

Intervening with State Self-Criticism: Comparing the Effects of Single-Session Cognitive
Restructuring and Compassion-Focused Approaches as a Function of Individuals' Trait Self-
Criticism

by
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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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Abstract

Self-criticism is a personality trait characterized by harsh self-judgement (Blatt, 1995) and a transdiagnostic risk factor for numerous psychological disorders (Werner et al., 2019).

Individuals high in this trait experience varied, persistent, and harmful forms of psychological distress that are often resistant to improvement with commonly-used psychotherapeutic approaches like cognitive behaviour therapy (CBT) (e.g., Bulmash et al., 2009; Loew et al., 2020; Rector et al., 2000). Cognitive restructuring, a key intervention within CBT, assumes that individuals experience distress when their thinking is negatively biased and so helps individuals develop more logical and balanced thoughts. Despite being able to generate more logical and balanced thoughts, Gilbert (2005) observed that self-critical individuals struggle to feel soothed by these thoughts and may in fact experience them in a hostile, impatient voice. He integrated this observation with research on evolutionary psychology and neuroaffective science, which suggest that in response to giving and receiving care, the parasympathetic system (i.e., the vagus nerve) gives rise to soothed physiological feelings which reduces the threatened physiological response underpinned by the sympathetic nervous system (Gilbert, 2014; Porges, 2007). Gilbert therefore argued that to become less distressed, highly self-critical individuals need to develop a more compassionate, warmer way of relating to themselves because affiliation, not logic, evolved to be a key facilitator of soothed affect and physiology which in turn reduces sensitivity to threats (Gilbert, 2009). Although Gilbert's theory is compelling, and there is growing evidence for the effectiveness of compassion-focused therapy, no studies have directly tested this theory by comparing the momentary effects of cognitive restructuring and compassion-focused interventions aimed at targeting self-criticism. The present study addressed this important clinical and theoretical gap in the literature in a pre-registered single-session randomized clinical

trial. We hypothesized that in the face of heightened momentary shame and self-criticism, individuals higher in the trait of self-criticism would experience lower threat-based states (i.e., self-criticism, shame, negative affect, arousal) and higher affiliative-based states (i.e., soothing affect, state self-compassion, self-reassurance) following a compassion-based intervention involving directing warmth and care inward, than from a cognitive restructuring intervention involving developing more logical thinking about self. We also predicted that, in line with the theory behind compassion-focused therapy, these relative gains would be mediated by soothing affect, a positive affective state characterized by feelings of safeness and contentment (Gilbert et al., 2008). In addition to testing this overall theory, we sought to determine whether both compassion-based and cognitive restructuring interventions would outperform a distraction control condition at reducing threat-based states, and whether the compassion-based intervention would facilitate more affiliative-based states than a cognitive intervention. Participants were 577 undergraduate students (74.7% women) who participated in an audio-guided interactive virtual session during which they recalled a situation evoking self-criticism and shame. They were then randomly assigned to a virtually delivered compassion-based intervention, cognitive restructuring intervention, or distraction-based placebo control condition. Hierarchical regressions revealed partial support for our hypotheses. We found that the compassion intervention generally led to more soothing affect than the cognitive intervention at higher levels of trait self-criticism, whereas the cognitive intervention led to more soothing affect than the compassion condition at lower levels of trait self-criticism. While higher soothing affect after the intervention was generally associated with reduced threat-based states (i.e., state shame, state negative affect, and state self-criticism) and increased affiliative states (i.e., state self-compassion and state self-reassurance), compassion did not significantly mediate the relative

effect of the compassion intervention on these outcomes among highly self-critical individuals. Other findings revealed that across the range of trait self-criticism scores in the sample, both the compassion and cognitive interventions had a more beneficial impact on outcomes than the distraction-based control condition; however, these active interventions did not differ from one another. Taken together, this research suggests that when college students are experiencing momentary shame and self-criticism, engaging in cognitive-restructuring or compassionate responding should be more beneficial than distraction, but that for highly self-critical individuals, compassionate responding might promote more soothed feelings. Although this latter finding is consistent with the theory behind compassion-focused therapy, future studies should build on this work in more diverse samples and by examining the relative effects of the cognitive restructuring and compassion-based intervention approaches among individuals with clinically high levels of trait self-criticism.

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Introduction

Self-criticism

Self-criticism Definition

Self-criticism has been of great interest in psychological research due to its relation to many persistent psychological challenges (e.g., Werner et al., 2019). Research has conceptualized self-criticism in numerous ways over the past decades. Self-criticism was originally defined by Blatt (1974) as a personality trait resulting from an impeded ability to establish positive self-representations due to hostile and critical parenting. Self-criticism emerges in response to this developmental environment as a defensive preoccupation with achievement and self-worth. Blatt asserted that this personality structure increases individuals' risk of developing introjective depression which is characterized by "feelings of guilt, low self-esteem, excessively high standards and morality, a vulnerability to failure and criticism, and a tendency to assume blame and responsibility" (Blatt et al., 1976, p.387).

Since Blatt's (1974) original definition, self-criticism has commonly been characterized as the tendency to engage in harsh self-judgement, hostile self-attacking, and negative self-evaluation (e.g., Blatt, 2004; Blatt & Zuroff, 1992; Gilbert, 2000; Gilbert & Procter, 2006; Whelton & Greenberg, 2005). Individuals high in self-criticism tend to feel inadequate, inferior, and submissive, and are concerned about others' judgments of them. They also tend to engage in negative internal monologues and ways of relating to themselves, all of which are thought to contribute to the persistent forms of psychological distress they experience (Werner et al., 2019).

Self-criticism Conceptualized as Personality Trait

Self-criticism as a construct has been assessed in varying ways. Based on his conceptualization of self-criticism, Blatt and colleagues (1976) developed the Depressive

Experience Questionnaire (DEQ) assessing self-criticism as a one-dimensional vulnerability factor for depression. Thompson and Zuroff (2004) developed the Level of Self-Criticism Scale (LOSC) to assess two forms of self-criticism, comparative self-criticism and internalized self-criticism. These forms of self-criticism emerged from prior work including Blatt's (1974) cognitive developmental theory: dependency, resulting from abnormal anaclitic development (i.e., development characterized by a reliance on others and interpersonal relationship needs) and self-criticism, resulting from abnormal introjective development (i.e., development characterized by guilt and need to achieve) (Blatt et al., 1995; Rude & Burnham, 1995). Further examination of introjective personality as conceptualized by Blatt and Blass (1992) led to the identification of comparative self-criticism and internalized self-criticism (Thompson & Zuroff, 2004). While comparative self-criticism consists of negative evaluations of self in comparison to others, internalized self-criticism consists of negative self-evaluations in comparison with one's own unattainable personal standards (Thompson & Zuroff, 2004). Both involve unsatisfactory comparisons; however, comparative self-criticism involves a relational inferiority where others are seen as critical, and in internalized self-criticism, it is the self that is seen as self-punitive in response to both failure and success. Notably, comparative forms of self-criticism tend to be more predictive of distress and psychopathology than internal forms of self-criticism (Kelly & Zuroff, 2014). Gilbert and colleagues (2004) also identified different forms of self-criticism that are thought to vary in the psychological harm with which they are associated. They proposed that self-criticism is not a single process that varies in severity, but rather a process with multiple forms and functions that have emerged from evolved competencies for managing social relationships (Gilbert, 2000a, 2000b; Gilbert et al., 2004). Gilbert proposed that these competencies can be used for self-to-self relating. For instance, Gilbert and colleagues (2004)

note that self-attacks can appear in the form of dominating an inferior to adhere to particular standards or ways of behaving, serving the function of self-correction and self-improvement. Alternately, self-criticism can consist of attacks intended to persecute or destroy, with the function to harm or take revenge upon the self for failure. Gilbert et al. (2004) therefore developed the Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS) which assesses two forms of self-criticism. The inadequate-self (FSCRS-IS) is characterized by a subordinate self-to-self relationship, focusing on personal inadequacy, self-correction, and adherence to specific standards, whereas the hated-self (FSCRS-HS) is more pathogenic and focuses on hatred, self-contempt aggression, punishment and harm towards the self. Notably, although these two proposed forms of self-criticism are conceptually distinct in nature and origins, scores on the two subscales tend to correlate very highly with one another (Gilbert et al., 2017).

Self-criticism as a Dynamic State

Although self-criticism has typically been considered a stable disposition, more recent research has found self-criticism to be dynamic, changing within individuals across time and circumstances (Kelly et al., 2024). A recent ecological momentary assessment study examining momentary self-criticism in daily life found that self-criticism fluctuates across both time and contexts (Veilleux et al., 2024). The authors found that individuals reported greater momentary self-criticism when they were tired. They also found that individuals tend to report higher levels of self-criticism at home. Another study by Mason and colleagues (2021) of women who engage in binge eating demonstrated that moments of higher self-criticism tend to be associated with a greater subsequent risk of eating disorder symptoms. Taken together, there is preliminary

evidence that self-criticism levels vary in a state-like way within a person and that higher self-criticism in a given moment or on a given day is associated with more maladaptive behaviours.

Self-criticism and the Environment

Environmental factors such as gender norms and culture have been found to affect self-criticism. Prior research has found that collectivistic cultures tend to be more self-critical and pay more attention to negative self-relevant information, whereas more individualistic cultures tend to self-enhance and focus on more positive self-relevant information (Chang, 2007; Kelly & Zuroff, 2014). Although there is less research on self-criticism and gender, meta-analytic research has found that individuals who identify as women report lower levels of self-compassion than men (Yarnell et al., 2015), and that men and women who report more masculine gender role orientations tend to report higher levels of self-compassion (Yarnell et al., 2019). Based on the research suggesting that self-criticism and self-compassion are opposite ways of relating to oneself and indeed inversely related to one another (Neff, 2003), it seems possible that women-identified individuals may be more self-critical than those who identify as men and espouse masculine role orientations. Although more studies on self-criticism are needed, this research highlights the important role that environmental factors, including cultural background and gender norms, may play in influencing trait self-criticism. This research also suggests that psychological treatments might need to be tailored to individuals' specific sociocultural experiences of self-criticism.

Self-criticism as a Transdiagnostic Risk-factor

Self-criticism is a transdiagnostic risk factor for numerous psychological disorders (Blatt, 1995; Gilbert & Irons, 2005; Werner et al., 2019). Individuals high in self-criticism are at greater risk of developing chronic and debilitating forms of mental illness, such as major depressive

disorder, social anxiety disorder and eating disorders (Werner et al., 2019). Self-criticism has often been conceptualized and interchangeably termed self-critical perfectionism (Dunkley et al., 2003) and linked predominantly to a greater risk of developing depression (Zuroff et al., 1994). In addition to this, prior research has observed that individuals high in self-criticism have worse therapeutic outcomes (Bulmash et al., 2009; Loew et al., 2020; Rector et al., 2000), take longer to respond to therapy (Blatt & Zuroff, 2005), experience a lower degree of symptom resolution (Hawley et al., 2006). Perfectionism, which is related to self-criticism has been shown to have higher rate of dropout rates (Smith et al., 2023). Thus, to prevent these costly outcomes, it is essential to understand how best to conceptualize and intervene with the repeated self-attacking in which self-critical individuals engage.

Self-Criticism, Negative Affect, and Shame

Individuals higher in trait self-criticism tend to experience prolonged negative affect following challenging circumstances (e.g., interpersonal rejection) (Besser & Priel, 2011; Zuroff et al., 1999). They also experience higher average levels of momentary self-criticism in their daily life (Veilleux et al., 2024). Veilleux and colleagues (2024) additionally found that during moments of greater state self-criticism, individuals reported that their negative affect was higher and their positive affect was lower. Relatedly, Brott and Veilleux (2023) found that higher state self-criticism was associated with more hopelessness and suicidal ideation. Thus, it appears as though higher levels of trait self-criticism predispose individuals to higher average levels of negative affect, and also to higher momentary self-criticism, which also fuels more negative affect.

A particularly common form of negative affect experienced by self-critical individuals is shame (Gilbert & Miles, 2000). According to compassion-focused therapy theory, self-criticism

triggers emotions such as “disappointment, frustration, anger, or contempt,” which are specific to what Gilbert terms the threat system (Gilbert, 2014, p.31). These emotions are defensive in nature, and compassion-focused therapy theorizes that amongst self-critical individuals, these emotions are activated by the threat of shame. Shame is conceptualized as a painful self-conscious emotion involving the concern that personal inadequacies, defects or undesirable characteristics may be exposed to others (Lewis, 1992; Tangney, 2001). Along with this, there is a sense of feeling lesser than and powerless as well as the desire to hide or simply disappear (Tangney, 2001). Within this conceptualization, shame can be broken down into further subcomponents. External shame involves how one thinks and feels they are perceived by others and focuses on the negative perceptions of others. Internal shame involves self-focused attention that is characterized by feelings of inadequacy, negative self-evaluations, and self-criticism (Gilbert & Procter, 2006; Lewis, 1992). Lewis (1992, 2003) identified that external and internal shame can be fused together to form the “exposed self” and that in contexts of shame, there can be a sense of one’s external and internal world turning against the self. Gilbert and Procter (2006) argued that the highly threatened physiological reactions that characterizes shame make it extremely difficult for individuals to access the ability to self-soothe and feel less threatened.

Self-criticism and Psychological Interventions

Given the psychosocial difficulties experienced by individuals high in self-criticism, and the role that self-attacking plays in their distress, there has been an interest in discovering how best to intervene with self-criticism. Below, I review two approaches that are commonly used to conceptualize and intervene with self-criticism in current psychotherapeutic work: cognitively-focused interventions and compassion-focused interventions.

Cognitive-focused Interventions

Theoretical Assumptions

Cognitive interventions are commonly used psychological interventions for self-critical individuals (Loew et al., 2020); however, individuals high in self-criticism also tend to have poorer responses to cognitive interventions (Bulmash et al., 2009; Rector et al., 2000). Nevertheless, those who do experience reductions in self-criticism experience benefits from treatment such as greater decreases in symptoms of psychopathology (e.g., Enns et al., 2002; Handley et al., 2015; Rector et al., 2000). Cognitive behaviour therapy theorizes that self-criticism emerges from core ideas of self as inadequate (Beck, 1976). These ideas form schemas, or an operating framework based on core beliefs about the self and the world, which in turn acts as a lens through which individuals see themselves and the world (Gilbert, 2000a; Purdon, 2021). As individuals take in external information, it is elaborated upon in accordance with one's schema (Moscovitch et al., 2023). Self-critical individuals are likely to have core schemas involving a sense of inadequacy that stem from early life experiences (Baldwin, 1992, 2005; Castilho et al., 2014; Gilbert et al., 2006). In accordance with a self-schema of this nature, these individuals, are likely to give greater attention and priority to negatively-valenced information (e.g., I did poorly on this test), resulting in cognitive generalizations (e.g., I am unintelligent and unable to succeed). Neutral, positive, or disconfirming information is given less attention, and tends to be minimized or perceived as insignificant. Such schemas and information processing biases are said to be increasingly activated when mood states become more negative or in specific contexts, and this results in the emergence of negative automatic thoughts (e.g., self-critical thoughts, self-evaluative judgements and assumptions) (Purdon, 2021).

