen, & Rijmen, 2008); Taiwan Depression Scale	0.35/−0.21	−0.26/0.44	0.26/−0.04	−0.32/0.44	0.22/−0.17	−0.25/0.41	−0.15	0.04	−0.02
Lai, Su, and Hou (2018)	Working adults	683	40	0.58	Taiwan	Chinese Happiness Inventory; Workplace Spirituality	Chinese Health Questionnaire	0.23/−0.13	−0.09/0.26	0.24/−0.12	−0.19/0.33	0.26/−0.21	−0.20/0.38	−0.10	0.03	−0.20
Lindsey (2017)	Community adults	315	38.0	0.83	United Kingdom	Types of Positive Affect Scale	Depression Anxiety Stress Scale	0.34/−0.26	−0.32/0.47	0.37/−0.21	−0.37/0.21	0.27/−0.29	−0.30/0.43	−0.58	−0.27	−0.47
Liu, Li, Wang, Wei, and Ko (2020)	Students	205	21.2	0.74	United States	Social Connectedness Scale	Center for Epidemiological Studies–Depression Scale-Short Form	0.27/−0.33	−	0.08/−0.10	−	0.22/−0.29				
López, Sanderman, and	Community adults	1736	54.9	0.55	Netherlands	Positive and Negative Affect Schedule	Center for Epidemiological Studies Depression Scale;	0.24/−0.24	−0.06/0.39	0.18/−0.06	−0.14/0.51	0.34/−0.24	−0.09/0.50	−0.20	−0.01	−0.17

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Schroevers (2016)							Positive and Negative Affect Schedule									
Lopez, Sanderman, and Schroevers (2018)	Community sample	734	55.7	0.55			Center of Epidemiologic Studies Depression Scale	−/−0.26	−/0.39	−/−0.08	−/0.50	−/−0.26	−/0.49	−0.25	−0.04	−0.21
Magnus, Kowalski, and McHugh (2010)	Young adult women who exercise	252	21.9	1	Canada		Social Physique Anxiety Scale	−/−0.48	−/0.61	−/−0.30	−/0.44	−/−0.39	−/0.43	−0.68	−0.39	−0.54
Mak et al. (2018)	Community adults	2161	33.6	0.73	Hong Kong	World Health Organization - 5	Kessler Psychological Distress Scale - 6	0.58/ −0.48	−	0.40/ −0.28	−	0.54/ −0.41				
Manavipour and Saeedian (2016)	Students	216	−	0.65	Iran									−0.36	−0.17	−0.19
Mantzios and Egan (2018)	Students	152	24.4	0.88	United Kingdom									−0.65	−0.50	−0.62
Marshall (2014)	Students	93	26.1	−	United Kingdom									−0.67	−	−0.65
McKnight (2014)	Meditation novices	53	−	0.74	United States									−0.71	−0.55	−0.61
Meng et al. (2019)	Nursing students and medical workers	2676	−	0.87	China	Short Form – 8 Health Survey	The Goldberg Anxiety Scale; Perceived Stress Scale	0.65/ −0.12	−0.56/ 0.20	0.62/ −0.06	−0.06/ 0.18	0.64/ −0.23	−0.65/ 0.35	−0.03	0.05	−0.13
Mete Otlu, Ekinci Vural, and Şahin Firat (2016)	Teacher candidates	498	−	0.59	Turkey									−0.47	−0.23	−0.40
Mills, Gilbert, Bellew, McEwan, and Gale (2007)	Students	131	22.1	0.63	United Kingdom		Center for Epidemiological Studies Depression Scale	−/−0.38	−/0.52	−/−0.18	−/0.61	−/−0.19	−/0.49	−0.24	−0.18	−0.30
Mistler (2010)	Community adults	308	40.6	0.77	United States									−0.63	−0.42	−0.50
Moadab (2013)	People with history of head injury, uncorrected vision problems, and abnormal use of their hands	23	46.4	0.48	United States									−0.62	−0.44	−0.65
Mowlaie, Mikaeili, Aghababaei, Ghaffari, and Pouresmali (2017)	Students	370	23.8	0.75	Iran		Penn State Worry Scale	−/−0.58	−/0.54	−/−0.63	−/0.36	−/−0.62	−/0.47	−0.32	−0.17	−0.32
Nearchou et al. (2019)	Patients with moderate to severe psoriasis	76	−	0.47	Republic of Ireland	Mental Health Inventory - 5		0.60/−	−0.46/−	0.30/−	−0.57/−	0.44/−	−0.54/−			
Neff, Whittaker, and Karl (2017) – Sample 1	Students	222	20.9	0.62	United States									−0.82	−0.50	−0.78
Neff et al. (2017) –Sample 2	Community adults	1394	36.0	0.65	−									−0.72	−0.48	−0.72
Neff et al. (2017) – Sample 3	Meditators	215	47.4	0.70	United States									−0.77	−0.54	−0.71
Neff et al. (2017) – Sample 4	People with recurrent major depression disorder	390	50.2	0.77	United Kingdom									−0.56	−0.46	−0.57
	Community adults	188	−	−				0.55/−	−0.52/−	0.48/−	−0.53/−	0.52/−	−0.51/−			

