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Mechanisms of Change in the Relationship between Self-Compassion, Emotion Regulation, and Mental Health: A Systematic Review

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Background: Research suggests that self-compassion may improve mental health by promoting emotion regulation (Berking & Whitley, 2014). This review aimed to identify studies which investigated the relationship between self-compassion, emotion regulation, and mental health in order to examine the role of emotional regulation as a mechanism of change. **Methods:** Searches were conducted in PsycINFO, CINAHL, Medline complete, Web of Science and Scopus databases. Inclusion criteria required publications to be: peer reviewed, published in English, contain validated measures of self-compassion and emotion regulation, and report a direct analysis on the relationship between these constructs. **Results:** The search yielded five studies which met inclusion criteria. Emotion regulation significantly mediated the relationship between self-compassion and mental health. This pattern was consistent across community and clinical samples, for a range of mental health symptoms including stress, depression, and post-traumatic stress disorder. A critical limitation of the review was that all included studies used cross-sectional data, limiting interpretations regarding causation. **Conclusions:** Results provide preliminary evidence that emotion regulation may be a mechanism of change in the relationship between self-compassion and mental health. Self-compassion may be a pertinent preliminary treatment target for individuals who avoid experiences of emotions.

Keywords: emotion regulation, mental health, self-compassion, systematic review

INTRODUCTION

Self-compassion has been characterised in the literature as the non-judgmental acceptance of one's own suffering, whilst also directing kindness towards oneself (Gilbert, 2014; Neff, 2003a, 2003b). Neff's (2003a) early conceptualisation

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of self-compassion is based on the Buddhist tradition of well-being, which focuses on understanding the self, whereas Gilbert's (2014) alternative yet complementary theoretical approach to self-compassion is based on evolutionary science and attachment theory. Research consistently supports self-compassion as a healthy way of relating to oneself that is positively related to positive mental health and negatively related to poor mental health (Gilbert & Procter, 2006; Neff, 2003a). Research into the mechanisms of change in self-compassion is still in the early stages (Findlay-Jones, 2017). Yet self-compassion has been found to modify negative emotions and engender more positive emotions, suggesting that self-compassion has emotion regulation at its core (Berking & Whitley, 2014; Neff, Kirkpatrick, & Rude, 2007). The current review aims to synthesise the available evidence in the literature on the relationship between self-compassion and emotion regulation and assess whether emotion regulation is a mechanism through which self-compassion impacts mental health.

Self-Compassion

Self-compassion is a healthy way of relating to one's self involving three core dimensions (Neff, 2003a). These dimensions include: (1) self-kindness, treating oneself with kindness versus harsh self-criticism or judgment; (2) common humanity, acknowledging that suffering is a common human experience versus isolation and disconnection; and (3) mindfulness, accepting suffering while holding it in balanced awareness versus over-identification with suffering. Neff (2003a) conceptualised and operationalised this construct in the Self-Compassion Scale (SCS). Both the SCS and its short form (SCS-SF; Raes, Pommier, Neff, & Van Gucht, 2011) measure trait, self-reported self-compassion and are widely used in the self-compassion literature. A different yet complementary perspective, Gilbert's (2014) evolutionary approach, is based upon a growing body of neuroscientific evidence exploring the interaction between three affect regulation systems: threat protection and social ranking, seeking and acquiring, and soothing. These affect systems are theorised to co-regulate in healthy individuals. Gilbert (2014) argues that individuals raised in safe and supportive environments should be high in self-compassion and have greater capacity to activate and maintain feelings of safety and warmth linked to the self-soothing system. Conversely, individuals who receive inadequate care in early development or are raised in stressful or threatening environments may be colder, more self-critical, and have an under-developed self-soothing system and a hyper-aroused threat system. These traits may further activate defensive emotions (e.g. anxiety, depression) and contribute to lower levels of self-compassion (Gilbert & Proctor, 2006). Illustratively, Neff and McGehee (2010) found that university students who recalled warm and supportive caregivers tended to have higher levels of self-compassion. Gilbert's (2014) conceptualisation of self-compassion requires

non-judgmental concern for one's well-being, tolerance and understanding of one's distress, and the development of self-warmth.

A number of studies suggest that higher self-compassion scores are associated with improved positive psychological constructs including life satisfaction and social connectedness (Barnard & Curry, 2011; Neff, 2003a). Lower scores of self-compassion are consistently associated with symptoms such as anxiety, depression, narcissism, self-criticism, and avoidance (Leary, Tate, Adams, Allen, & Hancock, 2007; Macbeth & Gumley, 2012; Neff, 2003a; Neff & Vonk, 2009). In studies involving undergraduate students, Leary et al. (2007) found that induced self-compassion was associated with reduced negative affect and emotional reactivity in response to everyday difficult situations. To date, much of the self-compassion research has been correlational, so cannot denote causality, yet these initial associations suggest that interventions which increase self-compassion may hold promise as approaches to improve mental health.

Intervention research in both clinical and community populations suggests that while self-compassion is a dispositional trait, it is also a skill that can be taught, practiced, and built into the identity of individuals who are low in self-compassion (Gilbert & Procter, 2006; Neff & Germer, 2013). The Mindful Self-Compassion program (MSC; Neff & Germer, 2013) is an 8-week group intervention which aims to cultivate self-compassion through taught meditation and self-compassion skills. The MSC program was developed and assessed in community populations, finding significant increases on measures of self-compassion, mindfulness, and life satisfaction, with decreases in symptoms of depression, anxiety, and stress for participants relative to wait-list controls (Neff & Germer, 2013). Gilbert and colleagues designed Compassionate Mind Training (CMT), a group intervention targeting clinical populations, particularly those high in shame and self-criticism, often related to trauma (Gilbert, 2014; Gilbert & Irons, 2005; Gilbert & Procter, 2006). Gilbert and Procter (2006) evaluated a CMT intervention which consisted of 12 six-hour sessions with a group of six patients with long-term, clinically diagnosed personality disorders. All patients showed significant post-treatment reductions on measures of depression, anxiety, shame, submissive behavior, feelings of inferiority, and self-critical thoughts. Self-compassion interventions are predicated on facing negative emotions with self-kindness rather than negative self-appraisals (e.g. self-criticism, shame) which are characteristic of maladaptive emotion regulation (Berking & Whitley, 2014; Gilbert & Procter, 2006; Neff & Germer, 2013).