CBT aims to shift these maladaptive schemas by helping individuals gain an understanding that these cognitions are based on faulty logic and function as a biased filter of

external information (Purdon, 2021). To this end, CBT uses techniques such as cognitive restructuring to help individuals consider evidence for and against their cognitive distortions to develop more accurate, balanced and less biased alternative thoughts (e.g., I did well at some tasks and poorly at others) (Purdon, 2021). Thought records are a commonly used tool aimed at promoting cognitive restructuring in cognitively-based interventions and involve identifying negative automatic thoughts and collecting evidence for and against these thoughts to develop more adaptive and balanced ways of thinking (Greenberger & Padesky, 1995).

While targeting the faulty logic of maladaptive thoughts, through thought records and other cognitive interventions, appears to be effective for a wide range of psychological disorders (Hofmann et al., 2012), it may not fully address the needs of highly self-critical individuals. Prior researchers examining the efficacy of CBT for self-criticism noted that shifting one's maladaptive cognitions may be an insufficient strategy for highly self-critical individuals as a deeper shift in core beliefs and schema may be required (Rector, 2000).

There is some prior research that supports the use of cognitive interventions generally in reducing self-criticism (e.g., Levin et al., 2018). In terms of single session cognitively-focused interventions there is less research assessing self-criticism; however, believability of negative core beliefs related to self-criticism have been explored. For instance, Oliveira et al. (2012) found that a trial-based thought-record intervention aimed at reducing self-criticism resulted in reductions in fear of negative evaluations about the self and of intensity of emotions in a sample of individuals with social phobia. This study compared a standard seven-column dysfunctional thought record; and a trial-based thought record which is based on a traditional thought record and also uses the judicial process in courtroom as a metaphor (i.e., asks individuals to think about how the two sides of a court case would evaluate the evidence). Both interventions in this

study led to improvements in symptoms of self-reported social anxiety and anxiety, and observer rated global symptoms. More broadly, research has also found that single-session cognitively focused interventions show promise in the reduction of distress and mood. Elefant et al. (2017) assessed the effect of three online micro interventions on mood and distress, one of which was a thought record. This research found that these brief interventions did lead to within group reductions in distress and mood immediately post the intervention.

Self-criticism and Compassion-focused Therapy

Gilbert, the developer of Compassion-focused therapy (CFT) observed that self-critical individuals tend to struggle to feel emotionally soothed by the logical thoughts they are guided to develop in cognitive restructuring tasks (Gilbert, 2000a, 2009; Gilbert & Procter, 2006; Rector et al., 2000). That is, they may not experience an increased feelings of reassurance and contentment as a result of having challenged their thoughts. For example, they may start with the thought, “I fail at everything I do”, and be able to challenge it and generate the more “balanced” thought, “I failed this test, but I have also been successful the rest of the term.” However, in sitting with this new thought, they may not feel reassured. Although self-critical individuals can generate and understand the logic, they may not be able to feel soothed by or internalize these alternative thoughts (Gilbert, 2009). Moreover, while the content of their newly generated alternative thoughts may be less negative and/or more positive and more objective (e.g., you did not fail, you simply struggled) than their default automatic thoughts (e.g., I fail at everything I do), Gilbert argues that they are unlikely to be self-delivered from a place of care and compassion, which is required for individuals to feel emotionally soothed and reassured, and thereby less distressed (Gilbert, 2005).

Moreover, Gilbert notes that a focus on rationality and manipulation of conscious thoughts may be insufficient to truly penetrate and be internalized when individuals are experiencing heightened states of affect activation (Gilbert, 2000). Gilbert drew on prior work differentiating propositional and implicational cognitive processes (Teasdale & Barnard, 1993; Power & Dalgleish, 1997), where propositional thoughts are beliefs about properties of the self, and implicative thoughts involve activation of affect or memories (Teasdale, 1997). He proposed that implicative thoughts involving activation of affect, such as those that may involve memories of shame, employ cognitive heuristics or shortcuts that have evolved to prioritize speed rather than accuracy. Thus, these highly activated affective states are receptive to feelings rather than objective facts and may also rely on early life experiences that are not conscious and conditioned emotional responses, as proposed by Power and Dalgleish (1997). With a greater reliance on more primitive parts of the brain (i.e., the limbic system, basal ganglia; e.g., Bailey, 1987; Buck, 1988; Gilbert 2000, MacLean, 1985), these highly activated affective states are thought to be more irrational when activated in contexts of threat (Gilbert, 1993, 1998, 2000). Thus, Gilbert argues that trying to focus on gathering evidence against a negative belief – i.e., developing more propositional thinking – in such emotional contexts may be a misguided endeavor. Support for the idea that a focus on logic and reasoning may be insufficient to increase a sense of feeling soothed and reassured is in part evidenced by the limited success of CBT in alleviating the distress of highly self-critical individuals (Blatt et al., 2010; Loew et al., 2020).

Self-criticism and Deficits in Warmth/Soothing

Gilbert proposes that part of the reason self-critical individuals struggle to internalize these more logical thoughts is because such individuals are thought to generally have little access to this care-based way of relating to themselves (Gilbert, 2009). Self-critical individuals generally

have fewer experiences of receiving care and warmth early in life and/or thus have fewer memories of receiving care and warmth or their memories are fused with memories of having been rejected, criticized, abused, or neglected (Gilbert, 2014). Previous research in college populations has shown that 29% were categorized as maladaptive perfectionists, indicating they endorsed both high levels of perfectionistic standards and high levels of self-criticism in the face of unmet standards (Rice & Ashby, 2007). As a result, they are not able to draw upon emotional memories of care in times of distress and evoke warmth towards themselves. This is evidenced in self-critical individuals' tendency to experience greater challenges resisting self-attacks and their tendency to blame themselves, rather than others, when things go wrong (Levine et al., 2017). Self-critical individuals may have also witnessed others be self-critical towards themselves or simply experienced others as threatening or unsafe (Gilbert & Procter, 2006). This could include parents or peer bullies (Gilbert & Irons, 2008). Under the above mentioned conditions, self-criticism can emerge as a defensive or self-protective strategy to protect oneself from more powerful or threatening others (Gilbert & Irons, 2005; Gilbert & Procter, 2006). For instance, criticizing oneself may have emerged as a self-protective strategy against external criticism or fear of abandonment from a caregiver earlier in life. In contrast to the conceptualization of self-criticism emerging from a maladaptive schema, Gilbert links self-criticism to a strategy for self-protection and safety (Gilbert & Procter, 2006). He also proposes that self-critics that use these safety seeking strategies all share the tendency to struggle to use a caregiving self-compassionate approach to relate themselves and self-soothe (Gilbert & Procter, 2006). In line with this, research examining the neural correlates of self-criticism demonstrates that individuals high in self-criticism experiences greater brain activation in the lateral prefrontal cortex and the dorsal anterior cingulate, areas of error processing and behaviour inhibition which are thought to be

indicative of a greater focus on one's own inadequacies (Longe et al., 2010). On the other hand, individuals who are higher in trait self-reassurance experiences greater brain activation in the left temporal pole and insula areas associated with feeling compassion and empathy for others (Longe et al., 2010).

Self-criticism and the Tripartite Model of Affect Regulation

Self-critical individuals' challenges in regards to self-soothing and generating a sense of warmth and care towards oneself is in part explained by Gilbert's Tripartite Model of Affect Regulation (Gilbert, 2005). This model outlines three distinct and interrelated evolved affect regulation systems including the threat system, the drive system, and the soothing system. The interplay of these affect regulation systems forms the basis of compassion-focused therapy's theoretical approach to addressing self-criticism, with the activation of these three systems more balanced relative to one another as a primary goal (Gilbert, 2009, 2014).

Self-criticism and an Overactive Threat-Protection System

Highly self-critical individuals are said to have an overactive and overly sensitive threat protection system, meaning that they are hypervigilant of potential threats (Gilbert, 2009). The threat-protection system acts as an alarm system, activated by external (i.e., physical danger, social danger) and internal signals (e.g., anxiety) of danger. Internal signals can include contexts of hostile inner self-relating, common amongst self-critics. When this system is activated, it is characterized by negative affective feelings including anger, disgust, and anxiety. In terms of cognition, perception is thought to become narrowed directly on the primary source of danger (Posner & Petersen, 1990; White et al., 2009). Physiologically, activation of this system characterized by activation of the sympathetic nervous system, which is associated with increased heart rate, increased perspiration, and increased respiration (Gilbert, 2014). This

system parallels the “fight-flight” response – an activated defensive physiological response of fleeing or fighting a threat, as well as the modes of submission or defeat (Cannon, 1915; Gilbert, 2014).

Self-criticism and the Drive System

When activated, the threat protection system can be de-activated by one of the other two affect regulation systems, the drive or soothing system (Gilbert, 2009). The drive system is a hypothesized affect regulatory system that is thought to be overactive and sensitive in individuals high in self-criticism and shame (Depue & Morrone-Strupinsky, 2005; Gilbert, 2009). This system is engaged under conditions of striving for resources and rewards. It is characterized by shorter-term positive affective feelings such as feeling driven or excited. Like the threat system, this system is associated with activation of the sympathetic nervous system (e.g., increased heart rate, perspiration, increased rate of breathing) (Gilbert, 2009, 2014; Richardson et al., 2016). Thus, although it is characterized by positive feelings, it is a more active state. In the case of self-critical individuals, this may mean that their feelings of inadequacy are dealt with temporarily by shifting to an active mode or drive to seek resources or status.

Self-criticism and the Soothing Affect System

The threat system can also be deactivated through the soothing system. This is of central interest in this work, as it is compassion-focused therapy’s proposed antidote to self-criticism and shame (Gilbert, 2009). This system can be activated by social (e.g., feeling a sense of belonging) or physical stimuli (e.g., a hug). It is characterized by feelings of contentment, safety, and a state of present moment awareness. Unlike the other systems, it is associated with activation of the parasympathetic nervous system, or the “rest and digest” system, which is associated with increased release of oxytocin which has been found to promote affiliation and

feelings of safety (Gilbert, 2014). It is also associated with a sense of being present, in a state of open and relaxed non-action. Compassion-focused therapy theorizes that activation of this specific state is most conducive to allowing for more compassionate and adaptive thinking to be genuinely integrated into one's perceptions of self.

Soothing System and Physiology

Benefits of engaging feelings of being soothed, physiologically and psychologically have long been evidenced to be beneficial for psychological wellbeing. It is believed that the soothing/contentment system evolved alongside attachment behaviour (Depue & Morrone-Strupinsky, 2005). Acts of care (e.g., a mother soothing an infant with physical closeness), activate the soothing system and promote feelings of affiliation, social safeness and well-being (Gilbert, 2000). These soothed states, underpinned by the parasympathetic nervous system (Duarte & Pinto-Gouveia, 2017), evolved to tone down the stress-based physiological states of the sympathetic nervous system that underlie varying forms of emotional distress including shame (Gilbert, 2005, 2014). Thus, compassion-focused therapy aims to grow the capacity to engage the soothing system and develop a warmer way of relating to oneself. Compassionate ways of relating should reduce physiological feelings of distress through activation of the vagus nerve which stimulates the release of the hormone oxytocin and which is associated with increased heart rate variability (Gilbert, 2014; Kemp et al., 2012; Porges, 2007). Heart rate variability is the amount of time between heart beats, where more variation in time is associated with a calmer state and low variation is associated with a more stressed state (Appelhans & Luecken, 2006; Porges, 2007). Increased heart rate variability is a marker of decreased cortisol (Rockliff et al., 2008) – and activation of the oxytocin-opiate affiliative system, has been found

to reduce sensitivity of the amygdala to socially threatening stimuli (e.g., criticism) (Depue & Morrone-Strupinsky, 2005; Kirsch et al., 2005; Sue Carter, 1998; Wang, 2005).

Caregiving Social Mentality

Compassion-focused therapy proposes that evolved motivation systems for affiliation, cooperation, and caregiving are associated with specific physiology conducive for activation of the soothing system and the emergence of compassion (Gilbert, 2014). Gilbert proposes that self-critical individuals can activate the soothing affect system when they engage the caregiving social mentality to relate to themselves. This mentality is one of the social mentalities theorized by Gilbert to work in tandem with other social mentalities to establish social roles and address social challenge (e.g., give care, eliciting care, cooperation, friendship building) (Gilbert, 2000, 2005). Gilbert also proposes that these mentalities are integrated into one's own self-evaluative systems (Gilbert, 2000). The caregiving social mentality is both a way of relating and responding to others and to oneself. It is engaged under conditions of providing care (e.g., a mother comforting a crying infant) and responding to signals of distress (Gilbert, 2005). While the caregiving social mentality is said to be self-nurturing, other competitive social mentalities characteristic of self-critical individuals are said to be self-attacking (Gilbert, 2000). Gilbert argues that engaging the caregiving social mentality is a key component of resolving inner conflicts and can alter the nature of self-directed signals of self-attack self-critics engage in. In contrast to cognitive restructuring interventions, which focus on shifting a maladaptive schema and shift the meaning of their distressing experiences through logic, Gilbert proposes that a motivational shift through engaging the caregiving social mentality is required to achieve this goal.

Responding to one's own distress through engaging one's caregiving mentality and offering the self-warmth and nurturance gives rise to compassion, which compassion-focused therapy defines as a turning towards one's own suffering with the desire to alleviate it (Gilbert & Choden, 2013). Through responding with compassion, one can learn to relate to the self in a warmer, more caring way. Gilbert (2005) proposed that it is precisely this care, not logic, that facilitates the soothed physiological response required to reduce distress in contexts of threat (e.g., self-attacking), to which self-critical individuals are prone.

Compassion-focused Therapy and Benefits for Self-critical Individuals

Compassion-focused therapy has been found to be associated with reduced psychopathology and shame for individuals high in trait self-criticism. For instance, a recent meta-analysis by Vidal and Soldevilla (2023) revealed that compassion-focused therapy reduces self-criticism and increases self-soothing. Other systematic reviews have found compassion-focused interventions to be effective in reducing negative mental health outcomes and improving positive mental health outcomes in clinical populations suffering from various psychological disorders characterized by shame and self-criticism (Craig et al., 2020; Petrocchi et al., 2024). A systemic review also found that compassion-focused therapy has beneficial therapeutic outcomes and that individuals high in self-criticism benefitted more than individuals low in self-criticism (Leaviss & Uttley, 2015). Most research looking at the effects of compassion-focused therapy on self-criticism and shame are longer-term and involve a full course of therapy. Looking more broadly beyond compassion-focused interventions alone, self-compassionate interventions have also been proven to effectively reduce self-criticism (Wakelin et al., 2022). Taken together, there is strong evidence that interventions that involve the repeated practice of self-compassion

cultivation over time result in beneficial outcomes for individuals with high self-criticism and shame.