(*continued*)

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Neff et al. (2018) – Sample 1					United States	Subjective Happiness Scale; Satisfaction with Life Scale; Positive and Negative Affect Schedule										
Neff et al. (2018) – Sample 2	Community adults	192	–	–	United States		Depression Anxiety Stress Scale; Penn State Worry Scale; Positive and Negative Affect Schedule	–/–0.47	–/0.59	–/–0.37	–/0.59	–/–0.45	–/0.66			
Neff et al. (2018) – Sample 3	Community adults	1355	37.2	0.63	United States									–0.70	–0.51	–0.64
Neff et al. (2018) – Sample 4	Community adults	43	–	–	United States									–0.50	–0.14	–0.52
Nerini, Matera, Di Gesto, Policardo, and Stefanile (2019)	University women	220	21	1	Italy									–0.67	–0.33	–0.58
O'Donnell (2018)	Elderly dementia caregiver	24	72	0.93	United States		Geriatric Depression Scale; Perceived Stress Scale	–/–0.52	–/0.53	–/–0.45	–/0.71	–/–0.64	–/0.60			
Pakenham (2015)	Students	51	27.2	0.86	Australia	Satisfaction with Life Scale	Mental Health Professional Stress Scale; The General Health Questionnaire – 28 (Anxiety and depression subscales)	0.16/ –0.15	–0.04/ 0.19	0.24/ –0.05	–0.09/ 0.14	0.20/ –0.16	0.01/ 0.13	–0.26	–0.21	–0.15
Pasupathi et al. (2015)	Students	85	21.8	0.66	United States	Ryff's Psychological Well-being Scale; Satisfaction with Life Scale		0.53/–	–0.49/–	0.42/–	–0.47/–	0.53/–	–0.50/–	–0.72	–0.44	–0.40
Petersen (2014)	Students	173	22.3	0.65	Germany									–0.40	–0.25	–0.36
Petrocchi, Ottaviani, and Couyoumdjian (2014)	Community sample	424	36.5	0.61	Italy		Italian Loneliness Scale (emotional loneliness and general loneliness subscales); Center for Epidemiological Studies Depression Scale; State-Trait Anxiety Inventory – Trait Form	–/–0.16	–/0.20	–/–0.08	–/0.35	–/–0.14	–/0.26	–0.57	–0.25	–0.44
Phillips and Ferguson (2013)	Elder people	185	73.4	0.57	Australia	Meaning in Life Questionnaire; Positive and Negative Affect Schedule	Positive and Negative Affect Schedule	0.27/ –0.24	–0.13/ 0.43	0.27/ –0.03	–0.25/ 0.42	0.38/ –0.32	–0.17/ 0.48	–0.41	–0.03	–0.39
Proeve, Anton, and Kenny (2018)	People diagnosed with depressive or anxiety disorders	32	49.8	0.59	Australia		Depression, Anxiety and Stress Scale	–/–0.10	–/0.39	–/–0.02	–/0.10	–/–0.00	–/0.36	–0.56	–0.51	–0.52
Psychogiou et al. (2016) – Sample 1	Father	133	38.8	0	United Kingdom		Patient Health Questionnaire - 9	–/–0.30	–/0.37	–/–0.09	–/0.53	–/–0.19	–/0.46	–0.50	–0.10	–0.40
Psychogiou et al. (2016) – Sample 2	Mother	122	36.4	1	United Kingdom		Patient Health Questionnaire - 9	–/–0.34	–/0.46	–/–0.25	–/0.45	–/–0.32	–/0.52	–0.52	–0.35	–0.51
Ptacek and Daubman (2020)	Women who were incarcerated	117	38	1	United States									–0.50	–0.34	–0.39
Raes (2010)	Students	271	18.1	0.79	Belgium		Beck Depression Inventory – II; State-trait Anxiety Inventory (trait version); Penn State Worry Questionnaire	–/–0.48	–/0.54	–/–0.27	–/0.57	–/–0.30	–/0.59	–0.62	–0.27	–0.37
	Working married individuals	300	32.7	0.43	Pakistan	Mental Health Inventory - Psychological		0.73/–	–0.74/–	0.75/–	–0.74/–	0.70/–	–0.76/–	–0.71	–0.62	–0.63