Emotion Regulation

Emotion regulation refers to automatic and cognitive processes that interact to influence the duration, intensity, and expression of emotions (Gratz & Roemer, 2004). It is well established that individuals differ in their use of emotion regulation strategies and that deficits in emotion regulation are associated with

measures of mental health (Aldao, Nolen-Hoeksema, & Schweizer, 2010). Aldao et al.'s (2010) meta-analysis of emotion regulation across psychopathology clarified the exact nature of deficits in emotion regulation for a range of disorders. For example, individuals diagnosed with generalised anxiety disorder display deficits in emotional clarity, understanding, reactivity, and acceptance. Individuals with emotion regulation deficits often employ maladaptive strategies to regulate negative emotions (e.g. avoidance, rumination, self-harm, or substance abuse) (Berking & Whitley, 2014; Gratz & Roemer, 2004). Maladaptive emotion regulation strategies reduce distress in the short term, but increase autonomic arousal and cognitive load in the long term, resulting in emotion dysregulation (Berking & Whitley, 2014; Gratz & Roemer, 2004). Adaptive emotion regulation is therefore essential for mental health and is often a target of treatment (Gratz & Roemer, 2004).

Various taxonomies of emotion regulation have been proposed. Gratz and Roemer's (2004) multidimensional model of emotion dysregulation, the Difficulties in Emotion Regulation Scale (DERS), is a widely used measure. The DERS was designed to assess emotion regulation strategies individuals may potentially have difficulty with, including: awareness, clarity, acceptance of emotions, access to adaptive strategies, maintaining goal-directed behavior, and impulse control. Similarly, the Berking and Znoj (2008) Emotion Regulation Skills Questionnaire (ERSQ) was designed to assess adaptive emotion regulation skills including awareness, sensations, clarity, understanding, acceptance, tolerance, willingness to confront, modification of negative emotions, and self-support. Research suggests that accepting, tolerating, and modifying negative emotions are the most crucial emotion regulation strategies for maintaining and restoring mental health (Berking & Whitley, 2014).

Self-Compassion and Emotion Regulation Research

Self-compassion and adaptive emotion regulation both independently demonstrate negative relationships with a range of mental health disorders (Aldao et al., 2010; Berking & Whitley, 2014; Macbeth & Gumley, 2012; Neff, 2003a). Research is now starting to examine how these two constructs interact to protect against poor mental health outcomes. In a sample of clinically depressed adults, Diedrich, Grant, Hofmann, Hiller, and Berking (2014) found that self-compassion instructions decreased experimentally induced depressed mood, as compared to the waiting condition. This promising research suggests that higher levels of self-compassion may enable more adaptive emotion regulation. Krieger, Altenstien, Baettig, Doerig, and Holtforth (2013) found that the maladaptive emotion regulation strategies, cognitive and behavioral avoidance, mediated the relationship between self-compassion and depression in a clinically depressed adult sample. This suggests that low self-compassion may impact depression via

deficits in emotion regulation, in particular experiential avoidance (Krieger et al., 2013; Neff, 2003b).

More recent research has examined the physiological responses associated with emotion regulation. In one such study, self-compassion was found to negatively predict stress hormones found in saliva after a psychosocial stressor (Breines et al., 2015). Self-compassion has also been linked with high vagally mediated heart rate variability (vmHRV), which has been suggested as a physiological index of emotion regulation (Svendsen et al., 2016). High vmHRV indicates increased parasympathetic influence on the heart via the vagal nerve (Svendsen et al., 2016). Svendsen et al. (2016) used an ecologically validated 24-hour measure of vmHRV and found that self-compassion was associated with high vmHRV in young healthy adults and led to faster recovery from stress, suggesting more flexible emotion regulation skill. These results offer physiological support to Gilbert's (2014) theory that self-compassion may activate parasympathetic activity and down-regulate sympathetic activity. Recent research provides some evidence to suggest that emotion regulation may be a key process through which self-compassion impacts mental health (Berking & Whitley, 2014; Neff & Germer, 2013); however, no review has systematically assessed this relationship.

Aims

The aim of this systematic review was to synthesise the available research investigating the relationship between self-compassion and emotion regulation. In addition, we hoped to investigate the role of emotion regulation as a mechanism of change in the relationship between self-compassion and mental health outcomes. Understanding the precise relationship may provide direction for new research and assist in the design of interventions tailored for specific clinical and non-clinical populations. Due to the exploratory nature of this review, any study design that directly analysed this relationship, in any population, was included.

METHOD

Search Strategy

The protocol for this review complies with the latest Preferred Reporting Items for Systematic Reviews and Meta-Analyses Guidelines (PRISMA; Moher, Liberati, Tetzlaff, & Altman, 2009). The search terms were generated from scoping searches and were kept broad to capture all potentially relevant studies. Two search terms focused on the constructs of self-compassion, and emotion regulation. The following terms were used: "compassion*" OR "self-compassion*" OR "self compassion*" OR "regulat*" OR "emotion* regulat*" OR "self regulat*" OR "self-regulat*" OR "dysregulat*" OR "reactivity" OR

"self-control" OR "self control". No year range was specified for the search and the final searches were conducted on 29 April 2017, using the following electronic bibliographic databases: PsycINFO, CINAHL, Medline complete, Web of Science and Scopus. Databases were searched within the "title" and "abstract" fields and search terms were combined with BOOLEAN operators. Manual searches of the reference lists of relevant papers were conducted for additional papers.