Brief Compassion-focused Therapy Interventions for Self-Criticism

While there is a wealth of research on the beneficial effects of longer-term compassion-focused therapy for shame and self-criticism, brief interventions have also been shown to produce promising results. For instance, a two-week compassionate mind training program, involving exercises used within compassion-focused therapy, resulted in significant reduction in shame, and self-criticism, as well as improvement in heart rate variability when compared to a waitlist control group (Matos et al., 2017). Brief self-compassionate letter-writing interventions have also been shown promise for individuals with self-criticism and shame. For instance, a study with undergraduate students experiencing high levels of shame found that a 16-day compassionate letter writing intervention reduced their shame (i.e., global shame, external shame) and self-criticism (Swee et al., 2023). Similarly, two-week self-compassionate letter writing interventions in eating disorder populations have also been shown to result in greater decreases in shame than waitlist-control groups (Kelly & Waring, 2018).

Single session Compassion-focused Interventions for Self-Criticism and Shame

Single session compassion-focused interventions have also demonstrated benefit in terms of reducing self-criticism. In an immersive virtual reality study, participants who experienced self-compassion from an embodied first-person perspective experienced reductions in self-criticism and increases in safety (Falconer et al., 2014). Individuals who simply observed self-compassion experienced a reduction in self-criticism alone. Promising results have also been found in self-critical parents. For example, Kirby and colleagues (2023) found that a single two-

hour compassion-focused therapy intervention led to reductions in self-criticism in a sample of highly self-critical parents.

Similarly, single session compassion-focused interventions have also been found to effectively to reduce feelings of shame. Lincoln et al. (2013) found that a single compassion-focused imagery intervention followed by a distressing exposure and guided application of a compassionate image, reduced paranoid imagery in a sample of undergraduate students through reductions in negative emotions including shame, in comparison to a neutral control condition where participants were shown a neutral chair image. A similar study was conducted by Ascone and colleagues (2017) with a sample of patients with paranoid ideation, and although there were no interaction effects on self-criticism or shame, the intervention was found to increase self-reassurance and positive affect.

Compassion-focused Interventions and Cognitively-Focused Interventions

Few studies under a few weeks in length have directly compared a compassion-focused intervention to a more cognitive-focused intervention, and none have examined the role of soothing affect in reducing self-criticism, distress, or shame. Stevenson and colleagues (2019) compared the effects of a fourteen-day self-help cognitive restructuring intervention to a self-compassion letter-writing intervention amongst a sample of individuals with elevated levels of social anxiety. They tested whether the effects were mediated by soothing affect, and whether they were moderated by self-criticism or fear of self-compassion. They found that both interventions reduced trait social anxiety and other measures related to social anxiety, and they did not find evidence for the proposed mediators or moderators. The lack of differences here may be due to the specific context of social anxiety or due to the methods used. The researchers note the value of testing other self-compassion interventions in future research. Similarly,

Cândeă & Szentăgotai-Tătar (2018) assessed the effect of an online self-compassion intervention, a cognitive reappraisal intervention and wait-list control on shame and shame proneness in a sample of undergraduate students with elevated levels of social anxiety. Both active treatments led to reductions in shame-proneness and irrational beliefs, however, only the self-compassion conditions led to decreases in social anxiety. Other research has compared the effects of internet-based compassionate mind training to a cognitive behavioural treatment in a perinatal and intending to be pregnant female sample (Kelman et al., 2018). The interventions in this study consisted of a 45-minute didactic training followed by four meditations for the compassionate mind training group and four exercises for the CBT group over the period of two weeks. This study also found similar effects of both of these interventions in terms of affect, self-reassurance, self-criticism and self-compassion; however, the compassionate mind training intervention resulted in greater reductions in depression and anxiety scores. While these findings are surprising, as it would be expected that the compassionate mind training intervention would result in greater increases in outcomes targeted in this approach (e.g., self-compassion, self-criticism), as Kelman and colleagues (2018) note that the greater reductions in anxiety and depression may suggest that compassionate mind training addresses specific mechanisms involved with these processes that extend beyond those addressed in CBT.

Current Gaps in the Literature on Compassion-focused Therapy and Self-Criticism

Although there is research demonstrating the benefits of compassion-focused therapy for reducing self-criticism, and increasing the capacity to feel soothed, no studies to our knowledge have directly examined whether the shame and negative affect that self-critical individuals experience when self-attacking is better conceptualized – and treated – as stemming from a) errors in thinking or b) deficits in inner care and compassion for self and the resulting lack of

soothed feelings, as theorized in compassion-focused therapy. It is also unknown whether trying to respond to self-critical thoughts and associated feelings of shame with and without direct activation of the caregiving social mentality produces different effects on therapeutic outcomes in individuals, and whether effects vary as a function of whether someone is relatively high or low in trait self-criticism. Prior research examining the efficacy of compassion-focused therapy for highly self-critical individuals has largely been in the context of whole therapeutic interventions that occur over the course of several weeks, rather than at a momentary level, making it hard to isolate the immediate effects of responding to heightened state self-criticism and distress by activating the caregiving mentality as compared to engaging in more logical thinking. Examining the effectiveness of such interventions at a momentary level would allow for more specific testing of a central tenet of compassion-focused therapy.

The Present Study

Study Objectives

The objective of the current work was to examine whether a compassion-based intervention is better than a cognitive restructuring intervention at helping participants respond effectively to momentary self-critical thoughts and associated feelings of shame by measuring the effects of these interventions on threat-based state outcomes, including state shame, negative affect, momentary arousal, self-critical thoughts, and affiliative-based state outcomes, including self-compassion, and self-reassurance. We also wished to determine whether any differences that emerge would vary as a function of trait self-criticism, such that more highly self-critical participants would benefit even more from the compassion-based relative to the cognitive restructuring intervention. Finally, we investigated whether this moderation effect (i.e., the potential superiority of the compassion-based intervention for highly trait self-critical

individuals) would be mediated by increases in safe/soothed feelings. To achieve these aims, we designed a pre-registered single-session randomized controlled trial in which undergraduate students were guided to bring to mind a source of self-criticism and shame and were then randomly assigned to an online intervention that guided them to one of three possible conditions in which they either: (1) responded to these thoughts and feelings with warmth and compassion; (2) engaged in cognitive restructuring to develop more balanced, logical thinking; or (3) listened to a story read to them as a way to distract from the distress (placebo control condition). The inclusion of this control condition allowed us to ensure that the two active interventions we were seeking to compare were indeed superior to an intervention grounded in less sophisticated psychological theory – namely, the psychological benefits of distraction (e.g., Drake et al., 2016).

Hypotheses

H1. As a first step in our analyses, we sought to examine differences between the three conditions in terms of their effect on both positive and negative state outcomes. We were interested in examining these differences independently of participants' level of trait self-criticism as a first, rudimentary question. Given the activation of the caregiving mentality in compassion-based work, and its proposed direct effects on a sense of feeling cared for and soothed, we hypothesized that the compassion-based intervention would generally facilitate more affiliative-based state outcomes – namely, higher state self-reassurance, state self-compassion, and soothing affect – than the cognitive restructuring intervention which does not directly target these processes (**H1a**). With respect to threat-based state outcomes, we did not expect there to be differences between the two active interventions given they both directly target state self-criticism and distress. Thus, we hypothesized that both the compassion-based and cognitive

restructuring interventions would both result in greater reductions in state self-criticism, state shame, negative affect, and arousal than the distraction control condition (**H1b**).

H2 and H3. Our primary interest was to examine whether responding to elevated shame and self-criticism by generating compassion and warmth toward self would result in more pronounced gains for individuals with elevated levels of trait self-criticism than a cognitive intervention that involved developing more logical and balanced thinking about self. Due to the established deficits of highly self-critical individuals in directing warmth and care inwards and the role these deficits are thought to play in their distress, we expected that individuals higher in state self-criticism would experience more pronounced benefits – i.e., reduced threat-based and increased safeness-based outcomes – from the compassion-based intervention than from the cognitive-restructuring intervention, and that this effect would be mediated by soothing affect as proposed by compassion-focused therapy theory.

H2 was therefore that the relative effects of the two active interventions on therapeutic outcomes would vary as a function of the individual's trait level of self-criticism. Specifically, among individuals higher in the trait of self-criticism, we expected that the compassion-based intervention would generate greater gains than the cognitive restructuring intervention. According to the theoretical underpinnings of compassion-focused therapy, it would be expected that for individuals who are higher in trait self-criticism and have less access to inner-care and warmth and are therefore less likely to generate or experience safe/soothed feelings, the deliberate activation of a caring, compassionate orientation in response to state self-criticism and shame should be especially impactful. Specifically, given how different this compassion-based orientation is to their natural way of relating, they should experience a more pronounced increase in safe/soothed feelings as compared to those lower in trait self-criticism

who more typically relate to themselves compassionately. Therefore, **H3** was that the relative benefits of the compassion intervention over the cognitive intervention for individuals lower in trait-criticism would occur indirectly due to the greater impact of compassion on soothed/safe feelings for these individuals. For individuals lower in the trait of self-criticism (i.e., below the sample mean), the relative effects of the compassion-based vs. cognitive restructuring interventions will be less pronounced; and this will be because the differing impact these interventions will have on safe/soothed feelings will be reduced for low trait self-critical individuals.

Method

This two-part study was approved by the university's Research Ethics Committee, preregistered on OSF, and registered with the US Clinical trials registry 45443. In line with the 2010 CONSORT statement (Moher et al., 2010) flow of participants is displayed in Figure 1. The study was a single-blind, placebo-controlled, parallel assignment, three-armed, randomized clinical trial with 1:1:1 randomization of an intervention in a sample of Canadian University students. A parallel-group design was employed where each participant was randomized to one of three conditions, which are described in further detail below: a compassion-based condition, a cognitive restructuring condition, and a placebo control condition. All aspects of the study were administered via the secure survey software Qualtrics™ and consisted of two online sessions.

Sample Size

We conducted an a-priori power analysis using Gpower for an ANCOVA that assessed fixed and main effects and interactions with three groups (i.e., compassion-based, logic-based, and placebo control) and one covariate per analysis. The power analysis indicated that approximately 82 participants per group ($N = 244$) would be required to provide sufficient power ($1-\beta = .80$; $\alpha = 0.05$) to detect a small effect ($d = 0.4$) post-intervention. To determine the required sample size for our planned moderated mediation analyses, we drew on path estimates ($B = .85$ and $B = .21$) from a similarly designed study by Shaw and Kelly (Shaw & Kelly, 2024) and associated recommendations for mediation by Fritz and MacKinnon (2007), i.e., 58 per condition ($N = 174$). Given our interest in moderated mediation, we followed Simonsohn's (2015) recommendation to double the sample required for moderation resulting in a recommendation of $N = 348$. In the end, we decided to present the results from the study using

hierarchical regressions instead of ANCOVAs as doing so allowed for greater parsimony in the presentation of main effects and interactions.

We nevertheless decided to recruit additional participants given the likelihood of some poor-quality data as well as some attrition. Based on 16.8% average attrition rates reported in randomised controlled trials (Cooper et al., 2018) and a range of 4-22% attrition rate in a similar study (Shaw & Kelly, 2024), we expected a 15% attrition rate from Part 1 to Part 2 resulting in us recruiting an additional 53 participants. We also expected a rate of roughly 10% failure of attention checks, resulting in an additional 35 participants requiring recruitment. Thus, we sought to recruit a minimum of 436 participants.

Participants

Participants were recruited through virtual advertisements on a university-specific online research platform (SONA) made available to the undergraduate students in the psychology participant pool of a large Canadian university. Recruitment ads informed participants that the study would be investigating “the effects of brief writing activities on the experience of feeling unpleasant emotions.” The informed consent letter informed participants that, the study will “examine the impact of three different online interventions that will guide you to deal with emotionally challenging situations.” Partial disclosure was used so as to not inform participants that the study aimed to examine whether the effectiveness of the interventions vary as a function of their trait self-criticism, and due to how much safe/soothing affect they generate. This information was withheld from participants to mitigate the likelihood of them providing responses that they believed were consistent with the study hypotheses.

Eligible participants had to be able to listen to audio clips (either via device speakers or with headphones) during their study participation, be between 16-84 years of age, and have a

SONA account. Given the rapid rate of study enrollment in the participant pool, we ended up recruiting $N = 577$ students. An international sample was also recruited via Prolific to ensure an adequate sample size; however, recruitment was much faster on SONA than anticipated and sufficient power was achieved with this sample alone as described below. Thus, recruitment via Prolific was halted to save resources and for the purpose of this master's thesis, I present findings from the student sample only.

Participant demographic information is presented in Table 1. Notably, the average age was 19.67 ($SD = 2.98$), largely consisted of individuals that identified as women (cis or trans) (74.7 %), largely of the female sex (78.7%), less than half Caucasian (39%), with about a fifth of the sample being East Asian (18.5%) or South Asian (19.8%).

Overview of Procedure

The study consisted of one 20-minute online session (Part 1) in which trait measures were administered, and one 50-minute online session (Part 2) in which the intervention took place and associated pre/post state measures were administered. Participants were eligible to complete Part 2 two days after completing Part 1 and they had five days to begin it to provide participants with ample time to complete the study. Participants were granted up to 1.5 SONA credit for study participation (i.e., 0.5 online credit for part one, and 1.0 online credit for part two). All participants were asked to complete Part 1 and Part 2 of the study on a desktop or laptop device. The first session (Part 1) consisted of a series of demographic questions and baseline trait measures (i.e., trait self-criticism, trait self-compassion) that served to screen out ineligible participants. With the exception of the demographic questionnaire (at the start of Part 1) and the questions regarding prior knowledge or engagement in therapy and exercises (at the end of Part 1), the measures were presented in a randomized order. Two days after completion of the first

session (Part 1), participants received access to the second session (Part 2) of the study via SONA. Participants began the second session by completing a set of baseline state questionnaires (i.e., state self-criticism, state shame, negative affect, state arousal). They then underwent a 10-minute shame induction adapted from previous studies in our and other research labs (e.g., Cavallera et al., 2018; McGarity-Shipley et al., 2022. REB #44763), where they were asked to reflect on something about themselves they feel ashamed about. Participants were specifically asked to pick something that felt painful and uncomfortable to think about, but something they felt they could tolerate for the remainder of the study. Participants were asked not to choose something related to trauma. They were asked to spend five minutes writing everything that came to mind as they recalled a recent situation where those feelings of shame were particularly pronounced. Subsequently, they completed several state questionnaires which served as pre-intervention measures. The measure of state shame additionally allowed us to ensure that the shame induction was successful as it was assessed at baseline. After completing these measures, participants were randomized to one of three conditions (i.e., compassion-based, cognitive restructuring, distraction-based control). All interventions began with a brief rationale explaining how their specific assigned intervention could be useful in addressing feelings of shame. All conditions involved listening to audio recordings that first guided participants to re-read what they wrote about their source of shame, then presented a rationale for a particular task with which they would be asked to engage, and then were guided to engage in a particular a condition-specific task which involved writing. Participants were then asked to re-read what they wrote during the intervention writing task. Finally, participants completed post-intervention state measures.