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Rafique, Masood, and Ahmad (2018)																
Rashid, Guo, and Babenko (2020)	Medical program students	195	–	0.60	Canada									−0.56	−0.46	−0.29
Raymond (2018)	Students	176	19.2	0.82	United States		Social Interaction Anxiety Straightforward Scale	−/−0.17	−/0.54	−/−0.04	−/0.42	−/−0.18	−/0.32	−0.28	−0.06	−0.26
Sabaitytė and Diržytė (2017)	Unemployed adults	80	24.4	0.62	Lithuania	Satisfaction with Life Scale		0.16/−	0.26/−	0.26/−	0.32/−	0.21/−	0.30/−			
Samios, Raatjes, Ash, Lade, and Langdon (2020)	People who experienced intimate partner psychological aggression	253	26.1	0.89	Australia	Meaning in Life Questionnaire		0.47/−	–	0.29/−	–	–	–			
Satıcı, Uysal, and Akın (2013)	Students	347	20.8	0.56	Turkey	Flourishing Scale		0.45/−	−0.50/−	0.30/−	−0.42/−	0.50/−	−0.47/−	−0.38	−0.17	−0.41
Satıcı, Uysal, and Akın (2015)	Students	268	18.2	0.54	Turkey									−0.28	−0.05	−0.22
Schaafsma (2018)	Experienced and in-training mental health professionals	309	34.5	0.80	United States	Professional Quality of Life Scale (compassion satisfaction subscale)	Professional Quality of Life Scale (compassion fatigue subscale); Perceived Stress Scale	0.39/ −0.35	−0.29/ 0.44	0.29/ −0.22	−0.34/ 0.40	0.44/ −0.40	−0.29/ 0.48	−0.69	−0.42	−0.63
Schellenberg, Bailis, and Mosewich (2016)	Students	348	19.3	0.76	Canada									−0.24	0.05	0.01
Schoenefeld and Webb (2013)	Students	322	19.5	1	United States									−0.50	−0.20	−0.39
Semenchuk et al. (2020)	Women at risk of cardiovascular disease	102	66.5	1	Canada		Health Anxiety Index	−/−0.12	−/−0.03	−/−0.03	−/−0.00	−/−0.10	−/0.04			
Seo (2012)	East Asian international students	255	24.8	0.62	–		Hopkins Symptom Checklist (anxiety and depression subscales)	−/0.06	−/−0.45	−/−0.02	−/−0.54	−/−0.13	−/−0.51	0.06	0.08	0.04
Shaw (2012)	Students	81	45.7	0.72	Canada		Maslach burnout inventory (emotional exhaustion and depersonalization subscales)	−/−0.40	−/0.46	–	–	–	–	−0.76	–	–
Shih (2019)	Youth	63	12.9	0.52	United States									−0.31	0.07	0.05
Shimizu, Niiya, and Shigemasu (2016)	Students	51	19.3	0.61	Japan									−0.09	−0.37	−0.36
Shin and Lim (2019)	Students	689	–	0.65	Korea	Mental Health Continuum – Short Form		0.47/−	−0.26/−	0.32/−	−0.32/−	0.38/−	−0.31/−	−0.34	−0.12	−0.16
Shin, Black, Shonkoff, Riggs, and Pentz (2016)	Students	210	12.4	0.48	United States									−0.24	–	–
Silva (2019)	Counselors	328	42	0.82	United States		Counselor Burnout Inventory (exhaustion and incompetence subscales)	−/−0.39	−/0.44	−/−0.23	−/0.47	−/−0.31	−/0.40	−0.74	−0.46	−0.61
Sinha (2012)	Students	479	21.1	0.69	United States									−0.50	−0.23	−0.31
Skipper, O'Donovan,	Meditation practitioner	254	47.7	0.55	–	Satisfaction with Life Scale		0.36/−	−0.41/−	0.29/−	−0.51/−	0.43/−	−0.44/−	−0.58	−0.21	−0.62

