A systematic review of the effectiveness of compassion focused imagery in improving psychological outcomes in clinical and non-clinical adult populations

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A Systematic Review of the Effectiveness of Compassion Focused Imagery in Improving Psychological Outcomes in Clinical and Non-clinical Adult Populations

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Conflict of Interest Statement

The authors have no conflict of interest to declare.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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1.1 Abstract

Background Compassion-focused imagery (CFI) is a technique used to facilitate self-compassion by constructing and exploring imagery of a compassionate ideal. It is commonly used in Compassionate Mind Training, as part of a wider skills training intervention. This review aimed to explore the effectiveness of CFI on psychological outcomes when used as a brief standalone intervention across clinical and non-clinical adult populations. Population-specific effects were also explored.

Methods Following an extensive literature search, twenty studies were identified for inclusion in the review. Quality and risk of bias assessment was completed using the Effective Public Health Practice Project (EPHPP) tool. Where available, effect sizes were calculated for outcome measures of self-compassion, self-criticism and shame. Study findings were qualitatively synthesized.

Results Most of the studies reported improvements in psychological outcomes, such as improvements in self-compassion and positive affect, reduction in self-criticism, shame and paranoia. Across measures of self-compassion, self-criticism and shame, the effect sizes ranged between 0.02 - 1.1 and estimated treatment effects range between 0.09 - 1.39. Preliminary evidence is promising, with most studies reporting improvements in psychological outcomes; however the evidence is limited by the methodological challenges and heterogeneity within the literature. Studies which implemented CFI in severe head injury samples reported limited improvements. Improvements in paranoia measures were more consistently reported in non-clinical samples, when compared to studies using clinical samples. High levels of self-criticism emerged as an important potential barrier in individuals' ability to engage with CFI tasks.

Key Practitioner Message

- The literature includes studies where CFI was used as a stand-alone intervention across different clinical populations.
- Preliminary evidence indicated that most studies reported improvements in psychological outcomes when CFI was used as a stand-alone intervention.
- Variations in the operationalisation of compassion and heterogeneity within the literature require caution when interpreting the outcome of the effectiveness of CFI as a stand-alone intervention.
- Some clinical populations (such as severe head injury or clinical paranoia) may require additional input to benefit from CFI interventions.
- High rate of self-criticism was highlighted by several studies as a potential barrier in engaging with CFI tasks.

Keywords: Compassion Focused Imagery, Compassion Focused Therapy, Compassionate Mind Training

1.2 Introduction

1.2.1 Compassion

The construct of compassion, which can be traced back to ancient Buddhist traditions, has received increasing attention from Western science over the last decades (Barnard & Curry, 2011; Gilbert, 2005). Compassion has been conceptualised through different perspectives and there is a lack of consensus about its definition, operationalisation and measurement (Strauss et al. 2016; Muris & Petrocchi, 2017). Earlier definitions of compassion focused on the emotional component of compassionate experiences, defining it as an empathic distress or a combination of emotions such as love and sadness in reaction to others' distress (Goetz, Keltner & Simon-Thomas, 2010). However it is now recognised as a multi-dimensional construct which includes cognitive, affective and motivational elements (Jazaieri et al. 2013; Strauss et al. 2016).

Compassion can be described as an affective state which arises as a response to others' suffering and results in a desire to help (Goetz, Keltner & Simon-Thomas, 2010). Similarly, Gilbert (2010a) described compassion as 'a sensitivity to suffering in self and others with a commitment to try to alleviate and prevent it'. He conceptualised compassion as part of an evolutionary motivational affect system which helps to regulate negative affect, respond to the distress of self and others, and facilitate feelings of safeness and warmth (Gilbert, 2014). The present study adopted Gilbert's conceptualisation of compassion.

Three separate orientations are described to facilitate compassionate feeling: compassion for others, compassion from others and self-compassion (Gilbert, 2009). Experiences of compassion has been shown to affect mental health and well-being. Studies observed negative associations between self-compassion and psychopathology (MacBeth & Gumley,

2012), rumination and self-criticism (Neff, Kirkpatrick & Rude, 2007). There is a growing body of compassion-based interventions, which aim to facilitate cultivation of compassion towards self and others (Kirby, 2017). There is emerging evidence into the effectiveness of these interventions, in improving negative affect and reducing psychological distress, facilitating the experiences of compassion, self-compassion, mindfulness, and improving well-being (Kirby, Tellegen & Steindl; 2017).

1.2.2 Compassion Focused Therapy

Compassion-Focused Therapy (CFT) which was developed by Paul Gilbert, combines an evolutionary perspective with neuroscience, attachment and social mentalities theories to provide a framework for the therapeutic application of compassion (Gilbert, 2010a). It was originally developed for individuals with high levels of self-criticism and shame who have difficulty generating self-warmth and who report limited affect shift, despite being able to generate alternative thoughts during Cognitive Behavioural Therapy (Gilbert & Procter, 2006).

The CFT model proposes that throughout evolution, humans have developed three motivational affect systems with distinct neurophysiological substrates – the threat system, the drive system and the soothing system (Gilbert, 2010a): According to the model, the threat system corresponds to the fight or flight reactions in mammals; the drive system enables reward-based goal attainment behaviours and the soothing system is connected to the attachment processes, promoting a sense of safeness and affiliation . An imbalance between these systems is proposed to contribute towards psychological distress (Depue & Morrone-Strupinsky, 2005; Gilbert, 2009). Therefore one of the aims of the therapy is to restore this balance by improving the individuals' awareness of their affective systems and cultivating a

more compassionate self-to-self relationship through the acquisition of compassionate attributes and skills (Gilbert, 2009). This is therapeutically done through Compassionate Mind Training (CMT), which refers to the range of techniques, such as soothing-rythm breathing, compassionate imagery, letter-writing, enactment of compassionate self and chair work, that help with the acquisition of compassionate attributes and skills (Gilbert, 2010b).

An early systematic review of fourteen studies across clinical and non-clinical samples provided a summary of favourable outcomes for CFT such as improvements in mood, compassion and well-being (Leaviss & Uttley, 2015). A subsequent review demonstrated a range of small to large treatment effects for CFT in self-compassion, shame and self-criticism across clinical samples (Tsivos, 2015). Even though the emerging evidence is promising, both reviews drew attention to the lack of large and well controlled study designs, inconsistencies in measurement and heterogeneity within the content of CFT interventions.

While evidence for the effectiveness of CFT interventions is emerging, less is known about the effectiveness of the specific components and mechanisms of action that make up the therapeutic process (Campbell et al., 2019). This is important in the context of transdiagnostic interventions when different components may be differentially effective for different client groups. A better understanding about the effectiveness of the therapeutic components of CMT could help clinicians develop interventions which are better-tailored towards the needs of their clients.

One of the commonly used components of CMT is Compassion Focused Imagery (CFI). By constructing and exploring imageries of a compassionate ideal (self or other), CFI encourages the clients to imagine compassionate attributes through this imagined ideal and practice

embodying this ideal over time (Gilbert, 2009). CFI is proposed to activate the soothing system by providing an internal compassionate representation and by facilitating feelings of warmth and affiliation (Gilbert & Irons, 2005). Physiological studies indicate that CFI can evoke different heart rate variability and cortisol reactions, some individuals experiencing increased heart rate variability (HRV) and a drop in cortisol (suggesting activation of soothing system), whereas others showing reduced HRV (suggesting a threat-based reaction) (Rockliff et al., 2008). These differences indicated that individuals with high-self criticsm and insecure attachment may experience CFI to be threatening. Similar findings were also noted where individuals with high trait self-criticism experienced difficulties in generating compassionate imagery and instead accessed hostile and self-critical images more easily (Gilbert et al., 2006).