Measures

Baseline Demographic and Trait Measures. In Part 1, demographic and personality trait measures were administered using the randomize function in Qualtrics. For the current paper, only the demographic measure and two personality measures were of interest and are described below.

Demographics. Participants completed demographic questions during Part 1 of the study to determine age, year of study, gender identity, sex, ethnicity, and country of residence.

Forms of Self-Criticizing/Attacking and Self-Reassuring Scale (FSCRS; Gilbert et al., 2004). This measure of trait self-criticism was completed at during Part 1 and was an eligibility requirement for inclusion in the final sample given the hypothesized role self-criticism was expected to play in moderating the effect of the interventions on outcomes. Participants rated their agreement with items reflecting self-critical thoughts and feelings on a 5-point scale (0 = *Not at all like me* to 4 = *Extremely like me*) with higher scores indicating greater degrees of trait self-criticism. The 14 items from the “Hated self” (5 items, e.g., “I do not like being me”) and “Inadequate self” (9 items, e.g., “I am easily disappointed with myself”) subscales of the FSCRS were combined to form a composite trait self-criticism score, as in prior research (Gilbert et al., 2006); total self-criticism scores demonstrated excellent internal consistency ($\alpha = .924$).

Self-Compassion Scale – Short Form (SCS-SF, Raes et al., 2011). This 12-item scale assessed participants’ trait self-compassion in Part 1 of the study; scores on this measure served as a covariate in analyses examining the effects of the intervention on outcome variables related to self-compassion (i.e., state self-compassion, state self-reassurance). Participants indicated how often they behaved in a manner stated in the scale items (e.g., “I try to be loving towards myself when I’m feeling emotional pain,” “When something upsets me, I try to keep my emotions in balance”) using a 5-point scale (1 = *Almost never* to 5 = *Almost always*). An index score of trait

self-compassion was obtained through calculating the mean of the positive items and the reverse-scored negative items of each participant's responses with higher scores indicating greater self-compassion. This measure has been shown to have acceptable internal consistency; the current research found that scores on the SCS-SF had good internal consistency with Cronbach's $\alpha = .853$.

Outcome Measures – Negative States

Momentary self-criticism scale (Mason et al., 2021). This 5-item measure was used to assess state self-criticism before the shame induction, after the shame induction/before the intervention, and after the intervention. The measure included instructions created by our research team to suit our study framework. Items of this measure were adapted by Mason et al. (2021) from self-report surveys of self-criticism (Gilbert et al., 2004) for use in an ecological momentary assessment (EMA) study. The items of the scale reflect momentary self-critical thoughts (e.g., “disliking yourself,” “dwelling on your failings”) and participants rated the extent to which the statements were true of them in the current moment on a 5-point scale (1 = *Not at all* to 5 = *Extremely*). An index score of momentary self-criticism was obtained by calculating the mean of participants' responses. Scores on this measure in the present study were found to have excellent reliability with Cronbach's alphas ranging from .939 to .942.

State Shame and Guilt Scale, Shame subscale (SSGS, Marshall et al., 1994). State shame was assessed using the 5-item Shame subscale of the SSGS before the shame induction, after the shame induction/before the intervention, and after the intervention. The SSGS Shame subscale assessed momentary feelings of shame on a 5-point scale (1 = *Not feeling this way at all* to 5 = *Feeling this way very strongly*). Sample items include “I feel small” and “I feel humiliated, disgraced”. An index score of shame was obtained by calculating the mean across

items, with higher scores indicating greater degrees of momentary shame. The present study found the Shame subscale of the SSGS to have good to excellent reliability with Cronbach's alphas ranging from .883 to .920.

Self-Assessment Manikin (SAM, Bradley & Lang, 1994). This measure was used to assess state negative affect and arousal before the shame induction, after the shame induction/before the intervention, and after the intervention. Specifically, momentary arousal was assessed using the arousal item, with the low end of the scale representing low arousal and the high end representing high arousal. The manikin for arousal ranges from a sleepy looking figure at the low end and increasing levels of an explosion within the manikin representing increased levels of arousal at the high end. Momentary negative affect was assessed with the pleasure item on this scale, with the low end of the scale representing low pleasure and the high end representing high pleasure, with the manikin frowning on the low end of the scale and showing a more neutral facial expression in the middle and moving towards a smile at the highest point of the scale. The pleasure item was reverse scored to achieve a negative affect score, with higher scores indicating greater negative affect. Both of these subscales consist of 9-point Likert scale consisting of pictorial representations (i.e., manikin figures).

Outcome Measures – Positive States

State Self-Compassion. State self-compassion was assessed after the intervention using two measures. Neff's and colleagues (2021) 6-item State Self-Compassion Scale assessed state self-compassion as conceptualized by Neff (2003), inquiring about the extent to which participants were responding to their distress in the present moment with kindness versus judgment (2 items; e.g., "I'm giving myself the caring and tenderness I need"), mindfulness versus rumination (2 items; e.g., "I'm keeping things in perspective"), and a sense of common

humanity versus isolation (2 items; e.g., “I’m remembering that there are lots of others in the world feeling like I am”). Participants were asked to indicate their agreement with each item on a 5-point scale (1 = *Not at all true for me* to 5 = *Very true for me*) and the mean of all six items formed a composite state self-compassion score with acceptability reliability of $\alpha = .768$.

To assess state self-compassion as conceptualized by Gilbert (2005), we administered the Self Compassion Subscale of the Compassionate Engagement and Action Scale (CEAS-Self, Gilbert et al., 2017) which was amended to orient participants to their present, momentary experience. Participants were asked to rate to what degree they agreed with eight items assessing compassionate engagement (e.g., “I am feeling motivated to engage and work with my distress”) and five items assessing compassionate action (e.g., “I am directing my attention to what is likely to be helpful to me”) on a 10-point scale (1 = *Not at all* to 10 = *Extremely*). To obtain a score of self-compassion we computed the mean across items on the two subscales of the Compassionate Engagement and Action Scales – Compassion for Self Scale as per scoring recommendations (CEAS-Self; Gilbert et al., 2017). The total mean had a good reliability of $\alpha = .896$.

State Self-Reassurance. State self-reassurance was assessed post-intervention with four researcher generated items. Participants were asked to rate the degree to which they felt reassured by the new response they generated during the intervention on a 5-point scale (*Very Slightly or Not at All* to *Extremely*). An index score was obtained by calculating each participant’s mean, with higher scores indicating greater momentary self-reassurance. Cronbach’s alpha was excellent at .907.

Mediating Variable

Soothing Affect. State soothing affect was measured post-intervention with a 13-item Soothing Affect Measure adapted scale from Shaw and Kelly (2024), which includes the

Serenity Subscale of the PANAS-X (Watson & Clark, 1994) and the Safe/Warmth Positive Affect Subscale of the Types of Positive Affect Scale (Gilbert et al., 2008). This scale also includes six researcher-generated items assessing social forms of soothing affect. The instructions for this scale were taken from Shaw and Kelly (2024), adapted from the Serenity Subscale of the PANAS-X (Watson & Clark, 1994). Participants rated the extent to which they felt the words on the scale (e.g., “safe”, “calm”) described how they felt in the current moment on a 5-point Likert scale (1 = *Very slightly or not at all* to 5 = *Extremely*). Due to high internal consistency, with a Cronbach’s alpha of .954, a composite score was used by combining the means of each participant scores on each of these scales.

Manipulation and Attention Checks

Manipulation checks: To assess whether the interventions functioned as expected, all participants completed a 12-item researcher-generated manipulation check questionnaire. Specifically, participants completed three yes/no questions about the content of the exercise they participated in, nine questions assessing whether the condition generated the feelings, cognitions, or experience expected (*Very Slightly or Not at All* to *Extremely*). The yes/no questions included, “In the exercise I was asked to think more logically,” “In the exercise I was asked to generate compassion for myself,” and, “In the exercise I was asked to listen to a story.” The nine-question measure consisted of three 3-item subscales specific to each condition. The Compassion subscale involved questions assessing the degree to which participants felt they generated emotional warmth, compassion and care towards themselves (e.g., “To what extent did you feel emotional warmth towards yourself?”) and the mean of this composite score showed excellent reliability with Cronbach alpha of .912. The Cognitive subscale consisted of questions assessing the degree to which participants felt they took a more logical, balanced, and objective perspective on their

feelings of shame (e.g., “To what extent do you feel you took a more logical approach to dealing with your feelings of shame?”) The mean of the cognitive subscale composite also showed acceptable internal consistency with a Cronbach alpha of .801. The placebo distraction control condition involved questions assessing the degree to which participants felt distracted, able to take their mind off their feelings of shame or let go of their feelings of shame (e.g., “To what extent did you feel distracted from your feelings of shame?”) and the mean of the placebo condition composite also showed borderline acceptable reliability with a Cronbach alpha of .707.

Attention checks. To assess participants’ attention and to screen out inattentive participants prior to randomization in Part 2, participants completed four attention check questions in Part 1 and one attention check in Part 2. Three additional attention checks were included in Part 2 to assess attentiveness post randomization. For these questions, participants were specifically asked to select a certain response (e.g., “Please select “4” for this question”). To be included in the data analysis, participants had to pass at least three out of the four attention checks in Part 1, and the first attention check in Part 2 prior to randomization.

Self-Reported Engagement and Motivation. Engagement in the shame induction task was assessed with one item asking (i.e., “How engaged with the shame reflection task were you”) on a 100-point slider scale (0 = *Very low* to 100 = *Very high*). Participants’ motivation to engage in the active intervention was assessed with a question asking participants about the degree to which they felt they were going through the motions (i.e., “How much did you feel like you were just going through the motions?”) 100-point slider scale (0 = *Not at all* to 100 = *Very much*).

Experimental Manipulations

Induction of state shame and self-criticism. All participants underwent a brief induction aimed at eliciting a state of shame and self-criticism that their assigned intervention condition would then be targeting. This induction consisted of audio recordings, followed by text on subsequent pages for participants to review if needed. The induction, which was adapted from previous studies conducted in our lab and other prior research (e.g., Cavalera et al., 2018; McGarity-Shipley et al., 2022), asked participants to connect to something about themselves that they felt ashamed about. Participants were first asked to bring to mind a situation where they remembered the feelings of shame about this specific thing being particularly pronounced (“Now, think back to that thing you’re ashamed of, and bring to mind a situation where you remember that your feelings of shame about that specific thing were particularly pronounced”). They were then asked to really connect with that moment (“Pay attention to what it feels like at this moment to be evoking this memory and feeling of shame. Allow yourself to really connect with what you felt in that moment”). Participants were further guided to reflect on this by being asked about elements of this experience such as their thoughts, feelings, and bodily sensations. Then, they were asked to spend five minutes writing about their feelings of shame (“During this task, please try to let go and express all your thoughts and innermost feelings in relation to your source of shame. Write freely without worrying about mistakes. Try to write everything that comes to mind. You may find it helpful to use present tense (for example, *I feel...*, or *I worry...*) to help you stay connected to what you are feeling”). If they ran out of content to write about, they were asked to continue re-writing or expanding on what they had already written.

Compassion-based intervention. The compassion-based intervention was adapted from compassion-based interventions developed by Paul Gilbert (e.g., Gilbert, 2009), and other self-compassion tasks used previously in our research lab (e.g., Shaw & Kelly, 2024; Kelly &

Waring, 2018). This intervention involved a series of audio recordings, followed by text on subsequent pages for participants to review if needed. Participants randomly assigned to the compassion-based intervention were given a rationale for their assigned task that explained that the exercise will involve looking at their source of shame through a compassionate lens. Participants were told that it can be difficult to access compassion when they are faced with feelings of shame and feel stuck in their shame (“The exercise will involve trying to see some of your experiences from the lens of a caring, compassionate other. Often when we are feeling ashamed, we experience a lot of inner hostility and expect that others would be hostile or unkind toward us if they knew more about us. We often have a hard time accessing and imagining compassionate perspectives. This combination of hostility and lack of compassion can keep us stuck in shame. In this exercise, we are going to try to access more compassionate ways of looking at our shame”).

Participants were then guided to connect with a compassionate part of themselves through connecting with a time they felt compassion for someone else and felt motivated to help them (“We will be guiding you to get in touch with a compassionate, caring part of yourself – a part of yourself that’s motivated to help others when they are suffering, by really trying to see and understand what they’re feeling and trying to make them feel better. We all have this ability to be compassionate. We are all born with it even though sometimes it can be challenging”). Participants were instructed to connect with that moment and to their own desire to do something about it (“To get in touch with this compassionate part of yourself, it can be helpful to think back to a time when you felt compassion for a person or animal, and you had this desire to help them and comfort them through an emotionally difficult or painful experience”).

After choosing an experience where they felt this way, participants were asked to try to return to that specific moment and allow themselves to observe what it had felt like for them. Once they spent a few moments with this orientation of compassion they were asked to remain connected to this orientation – that is, their ‘compassionate self’ – while re-reading what they had written about their source of shame as though it was someone else that had written it. While staying connected to their compassionate self, they were asked to then respond by writing whatever was arising from their compassionate self. They were also given examples of how they might do this (“For example, you might say, “I see how hard this is for you, and how painful it is. I see how much you have been suffering with these feelings. It is so hard to be going through this and to feel so alone with it. Many people would have a difficult time dealing with what you’re dealing with. It’s a lot”). Finally, they were asked to reread and allow themselves to really take in the compassion being expressed to from their compassionate self. They were asked to read it back to themselves with a warm and supportive tone of voice while staying connected to their compassionate self. (“Now that you have finished responding to your feelings of shame from this compassionate perspective, we would like to you read over what you wrote and try to allow yourself to really take in, even for a moment, the compassion being expressed to you from this compassionate part of yourself”).

Cognitive restructuring intervention. Participants randomly assigned to the cognitive restructuring intervention were asked to engage in a logic-based exercise that was adapted from a thought record often completed during CBT treatment (Greenberger & Padesky, 1995). This intervention involved a series of audio recordings, followed by text on subsequent pages for participants to review if needed. First, participants were given a rationale for their assigned task that explained that shame can make it difficult to access more rational and subjective

perspectives and this exercise will work to help them take a more balanced perspective on their source of shame (“The exercise will involve trying to think about some of your experiences through a more rational, objective lens. Often when we are feeling ashamed, we do not think as rationally and often distort pieces of information, exaggerate or focus in on negative pieces of information, and overlook or dismiss positive pieces of information. In this exercise, we are going to try to develop more balanced, rational thinking about our source of shame”).