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Conlon, and Clough (2015)																
Stafford-Brown and Pakenham (2012)	Students	56	28.5	0.88	Australia	Satisfaction with Life Scale	Mental Health Professional Stress; The General Health Questionnaire – 28 (Anxiety and depression subscales)	0.33/ −0.24	−0.32/ 0.27	0.24/ −0.11	−0.39/ 0.14	0.22/ −0.27	−0.31/ 0.24	−0.72	−0.43	−0.59
Sun et al. (2016)	Students	277	14.2	0.48	Hong Kong	Psychological Well-being Scale		0.43/−	0.19/−	0.40/−	−0.26/−	0.50/−	−0.18/−	0.07	−0.00	−0.15
Svendsen et al. (2016)	Students	53	23.6	0.68	Norway		State-trait Anxiety Inventory	−/−0.54	−/0.58	−/−0.61	−/0.78	−/−0.61	−/0.77	−0.86	−0.64	−0.71
Tandler and Petersen (2018)	German-speaking adults who are in romantic relationship	185	32.3	0.65	Germany									−0.47	−0.20	−0.44
Taylor, Daiss, and Krietsch (2015)	Students	150	19.2	0.85	United States									−0.40	−0.13	−0.22
Thompson and Waltz (2008)	Participants who met the PDS or PTSD criterion	99	20.8	0.66	United States									−0.48	−0.25	–
Tielke (2016)	American Indian/ Alaska Native	236	43.7	0.66	United States									−0.15	−0.10	−0.40
Ursic, Kocjancic, and Zvelc (2019)	Community sample	442	31.5	0.72	Slovenia	World Health Organization – 5 Well-Being Index; Satisfaction with Life Scale		0.44/−	−0.32/−	0.27/−	−0.48/−	0.37/−	−0.44/−	−0.63	−0.32	−0.53
Valdez and Lilly (2019)	Nurses	158	–	0.58	United States	Professional Quality of Life Scale (compassion satisfaction); Self-developed items on job satisfaction	Professional Quality of Life Scale (burnout and secondary traumatic stress)	0.50/ −0.14	−0.12/ 0.62	0.37/ −0.06	−0.20/ 0.67	0.41/ −0.23	−0.12/ 0.65			
Van der Donk et al. (2020) - Sample 1	Cancer patients	245	–	–	Netherlands	Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Center of Epidemiologic Studies Scale	0.22/ −0.11	0.05/ 0.31	0.13/ −0.04	−0.02/ 0.44	0.27/ −0.20	0.00/ 0.38			
Van der Donk et al. (2020) - Sample 2	Matched community sample	245	–	–		Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Center of Epidemiologic Studies Scale	0.39/ −0.09	−0.02/ 0.31	0.24/ 0.05	−0.18/ 0.44	0.48/ −0.17	−0.06/ 0.47			
Veneziani, Fuochi, and Voci (2017)	Community adults	522	30.1	0.63	Italy									−0.61	−0.43	−0.64
Verba (2017)	Pre-bariatric surgery patients with obesity	123	45.6	0.83	United States		The Psychiatric Indications subscale of depression; The Psychiatric Indications subscales of anxiety	−/−0.18	−/0.44	−/−0.10	−/0.43	−/−0.26	−/0.36			
Vonk and Smit (2012)	Individuals aged 16 or above	2181	–	0.46	Netherlands	Satisfaction with Life Scale		0.31/−	−0.30/−	0.19/−	−0.41/−	0.27/−	−0.29/−	−0.57	−0.30	−0.44
Waldron and Ebbeck (2015)	Wildland firefighters	289	–	–	United States									−0.34	−0.20	−0.40
Wasylkiw, MacKinnon, and MacLellan (2012)	Female undergraduate students	142	19	1	Canada		Center for Epidemiological Studies Depression Scale	−/−0.49	−/0.59	−/−0.27	−/0.48	−/−0.33	−/0.47	−0.60	−0.39	−0.64
Watson (2018)	Students	423	20,5	0.73	Canada	Meaning in Life Scale (prescence); Satisfaction with Life Scale		0.37/−	−0.32/−	0.39/−	−0.44/−	0.39/−	−0.27/−	−0.64	−0.37	−0.52
Wei, Liu, Ko, Wang, and Du (2020)	Students	433	20.3	0.57	United States		Hopkins Symptoms Checklist	−/−0.33	−/0.47	−/−0.13	−/0.42	−/−0.25	−/0.50	−0.44	−0.19	−0.15
		72	33.8	0.54				−/0.02	−/0.24	−/−0.05	−/0.22	−/−0.02	−/0.13			