1.2.3 Aims of the Review

The present review aimed to explore the effectiveness of CFI on psychological outcomes when it was used as a brief and stand-alone intervention. The research questions were as follows:

1. What is the effectiveness of CFI in improving psychological outcomes for clinical and non-clinical adult populations?
2. Are there any population specific effects of CFI across different clinical samples?

1.3 Method

An initial search was completed within the CRD Database Abstracts of Reviews of Effects (DARE) and PROSPERO to ensure a similar review was not already completed. A systematic review protocol was developed between November – December 2019 by the author, which has been registered on PROSPERO (Project ID: CRD42019158720).

1.3.1 Search Strategy

An extensive literature search was conducted, using online bibliographic databases MEDLINE (via Ovid), Embase, PsycINFO, PsycARTICLES. The search was initially completed by the lead author in December 2019 as part of a Clinical Psychology doctoral training program. An updated search was completed using the same search strategy, covering studies and publications from January 2020 to March 2022. Ahead of print and in-press publications were included where possible. PROQUEST was also searched to identify any unpublished thesis studies relevant to the review questions. Additionally, reference lists of studies included in the review were hand-searched for relevant articles. Key journals, conference proceedings, posters and other internet resources were also reviewed for identifying studies that may fit the eligibility criteria.

Scoping searches were conducted to identify the most inclusive and relevant search terms. A research librarian was consulted for developing an effective search strategy. Table 1.1 presents the search strategy. The strategy captured hyphenated versions of all terms to ensure a comprehensive search. Only studies written in English language were included in the review due to limited resources for translation.

1.3.2 Study Selection and Eligibility Criteria

Following the database searches, studies were screened for eligibility by scanning the titles and abstracts. Studies which appeared appropriate for inclusion were exported into EndNote for full text review before a decision was made regarding their eligibility. The following eligibility criteria were applied when screening studies for inclusion:

Population: To maintain a wider scope, the review included studies with both clinical and non-clinical adult populations. Studies with children and adolescent participants (under 18 years of age) were excluded from the review.

Intervention: Studies which included compassion-focused imagery as the primary intervention were included in the review. The interventions could be delivered within any medium (e.g. face to face, online, group, participant-led at home). Compassion-focused imagery was defined as imagery interventions where the aim was to improve and facilitate participants' ability to hold more compassionate views of themselves by imagining a more compassionate self, other or a thing. This definition is congruent with Gilbert's theoretical model of compassion (Gilbert, 2009) and is frequently used in compassion-focused therapy interventions. Studies which used an imagery intervention based on a different conceptualisation of compassion (e.g. Loving Kindness meditation) were not included due to differences in theoretical and conceptual underpinnings.

Studies which included an additional psychoeducation component about compassion (prior to the imagery intervention) were not excluded from the review, since such psychoeducation provides a rationale for the intervention and is routinely incorporated into compassion focused therapy interventions (Gilbert, 2010a). Studies were also included where the main imagery intervention was preceded by a brief breathing task, allowing smooth transition into imagery interventions. However, where other aspects of compassion-focused therapy interventions (e.g. letter writing/chair work/self-talk) or other psychological interventions were incorporated alongside the imagery intervention, these studies were excluded from the review.

Comparator: A comparator imagery control condition was not set ahead of time. Studies which did not include a control condition were not excluded from the review.

Outcomes: The review only included studies in which pre- and post- intervention measures were available. Randomized and non-randomized designs were both included. Single case studies were excluded. Studies which did not utilize formal psychological measures and/or where psychological outcomes were solely measured by non-standardized methods were excluded.

The primary outcome measures included in the review were measures of compassion or self-compassion. Since scoping research indicated heterogeneity in outcome measures (e.g. for self-compassion), no limitations were set for which compassion outcome measures would be included.

Studies which did not report on compassion-related measures were not excluded from the review as long as they reported on other psychological outcomes, such as depression, anxiety, distress, and other relevant psychological measures pertinent to specific populations studied (e.g. outcome measures specific for psychosis or eating disorders). The review included outcome measures reported at the baseline and post-intervention time points. When long-term follow-up data was reported, this was also included in the review.

1.3.3 Data Extraction

The lead author conducted the data extraction. A data extraction form was adapted from National Institute for Clinical Excellence (NICE, 2012) guidelines to summarise information pertinent for the review. This data extraction form was created on Excel and included

information regarding study details such as population and participant characteristics, methods, information on intervention and control conditions, relevant outcome measures and summary of main findings..

1.3.4 Assessment of Quality and Risk of Bias

The assessment of quality and risk of bias was conducted using the Effective Public Health Practice Project (EPHPP, 1998). This assessment tool can be used for randomised and non-randomised studies. It is a structured assessment tool which evaluates risk of bias across the following eight domains: selection bias, study design, confounders, blinding, data collection methods, withdrawals and drop-outs, intervention integrity and analyses. Each study is given a rating of "Strong/Moderate/Weak" across each domain. A dictionary accompanies the assessment tool and provides additional guidance about what evidence counts towards the different rating categories for each domain. The component ratings are used to obtain a global quality rating for each study. Accordingly, a study which receives no "Weak" ratings across any of the domains is assigned a "Strong" global rating. If there is only one "Weak" rating across any of the domains assessed, then the study is assigned a "Moderate" global rating. If there are two or more "Weak" ratings, the study is assigned a "Weak" global rating.

The quality and risk of bias assessment was completed by the lead author. Approximately one-third of the studies were randomly selected and reviewed by a second rater for quality and risk of bias assessment. Based on the domain-specific ratings on the quality assessment tool, the inter-rater reliability between the two raters was moderate ($\kappa = 0.63$, $p < .001$). Disagreements, which were mainly due to differences in the interpretation of the rating scale guidelines, were settled through discussion.

The quality assessment ratings were taken into consideration in deciding whether studies with "Weak" global ratings should be included in data synthesis. Studies which had no more than three ratings of "Weak" across the six assessment domains were retained in the qualitative synthesis.

1.3.5 Effect Sizes

Effect sizes (ES) were calculated on the main psychological outcomes which were relevant to compassion-focused therapy constructs (self-compassion, self-crticisim and shame).

For studies which did not implement any control condition, effect sizes were calculated using Cohen's *d*, using the following formula (Field, 2018):

$$d = \frac{\mathrm{M_{Pre}} - \mathrm{M_{Post}}}{\mathrm{SD_{Pre}}}$$

For studies which implemented a control imagery condition, Cohen's *d* was calculated separately for the experimental and control groups and an estimate of the treatment effect was obtained by taking the difference between the effect sizes in experimental and control groups using the following formula (Becker, 1988; Rohling, Faust, Beverley & Demakis, 2009):

$$d = \left[\frac{\mathrm{M_{exp.\ Pre}} - \mathrm{M_{exp.post}}}{\mathrm{SD_{Exp.Pre}}}\right] - \left[\frac{\mathrm{M_{control\ Pre}} - \mathrm{M_{control\ Post}}}{\mathrm{SD_{Control\ Pre}}}\right]$$

1.4 Results

The database search returned 2230 studies in total. Figure 1.1 presents the PRISMA diagram detailing the study screening and selection process.