To begin the active component of the intervention, participants were asked to re-read what they had written about their source of shame and chose a thought that felt most central and related to their chosen shame experience which they felt it would be beneficial to start thinking about differently. Participants were given examples of potential thoughts they could choose (e.g., “There is something wrong with me”). Participants were then provided with an explanation as to how to generate evidence for and against a thought by being given a series of examples. They were then asked to spend a few moments generating at least three pieces of evidence for their negative thought and at least three pieces of evidence against their negative thought. Participants were then guided to examine all the evidence they had generated and develop a new, more balanced thought (“We would like you to look back at the evidence for and against your chosen thought, and really think through and try to weigh the evidence for and against your initial thought and try to develop what is likely to be a more balanced thought”). They were also given an example of how they might do this (“For example, taking into account evidence for and against the thought, *I am unlovable*, someone could update their thought to: *I felt hurt that my boyfriend left me, and that I sometimes do not get invited to the gatherings I want; however, I am loved by my friends and they often tell me that they care a lot for me*). Participants were then asked to reread their new more balanced thought back to themselves.

Placebo control distraction condition. Participants randomly assigned to the placebo control condition listened to a portion of an audio recording of “The Hobbit” (Tolkien, 2009), adapted from prior research (e.g., Xu et al., 2017). This intervention involved a series of audio recordings, followed by text on subsequent pages for participants to review if needed. Participants were first given a rationale for their assigned task that explained that they would participate in an exercise that would take their attention from their feelings of shame and involve listening to a story (“The exercise will involve hearing a passage read from the book *The Hobbit*. Often when we are feeling ashamed, we feel stuck in our shame and start to ruminate on it, which can make us feel worse. In this exercise, we are going to let go of our focus on shame for a little bit to listen to a story”).

Participants first listened to a five-minute audio recording of the hobbit, and then were asked to reread what they wrote about their source of shame. Next, they were asked to reflect on their source of shame in the present moment for five minutes (“Having reviewed what you wrote about your source of shame, please take a few moments to reflect further on anything that is coming up for you now. On the next page, please let yourself write about the thoughts and feelings that you have now as you do this reflection”). After they had done so they were asked to reread their newly generated reflection.

Results

Missing Data

Of the 886 participants who began the study, 195 did not complete Part 1 or did not complete Part 2 and were not randomized to an intervention. Nine of those randomized in Part 2, did not complete the remainder of the session. Thirty-seven did not complete the FCSR and 36 did not complete the SCS-SF, as required for inclusion in analysis. When examining data provided by participants as part of their pre- and post-manipulation questionnaire, only 0.7-1.6% of data were missing and Little MCAR's test revealed that these data were missing at random $X^2(24355) = 24438.73, p = .351$.

Data Exclusions and Inspections

All exclusions were made prior to randomization of experimental conditions in Part 2 to abide by Consort guidelines for randomized controlled trials (Moher et al., 2010). Of the 886 participants who began the study, 18 were excluded due to overly consistent responses on several measures; 29 were excluded for completing the survey in an unreasonably short or long period of time; 115 failed half or more of the attention checks in Part 1; and 197 participants failed the first attention check prior to randomization in Part 2. An additional six participants were excluded due to completing the shame induction more than once and not completing the study the first time or completing the active intervention portion of the study twice.

All baseline trait, pre-shame induction, pre-intervention measures, and post-intervention were assessed for outliers of $|3.00|$ standard deviations or greater as recommended by (Field, 2013). Higher outlier values were identified in scores on trait self-compassion, pre-shame induction state shame, pre-intervention state negative affect, and post-intervention state shame; lower outlier values were identified in scores on post-intervention state negative affect. All

identified outliers were winsorized to remain within the |3.00| standard deviation cut-off, by replacing all outlier values with the nearest non-outlying value (Field, 2013). Skewness and kurtosis of all study variables was found to be within acceptable ranges of |1.4| and |1.7|, respectively (Field, 2013).

Descriptive Statistics and Correlations Among all Study Variables

Means, standard deviations, and Pearson zero-order correlations for all baseline trait and state variables are included in Table 2. Trait self-criticism was positively associated with baseline state negative affect, arousal, self-criticism and shame. Trait self-compassion was negatively related to all baseline state variables (i.e., state self-criticism, state shame, negative affect, arousal).

Preliminary Analyses

Baseline Differences. ANOVAs examined whether there were any differences between conditions on baseline trait measures, pre shame induction and pre-intervention scores. There were no differences in baseline trait measures, baseline state measures, or post shame induction/pre-intervention measures administered immediately before randomization to the intervention of interest.

Self-Reported Engagement and Motivation. When asked to rate the degree to which they were engaged in the initial shame induction exercise, 22.2% reported scores below the midpoint of the scale, and 77.8% reported scores above the midpoint of the scale. This indicates that 22.2% reported a low level of engagement, and 77.8% reported a high level of engagement. When asked to rate the degree to which they were “going through the motions” when participating in the active intervention, 71.4% reported scores below the midpoint of the scale and 28.6% of participants reported scores above the midpoint of the scale. This indicates that

71.4% of participants reported a low degree of going through the motions, and 28.6% reported a high degree of going through the motions.

Manipulation checks. To assess whether the shame-induction successfully induced feelings of shame, a *t*-test was conducted. Results indicated that there was a significant increase in state shame from pre- to post-shame induction, $t(576) = 15.66, p < .001$.

To ensure that participants experienced their assigned interventions in the way it was intended, we asked them three yes or no questions about the content of the intervention. Participants were expected to answer yes to the question that best described the intervention they were assigned to. Descriptive statistics revealed that of the participants who had been assigned to the compassion condition, 97% correctly responded ‘yes’ to the compassion-specific question; however, 67% and 33% incorrectly responded ‘yes’ to the cognitive-specific and control-specific questions respectively. Of participants who had been assigned to the cognitive condition, 93% correctly responded ‘yes’ to the cognitive-specific question; however, 87% and 26% also incorrectly responded ‘yes’ to the compassion and control condition questions respectively. Of participants who had been assigned to the placebo control condition, 98% correctly responded ‘yes’ to the control-specific question; however, 60% and 72% responded ‘yes’ incorrectly to the compassion and cognitive questions respectively.

ANOVA analyses also revealed that when examining between-condition differences in ratings of the manipulation check items intended to assess qualities of the three different conditions (e.g., “To what extent do you feel you were able to generate compassion toward yourself?”), there was a main effect of condition on the compassion and cognitive composites. Regarding the compassion composite, participants in the compassion intervention reported higher scores than those in the control condition participants ($p < .001$) but not than those in the

cognitive intervention ($p = .390$). Regarding the cognitive composite, those in the cognitive condition scored higher than those in both the compassion intervention ($p < .001$) and the control condition ($p < .001$). Interestingly, there was no effect of condition on responses to items designed to assess qualities of the control condition ($p = .134$).

Task duration. To assess whether there were differences in the time taken to complete the intervention task in Part 2, an ANOVA was conducted with condition as the independent variable and time spent on the intervention as the dependent variable. There were no significant effects of condition on time spent on the intervention $F(2,576) = 1.07, p = .342, \eta^2_p = .004$.

Analytic Strategy

Hypotheses 1 and 2. Hierarchical multiple regressions were used to test hypotheses about the main effect of condition (H1a and H1b) and the interaction between condition and trait self-criticism in predicting outcome variables (H2). In all hierarchical regression models dummy-coded condition variables were the primary predictor, with the reference comparison condition, assigned a 0, chosen to suit the particular hypothesis being tested in a given analysis; these details are described in the results section within each analysis. In all hierarchical models, pre-intervention scores on the relevant dependent variable were entered in Step 1 as a covariate (e.g., pre-intervention state negative affect when examining post-intervention negative affect as the outcome); in cases where a pre-intervention state variable was not administered, a trait measure relevant to the outcome in question was instead entered in Step 1 as a covariate (e.g., trait self-compassion when examining the post-intervention outcome of state self-compassion) so as to not overwhelm participants with measures and not lead them into an expectation of what we were aiming to induce. Covariate scores were centered and standardized in all analyses. The dummy-coded condition variables were entered in Step 2 of each model to allow for the testing of

hypotheses about condition main effects. Subsequently, trait self-criticism was entered in Step 3 and its interaction with dummy-coded condition variables were entered in Step 4 to allow for the testing of hypotheses regarding the moderating role of trait self-criticism on condition effects.

When a significant interaction emerged between condition and trait self-criticism in predicting a particular outcome variable in Step 4, Process MACRO 4.0 was used to conduct simple slope analyses to probe the nature of the interaction. Simple slope estimates were generated at -1, 0, and +1 standard deviation from the sample mean to represent low, average and high levels of self-criticism respectively. In each of the regression analyses, the criterion variable was regressed on two dummy-coded variables, together representing the main effect of condition, where the reference condition (coded as 0 within each dummy variable) was compassion for H1a and H2, and control for H1b.

Hypothesis 3. Moderated mediation regression was used to test the hypothesis that the interaction between trait self-criticism and condition in predicting outcomes would occur indirectly through soothing affect. In all moderated mediation analyses, dummy-coded conditions variables were the primary predictor, with compassion group serving as the reference group by being assigned the lowest value (i.e., 1), the cognitive condition a greater value (i.e., 2) and the control condition was excluded.

Hypothesis 1 and 2

State Soothing Affect as Predicted by Condition and Condition x Trait Self-Criticism

To test H1a, regarding the superiority of the compassion condition in generating soothing affect, a hierarchical regression model was conducted with trait self-compassion in Step 1 and both the cognitive and control conditions in Step 2, with the compassion condition entered as the benchmark. To control for baseline differences that may affect soothing affect, we controlled for

trait self-compassion. Consistent with H1a, there was a main effect of condition on post-intervention levels of soothing affect. Consistent with H1a, the compassion condition led to more soothing affect than the control condition (see Table 3, Step 2), but contrary to H1a, did not differ from the cognitive condition (see Table 3, Steps 2). When another exploratory model was run with the cognitive condition as the benchmark, the cognitive condition was also found to generate more soothing affect than the control condition, $B = -.31$ ($SE = -.09$), $t(568) = -3.63$, $p < .001$.

To test H2 that trait self-criticism would moderate the effect of condition on soothing affect, such that individuals higher in trait self-criticism would experience more soothing affect in the compassion than in the cognitive condition, trait self-criticism was added to the initial model in Step 3, emerging as a significant negative predictor; next, the interaction terms between trait self-criticism and both the cognitive and control conditions were entered in Step 4, with the compassion condition as the benchmark. The interaction between trait self-criticism and the cognitive condition was significant, $p = .03$, but the interaction between trait self-criticism and the control condition was not, $p = .15$ (see Table 3, Step 4). When the model was run again with the cognitive condition as benchmark, there was also no interaction between trait self-criticism and the control condition, $B = .07$ ($SE = 1.0$), $t(565) = .76$, $p = .44$. Simple slopes analysis was used to probe the one significant interaction, and revealed that the relative effect of the compassion versus cognitive condition on soothing affect was not significant at trait levels of self-criticism that were 1 SD below the mean, $B = .21$ ($SE = .12$), $t(2,565) = 1.76$, $p = .08$, at the mean, $B = .03$ ($SE = .08$), $t(563) = .13$, $p = .74$, or 1 SD above the mean, $B = -.16$ ($SE = .12$), $t(563) = -1.28$, $p = .20$. Figure 1 nevertheless shows a pattern consistent with H2 whereby the compassion condition generated more soothing affect at higher trait self-criticism levels and the

cognitive condition generated more soothing affect at lower levels of trait self-criticism. ***State Self-Reassurance as Predicted by Condition and Condition x Trait Self-Criticism***

To test H1a, regarding the superiority of the compassion condition in generating state self-reassurance, a hierarchical regression model was conducted. To control for baseline differences that may affect state self-reassurance, we controlled for trait self-compassion in Step 1. We entered the dummy-coded cognitive and control condition variables in Step 2, with the compassion condition entered as the benchmark. There was a main effect of condition on post-intervention levels of state self-reassurance. Consistent with H1a, the compassion condition led to more state self-reassurance than the control condition (see Table 4, Steps 2), but contrary to H1a, did not differ from the cognitive condition (see Table 4, Steps 2). When another exploratory model was run with the cognitive condition as the benchmark, the cognitive condition was also found to generate more state self-reassurance than the control condition, $B = -.67$ ($SE = .10$), $t(569) = -6.71$, $p < .001$.

To test H2 that trait self-criticism would moderate the effect of condition on state self-reassurance, trait self-criticism was added to the model in Step 3, emerging as a significant negative predictor; next, the interaction terms between trait self-criticism and both the cognitive and control conditions were entered in Step 4, with the compassion condition as the benchmark. The interaction between trait self-criticism and the cognitive condition was not significant, $p = .3$ (See Table 4, Step 4). Further, the interaction between trait self-criticism and the control condition was not significant, $p = .25$. When the model was run again with the cognitive condition as benchmark, there was no interaction between trait self-criticism and the control condition, $B = -.01$, ($SE = .12$), $t(566) = -.10$, $p = .92$.

State Self-Compassion as Predicted by Condition and Condition x Trait Self-Criticism

To test H1a, regarding the superiority of the compassion condition in generating state self-compassion as conceptualized by Neff (2021), a hierarchical regression model was conducted. To control for baseline differences that may affect state self-compassion, we controlled for trait self-compassion in Step 1. We entered the dummy-coded cognitive and control condition variables in Step 2, with the compassion condition entered as the benchmark. There was a main effect of condition on post-intervention levels of state self-compassion. Consistent with H1a, the compassion condition led to more state self-compassion than the control condition (see Table 5, Steps 2), but contrary to H1a, did not differ from the cognitive condition (see Table 5, Steps 2). When another exploratory model was run with the cognitive condition as the benchmark, the cognitive condition was also found to generate more state self-compassion than the control condition, $B = -.30$ ($SE = .07$), $t(567) = -.18$, $p < .001$.

To test H2 that trait self-criticism would moderate the effect of condition on state self-compassion, trait self-criticism was added in Step 3, emerging as a significant negative predictor; in Step 4, we added the interaction terms between trait self-criticism and both the cognitive and control conditions, with the compassion condition as a benchmark. Neither the interactions between trait self-criticism and the cognitive condition, $p = .44$, nor the interaction between trait self-criticism and the control condition were significant, $p = .10$ (see Table 5, Step 4). When the model was run again with the cognitive condition as benchmark, there was also no interaction between trait self-criticism and the control condition, $B = .06$ ($SE = .08$), $t(564) = .77$, $p = .44$.

To test H1a, regarding the superiority of the compassion condition in generating state self-compassion as conceptualized by Gilbert (2017), a hierarchical regression model was conducted with trait self-compassion in Step 1 and both the cognitive and control conditions in Step 2, with the compassion condition entered as the benchmark. To control for baseline

differences that may affect state self-compassion, we controlled for trait self-compassion. A main effect of condition on post-intervention levels of state self-compassion emerged. Consistent with H1a, the compassion condition led to more state self-compassion than the control condition (see Table 6, Steps 2), but contrary to H1a, did not differ from the cognitive condition (see Table 6, Steps 2). When another exploratory model was run with the cognitive condition as the benchmark, the cognitive condition was also found to generate more state self-compassion than the control condition, $B = -.46$ ($SE = .16$), $t(568) = -2.95$, $p = .003$.