Eligibility Criteria

Titles and abstracts were examined to identify relevant studies for inclusion in the review, full manuscripts were retrieved for the identified studies and assessed for inclusion. Study selection was conducted by one reviewer, with a second reviewer independently screening 16 per cent of the studies for inter-rater reliability verification. There were no discrepancies; in all cases agreement was reached. The inclusion and exclusion criteria used in the screening process along with the rationale are presented in Table 1.

Data Extraction

A general data extraction form was created and piloted on five studies. No modifications were deemed necessary. Limited data coding was required due to the small number of variables and studies extracted. Coding included: clinical vs. non-clinical population, emotion regulation mediator variable vs. any other mediator variable. The data extracted from each study included: author, year of publication, country of publication, mean age of participants, sample size, participant and setting characteristics, outcome measures, funding sources, and main findings. The studies included in this review reported data in full and no contact with authors was required.

Planned Risk of Bias

Based on scoping searches it was expected that included studies would be exploratory and non-experimental in nature. Therefore, Hawker, Payne, Kerr, Hardy, and Powell's (2002) quality appraisal tool was used to assess risk of bias and quality assessment.

Planned Synthesis of Results

The extracted data were examined for key results across the studies and conclusions drawn based on consistency of findings. No further additional analyses were planned.

TABLE 1
Study Inclusion and Exclusion Criteria Used in the Screening Process

Inclusion criteria	*Exclusion criteria*	*Rationale*
Published journal	Unpublished (e.g. dissertations and grey publications)	Published studies have undergone a peer-review process. The quality of unpublished studies cannot be determined and they were therefore excluded.
Empirical design	Non-empirical (e.g. reviews)	In order to synthesise the data and add to our understanding of the literature non-empirical designed studies were excluded (e.g. case/cohort studies).
English	Non-English	Translation of non-English studies poses too many new difficulties (e.g. interpretation errors).
Validated self-compassion measure	No validated self-compassion measure	There are various conceptualisations of compassion and self-compassion in the literature. This study focused on compassion directed at the self and therefore a validated self-compassion measure was required. This increased the likelihood that included studies were referring to a uniform underlying construct.
Validated emotion regulation measure	No validated emotion regulation measure	The term emotion regulation is sometimes used synonymously with other related terms (e.g. self-regulation, emotional-intelligence). In order to keep the data homogeneous a validated emotion regulation measure was required.
Explicit analysis of the relationship between self-compassion and emotion regulation	Studies that measured these variables with no comparison analysis	As the research question is to explore the relationship and contributions between self-compassion and emotion regulation, only studies that directly analyzed the relationship were included (e.g. via mediation).

RESULTS

Figure 1 depicts a summary of the searching and screening process, including reasons for exclusion, based on PRISMA recommendations. Searching of the databases yielded a total of 1,536 records. After duplicates were removed, 1,140 records remained. One further study was identified via hand searching reference lists. Following the "title and abstract" screen, 52 articles were full-text scanned for inclusion. Of these, 47 were excluded, most due to not including a validated self-compassion or emotion regulation measure. Eleven studies which included

both self-compassion and emotion regulation measures were excluded as they did not evaluate the relationship between the two measures. The remaining studies were included in the review ($N = 5$).

Study Characteristics

A summary of the studies' characteristics and findings are presented in Table 2. The studies included in this review were published between 2011 and 2017. The studies were conducted in various countries including the USA (Barlow,

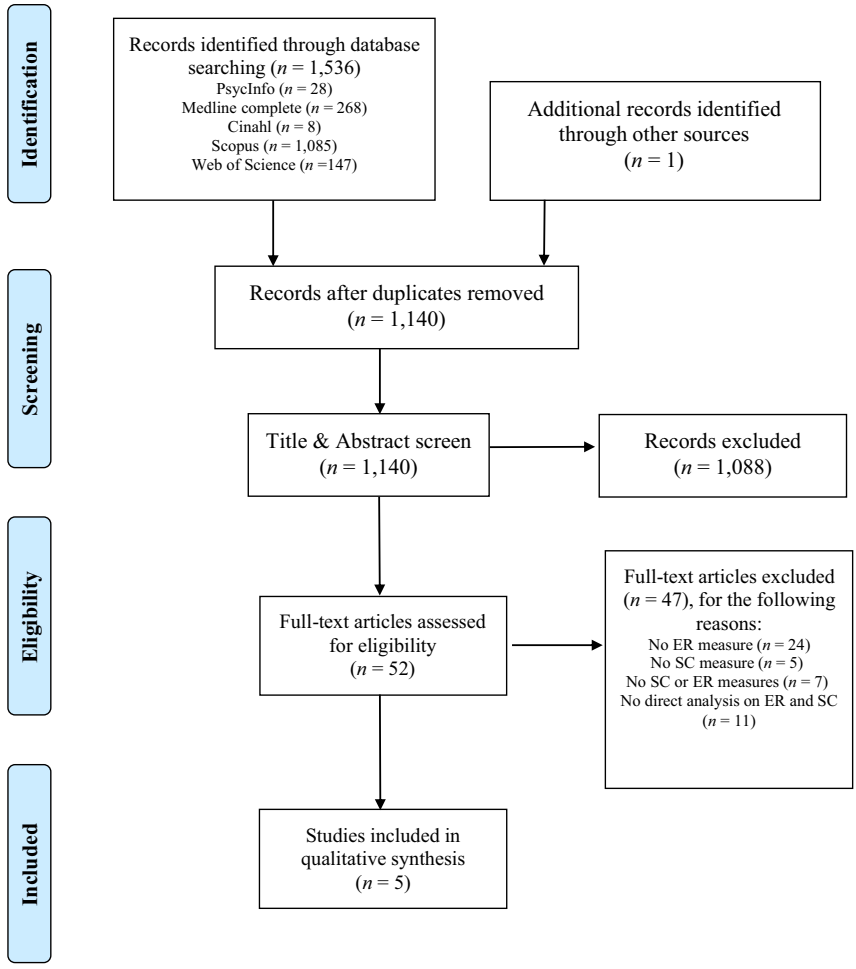

FIGURE 1. PRISMA flow diagram of the selection process.