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	SK[a]	SJ[b]	CH[c]	I[d]	M[e]	OI[f]	SJ vs. SK	CH vs. I	M vs. OI
Werner et al. (2012)	People diagnosed with Generalized SAD				United States		Liebowitz Social Anxiety Scale – Self-report version; Social interaction Anxiety Scale									
Woods and Proeve (2014)	Students	212	21.3	0.53	Australia									−0.58	−0.33	−0.57
Xu and Sang (2016)	Working adults	915	–	0.31	China									−0.27	−0.18	−0.03
Yang (2016)	Students	246	–	0.70	Hong Kong	Satisfaction with Life Scale	Beck Depression Inventory	0.36/−0.31	−0.21/0.50	0.23/−0.08	−0.23/0.43	0.32/−0.18	−0.20/0.47	−0.19	0.17	−0.06
Ying (2009)	Master students in social work	65	28.1	0.49	United States		California Psychological Inventory – Depression Scale	−/−0.49	−/0.49	−/−0.23	−/0.43	−/−0.42	−/0.59	−0.72	−0.40	−0.50
Ying and Han (2009)	Social work students	66	29.7	0.91	United States									−0.73	−0.33	−0.41
Yip et al. (2017)	Clinical psychologists and trainees	77	35.1	0.83	Hong Kong		Professional Quality of Life Scale (Secondary traumatic stress & burnout)	−/−0.43	−/0.44	−/−0.16	−/0.37	−/−0.22	−/0.35	−0.47	−0.38	−0.34
Yousaf, Amir, and Hameed (2019)	Women patients with mastectomy	74	37	1	Pakistan		Female Distress Scale	−/−0.54	−/0.46	−/−0.38	−/0.27	−/−0.52	−/0.51	−0.47	−0.38	−0.59
Yu and Mak (2019)	Students	613	20.5	0.69	Hong Kong	Mental Health Continuum (Short Form)	Perceived Stress Scale; Generalized Anxiety Disorder – 7; Patient Health Questionnaire - 9	0.46/−0.32	−0.28/0.43	0.13/0.08	−0.29/0.49	0.33/−0.19	−0.34/0.44	−0.21	0.23	0.03
Zeng, Wei, Oei, and Liu (2016) – Sample 1	Buddhists	179	35.5	0.37	China	Positive and Negative Affect Schedule; Satisfaction with Life Scale	Positive and Negative Affect Schedule	0.20/−0.10	−0.22/0.46	0.18/−0.17	−0.30/0.60	0.39/−0.38	−0.26/0.60	−0.04	−0.03	−0.41
Zeng et al. (2016) – Sample 2	Non-Buddhists	232	31.1	0.56	–	Positive and Negative Affect Schedule; Satisfaction with Life Scale	Positive and Negative Affect Schedule	0.49/−0.39	−0.29/0.60	0.47/−0.30	−0.34/0.58	0.51/−0.48	−0.36/0.62	−0.38	−0.27	−0.48
Zhang et al. (2019b)	People who have attempted suicide and recruited in public hospital	147	37.7	0.57	United States		Beck Depression Inventory	−/−0.19	−/0.52	−/−0.15	−/0.38	−/−0.08	−/0.45	−0.18	−0.11	−0.13
Zhang et al. (2019a)	Participants in the medical and psychiatric emergency rooms with suicide attempt	248	37.3	0.56	United States		Beck Depression Inventory	−/−0.17	−/0.48	−/−0.12	−/0.36	−/−0.09	−/0.42	−0.20	−0.03	−0.10
Zhang et al. (2016)	Students	208	21.7	0.68	China	Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Adolescent Self-Rating Life Event Checklist	0.39/−0.10	0.08/0.33	0.40/−0.06	−0.12/0.43	0.54/−0.08	−0.09/0.38	−0.08	−0.05	−0.04

[a] SK = Self-kindness
[b] SJ = Self-judgment
[c] CH = Common humanity
[d] I = Isolation
[e] M = Mindfulness
[f] OI = Over-identification

Appendix B. Study characteristics of the included studies with self-warmth and self-coldness. Figures before the slash are the effect sizes with psychological well-being and figures after the slash are the effect sizes with psychological distress