To test H2 that trait self-criticism would moderate the effect of condition on state self-compassion, trait self-criticism was added to the initial model in Step 3; next, the interaction terms between trait self-criticism and both the cognitive and control conditions, relative to the compassion condition, were entered in Step 4. The interactions between trait self-criticism and the cognitive condition ($p = .56$) and between trait self-criticism and the control condition ($p = .75$) were not significant (see Table 6, Step 4). When the model was run again with the cognitive condition as benchmark, there was also no interaction between trait self-criticism and the control condition, $B = .05$ ($SE = .18$), $t(565) = .27$, $p = .79$.

State Negative Affect as Predicted by Condition and Condition x Trait Self-Criticism

To test H1b, regarding the superiority of the active interventions in reducing negative affect, a hierarchical regression model was conducted. To control for baseline differences that may affect state negative affect, we controlled for pre-intervention state negative affect in Step 1. We entered the dummy-coded cognitive and control condition variables in Step 2, with the compassion condition entered as the benchmark. There was a main effect of condition on post-intervention levels of state negative affect. Consistent with H1b, both the compassion and cognitive conditions led to less negative affect than the control condition (see Table 7, Steps 2).

To compare the compassion and cognitive conditions, an additional model was run with the compassion condition as the benchmark (see Table 11, Steps 2); this revealed no difference between these two conditions in terms of their impact on negative affect.

To test H2 that trait self-criticism would moderate the effect of condition on negative affect, such that among those higher in trait self-criticism, the compassion condition would be most effective at reducing negative affect, two steps were added to the model that contained the compassion condition as the benchmark. Trait self-criticism was added in Step 3, and the interaction terms between trait self-criticism and both the cognitive and control conditions, relative to the compassion condition, were entered in Step 4. Contrary to H2, there were no significant interactions between trait self-criticism and the cognitive condition ($p = .48$) (see Table 11, Step 4). There was also no significant interaction between trait self-criticism and the control condition ($p = .91$) (see Table 11, step 4). When the model was run again with the cognitive condition as benchmark, there was also no interaction between trait self-criticism and the control condition, $B = -.09$. ($SE = .15$), $t(565) = -.60$, $p = .55$.

State Arousal as Predicted by Condition and Condition $\times$ Trait Self-Criticism

To test H1b, regarding the superiority of the active interventions in reducing state arousal, a hierarchical regression model was conducted. To control for baseline differences that may affect state arousal, we controlled for pre-intervention state arousal in Step 1. We entered the dummy-coded cognitive and compassion condition variables in Step 2, with the control condition entered as the benchmark. Inconsistent with H1a, when controlling for pre-intervention arousal, there were no main effects of condition on post-intervention levels of state arousal (see Table 8, Steps 2). To compare the compassion and cognitive conditions, an additional model was

run with the compassion condition as the benchmark (see Table 12, Step 2); this revealed no difference between these two conditions in terms of their impact of state arousal.

To test H2 that trait self-criticism would moderate the effect of condition on state arousal, such that among those higher in trait self-criticism, the compassion condition would be most effective at reducing state arousal, two steps were added to the model that contained the compassion condition as the benchmark. Trait self-criticism was added in Step 3, and the interaction terms between trait self-criticism and both the cognitive and control conditions, relative to the compassion condition, were entered in Step 4. Contrary to H2, there were no significant interactions between trait self-criticism and the cognitive condition ($p = .10$) (see Table 12, Step 4). However, there was also a significant interaction between trait self-criticism and the control condition, $B = -.43$. ($SE = .17$), $t(565) = 2.59$, $p = .01$ (see Table 12, Step 4). (Step 4). Simple slopes analysis revealed that the relative effect of the compassion versus control condition on state arousal was not significant at low trait self-criticism (1SD below the mean), $B = -.37$ ($SE = .24$), $t(563) = -1.53$, $p = .13$, or mean levels of self-criticism $B = .06$ ($SE = .17$), $t(563) = .38$, $p < .71$; however, it was significant at high (1 SD above the mean) levels of self-criticism, $B = .50$ ($SE = .24$), $t(563) = 2.10$, $p = .04$. These findings reveal that among individuals higher in the trait of self-criticism, the compassion-based intervention generated lower post-intervention arousal levels than the control intervention. When the model was run again with the cognitive condition as benchmark, there was also no interaction between trait self-criticism and the control condition, $B = .16$ ($SE = .20$), $t(565) = .83$, $p = .41$.

State Self-criticism as Predicted by Condition and Condition x Trait Self-Criticism

To test H1b, regarding the superiority of the active interventions in reducing state self-criticism, hierarchical regression model was conducted. To control for baseline differences that

may affect state self-criticism, we controlled for pre-intervention state self-criticism in Step 1. We entered the dummy-coded cognitive and compassion condition variables in Step 2, with the control condition entered as the benchmark. There were main effects of condition on post-intervention levels of state self-criticism (see Table 9, Steps 2). Consistent with H1b, both the compassion and cognitive conditions led to less state self-criticism than the control condition (see Table 9, Steps 2). To compare the compassion and cognitive conditions, an additional model was run with the compassion condition as the benchmark (see Table 13, Step 2); this revealed no difference between these two conditions in terms of their impact on state self-criticism.

To test H2 that trait self-criticism would moderate the effect of condition on state self-criticism, such that among those higher in trait self-criticism, the compassion condition would be most effective at reducing state self-criticism, two steps were added to the aforementioned model that contained the compassion condition as the benchmark. Trait self-criticism was added in Step 3, and the interaction terms between trait self-criticism and both the cognitive and control conditions, relative to the compassion condition, were entered in Step 4. Contrary to H2, there were no significant interactions between trait self-criticism and the cognitive condition ($p = .34$) (see Table 13, Step 4), however, there was a significant interaction between the compassion condition and the control condition ($p = .01$).

Simple slopes analysis revealed that the relative effect of the compassion versus control condition on state self-criticism was not significant at trait levels of self-criticism that were 1 SD below the mean, $B = .13$ ($SE = .12$), $t(563) = 1.64$, $p = .24$; however, it was significant at mean levels of trait self-criticism, $B = .34$ ($SE = .08$), $t(563) = 4.37$, $p < .001$, and at 1 SD above the mean of trait self-criticism, $B = -.55$ ($SE = .12$), $t(563) = 5.13$, $p < .001$. Thus, the compassion intervention generated less state self-criticism among individuals higher in trait self-criticism

than the control condition. When the model was run again with the cognitive condition as benchmark, there was no significant interaction between trait self-criticism and the control condition, $B = .15$. ($SE = .09$), $t(563) = 1.72$, $p = .09$.

State Shame as Predicted by Condition and Condition x Trait Self-Criticism

To test H1b, regarding the superiority of the active interventions in reducing state shame, a hierarchical regression model was conducted with pre-intervention state shame in Step 1 and both the compassion and cognitive conditions in Step 2, with the control condition entered as the benchmark. There was a main effect of condition on post-intervention levels of state shame. Consistent with H1b, both the compassion and cognitive conditions led to less state shame than the control condition (see Table 10, Steps 2). To compare the compassion and cognitive conditions, an additional model was run with the compassion condition as the benchmark (see Table 14, Steps 2); this revealed no difference between these two conditions in terms of their impact on state shame.

To test H2 that trait self-criticism would moderate the effect of condition on state shame, such that among those higher in trait self-criticism, the compassion condition would be most effective at reducing negative affect, two steps were added to the aforementioned model that contained the compassion condition as the benchmark. Trait self-criticism was added in Step 3, and the interaction terms between trait self-criticism and both the cognitive and control conditions, relative to the compassion condition, were entered in Step 4. Contrary to H2, there were no significant interactions between trait self-criticism and the cognitive condition ($p = .77$) (see Table 14, Step 4). There was, however, a significant interaction between trait self-criticism and the control condition ($p = .01$).

Simple slopes analysis revealed that the relative effect of the compassion versus control condition on state self-criticism was not significant at trait levels of self-criticism that were 1 SD below the mean, $B = .10$ ($SE = .09$), $t(563) = 1.04$, $p = .30$, however; it was significant at mean levels of trait self-criticism, $B = .27$ ($SE = .07$), $t(563) = 4.11$, $p < .001$, and at 1 SD above the mean of state self-criticism, $B = -.45$ ($SE = .09$), $t(563) = 4.89$, $p < .001$. Thus, the compassion condition generated less state shame at average and higher trait self-criticism levels than the control condition.

When the model was run again with the cognitive condition as benchmark, there was a significant interaction between trait self-criticism and the control condition, $B = -.17$. ($SE = .08$), $t(565) = 2.29$, $p = .02$. Simple slopes analyses were used to probe this significant interaction, and revealed that the relative effect of the cognitive versus control condition on state shame was not significant at low trait self-criticism levels (1SD below the mean), $B = .12$ ($SE = .09$), $t(563) = 1.26$, $p < .21$; however, it was significant at mean self-criticism levels $B = .27$ ($SE = .07$), $t(563) = 4.11$, $p < .001$ and high (1 SD above the mean) self-criticism levels, $B = .43$ ($SE = .10$), $t(563) = 4.48$, $p < .001$. These findings reveal that, among individuals with average and higher levels of trait of self-criticism, the cognitive conditions resulted in lower state shame than the control condition.

Hypothesis 3

Moderated Meditation: State Outcomes Predicted by Condition x Trait Self-Criticism

Indirectly via Soothing Affect

Moderated mediation was used to test H3 that among those higher in trait self-criticism, the compassion condition would lead to better outcomes than the cognitive condition – namely, reduced negative affect, arousal, state self-criticism, and state shame, and increased state self-

compassion and self-reassurance – indirectly via soothing affect. The placebo control condition was excluded from this analysis, as our hypothesis focused centrally on the relative effects of the two active interventions compared to one another. The moderated mediation analysis was conducted using Hayes (2018) PROCESS V.4.0 macro for SPSS, model 7, with 10,000 percentile bootstrap samples. Process MACRO preprogrammed coding systems created a new dummy variable where compassion was the reference group and the cognitive group was the indicator variable. In each model, the dummy-coded condition variable was the independent variable, pre-intervention level of the outcome variable was the covariate, trait self-criticism was the moderator, post-intervention soothing affect was the mediator, and post-intervention level of the outcome variable was the dependent variable.

Contrary to H3, there was no evidence of moderated mediation when examining any of the outcome variables. In other words, the interaction between trait self-criticism and condition did not exert an indirect effect on outcomes via soothing affect. Two significant paths emerged in nearly all models. First, there was a significant effect of trait self-criticism by condition on soothing affect in all models with the exception of the model predicting negative affect. Findings were similar to those reported in the hierarchical regression analysis above; namely, among those higher in trait self-criticism, the compassion intervention resulted in more soothing affect than the cognitive intervention, whereas the reverse was true at lower trait self-criticism. The second significant path was from post-intervention soothing affect to the negative outcome variable, with greater post-intervention soothing affect associated with lower levels of post-intervention state negative affect, shame, self-criticism, and arousal. This path was also significant when predicting positive outcomes variables, with greater post-intervention soothing affect associated

with higher levels of post-intervention state self-reassurance and self-compassion as conceptualized by both Neff (2003) and Gilbert (2005) (see tables 15-28).

Discussion

The personality trait of self-criticism is associated with numerous mental health and social challenges (Werner et al., 2019). High levels of self-criticism can be debilitating and interfere with successful engagement in therapy, and is associated with greater treatment resistance and dropout (Bulmash et al., 2009; Rector et al., 2000). Gilbert, the developer of compassion-focused therapy, observed that highly self-critical individuals tend to struggle with CBT- derived practices like cognitive restructuring (Gilbert, 2009). He observed that although highly self-critical individuals are often able to produce more balanced and less biased alternative thoughts to their self-critical ones, the defining task of cognitive restructuring, these individuals do not feel emotionally soothed by their alternative thoughts and thus are limited in how much their distress can subside. This observation – together with research on neuroaffective science and evolutionary psychology – contributed to the theoretical model underlying compassion-focused therapy. Namely, Gilbert (2005) argued that for psychological interventions to assist self-critical individuals in feeling less distressed, they must be effective at generating a physiological state of feeling soothed, hence the focus on training individuals to generate inner-care and warmth, not simply more logical thoughts. Despite a wealth of evidence supporting the efficacy of compassion-focused psychotherapies and practices for a range of psychological challenges and disorders, no research prior to the present study has directly compared the momentary effects of a cognitive and compassionate intervention for individuals high in trait self-criticism. This is problematic because it remains unclear which theoretical approach – that underlying cognitively-based or compassion-focused therapy – is most relevant to understanding the distress associated with self-criticism. As a result, it remains unclear which type of intervention approach is likely to be most beneficial. Given that self-criticism is a transdiagnostic

risk factor for many psychological disorders characterized by recurrent self-attacking and shame (Blatt, 1995; Gilbert & Irons, 2005; Werner et al., 2019), a greater understanding of the optimal ways to intervene with these momentary manifestations of the trait can lead to more empirically-informed treatment approaches and decisions.

To address this important clinical and theoretical gap in the literature, we conducted a randomized clinical trial in which participants engaged in a task to recall a situation evoking shame and then were randomly assigned to a single-session virtually delivered compassion-based intervention, cognitive restructuring intervention, or distraction-based control condition. We were especially interested in whether for individuals high in the trait of self-criticism, a compassion-based intervention, that involved directing warmth and care inward, would result in more emotional gains in the face of heightened state shame and self-criticism than a cognitive intervention that involved developing more logical thinking about self; we were also interested in testing whether these relative gains would be mediated by soothing affect, as is expected in compassion-focused therapy. In addition to testing this overall theory, we also tested the hypotheses that both the compassion-based and cognitive restructuring interventions would outperform the distraction control condition at reducing threat-based state outcomes (e.g., negative affect), that the compassion-based intervention would facilitate more affiliative-based state outcomes (e.g., state self-compassion), and that these between-condition differences would be more pronounced among individuals higher in trait self-criticism given the marked deficits these individuals have in generating care and warmth inward.

Overall, results of this study provided partial support for our hypotheses. We had predicted that across levels of trait self-criticism, responding to distress with compassion as compared to cognitive restructuring would generate greater state soothing affect, self-

reassurance, and self-compassion (H1a). The rationale for this hypothesis was that compassion-focused interventions specifically target these outcomes through generating warmth and care towards self and indeed prior research offers support for the effectiveness of longer-term compassion-focused therapy leading to increases in these outcomes over time (Beaumont, 2012; Gilbert & Procter, 2006; Vidal & Soldevilla, 2023). We nevertheless did not find support for this particular hypothesis. Instead, exploratory analyses revealed that both the compassion and cognitive conditions did lead to more state soothing affect, self-reassurance, and self-compassion than the control condition. These findings demonstrate that responding to momentary shame and self-criticism by developing more balanced thinking about one's source of shame and generating compassion towards the self are both strategies that can facilitate more positive emotional states and ways of relating to oneself in comparison to distraction.