Figure 1.1 PRISMA Diagram of study identification and selection

After removal of duplicates, the remaining 1687 studies were screened by title and abstract to determine eligibility. 69 studies were identified for review by full text via the main search. An additional study was identified while going through reference lists of a considered study and a further study was identified through direct communication with the study author. Full-text review resulted in exclusion of a further 48 studies for reasons outlined in Figure 1.1. The remaining 23 records included in the review related to 20 separate studies. Three additional records were doctoral thesis projects relating to the included studies. These were kept within the review and consulted for additional information where needed (e.g. if some information was not present in the journal article but was presented within the thesis project). There was heterogeneity among the included studies, in terms of the range of outcome measures used for self-compassion, self-criticism and shame. Among the studies where the same measure was utilised (e.g. the Self-Compassion Scale), some studies used different versions or made adaptations to the original scale and the scoring, which would not yield a meaningful comparison in a meta-analysis. For these reasons, a systematic review with qualitative synthesis was completed.

1.4.1 Study Characteristics

A summary of study characteristics and main outcomes are presented on Table 1.2. The majority of the studies (14) were conducted in the United Kingdom (UK). Three were conducted in Germany, one each in Colombia, Australia and United States of America (U.S.A). Participant populations included non-clinical general population samples (some of

which included only university students, university staff and students or only general population, 10), ecstasy users (2), severe head injury (2), personality disorder (1), sub-clinical eating problems (1), depression (1), psychosis (1), persistent persecutory delusions (1) and contamination-related Obsessive Compulsive Disorder (1). In most studies, participants attended the CFI intervention in-person, with the exception of three studies that utilized a remote and online delivery method (McEwan & Gilbert, 2016; Bibbey, 2019; Wright, 2019).

The imagery exercises ranged from 5 minutes to 50 minutes across the studies. Most studies implemented a single imagery intervention session. Three studies implemented single intervention sessions with instructions for continued home practice (Naismith et al., 2018; McEwan & Gilbert, 2016; Gilbert & Irons, 2004). One study (Forkert et al. 2022) implemented a four session CFI intervention, which included elements of psychoeducation and opportunities for participants to practice in between-sessions. Three studies (Kamboj et al. 2015, 2018; Rockliff et al. 2011) looked at enhancing effects of substances on CFI and implemented two separate testing sessions (CFI only and CFI+substance). For the purposes of this review, the CFI only conditions were reported as the main intervention of interest for these studies.

1.4.2 Assessment of Risk of Bias

A summary of the risk of bias assessment is presented in Table 1.3, which displays the breakdown of scores across six assessment criteria and the final global rating. Five studies scored a 'Strong' global rating (Ascone et al., 2017; Fink-Lamotte et al. 2021; O'Neil, 2011; Tsivos, 2015 and Wright, 2019). Ten scored a 'Moderate' global rating (Baldwin et al. 2020; Bibbey, 2019; Brown et al. 2020; Campbell et al. 2019; Kamboj et al. 2015, Kamboj et al., 2018; Lincoln et al., 2013; Marantos & Sheffield, 2020; Naismith et al. 2019 and Rockliff et al., 2011). Five studies scored a 'Weak' global rating (Duarte et al. 2015; Forkert et al. 2022; Gilbert & Irons, 2004;McEwan & Gilbert, 2016; Naismith et al. 2018).

In some studies, higher risk of bias was associated with limitations in reporting (especially with regards to selection bias and blinding). Eleven study authors were contacted to clarify uncertainties where possible. Additional information was received through personal communication in relation to seven studies (Brown et al. 2020; Campbell et al., 2019 Fink-Lamotte et al. 2021; Kamboj et al. 2015, 2018; Lincoln et al. 2013, Marantos & Sheffield, 2020 and Wright, 2019) and this was taken into consideration for risk of bias assessment.

1.4.3 Psychological Outcome Measures

Table 1.2 provides a summary of the various relevant outcome measures for each study. In addition to psychological measures, six studies used psychophysiological measures such as Skin conductance levels (Ascone et al. 2017), Heart Rate Variability (Baldwin et al. 2020; Campbell et al. 2019), ECG recordings (Kamboj et al. 2018) and saliva Alpha Amylase (sAA) analyses (Duarte et al. 2015; Maratos & Sheffield, 2020).

Main psychological outcome measures relevant to therapeutic application of compassion (Gilbert, 2009) such as compassion, self-criticism and shame, have been summarised below. In some studies, these outcome measures were used in pre/post-intervention analyses to obtain an effectiveness of CFI tasks; whereas in other studies these measures provided a means to obtain trait-level characteristics of participants or to group participants based on their scores on specific measures.

Outcome measures for Compassion: Seven studies utilized the Self-Compassion Scale (SCS, Neff, 2003) and one used the short form of this scale (Ascone et al. 2017; Campbell et al. 2019; Fink-Lamotte et al. 2021; Forkert et al. 2022; McEwan & Gilbert, 2016; O'Neill & MacMillan, 2012; Tsivos, 2015 and Naismith et al. 2018). Two studies (Kamboj et al., 2015 & 2018) utilized the State Self Compassion and Criticism scale (SCCS; Falconer et al., 2015). Gilbert & Irons (2004) used interval contingent diaries, asking participants to rate their self-soothing on a Likert scale over the course of a group intervention. One study (Wright, 2019) utilized the Compassionate Engagement and Action Scale (CEAS, Gilbert et al., 2017). One study (Brown et al. 2020), which employed a Virtual Reality methodology, obtained a state measure of self-compassion by averaging participant responses to two visual analogue scales. The remaining studies did not implement a compassion-based outcome measure (Baldwin et al. 2020; Bibbey, 2019; Duarte et al., 2015; Lincoln et al., 2013; Maratos & Sheffield, 2020; Naismith et al., 2019; Rockliff et al., 2011).

Outcome measures for Self-criticism: Nine studies implemented an outcome measure for self-criticism (Ascone et al., 2017; Gilbert & Irons, 2004; Kamboj et al., 2015 & 2018; Maratos & Sheffield, 2020; McEwan & Gilbert, 2016; Naismith et al. 2019; Rockliff et al. 2011; Tsivos, 2015). Most utilized The Forms of Self-Criticism and Reassurance Scale (FSCRS; Gilbert et al., 2004), with the exception of Gilbert and Irons, (2004) who used

interval contingent diaries for self-criticism. Kamboj et al. (2015) used both the SCCS and the FSCRS to obtain a measure of state and trait self-criticism although only the former was used in pre- and post- intervention analyses.

Outcome measures for Shame: Only Tsivos (2015) and Naismith et al. (2019) used specific shame-based outcome measures, utilizing the Other as Shamer Scale (Goss, Gilbert, & Allan, 1994) and Induced Shame Scale (adapted from the Experiences of Shame Scale; Andrews, Qian, & Valentine, 2002) respectively.

1.4.4 Effectiveness of CFI on improving Psychological Outcomes

The effectiveness of CFI was examined in two separate groups, depending on whether a study included a control imagery condition or not. Eleven studies included a control imagery condition (Ascone et al. 2017; Bibbey, 2019; Campbell et al. 2019; Duarte et al. 2015; Fink-Lamotte et al. 2021; Lincoln et al. 2013; Maratos &Sheffield, 2020; O'Neil & MacMillan, 2012, Tsivos, 2015 and Wright, 2019) and nine did not (Baldwin et al. 2020; Forkert et al. 2022; Gilbert & Irons, 2004; Kamboj et al. 2015; Kamboj et al. 2018; McEwan & Gilbert, 2016; Naismith et al. 2018; Naismith et al. 2018 and Rockliff et al. 2011).