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	Self-warmth[a]	Self-coldness[b]	Self-warmth and self-coldness
Babenko and Guo (2019)	Medical students	200	–	0.6	Canada	Oldenburg Burnout Inventory – Student version (engagement)	Oldenburg Burnout Inventory – Student version (exhaustion)	0.17/ −0.32	−0.25/ 0.44	
Bengtsson et al. (2016)	Students	256	12.9	0.57	Sweden					−0.07
Bohadana, Morrissey, and Paynter (2019)	Parents of children with Autism Spectrum Disorder	139	38.9	0.86	Australia	Quality of Life in Autism Scale	Parenting Stress Index	0.44/ −0.41	−0.36/ 0.50	
Bolt, Jones, Rudaz, Ledermann, and Irons (2019)	People in a romantic relationship	342	0.63	27.1	–	Couple Satisfaction Index		0.16/−	−0.13/−	−0.53
Booth, McDermott, Cheng, and Borgogna (2019)	Male adults	777	24.1	0	United States		Abbreviated Masculine Gender Role Stress Scale	−/−0.15	−/0.26	−0.65
Brenner et al. (2018) – Sample 1	Students	457	19.2	0.63	United States	Satisfaction with Life Scale; The Flourishing Scale; Positive and Negative Affect Schedule	Kessler Psychological Distress Scale – 6; Depression Anxiety Stress Scale; Positive and Negative Affect Schedule	0.50/ −0.36	−0.46/ 0.55	−0.56
Brenner et al. (2018) – Sample 2	Community adults	794	36.7	0.72	–	Satisfaction with Life Scale; The Flourishing Scale; Positive and Negative Affect Schedule	Kessler Psychological Distress Scale – 6; Depression Anxiety Stress Scale; Positive and Negative Affect Schedule	0.42/ −0.37	−0.42/ 0.60	−0.52
Brenner et al. (2017)	Students	1115	19.4	0.56	United States		Depression Anxiety Stress Scale (short form)	−/−0.28	−/0.42	−0.50
Brophy et al. (2020)	Community sample	2253	50.3	0.53	German	European Organization for Research and Treatment of Cancer Quality of Life Questionnaire	Beck Depression Inventory Fast Screen; European Organization for Research and Treatment of Cancer Quality of Life Questionnaire	0.02/ −0.06	−0.27/ 0.41	0.22
Brotto, Bergeron, Zdaniuk, and Basson (2020)	Women diagnosed with provoked vestibulodynia	130	32.4	1	Canada		Female Sexual Distress Scale	−/−0.28	−/0.41	
Campbell (2017)	Adolescents	128	16.2	0.64	United Kingdom			–	–	−0.48
Carvalho, Pinto-Gouveia, Gillanders, and Castilho (2019)	Women diagnosed with a chronic pain condition	231	48.5	1	Portugal		Depression Anxiety Stress Scale	−/−0.55		
Chan (2018)	Participants who belong to the LGBT community	1050	25.1	0.53	Hong Kong	Mental Health Continuum (Short Form)	Generalized Anxiety Disorder – 7; Patient Health Questionnaire - 9	0.39/ −0.25	−0.45/ 0.56	−0.29
Chen and Chen (2019)	Community sample	854	35.3	0.57	Taiwan	Ryff's Psychological Well-being Scale	Depression Anxiety Stress Scale	0.52/ −0.21	−0.57/ 0.45	
Cheng (2015)	Students	215	21.1	0.64	Hong Kong	Warwick-Edinburgh Mental well-being Scale; Peace of Mind Scale; Positive and Negative Affect Schedule	Positive and Negative Affect Schedule	0.30/ −0.26	−0.18/ 0.54	−0.10
Chio (2018) – Sample 1	Students	498	19.9	0.70	Hong Kong	Mental Health Continuum (Short Form)	Generalized Anxiety Disorder- 7; Patient Health Questionnaire - 7	0.25/ −0.15	−0.39/ 0.51	0.01
Chio (2018) – Sample 2	Community adults	326	20.2	0.66	Hong Kong	Mental Health Continuum (Short Form); Warwick-	Perceived Stress Scale; Generalized Anxiety Disorder – 7;	0.30/ −0.23	−0.42/ .0.54	−0.12

(*continued*)