In accordance with H1b, both the compassion and cognitive interventions resulted in less post-intervention state negative affect, self-criticism, and shame than the distraction control condition; furthermore, the two active interventions did not differ from one another, once again suggesting they are both more beneficial momentary strategies to alleviate state self-criticism and shame than distraction. It may not seem surprising that both interventions outperformed the distraction control condition given that listening to an excerpt from a book may not seem to directly target psychological mechanisms that fuel state shame and self-criticism. The finding is nevertheless noteworthy given that non-specific treatment factors were held constant across the two active interventions and control conditions; that is, a plausible rationale was provided for all conditions and participants engaged in the same types of tasks across conditions (i.e., listening to an audio guide, providing a written reflection). Given the wealth of research showing that psychological interventions with theoretically-derived rationales and tasks tend to generate

similar outcomes (Wampold, 2015), it is not a trivial finding that both the cognitive restructuring intervention and the compassion-based intervention resulted in greater gains than the distraction control condition. Furthermore, the fact that distraction is a commonly used approach to managing distress (Walker et al., 2023) and the active interventions still surpassed these benefits makes the present findings all the more useful to disseminate.

In line with H2, the relative benefits of the compassion intervention over the cognitive intervention in generating positive emotional outcomes were dependent on the individual's level of trait self-criticism. Namely, trait self-criticism interacted with condition to predict soothing affect, such that individuals in the sample with average and relatively high levels of trait self-criticism experienced more soothing affect from the compassion-based intervention than from the cognitive restructuring intervention. This finding provides critical evidence for a fundamental tenet of compassion-focused therapy which purports that compassionate caregiving facilitates soothing affect for highly self-critical individuals in a way that cognitive restructuring interventions do not (Gilbert, 2009). Although we relied on self-report measures, these findings are consistent with the idea that among highly self-critical individuals, the physiological systems that underpin soothed physiological responses (e.g., oxytocin and vasopressin hormones, the vagus nerve) are more successfully targeted in compassion-focused interventions (Gilbert, 2020) as compared to cognitive restructuring interventions. Interestingly, though, the compassion intervention did not outperform the cognitive intervention among high self-critics when examining negative emotional outcomes (i.e., state self-criticism, negative affect, arousal, and shame) indicating that future research is needed to determine the outcomes and individuals for whom compassion-based responding is more effective than cognitive restructuring.

Although we did not find consistent direct support for the hypothesis that the compassion intervention would lead to more therapeutic gains than the cognitive condition, we did generally find that individuals at mean and high levels of trait self-criticism benefitted more from the compassion intervention than the distraction control condition. This was evidenced when examining the outcomes of arousal, shame, self-criticism, and soothing affect. In contrast, when comparing the outcomes of the cognitive versus control conditions for individuals with average and high self-criticism individuals, the cognitive intervention was only superior at reducing shame. This pattern of findings further suggests that individuals with higher levels of self-criticism may experience more pronounced benefits from responding to momentary self-criticism and shame with compassion and warmth.

Results of the moderated mediation analyses failed to support the theory that for individuals higher in trait self-criticism, the compassion-based intervention would yield more positive and fewer negative emotional outcomes than the cognitive intervention indirectly via soothing affect. Although as discussed earlier, the compassion-based intervention increased soothing affect more than the cognitive restructuring intervention for more highly self-critical individuals, soothing affect did not emerge as a mediator, perhaps because the two interventions did not differ in their impact on other outcome variables as a function of trait self-criticism. Nevertheless, an examination of the paths in the model revealed that post-intervention soothing affect generally predicted lower levels of post-intervention negative affect, shame, self-criticism and arousal, and higher levels of state self-reassurance and self-compassion. These findings align with prior work showing the benefits of soothing affect (e.g., Lucre & Corten, 2013) and are in line with the theory that soothing affect is a mechanism through which compassion-focused

therapy generates gains in highly self-critical individuals. Nevertheless, the absence of full moderated mediation makes further research necessary.

A surprising result that emerged when examining the interaction between trait self-criticism and condition in predicting soothing affect was that individuals with lower levels of trait self-criticism reported higher levels of soothing affect from the cognitive restructuring exercise compared to the compassion-based intervention. In considering reasons for this finding, one possibility is that for individuals who do not have trait-like deficits in their ability to self-soothe, generating more logical thinking may lead to more soothing affect than engaging compassionately with distress (Moroz & Dunkley, 2019). It is also possible that individuals low in self-criticism feel more threatened by the task of engaging emotionally with their distress as required in the compassion intervention because they typically avoid truly confronting their personal weaknesses and limitations, a question that will be important to test in future research.

In trying to make sense of some of the findings that emerged, it can be helpful to review results from the manipulation check analyses. These revealed that although participants largely demonstrated being able to accurately recall about the focus of their assigned task, there were some unexpected responses whereby participants also selected responses in line with conditions in which they did not participate in. Particularly noteworthy was that 87% of people in the cognitive condition said ‘yes’ to the question asking if their task involved generating warmth, care and compassion towards themselves (compassion) which was only 6% lower than those who said that their task focused on challenging thinking; in the compassion condition, 67% of people endorsed their task involved developing a more balanced, logical and objective perspective on their shame (cog restructuring) which was only 30% lower than those who said their task involved generating self-compassion. These numbers suggest that the intervention tasks in the

compassion and cognitive conditions especially had some overlap, that students without much exposure to psychological exercises understood the instructions to be somewhat similar, or that there was a lack of attention to study instructions. Conversely, the yes-no nature of these manipulation check questions and the ability participants had to endorse ‘yes’ to more than one question may account for the findings observed; for example, nuances in understanding of the foci of the tasks could not be conveyed through the response options provided, and may not reflect the way the tasks were experienced when performed. Indeed, our manipulation check questions consisting of three subscales, did reveal that participants generally scored higher in the subscale associated with their condition, suggesting the conditions targeted what we intended. Nevertheless, it is important to consider the possibility that in the present study, there may have been overlap in what was targeted via the two active interventions.

Contributions and Implications

The finding that individuals with average and high levels of trait self-criticism experienced more soothing affect when responding to their difficulties with warmth and compassion as compared to by generating more logical thoughts supports a key tenet underlying compassion-focused therapy – namely, that individuals with high trait self-criticism do not feel as soothed by cognitive restructuring, and instead require inner warmth and compassion to experience more soothing affect. This result provides important evidence for the effectiveness of compassion-based approaches in targeting deficits in the ability to feel soothed (Gilbert, 2005)

The fact that individuals lower in trait self-criticism experienced more soothing affect from the cognitive intervention than from the compassion intervention was unexpected and requires further research to probe potential mechanism. It is possible that individuals who do not have pre-existing deficits in the ability to self-soothe naturally activate warmth and compassion

when weighing evidence for and against their self-critical thoughts, allowing them to experience the benefits of both compassion and logic simultaneously. An alternate consideration stems from research showing that individuals with very low levels of trait self-criticism have more narcissistic and grandiose beliefs about self (Kealy et al., 2012). These overwhelmingly positive views about self may make them feel more threatened and less soothed by a task that guides them to connect with their feelings of vulnerability in an emotionally engaged way, as in the compassion-based intervention. The fact that the average trait self-criticism level in the current sample was relatively low compared to other non-clinical samples suggests there may be merit to this interpretation. Nevertheless, future research should try to replicate this interesting set of findings and probe interpretations if the pattern of results at low trait self-criticism re-emerges.

Although for individuals higher in self-criticism, there were more relative benefits of the compassion-based intervention over the control condition than for the cognitive restructuring condition over the control condition, aside from soothing affect, there were generally no differences between the two active interventions as a function of trait self-criticism. These findings suggest that it would be premature to conclude that for highly self-critical individuals, a single-session, self-guided compassion-focused intervention is more effective than a single-session, self-guided cognitive restructuring intervention for state self-criticism and state shame. That said, findings from interactions comparing each active intervention to the control condition would suggest that for highly self-critical individuals, compassionate responding might offer more benefits over distraction than cognitive restructuring. Despite this pattern of findings, it is notable that the sample mean of trait self-criticism ($M = 1.93$ on a scale of 0-4; $SD = .88$) was lower than those found in clinical samples (e.g., Castilho et al., 2015) limiting our ability to make any firm conclusions about the relative effects of the interventions for individuals with

clinically high levels of trait self-criticism. Compassion-focused therapy was originally conceptualized to help individuals with clinically significant levels of trait self-criticism and as such it may be that the full benefits of compassion-based interventions are not evident in our current non-clinical sample. Future research should therefore replicate the current study in a clinical sample.

We also did not detect soothing affect as a mediator of the compassion condition among highly self-critical individuals. However, the compassion intervention did promote more soothing affect among high self-critics, and soothing affect in turn predicted outcomes. It is possible that our measure of soothing affect did not adequately capture soothed feelings. It may be that the soothing affect measure captured other positive affective feelings and those benefits may not have been captured in this study, or it may have only wholly captured the construct and missed important elements of this mechanism. Future research should include physiological measures like heart-rate variability monitoring so as to capture a more objective measure of soothing affect and future research should also consider examining a wider range of behavioural outcomes that may be impacted by increases in soothing affect. Clinically, this study provides critical information for clinicians working with individuals both high and low in trait self-criticism. First, this study shows that single session compassion or cognitive intervention resulted in greater gains than a control condition in terms of (negative and positive outcomes). This aligns with recent research demonstrating the effectiveness of single session interventions and highlights the use of brief interventions targeting the distress associated with self-criticism. This provides useful information for clinicians, in terms of working with distress associated with self-criticism in the moment.

In addition, this study also provides useful information for clinicians working with highly self-critical individuals with difficulty self-soothing. Our results indicate that brief compassion exercises can make immediate and momentary shifts in one's experience of soothing affect. Such clients may especially benefit from such practices prior to working with the content of self-critical thoughts and feelings of shame.

Limitations and Future Directions

There are a number of limitations in this study. First, this study was conducted online. Although attention checks were used to determine eligibility, we cannot confirm the degree to which participants were truly engaged in listening to the audio content, reading the instructions, and participating in the writing tasks.

A second limitation pertains to potential low participant engagement. Despite the use of attention checks in determining eligibility, manipulation check analyses showed that some participants lacked a precise understanding of what they were asked to do during the intervention in Part 2 of the study. Participants self-reports of engagement in the initial shame induction and the degree to which they felt they were going through the motions while participating in the active intervention were fair but not excellent. The amount of participants reporting low engagement during the intervention based on their scores, using the midpoint as high versus low was 28.6%, and 22.2% during the shame induction. These numbers suggest that the level of engagement in the shame induction task and the degree participants were engaged in the actual intervention were fairly poor and, as such, the current results may not be fully reflective of a highly engaged sample of participants. Future research should ask more questions in part 2 of the study to assess participants level of engagement with the content and use this as an eligibility criterion for part 2 of the study involving the active interventions. This study also asked

participants to engage in a shame reflection task that may have been difficult or aversive for individuals. While the manipulation checks did show increases in state shame from pre intervention to post intervention, it is possible that participants disengaged with the task to some degree or partook in an avoidance strategy to reduce their feelings of self-criticism or shame. Participants were also asked to reflect on their source of shame for five minutes with a writing task, however, participants were able to move on whenever they chose to. As such, some participants may have engaged more deeply with the task than others. Future research would benefit from doing this study in person with a trained therapist present that could support and guide the participant in facing a significant source of shame and remaining engaged with the task for a standardized amount of time before moving forward to the next phase of the study.

Third, this study was also largely conducted with a sample of university students who completed this study for course credit. As such it is possible that students were motivated to complete the study quickly for credit and were not fully engaged. Future research should include a broader population and consider targeting a population with motivation to help with this research through a high degree of engagement.

Fourth, our sample was also not highly representative of the general population. Given that our study consisted of university students our sample was fairly young with a mean age of 19.67, meaning that these processes may vary in older populations. Moreover, our sample largely identified as women (74.7%) and were of the female sex (78.7%). In terms of self-identified ethnicities, our sample was somewhat diverse; however, the largest proportion was Caucasian (39 %), with larger portions of South Asian (19.8%) and East Asian (18.5%). All in all, this suggests that the generalizability of this sample is somewhat limited by the abovementioned

demographics and future research may benefit from recruiting participants from a wider range of ages, gender and sexual identities, and ethnic backgrounds.

Fifth, this research also did not assess the role of culture or ethnicity. Given that the development self-criticism is influenced by one's environment, culture and ethnicity may have a significant impact on how individuals experience self-criticism and consequently how they engage in interventions aimed at helping reduce the distress associated with self-criticism. For instance, self-presentation concerns may have influenced the degree to which participants wrote about their self-criticism topic and consequently the degree to which they could engage with this content in the interventions. As such future research should consider examining the current research questions amongst specific cultural groups and/or including questions that assess the role of ethnicity in culture.

Sixth, this study also consisted solely of self-report measures which may not have captured participants' entire experience. Physiological and behavioural measures would have aided in increasing objectivity of measures. This is particularly relevant in terms of measuring soothing affect. Soothing affect can also be assessed with physiological measures, such as heart rate variability. In terms of the negative outcomes assessed in this study (i.e., arousal, negative affect), prior research has also demonstrated discrepancies between physiological measures and self-report (Korpál & Jankowiak, 2018).

Seventh, this study did not use computational text analysis to examine the actual text responses of participants. Examining the text responses of participants could have enhanced the current work by providing information on the degree of engagement during the shame induction task and the active interventions. Analysis of text responses could also elucidate whether participants were engaging in the interventions as intended. For instance, future research could

examine whether participants in the compassion intervention successfully came up with a more self-compassionate response and whether the participants in the cognitive restructuring intervention came up with a less negative, more positive and object alternative thought. Future research may also consider examining the self-critical topics, sentiment or the balance of episodic versus semantic content to gain a better understanding of how the nature of self-critical memories affects participants' ability to engage with the content and the degree to which the interventions result in therapeutic changes.

Eighth, Part 2 of this study involved a fairly large number of measures, and several measures (i.e., negative affect, arousal, shame, and self-criticism) were repeated to assess outcomes before the shame induction task, after the shame induction task, and again after the active intervention. Participants may have experienced fatigue through the completion of these measures or responded in a biased way due to their repetitive nature.

Ninth, our mediator, soothing affect was assessed immediately prior to the outcomes variables at the post-intervention time point. Although we believe that the effects of soothing affect on assessed outcomes occur in high proximity at a momentary level, some literature suggests that this does not satisfy the conditions of temporal precedence for mediation analyses. Future research may consider examining the effects of soothing affect as a mediator with greater time period between assessing the mediator and the outcomes.