TABLE 2
Summary of the Characteristics and Findings of the Studies Included in this Review

Author	*Year*	*Country*	*Age: M(SD)*	*N*	*Participants/ recruitment*	*Measures*	*Study design*	*Findings*
Barlow, Goldsmith Turow, & Gerhart	2017	USA	21.21 (5.83)	466	University students course credit	CAT, IES, SCS & DERS	Cross-sectional, self-report online	Five significant pathways between child abuse & Post-Traumatic Stress Disorder (PTSD) symptoms were found via combinations of emotion dysregulation, negative trauma appraisal & self-compassion.
Diedrich, Burger, Kirchner, & Berking	2017	Germany	35.9 (12.0)	69	Clinically depressed adults. Hospital outpatients	SCS, BDI-II, ERSQ	Cross-sectional, self-report	Adaptive emotion regulation skills mediated the self-compassion–depression severity relationship. Tolerance of negative emotions mediated the self-compassion–depression relationship.
Finlay-Jones, Rees, & Kane	2015	Australia	36.25 (11.79)	198	73 psychologist & 125 post-graduate psychology trainees in clinical work recruited via email	SCS-SF, DERS (awareness subscale excluded), DASS-21 (stress subscale only)	Cross-sectional, self-report online	Difficulties in emotion regulation fully mediated the self-compassion–stress relationship.

Table 2 *(Continued)*

Author	*Year*	*Country*	*Age: M(SD)*	*N*	*Participants/ recruitment*	*Measures*	*Study design*	*Findings*
Scoglio, Rudat, Garvert, Jarmolowski, Jackson, & Herman	2015	USA	41.18 (12.45)	168	Outpatient women with PTSD, in the severe trauma range. Recruited from urban community clinics also participating in a larger ongoing multisite clinical trial	CAPS, SCS-SF, DERS, CD-RISC	Cross-sectional, self-report	Emotion dysregulation mediated the PTSD symptom severity–self-compassion relationship. Emotion dysregulation mediated the self-compassion–resilience relationship.
Vettese, Dyer, Li, & Wekerle	2011	Canada	19.49 (2.23)	81	Inpatient youth with substance abuse issues	DERS, CTQSF, SCS, BSI, SMS	Cross-sectional self-report	Self-compassion mediated the childhood maltreatment severity–later emotion dysregulation relationship.

Note: SCS = Self-Compassion Scale, DERS = Difficulty in Emotion Regulation Scale, CAT = Child Abuse Trauma Scale, IES = Impact of Event Scale, CTQSF = Childhood Trauma Questionnaire Short Form, BSI = Brief Symptom Inventory, SMS = Substance Misuse Scale, CAPS = Clinician Administered PTSD Scale, CD-RISC = Connor-Davidson Resilience Scale, DASS-21 = Depression Anxiety Stress Scale, BDI-II = Beck-Depression Inventory, ERSQ = Emotion Regulation Skills Questionnaire.

TABLE 3
Summary of the Quality Assessment of the Studies Included in this Review

Author	*Year*	*N*	*Population*	*Quality assessment comments*
Barlow, Goldsmith Turow, & Gerhart	2017	466	Non-clinical university students	Clearly reported Introduction, Method & Data, Data Analysis and Results. Convenience sample recruited for university course participation, may limit transferability of findings to general population. No response or attrition data reported. Self-report measures used; clinician interview would lend greater confidence in the measurement of PTSD symptom severity. No mention of follow-up or support for participants in distress.
Diedrich, Burger, Kirchner, & Berking	2017	69	Clinically depressed adults. Hospital outpatients	Clearly reported Abstract, Introduction, Method & Data, Sampling, Data Analysis, Results, Transferability and Implications. Sample size justified a priori given selected analyses and past research. Paper acknowledged concerns regarding sufficient sample size to conduct subgroup analyses. Minimal mention of follow-up or support provided for high-risk participants.
Finlay-Jones, Rees, & Kane	2015	198	Psychologists (N = 73) & post-graduate psychology trainees (N = 125)	Clearly reported Abstract, Introduction, Method & Data, Sampling, Data Analysis, Results, Transferability and Implications. Unable to report response rate data given convenience sampling. No power analysis reported. Sample was self-selected to participate and may be biased as a result (i.e. may have a natural interest or skill in practicing self-compassion).
Scoglio, Rudat, Garvert, Jarmolowski, Jackson, & Herman	2015	168	Women with PTSD, severe trauma range. Outpatients at urban community clinics	Clearly reported Introduction, Method & Data, Sampling, Data Analysis, Results, Transferability and Implications. Robust clinically administered interview used for PTSD diagnosis. Study reported here was part of a larger study. Reader referred to another paper for details regarding ethics.

Table 3 *(Continued)*

Author	*Year*	*N*	*Population*	*Quality assessment comments*
Vettese, Dyer, Li, & Wekerle	2011	81	Young adults (ages 16–24 years) with substance abuse issues, childhood maltreatment in the low to moderate range. All were inpatients at a hospital-based youth addiction/ mental health treatment program	Clearly reported Introduction, Method & Data, Data Analysis, Results, Transferability and Implications. Paper acknowledged concerns regarding sufficient sample size to provide adequate power. High recruitment rate with only one participant declining and a reason is provided. Whether any participants were excluded based on inclusion/exclusion criteria is not explicitly reported.