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	Self-warmth[a]	Self-coldness[b]	Self-warmth and self-coldness
Chun-Kennedy (2017)	Students	614	22	0.65	United States	Edinburgh Mental Well-being Scale	Patient Health Questionnaire - 9 Counseling Center Assessment of Psychological Symptoms (depression subscale)	−/−0.41	−/0.66	−0.35
Coroiu et al. (2018)	Community adults	2448	50.2	0.54	Germany		Patient Health Questionnaire – 9; Generalized Anxiety Disorder screener	−/−0.04	−/0.43	0.23
Doughty (2016)	Adults with chronic pain	60	53.1	0.65	United Kingdom	Quality of Life Scale	The Hospital Anxiety and Depression Scale	0.60/−0.49	−0.50/0.62	−0.44
Eriksson, Germundsjo, Astrom, and Ronnlund (2018)	Practicing psychologists	101	36.2	0.96	Sweden		Shirom-Melamed Burnout Questionnaire; Perceived Stress Scale	−/−0.44	−/−0.57	
Ferrari, Dal Cin, and Steele (2017)	Adults with diabetes	310	37	0.81	Australia	Well-Being Questionnaire		0.55/−	−0.69/−	−0.43
Ferreira et al. (2018)	Community sample	449	30.2	0.76	Portugal		Depression Anxiety Stress Scale	−/−0.29	−/0.50	−0.38
Gilbert et al. (2017)	Community adults and students	1352	25.9	0.75	–	WARWICK and Edinburgh Well-being Scale	Depression Anxiety Stress Scale	0.48/−0.26	–	−0.41
Hochheiser, Lundin, and Lysaker (2020)	People with schizophrenia or schizoaffective disorder	92	49.4	0.14	United States					−0.04
Kane, Hoogendoorn, Tanenbaum, and Gonzalez (2018)	Adults with Type 2 diabetes	120	–	0.64	United States		Diabetes Distress Scale	−/−0.12	−/0.37	
Kao (2018)	People in recovery	103	37.4	0.85	Hong Kong	Brunnsviken Brief Quality of Life Scale		0.32/−	−0.48/−	−0.08
Kaurin, Schönfelder, and Wessa (2018)	Firefighters	123	38.5	–	Germany		Patient Health Questionnaire - 9	−/−0.13	−/0.57	
Kelly and Tasca (2016)	People with eating disorder	78	28.0	0.97	Canada		The Experience of Shame Scale	−/−0.54	−/0.80	−0.59
Krieger, Berger, and Grosse Holtforth (2016)	People who had completed treatment in a depression treatment efficacy study	125	41.8	0.54	Switzerland		Beck Depression Inventory II; Structured Clinical Interview for DSM-IV Axis I Disorders – Depression Section	−/−0.41	−/0.41	−0.68
Kurebayashi (2020)	Psychiatric nurses	404	40.2	0.58						−0.07
Kwan (2014)	Students	183	20.2	0.75	Hong Kong	Mental Health Continuum (Short Form)		0.51/−	−0.50/−	−0.40
Lahtinen, Järvinen, Kumlander, and Salmivalli (2020)	Students	2385		0.52			Revised Beck Depression Inventory	−/−0.32	−/0.53	−0.25
López et al. (2015)	Community sample	1736	54.9	0.55	Netherlands	Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Center of Epidemiologic Studies Depression Scale; Perceived Stress Scale	0.29/−0.23	−0.11/0.51	–
Lopez et al. (2018)	Community sample	734	55.7	0.55			Center of Epidemiologic Studies Depression Scale	−/−0.24	−/0.53	−0.16
López, Sanderman, Ranchor, and	Community adults	328	57.0	0.55	Netherlands	Positive and Negative Affect Schedule	Center of Epidemiologic Studies Depression	0.35/−0.27	−0.24/0.54	–

(*continued*)

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	Self-warmth[a]	Self-coldness[b]	Self-warmth and self-coldness
Schroevers (2018)							Scale; Positive and Negative Affect Schedule			
Lucena-Santos, Carvalho, da Silva Oliveira, and Pinto-Gouveia (2017)	Women in treatment for weight loss	294	41.9	1	Brazil			–	–	−0.52
Mak et al. (2018)	Community adults	2161	33.6	0.73	Hong Kong	World Health Organization - 5	Kessler Psychological Distress Scale - 6	0.57/−0.44	–	
Naismith, Guerrero, and Feigenbaum (2019)	People with personality disorder	53	32	0.83	United Kingdom					−0.41
Neff et al. (2018) – Sample 1	Community adults	188	N/R	N/R	United States	Subjective Happiness Scale; Satisfaction with Life Scale; Positive and Negative Affect Schedule		0.61/−	−0.64/−	–
Neff et al. (2018) – Sample 2	Community adults	192	–	–	United States		Depression Anxiety Stress Scale; Penn State Worry Scale; Positive and Negative Affect Schedule	−/−0.47	−/.0.67	–
Neff et al. (2018) – Sample 3	Community adults	1355	37.2	0.63	United States			–	–	−0.70
Neff et al. (2018) – Sample 4	Community adults	43	–	–	United States			–	–	−0.47
Pandey, Tiwari, Parihar, and Rai (2021)	Students	272	23.5	0.51	India	Mental Health Continuum – Short Form		0.25/−	0.03/−	−0.11
Pedro, Branquinho, Canavarro, and Fonseca (2019)	Women in the postpartum period	686	32.1	1	Portugal		Edinburgh Postnatal Depression Scale	−/−0.52	−/0.59	−0.61
Potter, Yar, Francis, and Schuster (2014)	Community adults	211	30.2	0.66	Australia		Liebowitz Social Anxiety Scale	−/−0.28	−/0.51	−0.28
Proeve et al. (2018)	People diagnosed with depressive or anxiety disorders	32	49.8	0.59	Australia		Depression, Anxiety and Stress Scale	−/−0.05	−/0.37	−0.60
Pullmer, Zaitsoff, and Coelho (2019)	Adolescents who were receiving specialized eating disorder treatment	58	15.5	1	Canada		The Hopkins Symptom Checklist	−/−0.52	−/0.60	−0.67
Seligowski et al. (2015)	Students	604	19.8	0.66	United States	Rand Health Quality of Life Scale – Mental Component Summary; Subjective Happiness Scale; WARWICK-Edinburgh Mental Well-Being Scale		0.32/−	−0.46/−	−0.23
Ștefan (2019)	Students	63	18.8	0.75	Romania		The Liebowitz Social Anxiety Scale	−/−0.25	−/0.53	−0.54
Stolow et al. (2016)	Children and adolescents	193	13.0	0.59	United States		Children's Depression Inventory	−/−0.15	−/0.58	0.07
Toole and Craighead (2016)	Female students	80	18.8	1	United States			–	–	−0.56
Van der Donk et al. (2020) - sample 1	Cancer patients	245	–	–	Netherlands	Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Center of Epidemiologic Studies Scale	0.43/−0.13	−0.10/0.44	
Van der Donk et al. (2020) - sample 2	Matched community sample	245	–	–	Netherlands	Positive and Negative Affect Schedule	Positive and Negative Affect Schedule; Center of	0.24/−0.07	0.01/0.47	