Effect sizes were calculated for all studies which utilized outcome measures related to Compassion, Self-criticism and Shame, where these measures were used in pre- and post-CFI intervention comparisons. These calculations are presented in Table 1.4. Estimate of treatment effect was separately calculated for the studies which utilized a control imagery condition, as presented in Table 1.5.

1.4.4.1 Studies without a control imagery condition

Eight out of nine studies reported improvements across different psychological outcomes following the implementation of CFI. Five of these noted significant improvements in self-compassion following the CFI intervention (Gilbert & Irons, 2004; Forkert et al. 2022; McEwan & Gilbert, 2016; Naismith et al. 2018 and Kamboj et al. 2018), with moderate to high effect sizes (d = 0.38 – 1.1). Two studies reported a significant reduction in self-criticism following the CFI intervention (McEwan & Gilbert, 2016; Kamboj et al. 2015); with effect sizes ranging between low and moderate (d = 0.19 – 0.4). Gilbert and Irons (2004) also reported a reduction in self-criticism, although this did not reach significance. One study reported significant reduction in shame related to a memory (Naismith et al. 2019), with a high effect size (d = 0.91). Rockliff et al. (2011) reported significant improvements in activated and relaxed positive affect following the CFI intervention. In addition to improvements in self-compassion, Forkert et al. (2022) reported significant improvements in negative self-beliefs, paranoia, social comparison, self-esteem and positive beliefs about the self and others, which were maintained at 4-week follow-up.

Baldwin et al. (2020), reported that participants' subjective fears of compassion did not change following a CFI task, irrespective of whether they received an attachment prime (AP) or interpersonal skills module manipulation. However, participants who had an initial parasympathetic threat response to the CFI task, demonstrated a reduction in heart rate variability responses following the AP, which was interpreted as an indication of a self-soothing response.

1.4.4.2 Studies with a control imagery condition

Out of the eleven studies which implemented a control imagery condition, seven reported statistically significant improvements on psychological outcomes after CFI compared to

control imagery conditions. These included four of the five studies with strong overall methodological quality ratings.

Ascone et al. (2017) reported significant improvements in self-reassurance and happiness following the CFI intervention in patients with psychosis and paranoid ideation. No significant differences were observed in self-compassion, self-criticism or paranoia when compared to the control condition. However, three studies with non-clinical participant samples reported significant reductions in paranoia following the CFI tasks: Lincoln et al. (2013) reported significant reduction in paranoia when compared to control imagery condition. CFI was also effective in improving negative affect and the reduction in shame, anger, anxiety and sadness were observed to mediate the enhancing effect of CFI on paranoid beliefs. Using a Virtual Reality, Brown et al. (2020) also reported significant improvements in self-compassion and significant reduction in paranoia levels following the CFI task, when compared to the control conditions. Using a Prisoner's Dilemma Game framework, Bibbey (2019) also observed that the CFI tasks led to a reduction of paranoia and negative affect in non-clinical general population sample; although the same effects were also observed in the relaxation imagery condition. No significant changes in positive affect were observed across either imagery conditions.

Significant reductions in externally perceived shame were reported in a sample of females experiencing subclinical eating problems following the CFI intervention, when compared to neutral imagery condition (Tsivos, 2015). This reduction in shame had a medium effect size (d = 0.64). Non-significant increases in self-compassion and reduction in self-criticism, depression, stress and anxiety in CFI group were also observed in comparison to control group.

CFI was successful in significantly reducing disgust experiences among patients with contamination-related OCD and healthy controls; although this effect was also observed across the other imagery (imagery rescripting and passive imagery) conditions (Fink-Lamotte et al. 2021). Wright (2019) also found that CFI tasks led to significant improvements in relaxed affect and safe/content positive affect. This effect was demonstrated across all three orientations of CFI tasks (compassion to self, compassion from others and compassion to others), as well as the guided relaxation control imagery condition.

Two studies completed with severe brain injury patients, reported limited non-significant improvements in some psychological outcomes following CFI intervention, when compared to a control condition. O'Neil (2011) reported non-significant increases in self-compassion after CFI; however this was not specific to intervention condition. Campbell et al. (2019) reported enhanced participant motivation for intervention following the preparatory video, however reported no changes in psychological outcome measures after CFI intervention.

One study investigated the impact of CFI on stress hormone levels in high and low self-critics (Duarte et al. 2015). High self-critics showed a greater increase in stress hormone on entering both CFI and control imagery tasks when compared to low self-critics. High self-critics were reported to feel significantly more unsafe/insecure entering both CFI and control imagery tasks. Their safeness scores increased significantly in control imagery conditions, however this trend was not observed in CFI condition.

Using a cold pressor task for pain induction, one study observed no changes in the emotional well-being measures and pain tolerance following either the CFI task or the control condition (Maratos & Sheffield, 2019). During the actual pain condition, participants in the control

group demonstrated an increase in sAA response. However, this increase in sAA response was not observed when participants completed the CFI task; which was interpreted as an indication that CFI could reduce the physiological stress response to pain.

1.4.5 Impact of CFI across different populations

The range of non-clinical and clinical samples and the diversity of the study designs make it difficult to draw population specific conclusions about the effectiveness of CFI as a stand-alone intervention. Notably, the two severe head injury studies (O'Neill, 2011 and Campbell et al. 2019) both reported no statistically significant improvements in self-compassion and empathy in comparison with a control imagery condition.

Some studies investigated the effectiveness of CFI on paranoia, both among clinical (Ascone et al. 2017; Forkert et al. 2022) and non-clinical populations (Lincoln et al. 2013; Brown et al. 2020 and Bibbey, 2019). While Forkert et al. reported significant improvements in paranoia outcomes following the uncontrolled treatment intervention; same effects were not observed in Ascone et al.'s study with regards to their paranoia outcome measures compared to the control condition. The three studies which used a non-clinical population sample all reported improvements in paranoia outcomes following the CFI.

1.4.5.1 Role of Self-criticism

While self-criticism is not a population specific characteristic, given its implication in the generation and maintenance of psychological distress, it is important to highlight that five studies indicated significant self-criticism may be a barrier to engaging with CFI: Ascone et al. (2017) who reported improvements in positive self-relating measures after CFI, reported that negative self-relating may be more difficult to shift. Gilbert and Irons (2004) also

discussed that self-critical individuals may have less memories or experiences of compassion and self-compassion to draw from, which could impact on engagement with CFI. Duarte et al. (2015) noted that participants with high self-criticism gave threat-based physiological responses upon entering the CFI condition which was not observed in control condition. Maratos and Sheffield (2020), particularly screened out individuals who scored highly on self-criticism measures, as this could impact their neurophysiological responses and their engagement with the CFI tasks. Rockliff et al (2011) also indicated that participants low in social safeness found it more difficult to engage with compassionate imagery when oxytocin was additionally introduced during the imagery task. This was interpreted as oxytocin activating the attachment system and therefore the attachment style potentially impacting on how people respond to the CFI task. Participants with high self-criticism were reported to express more negative emotions such as loss and sadness, as well as anger and frustration at their difficulties in generating compassionate images.