Goldsmith Turow & Gerhart, 2017; Scoglio et al., 2015); Australia (Findlay-Jones, Rees, & Kane, 2015); Canada (Vettese, Dyer, Li, & Wekerle, 2011) and Germany (Diedrich, Burger, Kirchner, & Berking, 2017). Two studies used non-clinical samples recruited via university advertising; a convenience sample of university students (Barlow et al., 2017) and psychologists and trainee psychologists (Findlay-Jones et al., 2015). The three remaining studies reported on clinical samples; two recruited from outpatient settings involving clinically depressed adults (Diedrich et al., 2017), and women with PTSD (Scoglio et al., 2015), whilst one study recruited from an inpatient setting including youth seeking treatment for substance abuse (Vettese et al., 2011). All five studies used a cross-sectional design with self-report measures on the variables of interest. All of the studies used the SCS (Neff, 2003a); four studies used the DERS (Gratz & Roemer, 2004); and one used the German version of the ERSQ (Berking & Znoj, 2008).

Research support was received from research institutions, not private corporations, for three of the studies. The institutions were: the German Research Foundation Grant (Diedrich et al., 2017); the National Institute of Mental Health USA (Scoglio et al., 2015); and the Canadian Institute of Health (Vettese et al., 2011). The remaining two studies reported no financial support nor potential conflict of interest. Table 2 presents a summary of the included studies' characteristics.

Risk of Bias

Hawker et al.'s (2002) quality appraisal tool was used to assess risk of bias and quality assessment. We used the scale to identify potential limitations or methodological weaknesses in each paper. Each study was assessed on nine

components (abstract and title, introduction and aims, method and data, sampling, data analysis, ethics and bias, results, transferability/generalisability, implications and usefulness). The included studies tended to demonstrate high quality and clear titles, abstracts and introductions, as well as clearly reporting the analyses conducted and results found. However, all the included studies: were cross-sectional in design, which may limit the generalisability of results; tended to lack adequate power analyses; and often provided only brief detail regarding ethical issues such as providing follow-up services or support to high-risk populations. Further comments regarding the quality assessment are listed in Table 3.

Results of Individual Studies

Four studies reported a strong, significant negative relationship between self-compassion and emotion dysregulation and one study reported a strong, significant positive relationship between self-compassion and adaptive emotion regulation skills. A summary of bivariate correlations between self-compassion and other study variables is presented in Table 4.

Across the five included studies assessing self-compassion and emotion regulation, all reported statistically significant mediation analyses. The first study found that emotion regulation mediated the relationship between self-compassion and stress in both psychologists and trainee psychologists (Finlay-Jones et al., 2015). Diedrich et al. (2017) found that emotion regulation mediated the relationship between self-compassion and depression in an adult clinical sample.

TABLE 4
Bivariate Correlations between Self-Compassion and Other Study Variables

Author	*Variable correlated with self-compassion*	*r*	*p*
Barlow et al. (2017)	Emotion dysregulation	−.70	.001
	PTSD symptoms	−.33	.001
	Childhood abuse	−.33	.001
	Trauma appraisals	−.47	.001
Scoglio et al. (2015)	Emotion dysregulation	−.70	.01
	PTSD symptoms	−.28	.01
	Resilience	.53	.01
Vettese et al. (2011)	Emotion dysregulation	−.69	.001
	Childhood maltreatment	−.34	.01
	Addiction severity	−.33	.01
	Psychological symptom severity	−.56	.001
Diedrich et al. (2017)	Emotion regulation skills	.40	.05
	Depression	−.35	.05
Findlay-Jones et al. (2015)	Emotion dysregulation	−.56	.001
	Stress	−.36	.001

Interestingly, the researchers found when reversing these constructs that self-compassion did not mediate the relationship between emotion regulation and depression. The authors also conducted a multiple mediation analysis to examine the impact of the specific emotion regulation skills on depression. The results showed that tolerance of negative emotions was the only skill that significantly mediated the relationship between self-compassion and depressive symptoms.

Three of the included studies reported a specific trauma focus. In a community sample of university students, Barlow et al. (2017) examined exposure to childhood abuse and current post-traumatic stress disorder (PTSD) symptoms, specifically avoidance and intrusion symptoms, via self-report measure. The measure of both PTSD symptoms, the Impact of Events Scale (IES), is widely used in community samples and is not a diagnostic tool. Five distinct and statistically significant pathways were found between childhood abuse and PTSD symptoms, via a combination of mediator variables (negative reappraisal, emotion dysregulation, and self-compassion). Self-compassion was only included in the two weakest pathways and influenced PTSD symptoms via emotion dysregulation. Analyses were repeated for each of the four sub-scales of the Child Abuse Trauma Scale (CAT; Sanders & Becker-Lausen, 1995), including sexual, punishment, neglect, and emotional abuse. All sub-scales produced similar results to child abuse as a total score. Of note, the strongest pathway between childhood abuse and PTSD symptoms was via negative appraisal alone. Vettese et al. (2011) looked at self-compassion among inpatient youth with a history of childhood maltreatment, who were seeking treatment for substance abuse. They found that self-compassion was significantly and negatively related to emotion dysregulation ($r = -0.69$, $p < .001$), over and above other related variables (including childhood maltreatment, addictive severity, and psychological symptom severity). The researchers also found that self-compassion significantly mediated the relationship between childhood maltreatment severity and later emotion dysregulation.

In the final trauma study, Scoglio et al. (2015) investigated self-compassion in female survivors of severe and repeated interpersonal trauma who were seeking treatment for PTSD in a clinical outpatient setting. The results in this vulnerable population suggested that resilience and self-compassion were positively related and that emotion dysregulation mediated the relationship between resilience and self-compassion. They also found that emotion dysregulation mediated the relationship between PTSD symptom severity and self-compassion.

Synthesis of Results

All five studies included in the review used a cross-sectional design; therefore conclusions of causation are limited. Despite this, across the diverse populations included in this review all studies observed strong, significant negative relationships between self-compassion and emotion dysregulation. Three studies found

statistically significant mediations using emotion regulation as the mediator variable between self-compassion and their outcome variable: PTSD symptoms (intrusion and avoidance) (Barlow et al., 2017); stress (Findlay-Jones et al., 2015); and unipolar depression (Diedrich et al., 2017). In addition, Vettese et al. (2011) found a significant mediation effect when self-compassion was the mediator variable between childhood maltreatment and later emotion dysregulation.