(*continued*)

Study	Participants	Sample recruited	Age	% female	Location	Well-being measures	Psychological distress measures	Self-warmth[a]	Self-coldness[b]	Self-warmth and self-coldness
Wagner, Schindler, and Reinhard (2017)	Students	136	22.6	0.85	Germany		Epidemiologic Studies Scale	–	–	−0.68
Wong and Yeung (2017)	Students	601	22.6	0.80	United States	Meaning of Life Questionnaire		0.43/–	−0.35/–	−0.53
Yip et al. (2017)	Clinical psychologists and trainees	77	35.1	0.83	Hong Kong		Professional Quality of Life Scale (Secondary traumatic stress & burnout)	−/−0.29	−/0.44	−0.53
Yu and Mak (2019)	Students	613	20.5	0.69	Hong Kong	Mental Health Continuum (Short Form)	Perceived Stress Scale; Generalized Anxiety Disorder – 7; Patient Health Questionnaire - 9	0.40/−0.18	−0.35/0.53	−0.02
Zeifman, Ip, Antony, and Kuo (2021)	Students	130	21	0.83	Canada		Depression Anxiety Stress Scale (depression subscale)	−/−0.36	−/0.67	−0.48
Zhang (2018)	Students	354	20.9	0.68	Hong Kong	Mental Health Continuum; Peace of Mind Scale		0.37/–	−0.42/–	,00
Zhu et al. (2019)	Cancer patients	153	50.8	0.66	China		Patient Health Questionnaire – 9; State Trait Anxiety Inventory; The Checklist Individual Strength	−/−0.17	−/0.36	0.11

[a] self-warmth refers to the composite score obtained from the average of self-kindness, common humanity, and mindfulness.
[b] self-coldness refers to the composite score obtained from the average of self-judgment, isolation, and over-identification.

Appendix C. Effect sizes of self-warmth and self-coldness

	k	N	r	Z	95% CI	P	Q	I^2
Well-being								
Self-warmth	27	16,483	0.38	10.14	0.32 to 0.45	<0.001	630.21***	95.87
Self-coldness	25	12,970	−0.36	−9.23	−0.43 to −0.29	<0.001	474.90***	94.95
Psychological distress								
Self-warmth	42	24,751	−0.29	−11.73	−0.33 to −0.24	<0.001	544.57***	92.47
Self-coldness	39	21,699	0.52	28.57	0.49 to 0.55	<0.001	267.58***	85.80
Self-compassion								
Self-warmth and self-coldness	46	23,556	−0.35	−6.92	−0.44 to −0.26	<0.001	2800.02***	98.39

*** $p < .001$.

Appendix D. Moderator analyses on self-warmth, self-coldness, mental well-being, and psychological distress

Moderators	Effect sizes	k	Slope	SE	Z	R^2
Dialecticism	Self-warmth and self-coldness	33	0.54*	0.25*	2.12*	0.12*
Collectivism	Self-warmth and well-being	24	0.00	0.00	0.32	0.00
	Self-coldness and well-being	23	0.00	0.00	0.27	0.00
	Self-warmth and distress	40	0.00	0.00	0.09	0.00
	Self-coldness and distress	38	0.00	0.00	0.29	0.00

* $p < .05$.

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Floria H. N. Chio, PhD, Assistant Professor, Department of Counselling and Psychology, Hong Kong Shue Yan University, Hong Kong.

Winnie W. S. Mak, PhD, Professor, Department of Psychology, The Chinese University of Hong Kong, Hong Kong.

Ben C. L. Yu, MPhil, PhD Student, Department of Psychology, The Chinese University of Hong Kong, Hong Kong.