1.5 Discussion

The present review aimed to investigate the effectiveness of CFI when introduced as a stand-alone intervention, by synthesizing the available evidence. Most studies included in the review reported improvements on psychological outcome measures such as self-compassion, self-criticism and shame following CFI interventions. However these outcomes should be interpreted carefully, considering methodological limitations and heterogeneity among reviewed studies.

Out of fifteen studies which reported improvements in psychological outcomes following the CFI intervention, eight did not implement a suitable control condition, such that the observed improvements cannot be attributed to the intervention alone. Furthermore, four of these eight

studies (Gilbert & Irons, 2004; Forkert et al. 2022; McEwan & Gilbert 2016; Naismith et al. 2018) had the highest risk of bias ratings which hazards caution when interpreting the outcomes.

Studies which did implement a control condition and which reported improvements in psychological outcomes were methodologically stronger (Ascone et al., 2017; Fink-Lamotte et al. 2021; Tsivos, 2015; Lincoln et al. 2013; Wright, 2019). These studies indicate that CFI intervention led to a more positive self-to-self relationship for the participants. On balance, the evidence suggests that CFI intervention has resulted in significant reduction of shame in two of the studies; with further improvements in negative affect (Lincoln et al. 2013) and non-significant improvements in self-compassion, depression and anxiety (Tsivos 2015). Ascone et al. (2017) on the other hand only reported improvements in self-reassurance and happiness. While these studies do report reliable improvements, the variability between them impedes on the ability to draw more general conclusions.

Some studies reported improvements in psychological outcomes following both the CFI and the control conditions. For instance, Ascone et al. (2017) observed reductions in negative affect following both the CFI and control tasks. Bibbey (2019) also observed reductions in paranoia and negative affect in both conditions. Fink-Lamotte et al. (2021) found all imagery conditions were equally successful in reducing feelings of disgust. Wright (2019) also reported that all imagery conditions, including control, had been successful in improving relaxed affect and safe/content positive affect. It was observed that the control conditions used across the studies showed some degree of variability, where some studies utilised relaxation-type imagery; whereas others kept the imagery tasks more neutral (e.g. imagining

a chair). The content and the level of engagement required by the control conditions could likely impact on the psychological outcomes.

Self-criticism emerged as an important factor when working with CFI. Six studies reported no improvement or non-significant improvements in self-criticism following CFI, suggesting that self-criticism may be more resistant to change. High self-critics were reported to respond more negatively to CFI. Previous research suggests that for self-critical individuals, self-compassionate stimuli may evoke negative emotional states (such as sadness or anger) by triggering memories or cognitions of lack of previous compassionate experiences from others (Gilbert et al., 2014). Self-criticism is thought to reflect, not only a negative self-to-self relationship, but also a difficulty in generating feelings of warmth and compassion (Gilbert & Procter, 2006) and is closely linked to attachment and negative parenting styles (Irons et al., 2006). CFI as a brief single intervention likely cannot create enough shift in a person's self-to-self relationship and additional methods or adaptations may be needed to impart skills for generating warmth and compassion in high self-critics.

Studies included in the review drew samples from a wide range of populations. This is understandable since compassion and its related constructs are considered from a transdiagnostic perspective. It was not possible to discern specific patterns of outcomes for specific populations due to this diversity of range. However it is notable that both of the studies investigating the effectiveness of CFI in severe head injury samples reported no changes in their respective outcome measures. Studies which investigated the impact of CFI on paranoia, also appeared to report improvements with non-clinical samples more often than in clinical samples. These findings could indicate that some clinical populations may have

specific needs that create a barrier in engaging with CFI. Additional resources or more rigorous input may be needed to tailor interventions according to that population's needs.

It is also important to note that CFI is only one of the wide range of techniques within CFT and CMT, which enable compassionate skills and attributes to be acquired. It is possible that these skills and attributes acquired within a wider intervention regime, could facilitate individuals' engagement with CFI and address the barriers they may experience with it. There is indeed some evidence towards the effectiveness of CFT in acquired brain injury population when a more comprehensive CMT approach was followed (Ashworth, Gracey & Gilbert, 2011; Ashworth et al., 2015). There is also some evidence into effectiveness of CFT in psychosis, where improvements in self-compassion and reductions in depression and perceived social marginalization were reported; although paranoia was not a particular focus of the study (Braehler et al. 2013)

1.5.1 Heterogeneity of Outcome Measures Used

The reviewed studies used a wide range of outcome measures of differing psychological constructs. Self-compassion was most commonly measured by the Self-Compassion Scale (Neff, 2003) even though Neff's theoretical conceptualisation of self-compassion shows differences to the CFT approach. The motivational aspect of recognizing distress and being moved to alleviate it is an integral understanding of compassion in CFT, which the SCS would not assess (Strauss et al. 2016; MacBeth & Gumley, 2012). This discrepancy raises concern for construct validity in research investigating effectiveness of CFT-related interventions, when SCS is used as a measure of compassion. The Compassionate Engagement and Action Scale (CEAS, Gilbert et al., 2017), which was published in 2017 and

which takes into account the motivational aspects and different orientations of compassion, was used by only one of the studies included in the review (Wright, 2019).

Even though the SCS provides a total composite self-compassion score (by adding up scores across all three dimensions), there have been inquiries into the factor-structure of the scale as some studies found a two-factor structure, perhaps reflecting self-compassion and self-criticism separately (Lopez, 2015). When using SCS, some studies in this review used the composite self-compassion score, whereas others used the SCS to obtain a self-compassion and self-criticism scores separately. This may create discrepancy among the findings of the studies, even though they are using the same measure. Difficulties in measuring compassion consistently and reliably, is closely tied to differences in conceptualisation of compassion within the literature and a more unified understanding is needed to enable researchers develop and use outcome measures confidently (Strauss et al. 2016; MacBeth & Gumley, 2012).

1.5.2 Strengths and Limitations

The review sought to include grey literature to mitigate against publication bias. Whilst the additional materials identified were all these relating to published studies that were already incorporated into the review, being able to consult to the theses meant more detailed information could be accessed about the studies. The calculation of effect sizes and estimated treatment effects was also a strength, as these enabled a better assessment about the impact and the effectiveness of the interventions provided.

Relying on a qualitative synthesis has been an important limitation of the study. A meta-analysis would have enabled a more precise understanding of the effectiveness of CFI

interventions, should the available data permitted. Another limitation, which potentially affected the risk of bias assessment, was the limited availability of information in reporting for some studies. This was mitigated by contacting authors and asking for further clarifications where possible. Four authors had not responded at the time of the writing and as such, some studies may have been allocated a higher risk of bias score due to reporting limitations rather than methodological issues.

1.5.3 Conclusion

The current review provides a synthesis of existing evidence into the effectiveness of CFI as a standalone intervention. Preliminary evidence is promising, whereby most studies reported improvements in psychological outcomes following CFI; however the evidence is limited by the methodological challenges and heterogeneity within the literature. Some clinical populations (such as severe head injury or clinical paranoia) may require additional input to benefit from CFI interventions. High rate of self-criticism was highlighted by several studies as a potential barrier in engaging with CFI tasks.