Scoglio et al. (2015) and Diedrich et al. (2017) looked at mediation models in opposing directions (i.e. where emotion regulation preceded self-compassion). Scoglio et al. (2015) found that both the severity of PTSD symptoms and emotional resilience independently influenced self-compassion through emotion dysregulation. In contrast, Diedrich et al. (2017) found that self-compassion did not mediate the relationship between emotion regulation and depression.

DISCUSSION

The aim of this systematic review was to summarise the available evidence on the relationship between self-compassion and emotion regulation, and their effects on mental health. Overall, the five included studies consistently found a meaningful relationship between self-compassion and emotion regulation. The small number of studies that met inclusion criteria points to the novelty of this area of research and the exploratory nature of this review. Despite the small number of included studies, the findings consistently suggest that habitual use of self-compassion impacts on mental health by facilitating adaptive emotion regulation, potentially by enabling negative emotions to be processed (Diedrich et al., 2017; Findlay-Jones, 2015). In addition, the findings suggest that the impact of trauma and early childhood maltreatment is associated with the development of low levels of self-compassion and difficulties with emotion regulation (Barlow et al., 2017; Scoglio et al., 2015; Vettese et al., 2011). These findings support the hypothesis that emotion regulation is a mechanism of change in the relationship between self-compassion and mental health.

The review found that self-compassion may attenuate both stress and clinical depression in adult samples by facilitating emotion regulation. Specifically, self-compassion was found to be associated with improvements in depression symptoms via the adaptive emotion regulation strategy, tolerance of negative emotions (Diedrich et al., 2017). Increasing one's ability to tolerate negative emotions may enable integration and processing of negative emotions, consequently reducing the deployment of maladaptive emotion regulation strategies such as avoidance (Berking & Whitley, 2014; Neff & Germer, 2013). This finding supports previous research which suggests that tolerance of negative emotions is a crucial competency for the maintenance and recovery of mental health (Berking & Whitley, 2014).

The current findings suggest that individuals with a history of trauma typically have low levels of self-compassion and high levels of emotion dysregulation,

which are associated with other mental health issues later in life (e.g. PTSD) (Barlow et al., 2017; Scoglio et al., 2015; Vettese et al., 2011). Two studies found that childhood abuse was associated with emotion dysregulation via lower levels of self-compassion (Barlow et al., 2017; Vettese et al., 2011). Symptomology of trauma and past childhood abuse may reduce an individual's ability to be self-compassionate via multiple pathways, and influence each of the three core self-compassion components. Negative trauma appraisals such as self-blame, shame, and higher self-criticism are likely to impede self-kindness; disconnection from others is likely to challenge a sense of common humanity; and chronic hyper-arousal may make mindfulness difficult (Barlow et al., 2017; Neff, 2003a; Scoglio et al., 2015). In addition, the current review found that deficits in emotion regulation are also likely to contribute to self-compassion levels. PTSD symptom severity was found to influence self-compassion via difficulties with emotion regulation in women with an extensive history of trauma (Scoglio et al., 2015). Self-compassion relies on components of emotion regulation (e.g. awareness and acceptance of emotions) and requires the individual to experience and examine their negative emotions (Neff, 2003a, 2003b). In contrast, PTSD along with other trauma-related mental health issues (e.g. depression) rely on experiential avoidance, which is clearly incompatible with self-compassion (Diedrich et al., 2017; Scoglio et al., 2015).

The findings from the trauma-related studies in the current review offer support to Gilbert's (2014) theory that maladaptive early childhood development may lead to an under-developed self-soothing system, a hyper-aroused threat system, and low self-compassion. However, the findings also suggest that habitual use of self-compassion may facilitate adaptive emotion regulation (Barlow et al., 2017; Vettese et al., 2011). Self-compassion may enable individuals to down-regulate hyper-arousal, allowing them to compassionately experience and process negative emotions, and manage distress (Gilbert, 2014; Svendsen et al., 2016). Therefore, self-compassion may be a protective factor for survivors of abuse. These findings support previous evidence that self-compassion facilitates the recovery from the impacts of trauma and other mental health symptoms (Gilbert & Procter, 2006).

Most of the mediation analyses examined in this review found that self-compassion worked through emotion regulation to influence mental health outcomes. In contrast, two studies tested the reverse model and assessed whether emotion regulation worked via self-compassion. Scoglio et al. (2015) found that resilience was associated with higher levels of self-compassion via emotion dysregulation in women with PTSD. Simultaneously, PTSD severity was associated with low levels of self-compassion through emotion dysregulation. On the other hand, Diedrich et al.'s (2017) reversed model found that emotion regulation did not impact depression via self-compassion in adults with unipolar depression. These varying results suggest that the relationship between self-compassion and

emotion regulation may differ across populations and types of mental health symptomology.

This review provides preliminary evidence that emotion regulation may be a mechanism through which self-compassion is associated with mental health outcomes, and offers initial support for an emotion regulation model of self-compassion. It contributes to filling the gap in the literature by highlighting that self-compassion may facilitate adaptive emotion regulation and lessen the chance of maladaptive emotion regulation, potentially enabling enhanced processing of negative emotions (Diedrich et al., 2017). Significant findings across a variety of populations examined in this review support the hypothesis that self-compassion may be a transdiagnostic competency that facilitates adaptive emotion regulation and enables distress management (Berking & Whitley, 2014; Diedrich et al., 2014). However, this review highlighted that the relationship between self-compassion and emotion regulation may work differently in different populations across different contexts.

Limitations of the Included Studies and the Review

Cross-sectional analysis was used exclusively in the included studies. Cross-sectional data do not allow temporal sequencing to be established, limiting causation inference. The exclusive use of self-report measures is another methodological concern. Self-reporting may be vulnerable to reporting errors as it requires accurate self-awareness and may be susceptible to social desirability. Another limitation within the studies are the relatively small sample sizes, with two studies acknowledging concerns regarding sufficient sample size to provide adequate power (Diedrich et al., 2017; Vettese et al., 2011).