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Figure 1

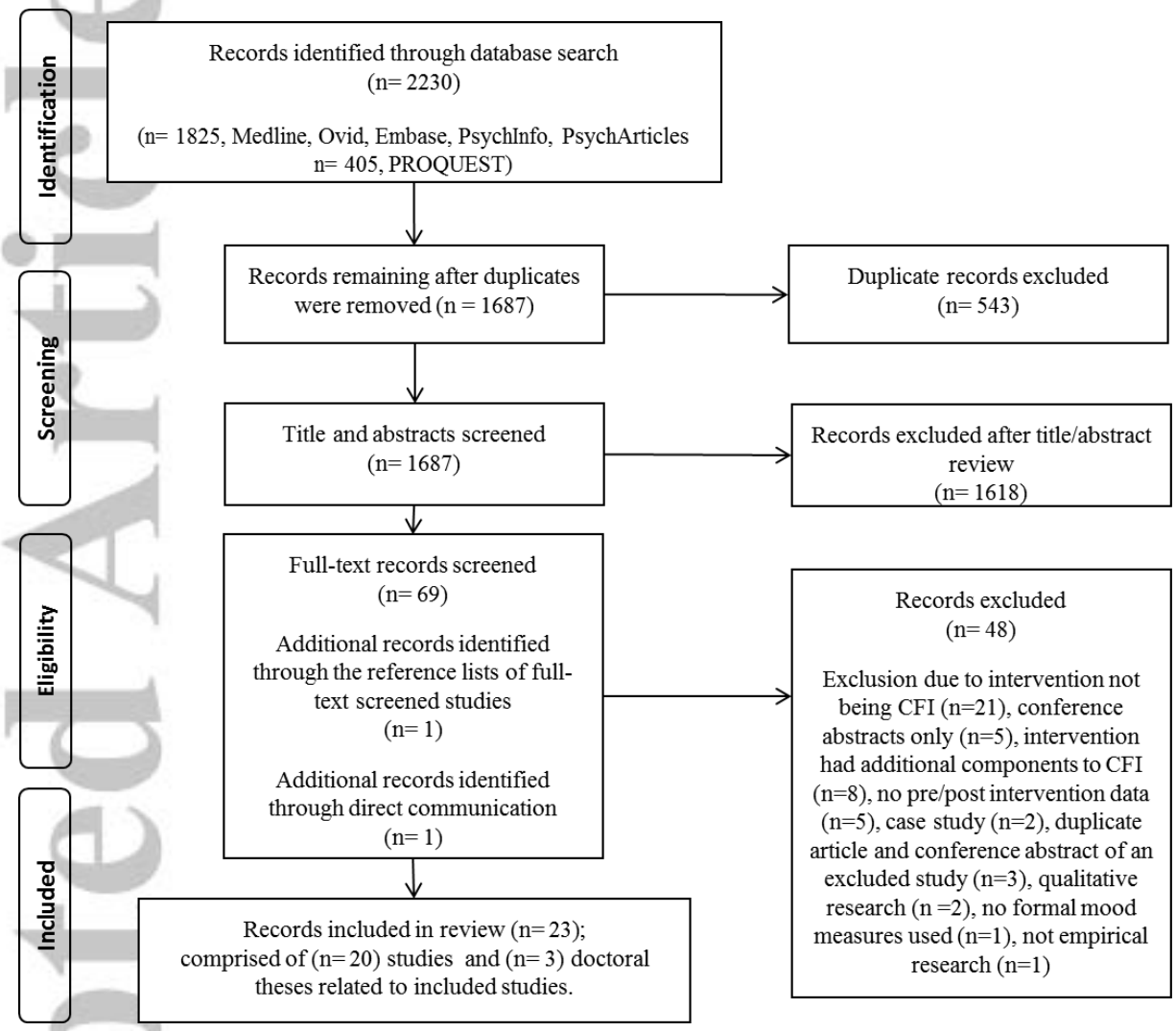

Table 1.1 The search strategy

Search	Search Term
1	Compas*
2	Image*
3	(1) and (2)
4	Deduplicate (3)

Table 1.2 Summary of Study Characteristics

Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Ascone et al., 2017 Germany	Psychosis (and paranoid ideation)	Randomized repeated-measures design	N = 51 36 M, 15 F Mean Age: N/A	1 session – 10 minutes CFI task	Neutral imagery task: Focusing on a chair	FSCRS, SCS, PANAS, Paranoia Checklist, Skin conductance	CFI resulted in significant improvements in self-reassurance and happiness, but not in negative self-relating or paranoia. Negative affect reduced both in CFI and control conditions. No specific intervention effects reported on sympathetic arousal as measured by skin conductance.
Baldwin et al. 2020 Australia	Non-clinical university students sample	Randomized between-groups design	N=68 63% female Mean Age: 25 (SD: 9.8)	1 session, 2 CFI Tasks (Pre and post attachment prime [AP]. CFI task involved imagining receiving compassion from a close other	Control condition not related to imagery	Change in HRV, FCS, SAAM, ECR-R	Participants who demonstrated an initial parasympathetic threat response to CFI, experienced a reduction in HRV (a self-soothing response) when an AP was completed. Subjective compassion fears did not change following the AP. AP resulted in a significant reduction in state attachment avoidance and increased state-attachment security.

Bibbey, 2019 U.K.	Non-clinical general population sample	Randomized between-groups design	N=170 33 M, 137 F Mean Age: 23.1 (SD:7.89)	1 session – Soothing rhythmic breathing followed by 12 minute CFI task	Soothing rhythmic breathing followed by 10 min. relaxation imagery task	SPS, PANAS, GPTS, DASS	Within a "Prisoner's Dilemma Game" framework, both CFI and relaxation imagery conditions resulted in a reduction of paranoia and negative affect. No significant change in positive affect observed across either imagery conditions.

Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Brown et al. 2020 (Study 1) U.K.	Non-clinical general population sample	Randomized between-groups design	N=740 (screened) N=100 (took part) 63 M, 37 F Mean Age: 29 Age range: 18-55	1 session – Four 10-min CFI training tasks, each followed immediately by VR scenario practice	Generating a neutral image. Four control tasks each followed immediately by VR scenario practice	GPTS-B, Two visual analogue scales averaged to measure self-compassion	CFI intervention resulted in significantly higher levels of self-compassion and significantly reduced paranoia levels, compared to the control imagery group.
Campbell et al., 2019 & Campbell 2014 U.K.	Severe Head Injury	Cross sectional experimental design	N = 24 20 M, 4 F Mean age: 47 (SD: 8.4)	1 session – 50 minute CFI task + 20 min preparatory video	Relaxation Imagery	EQ, SCS, STAI, Relaxation Scale, HRV change	No change attributable for CFI (despite the longer and more reinforced intervention and preparatory video) compared to relaxation control condition. No significant differences in HRV

							change across groups.
Duarte et al., 2015 U.K.	Non-clinical sample of university staff and students	Mixed Design (Repeated and Between subjects)	N = 29 All F Mean age 24.96 (SD: 6.49)	1 session- Same CFI transcript as Rockliff et al., 2011.	Control Imagery (Taking a stroll in countryside)	SAAS, TPAS, PANAS, sAA measure -	Compared to Low Self-critics, High self-critics showed greater increase in stress hormone in both CFI and control imagery tasks, when compared to non-intervention control. HSC reported more unsafeness/ insecurity on entering imagery interventions. Safeness scores increased in control imagery but not after CFI.
Fink-Lamotte et al. 2021 Germany	Contamination-related OCD	Mixed Design (Repeated and Between subjects)	N=48 (24 C-OCD, 24 control) 8 M, 40 F Mean Age: 33.79 SD C-OCD:13.11 SD Controls: 13.4	Two-session experiment. 6.49-minute CFI task (building a compassionate self-image)	Two comparison conditions: Imagery Rescripting and Passive Positive Imagery	BDI-II, SCS, STAI-T, Y-BOCS, Disgust Propensity	All three imagery conditions were equally successful in significantly reducing feelings of disgust, with medium effect sizes.

Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Forkert et al. 2022 U.K.	Persistent persecutory delusion	Cohort design Uncontrolled treatment feasibility study	N=12 7 M, 5 F Mean Age: 42 (SD: 13.1)	4-session CFI intervention delivered 1:1. Each session lasting 60 minutes, delivered	None	GPTS-B, SCS, BCSS, Social Comparison Scale, Rosenberg Self-Esteem Scale	Following CFI treatment, improvements in self-compassion, negative self-beliefs, paranoia, social comparison, self-esteem and positive beliefs about the self and others were observed.

				twice/week for 2 weeks			Improvements maintained at 4-week follow-up.
Gilbert & Irons, 2004 U.K.	Depression (High self-critics)	Cohort design	N = 9 2 M, 7 F	4-session group intervention 10 minute CFI task introduced in 2nd session with instruction for additional home practice	None	Interval contingent diary	Small reduction in self-criticism at the end of the intervention compared to baseline but not reaching significance. Significant increase in ability to generate CFI images and ability to self-soothe in self-critical situations.
Kamboj et al., 2015 U.K.	Recreational ecstasy users sample	Within subjects naturalistic design	N = 20 13 M, 7 F Mean Age 25.5 (SD:3.59)	2 separate testing sessions (with and without ecstasy). 18 minute CFI task in each session	Control condition not related to imagery	TPAS, PANAS, SCCS, BDI-II, FSCRS	Significant reduction in self-criticism following CFI. This effect twice as larger in CFI + MDMA condition. Similar to MDMA, CFI alone had a sociotropic effect, even though compassion was self-directed rather than other-directed.
Kamboj et al., 2018 U.K.	Recreational ecstasy users sample	Within subjects naturalistic design	N = 20 12 M, 8 F Mean Age: 28.45 (SD: 6.16)	Same as Kamboj et al. 2015	Control condition not related to imagery	TPAS, PANAS, SCCS, BDI-II, Empathy Assessment Task, ECG recordings	CFI only and MDMA only conditions led to small to medium increases in self-compassion. Small but significant additional increase in self-compassion when CFI and MDMA administered together. Emotional empathy in response to critical faces increased following CFI only condition. MDMA + CFI indicating a trend for reducing self-criticism, but non-significant.

Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Lincoln et al. 2013 Germany	Non-Clinical University Student Sample	Randomized between subjects design	N = 71 23 M, 48 F Mean Age: 23.2 (SD: 5.6)	1 session- 10 minute practice then 5 minute guided application of CFI	Neutral imagery (visualizing chair)	ADS, RSE, Paranoia checklist	CFI led to significantly less reported paranoia, lower levels of negative emotions and higher self-esteem compared to control imagery condition. CFI's improvement on paranoid beliefs mediated through reduction in shame, anger, anxiety and sadness.
Maratos & Sheffield, 2020, U.K.	Non-Clinical University Student and Staff Sample	Randomized repeated measures crossover design	N=34 16 M, 18 F Mean Age: 25.6 (Age range: 19-43)	1 session- 3 minute relaxation imagery followed by 7 minute CFI task (generating an image of a compassionate person/being)	3 minute relaxation imagery followed by the Control Imagery Task (taking a stroll through countryside)	sAA measure, Pain tolerance Measurement, FSCRS, TPAS, PANAS	In actual pain conditions (cold pressor task), CFI resulted in no increases in sAA response, whereas in control imagery increases in sAA were observed. No differences to pain tolerance observed in either imagery condition, but sAA levels to actual pain predicted decreased pain tolerance in CFI condition. No changes in emotional well-being measures in either of the imagery conditions observed.
McEwan & Gilbert, 2016 U.K.	Non-Clinical University Student Sample	Repeated Measures Design	N = 45 12 M, 33 F Mean Age: 30.73 (SD: 9.93)	Online intervention without clinician support. Participants to practice CFI task,	None	SCS, FSCRS, DASS	Significant increases were found in self-compassion and self-reassurance and reductions found in self-coldness, self-

				5 minutes daily for two weeks			criticism, depression, anxiety, and stress. Higher self-critics showed the largest improvement in scores. Follow-up data at 6 months revealed results were maintained with the exception of stress which increased.
Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Naismith et al., 2018 (Study 2) + Mwale, 2017 U.K.	Personality Disorder Sample (mostly BPD)	Repeated measures design	N = 17 2 M, 15 F Mean Age: 34 (SD: 10.06)	Daily 5-minute CFI practice (either imagined ideal or memory) for a week	None	SCS-SF	Self-compassion significantly increased compared to baseline with regular CFI practice (5 times/more). Change in self-compassion correlated with practice frequency. Higher baseline of self-compassion was predictive of higher practice frequency.
Naismith et al., 2019 Colombia	Non-Clinical University Student Sample	Randomized between groups design	N = 160 44 M , 114 F Mean Age: 20.64 (SD: 19.95)	1 session- CFI task with two different sensory enhancements	Control condition not related to imagery	PsiQ, FSCRS, PANAS, Qualities of Compassion, Compassionate affect, ISS	Significant reduction of shame from the recalled memory after CFI. People with higher baseline shame experienced greater reduction in shame.
O'Neill & Macmillan 2012 + O'Neill, 2011	Severe head injury Sample	Between group repeated measures	N = 24 21 M , 3 F Mean Age: 42.21	1 session – 30 minute CFI task	Relaxation imagery	SCS, EQ, Relaxation measure	Self-compassion increased after 1 session but not reaching

U.K.			(SD: 13.61)				significance and not specific to intervention. No change observed in empathy scores following CFI.
Rockliff et al., 2011 U.K.	Non-Clinical Student Sample	Within-subjects counterbalanced and randomized design	N = 41 26 M, 15 F Mean Age: 26.03 (SD: 8.53)	2 sessions (CFI with and without oxytocin)- 5 minute relaxation + 7 minutes CFI task in both sessions	Control condition not related to imagery	PANAS, TPAS,FSCRS	Significant improvements in positive affect after CFI(increase in 'relaxed' and decrease in 'activated' affect). Oxytocin enhanced ease of imagining compassionate qualities. People with lower self-reassurance and social safeness found it significantly more difficult to engage with compassionate emotions.

Study	Population	Method	Participant Characteristics	CFI Intervention Details	Control Condition	Relevant Outcome Measures	Summary of main findings relevant to current review
Tsivos, 2015 U.K.	Subclinical eating problems sample	Randomized Clinical Trial	N = 66 All F Mean Age: not provided for whole sample	1-session -25 minute guided CFI task. Instruction for practice at least once more until follow-up	Neutral imagery and no imagery conditions	SCS, DASS, OAS, FSCRS, EDE-Q, FSCS	Significant reductions in externally perceived shame in CFI group, compared to neutral imagery. No significant improvement observed in self-compassion following CFI. Non-significant increases in self-compassion and reduction in self-criticism, depression, stress and anxiety compared to neutral imagery condition.

Wright, 2019 U.S.A.	Non-clinical general population sample	Randomized between-groups design	N=160 88 M, 69 F, 3 NB Mean Age: 35.6 (SD: 11.6)	1- session, 5 minute breathing exercise followed by 10 minute CFI task in three orientations (to self, to others, from others).	Guided relaxation imagery task (Body Scan)	PANAS (only negative affect scale), TPAS, FCS, CEAS	Significant improvement in relaxed affect and safe/content positive affect observed across all imagery conditions, including control.