The small number of studies included in the review does not allow for large comparisons of results. While some common results were found, the studies used very specific populations: women with PTSD receiving outpatient treatment (Scoglio et al., 2015); clinically depressed adults receiving outpatient treatment (Diedrich et al., 2017); youth seeking inpatient treatment for substance abuse (Vettese et al., 2011); a community sample of university students (Barlow et al., 2017); and psychologists and psychology trainees (Findlay-Jones et al., 2015). It is currently unclear which findings may more readily generalise to broader community and clinical samples.

All studies included in the review were published to ensure an adequate level of quality and scientific scrutiny, and as a result there is a risk of publication bias as published articles are more likely to present positive results. Similarly, all studies were in English and are therefore at risk of language or cultural bias, as studies that yielded different results, and were written in other languages, may not have been identified. These limitations may lead to a limited generalisability of key inferences drawn in this review.

Neff's (2003a) SCS was the only self-compassion measure used across all studies. The SCS may measure dimensions that other conceptualisations of self-compassion may not consider to be integral. For example, Gilbert (2014) focuses on self-soothing without referring to common humanity. In addition, Berking and Whitley (2014) suggest that self-compassion may be more narrowly defined as an emotion regulation skill. Illustratively, there is current debate about the factor structure of the SCS. Some suggest that a two-factor model, a positive and a negative factor, is more appropriate than the SCS total score (Pfattheicher, Geiger, Hartung, Weiss & Schindler, 2017). Similarly, some items in the SCS may capture similar processes to the emotion regulation measures. Acceptance and tolerance of emotions are principal competencies identified in both conceptualisations of self-compassion (Neff, 2003a, 2003b; Gilbert, 2014) and in emotion regulation measures (DERS; Gratz & Roemer, 2004; and ERSQ; Berking & Znoj, 2008). Further clarification of the construct of self-compassion would help demonstrate that research is measuring the same underlying construct.

Future Research

A major limitation of the current research investigating the relationship between self-compassion and emotion regulation is the cross-sectional research design of all papers identified by the review. It is imperative that the findings of this review gain further support from experimental or longitudinal research, to establish causal effect and long-term outcomes. The use of measures other than self-report (e.g. structured clinical interviews, behavioral indices of emotion dysregulation) in ecologically valid contexts may provide more accurate measures of self-compassion and emotion regulation. Experimental research may help identify whether specific components of self-compassion facilitate emotion regulation in different contexts. In addition, experimental research could establish how individual differences affect the impact of self-compassion and the ability to be self-compassionate.

Future research could further examine whether self-compassion works via different emotion regulation strategies across different populations (e.g. non-clinical, clinical). In addition, future research could assess whether different levels of self-compassion aid in the deployment of different emotion regulation strategies. For example, does self-compassion work via tolerance of negative emotion when an individual has low levels of self-compassion? In contrast, does self-compassion work via other high-order emotion regulation strategies (e.g. cognitive reappraisal) when an individual has high levels of self-compassion (Berking & Whitley, 2014)? These future findings may inform how to best utilise self-compassion in the treatments of various disorders.

CONCLUSION

Research has documented the positive relationship between self-compassion and mental health, along with encouraging results from self-compassion interventions (Neff, 2003a, 2003b; Neff & Germer, 2013; Gilbert & Procter, 2006; Zessin, Dickhauser, & Garbade, 2015). The findings of this systematic review suggest that self-compassion impacts mental health in a diverse range of clinical and community populations by facilitating adaptive emotion regulation, potentially enabling integration of negative experiences rather than avoidance. If individuals can learn to be present with their distress, negative emotional processing may be facilitated, reducing the need for maladaptive strategies. Explicitly cultivating self-compassion may be an efficacious treatment target for many mental health disorders.

REFERENCES

Note: References marked with an * were included in the systematic literature review.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion-regulation strategies across psychopathology: A meta-analytic review. *Clinical Psychology Review*, *30*, 217–237. https://doi.org/10.1016/j.cpr.2009.11.004.

*Barlow, R., Goldsmith Turow, R., & Gerhart, J. (2017). Trauma appraisals, emotion regulation difficulties, and self-compassion predict posttraumatic stress symptoms following childhood abuse. *Child Abuse & Neglect*, *65*, 37–47. https://doi.org/10.1016/j.chiabu.2017.01.006.

Barnard, L., & Curry, J. (2011). Self-compassion: Conceptualizations, correlations & interventions. *Review of General Psychology*, *15*, 289–303. https://doi.org/10.1037/a0025754.

Berking, M., & Whitley, B. (2014). *Affection regulation training: A practitioner's manual*. New York: Busines Media. doi. https://doi.org/10.1007/978-1-4939-1022-9_1.

Berking, M., & Znoj, H. (2008). Development and validation of a self-report measure for the assessment of emotion regulation skills. *Zeitschrift fur Psychiatrie, Psychology und Psychotherapie*, *56*, 141–153.

Breines, J.G., McInnes, C.M., Kuras, Y.I., Thoma, M.V., Gianferante, D., Hanlin, L., et al. (2015). Self-compassionate young adults show lower salivary alpha-amaylase responses to repeated psychosocial stress. *Self and Identity*, *14*, 390–402. https://doi.org/10.1080/15298868.2015.1005659.

*Diedrich, A., Burger, J., Kirchner, M., & Berking, M. (2017). Adaptive emotion regulation mediates the relationship between self-compassion and depression in individuals with unipolar depression. *Psychology and Psychotherapy: Theory, Research and Practice*, *90*, 247–263. https://doi.org/10.1111/papt.12107.

Diedrich, A., Grant, M., Hofmann, S., Hiller, W., & Berking, M. (2014). Self-compassion as an emotion regulation strategy in major depressive disorder. *Behaviour Research and Therapy*, *58*, 43–51. https://doi.org/10.1016/j.brat.2014.05.066.

Findlay-Jones, A. (2017). The relevance of self-compassion as an intervention target in mood and anxiety disorders: A narrative review based on an emotion regulation framework. *Clinical Psychologist*, *21*, 90–103. https://doi.org/10.1111/cp.12131.

*Findlay-Jones, A., Rees, C., & Kane, R. (2015). Self-compassion, emotion regulation and stress among Australian psychologists: Testing an emotion regulation model of self-compassion using structural equation modeling. *PLoS ONE*, *10*, 0133481. https://doi.org/10.1371/journal.pone.0133481.

Gilbert, P. (2014). The origins and nature of compassion focused therapy. *British Journal of Clinical Psychology*, *53*, 6–41. https://doi.org/10.1111/bjc.120423.

Gilbert, P., & Irons, C. (2005). Focused therapies and compassionate mind training for shame and self-attacking. In P. Gilbert (Ed.), *Compassion: Conceptualizations, research and use in psychotherapy* (pp. 263–325). London: Routledge.

Gilbert, P., & Procter, S. (2006). Compassionate mind training for people with high shame and self-criticism: Overview and pilot study of a group therapy approach. *Clinical Psychology and Psychotherapy*, *13*, 353–379. https://doi.org/10.1002/cpp.507.

Gratz, K., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the Difficulties in Emotion Regulation Scale. *Journal of Psychopathology and Behavioural Assessment*, *26*, 41–54. https://doi.org/10.1023/B:JOBA.0000007455.08539.94.

Hawker, S., Payne, S., Kerr, C., Hardy, M., & Powell, J. (2002). Appraising the evidence: Reviewing disparate data systematically. *Qualitative Health Research*, *12*, 1284–1299. https://doi.org/10.1177/1049732302238251.

Krieger, T., Altenstien, D., Baettig, I., Doerig, N., & Holtforth, M. (2013). Self-compassion in depression: Associations with depressive symptoms, rumination, and avoidance in depressed outpatients. *Behavior Therapy*, *44*, 501–513. https://doi.org/10.1016/j.beth.2013.04.004.

Leary, M., Tate, E., Adams, C., Allen, A., & Hancock, J. (2007). Self-compassion and reactions to unpleasant self-relevant events: The implications of treating oneself kindly. *Journal of Personality and Social Psychology*, *92*, 887–904. https://doi.org/10.1037/0022-3514.92.5.887.

Macbeth, A., & Gumley, A. (2012). Exploring compassion: A meta-analysis of the association between self-compassion and psychology. *Clinical Psychology Review*, *32*, 545–552. https://doi.org/10.10.16/j.cpr.2012.06.003.

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of Internal Medicine*, *4*, 264–269. https://doi.org/10.1371/journal.pmed.1000097.

Neff, K. (2003a). Development and validation of a scale to measure self-compassion. *Self and Identity*, *2*, 223–250. https://doi.org/10.1080/15529860390209035.

Neff, K. (2003b). Self-compassion: An alternative conceptualization of a healthy attitude toward oneself. *Self and Identity*, *2*, 85–10. https://doi.org/10.1080/15298860390129863.

Neff, K., & Germer, C. (2013). A pilot study and randomized control trial of the mindful self-compassion program. *Journal of Clinical Psychology*, *69*(1), 28–44. https://doi.org/10.1002/jclp.21923.

Neff, K., Kirkpatrick, K., & Rude, S. (2007). Self-compassion and adaptive psychological functioning. *Journal of Research in Personality*, *41*, 139–154. https://doi.org/10.1016/j.jrp.2006.03.004.

Neff, K., & McGehee, P. (2010). Self-compassion and psychological resilience among adolescents and young adults. *Self and Identity*, *9*, 225–240. https://doi.org/10.1080/15298860902979307.

Neff, K., & Vonk, R. (2009). Self-compassion versus global self-esteem: Two different ways of relating to oneself. *Journal of Personality*, *77*, 23–50. https://doi.org/10.1111/j.1467-6494.2008.00537.x.

Pfattheicher, S., Geiger, M., Hartung, J., Weiss, S., & Schindler, S. (2017). Old wine in new bottles? The case of self-compassion and neuroticism. *European Journal of Personality*, *31*, 160–169. https://doi.org/10.1002/per.2097.

Raes, F., Pommier, E., Neff, K., & Van Gucht, D. (2011). Construction and factorial validation of a short form of the Self-Compassion Scale. *Clinical Psychology and Psychotherapy*, *18*, 250–255. https://doi.org/10.1002/cpp.702. PMID:21584907.

Sanders, B., & Becker-Lausen, E. (1995). The measurement of psychological maltreatment: Early data on the Child Abuse and Trauma Scale. *Child Abuse & Neglect*, *19* (3), 315–323. https://doi.org/10.1016/S0145-2134(94)00131-6.

*Scoglio, A.A.J., Rudat, D.A., Garvert, D., Jarmolowski, M., Jackson, C., & Herman, J.L. (2015). Self-compassion and responses to trauma: The role of emotion regulation. *Journal of Interpersonal Violence*. https://doi.org/10.1177/0886260515622296.

Svendsen, J., Osnes, B., Binder, P., Dundas, I., Visted, E., Nordby, H., et al. (2016). Trait self-compassion reflects emotional flexibility through an association with high vagally mediated heart rate variability. *Mindfulness*, *7*, 1103–1113. https://doi.org/10.1007/s12671-016-0549-1.

*Vettese, L., Dyer, C., Li, W., & Wekerle, C. (2011). Does self-compassion mitigate the association between childhood maltreatment and later emotion regulation difficulties? A preliminary investigation. *International Journal of Mental Health and Addiction*, *9*, 480–491. https://doi.org/10.1007/s11469-011-9340-7.

Zessin, U., Dickhauser, O., & Garbade, S. (2015). The relationship between self-compassion and well-being: A meta-analysis. *Applied Psychology: Health and Well-Being*, *7*, 340–364. https://doi.org/10.1111/aphw.12051.