ADS: Allgemeine Depressions Skala (General Depression Scale), BCSS: Brief Core Schema Scale, BDI-II:Beck's Depression Inventory II, CEAS: Compassionate Engagement and Action Scales , DASS: Depression Anxiety and Stress Scale, ECG: Electrocardiogram, ECR-R: Experiences in Close Relationship Scale Revised, EDE-Q: Eating Disorder Examination Questionnaire, EQ: Empathy Quotient, F: Female, FCS: Fear of Compassion Scale, FSCRS: The Forms of Self-Criticising/Attacking & Self-Reassuring Scale, FSCS: Forms of Self-Criticism Scale, GPTS: Green Paranoid Thoughts Scale, GPTS-B: Green Paranoid Thoughts Scale - Part B, HRV: Heart Rate Variability. ISS: Induced Shame Scale, M: Male, NB: Non-binary, OAS: Other as Shamer Scale, OCD: Obsessive Compulsive Disorder, PANAS: Positive and Negative Affect Schedule, PsiQ: Plymouth Sensory Imagery Questionnaire, RSE: Rosenberg Self Esteem Scale, sAA: salivary Alpha Amylase, SAAM: State Adult Attachment Measure, SAAS: State Adult Attachment Scale, SCCS: State self-compassion and criticism scale, SCS: Self-Compassion Scale, SCS-SF :Self-Compassion Scale Short Form, SPS: State Paranoia Scale, STAI: State-Trait Anxiety Inventory, STAI-T:state-trait anxiety inventory—trait version, TPAS: Types of Positive Affect Scale, VR: Virtual Reality, Y-BOCS: Yale Brown Obsessive–Compulsive Scale

Table 1.3 EPHPP Risk of Bias Assessment Component and Global Ratings

Study Name	Selection Bias	Study Design	Confound.	Blinding	Data Collection	Withdrawal/Dropouts	Global Rating	Final Classification
Ascone et al., 2017	1	1	1	1	1	2	1	Strong
Baldwin et al. 2020	3	1	1	1	1	2	2	Moderate
Bibbey, 2019	3	1	1	2	1	2	2	Moderate
Brown et al., 2020	2	1	1	3	1	1	2	Moderate
Campbell et al. 2019	2	1	3	1	1	2	2	Moderate
Duarte et al. 2015	3	2	1	3	1	1	3	Weak
Gilbert & Irons, 2004	3	2	1	3	3	1	3	Weak
Fink-Lamotte et al. 2021	2	1	1	1	1	1	1	Strong
Forkert et al. 2022	2	2	3	3	1	1	3	Weak
Kamboj et al. 2015	3	2	1	2	1	1	2	Moderate
Kamboj et al. 2018	3	2	1	2	1	1	2	Moderate
Lincoln et al. 2013	2	1	1	2	1	2	2	Moderate
Maratos & Sheffield, 2020	3	1	1	2	1	1	2	Moderate
McEwan & Gilbert, 2016	3	2	1	3	1	2	3	Weak
Naismith et al. 2018	3	2	1	3	1	1	3	Weak
Naismith et al. 2019	3	1	1	2	1	2	2	Moderate
O'Neill & Macmillan 2012	2	1	1	2	1	2	1	Strong
Rockliff et al., 2011	3	2	1	1	1	1	2	Moderate
Tsivos, 2015	1	1	1	1	1	1	1	Strong
Wright, 2019	2	1	1	1	1	2	1	Strong

1 = Strong; 2 = Moderate; 3 = Weak

Table 1.4 Effect size (ES) calculations for Compassion Focused Imagery studies with and without control imagery conditions, for outcome measures used in pre- and post- intervention comparison.

Study	Compassion		Self-Criticism		Shame	
	Measure	d	Measure	d	Measure	d
Ascone et al., 2017	SCS†	0.25	FSCRS†	0.24	-	-
Baldwin et al. 2020	-	-	-	-	-	-
Bibbey, 2019	-	-	-	-	-	-
Brown et al. 2020 (Study 1)	VAS	1.1	-	-	-	-
Campbell et al. 2019& Campbell 2014	SCS	0.02§	-	-	-	-
Duarte et al. 2015	-	-	-	-	-	-
Fink-Lamotte et al. 2021			-	-	-	-
Forkert et al. 2022	SCS ‡	1.1	-	-	-	-
Gilbert & Irons, 2004	ICD	0.63	ICD	0.35	-	-
Kamboj et al. 2015	SSCS	0.46	SSCS	0.4	-	-
Kamboj et al. 2018	SSCS	0.38	SSCS	0.54	-	-
Lincoln et al. 2013	-	-	-	-	-	-
Maratos & Sheffield, 2020	-	-	-	-	-	-
McEwan & Gilbert, 2016	SCS†	0.6	FSCRS-IS FSCRS-HS FSCRS-RS	0.38 0.19 0.26	-	-
Naismith et al. 2018 (Study	SCS-SF	0.7	SCS-SF	0.58§	-	-

2) & Mwale, 2017						
Naismith et al. 2019	-	-	-	-	ISS†	0.91
O'neill, 2011; O'neill & Macmillan 2012	SCS	data not available	-	-	-	-
Rockliff et al., 2011	-	-	-	-	-	-
Tsivos, 2015	SCS	0.35	FSCRS	0.5	OAS	0.63
Wright, 2019	-	-	-	-	-	-

† denotes adapted scales.

‡ denotes calculation completed using baseline and follow-up data.

§ denotes non-significant outcome from comparison statistics.

SCS: Self Compassion Scale, SCS-SF: Self-Compassion Scale Short Form; SSCS: State self-compassion and criticism scale, ICD: Interval Contingency Diary, FSCRS: Forms of Self Criticising/Attacking &Self-reassuring Scale, FSCRS-IS: FSCRS –Inadequate Self Subscale, FSCRS-HS: FSCRS- Hated Self Subscale , FSCRS-RS: FSCRS – Reassured Self Subscale , ISS: Induced Shame Scale, OAS: Other as Shamer Scale, VAS: Visual Analogue Scales (averaged)

Table 1.5 Estimated treatment effect calculations on relevant outcome measures, for studies with imagery control conditions

Study	Compassion		Self-Criticism		Shame	
	Measure	d	Measure	d	Measure	d
Ascone et al., 2017	SCS†	0.29	FSCRS†	0.13	-	-
Bibbey, 2019	-	-	-	-	-	-

Brown et al. 2020 (Study 1)	VAS	1.39	-	-	-	-
Campbell et al. 2019& Campbell 2014	SCS	0.09	-	-	-	-
Duarte et al. 2015	-	-	-	-	-	-
Fink-Lamotte et al. 2021	-	-	-	-	-	-
Lincoln et al. 2013	-	-	-	-	-	-
Maratos & Sheffield, 2020	-	-	-	-	-	-
O'neill, 2011; O'neill & Macmillan 2012	SCS	data not available	-	-	-	-
Tsivos, 2015	SCS	0.41	FSCRS	0.25	OAS	0.62
Wright, 2019	-	-	-	-	-	-

† denotes adapted scales.

SCS: Self Compassion Scale, FSCRS: Forms of Self Criticising/Attacking &Self-reassuring Scale, OAS: Other as Shamer Scale, VAS: Visual Analogue Scales (averaged)