Tenth, while this study looked at momentary effects, we did not include follow-up measures to assess whether these momentary gains were maintained longer-term. This would indicate whether these momentary shifts last in a meaningful way. For instance, although we did not see any differences in the main effects of the compassion and cognitive conditions when predicting outcomes at all levels of self-criticism, there may be notable differences in which

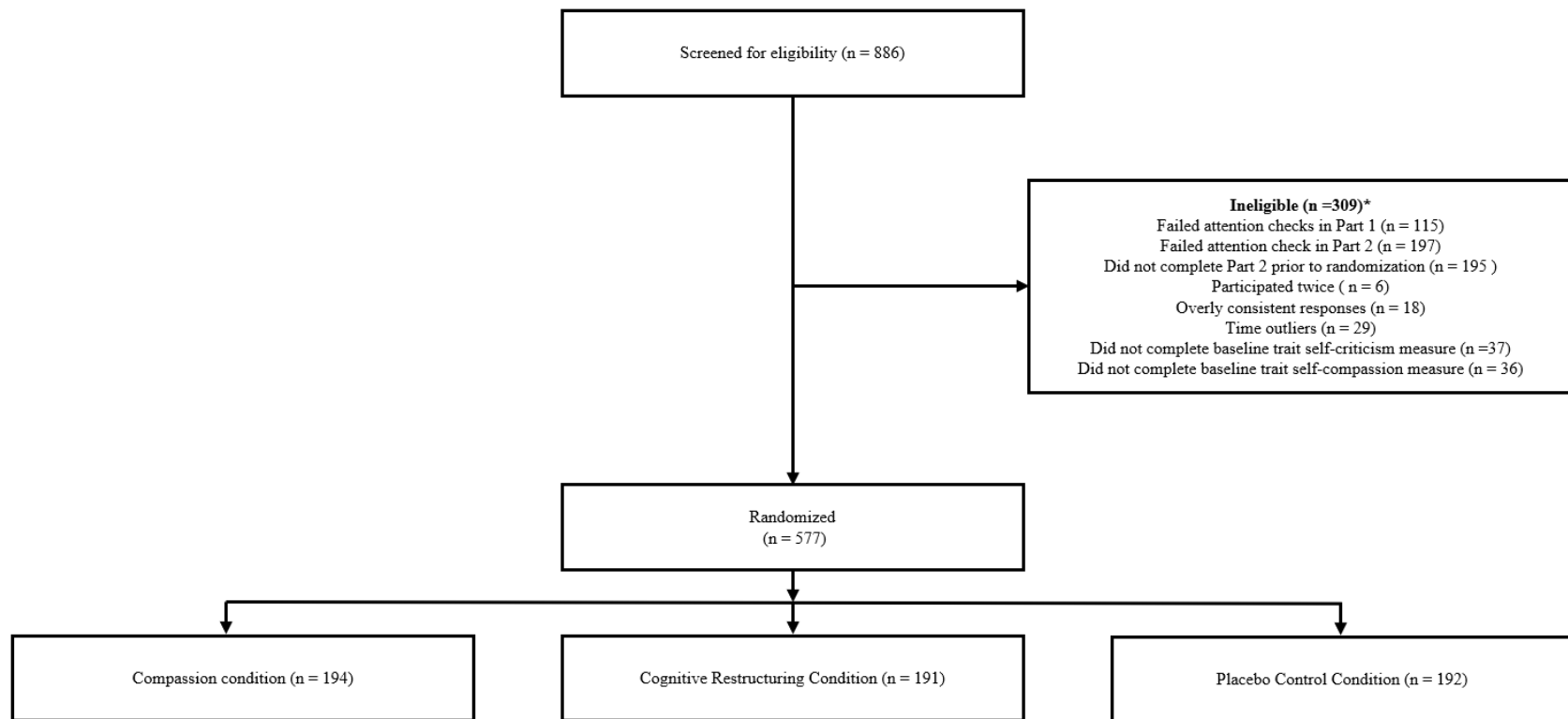
intervention has a longer lasting impact on individuals. Future research could also work to assess whether repeated practice is needed to maintain gains, and exactly how much repetition is needed for the skills to be effective. In the same vein, it would be beneficial to assess the effects of these interventions through measures that assess daily outcomes over a period of time (i.e., diary studies), to learn more about how effects change over time, and what factors influence these effects.

Conclusions

This research examined central questions related to the momentary effects of compassion interventions on self-criticism and associated distress, while examining a central proposed mechanism of compassion-focused therapy. Central takeaways from this study suggest that when college students are experiencing momentary shame and self-criticism, engaging in cognitive-restructuring or compassionate responding should be more beneficial than distraction. Consistent with compassion-focused therapy theory, compassionate responding to momentary shame and self-criticism may promote soothed feelings for highly self-critical individuals. Future research should build on this work by examining the relative effects of the cognitive restructuring and compassion-based intervention amongst individual with clinically elevated levels of trait self-criticism.

Figure 1.

Consort Diagram of Participant Flow



** Total number of ineligible participants includes participants who were ineligible based on multiple criteria.*

Figure 2.

The Interaction Between Trait Self-Criticism and Condition predicts Post-Intervention Soothing Affect

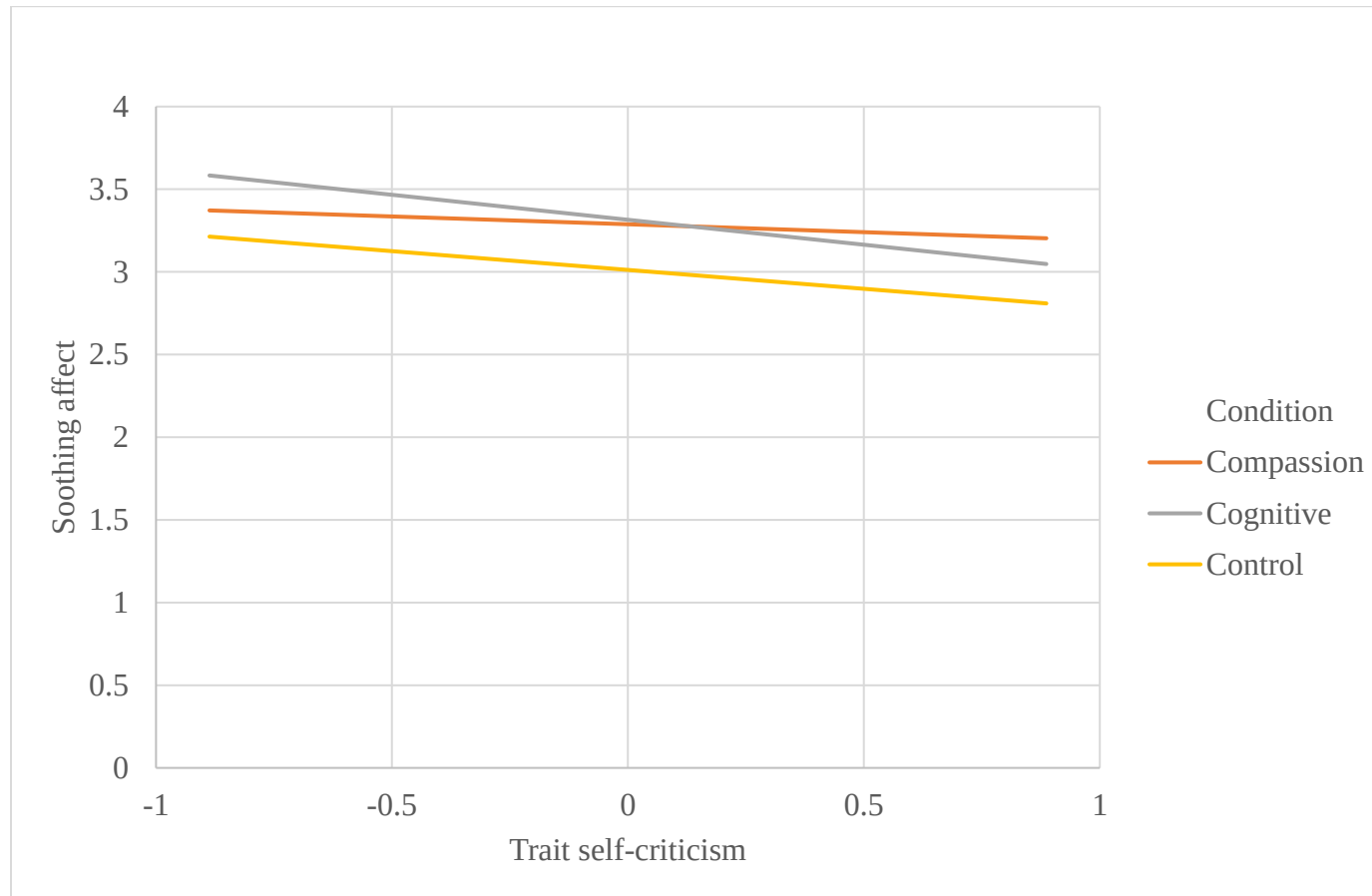


Table 1.

Demographics for Student Sample

	Student Sample (<i>n</i> = 577)
Age in years <i>M</i> (<i>SD</i>)	19.67 (2.98)
Ethnicity (%)	
White/Caucasian	39.0
South Asian	19.8
East Asian	18.5
Southeast Asian	5.5
Other	4.9
Middle Eastern	4.0
Black/African	2.9
West Indian/Caribbean	2.3
Latino/Hispanic	1.6
Prefer not to disclose	0.9
Indigenous	0.7
Gender identity (%)	
Female (cis/trans)	74.7
Male (cis/trans)	20.3
Genderqueer	3.1
I prefer not to answer	1.0
I prefer to self-define	0.9
Study year (%)	
1 st year	38.0
2 nd year	25.5
3 rd year	22.7
4 th year	10.1
5 th	3.8
Country of residence (%)	
Canada	99.3
France	0.2
Indonesia	0.2
United States	0.2

Table 2.

Zero-Order Correlations

	1	2	3	4	5	6	Mean	SD
1. Trait self-criticism	-	-	-	-	-	-	1.93	0.88
2. Trait self-compassion	-.73**	-	-	-	-	-	2.72	0.69
3. Baseline state negative affect	.33**	-.30**	-	-	-	-	4.49	1.55
4. Baseline state arousal	.21**	-.18**	.30**	-	-	-	4.80	2.02
5. Baseline state self-criticism	.60**	-.45**	.56**	.41**	-	-	2.58	1.19
6. Baseline state shame	.54**	-.36**	.56**	.41**	.79**	-	1.99	0.98

** $p < .01$.

Table 3.

Predicting Post-Intervention Soothing Affect from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.08***
Trait Self-Compassion	.25	.04	.29	[.18, .32]	
<u>Step 2</u>					.11***
Trait Self-Compassion	.25	.03	.28	[.18, .32]	
D1 (Cognitive Condition)	.03	.09	.02	[-.14, .20]	
D2 (Control Condition)	-.28	.09	-.15	[-.45, -.11]	
<u>Step 3</u>					.13***
Trait Self-Compassion	.12	.05	.13	[.02, .22]	
D1 (Cognitive Condition)	.03	.08	.02	[-.14, .20]	
D2 (Control Condition)	-.28	.08	-.15	[-.44, -.11]	
Trait Self-Criticism	-.18	.05	-.20	[-.28, -.08]	
<u>Step 4</u>					.13***
Trait Self-Compassion	.12	.05	.13	[.02, .22]	
D1 (Cognitive Condition)	.03	.08	.02	[-.14, .19]	
D2 (Control Condition)	-.28	.08	-.15	[-.44, -.11]	
Trait Self-Criticism	-.08	.07	-.10	[-.22, .05]	
D1 X Trait Self-Criticism	-.18	.09	-.11	[-.35, -.01]	
D2 X Trait Self-Criticism	-.12	.08	-.08	[-.28, .04]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .05$.

*** $p < .001$.

Table 4.

Predicting Post-Intervention State Self-Reassurance from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.03***
Trait Self-Compassion	.17	.04	.16	 [.08, .25]	
<u>Step 2</u>					.12***
Trait Self-Compassion	.16	.04	.16	 [.08, .24]	
D1 (Cognitive Condition)	.03	.10	.01	[-.17, .22]	
D2 (Control Condition)	-.65	.10	-.29	 [-.84, -.45]	
<u>Step 3</u>					.12***
Trait Self-Compassion	.09	.06	.08	[-.03, .20]	
D1 (Cognitive Condition)	.02	.10	.01	[-.17, .22]	
D2 (Control Condition)	-.65	.10	-.29	 [-.84, -.45]	
Trait Self-Criticism	-.11	.06	-.10	[-.22, .01]	
<u>Step 4</u>					.12***
Trait Self-Compassion	.08	.06	.08	[-.03, .20]	
D1 (Cognitive Condition)	.03	.10	.01	[-.17, .22]	
D2 (Control Condition)	-.64	.10	-.29	 [-.84, -.45]	
Trait Self-Criticism	-.04	.08	-.04	[-.19, .12]	
D1 X Trait Self-Criticism	-.10	.10	-.05	[-.30, .10]	
D2 X Trait Self-Criticism	-.11	.10	-.06	[-.30, .08]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .001$.

*** $p < .001$.

Table 5.

Predicting Post-Intervention State Self-Compassion (State Self-Compassion Scale; Neff et al., 2021) from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.21***
Trait Self-Compassion	.35	.03	.46	 [.30, .41]	
<u>Step 2</u>					.25***
Trait Self-Compassion	.35	.03	.46	 [.30, .41]	
D1 (Cognitive Condition)	-.02	.07	-.01	[-.15, .12]	
D2 (Control Condition)	-.31	.07	-.19	 [-.45, -.18]	
<u>Step 3</u>					.30***
Trait Self-Compassion	.17	.04	.22	 [.09, .25]	
D1 (Cognitive Condition)	-.02	.07	-.01	[-.15, .11]	
D2 (Control Condition)	-.31	.07	-.19	 [-.45, -.18]	
Trait Self-Criticism	-.25	.04	-.33	 [-.33, -.18]	
<u>Step 4</u>					.30***
Trait Self-Compassion	.17	.04	.22	 [.09, .25]	
D1 (Cognitive Condition)	-.02	.07	-.01	[-.15, .11]	
D2 (Control Condition)	-.31	.07	-.19	 [-.45, -.18]	
Trait Self-Criticism	-.24	.05	-.31	 [-.34, -.13]	
D1 X Trait Self-Criticism	-.05	.07	-.04	[-.19, .08]	
D2 X Trait Self-Criticism	.00	.06	.00	[-.13, .13]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .001$.

*** $p < .001$.

Table 6.

Predicting Post-Intervention State Self-Compassion (Compassionate Engagement and Action Scale, Gilbert et al., 2017) from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.08***
Trait Self-Compassion	.47	.06	.29	[.34, .59]	
<u>Step 2</u>					.11***
Trait Self-Compassion	.47	.06	.29	[.34, .59]	
D1 (Cognitive Condition)	-.14	.16	-.04	[-.45, .17]	
D2 (Control Condition)	-.60	.16	-.18	[-.91, -.30]	
<u>Step 3</u>					.11***
Trait Self-Compassion	.46	.09	.29	[.28, .65]	
D1 (Cognitive Condition)	-.14	.16	-.04	[-.45, .17]	
D2 (Control Condition)	-.60	.16	-.18	[-.91, -.30]	
Trait Self-Criticism	.00	.09	.00	[-.18, .18]	
<u>Step 4</u>					.11***
Trait Self-Compassion	.46	.09	.29	[.28, .65]	
D1 (Cognitive Condition)	-.14	.16	-.04	[-.45, .17]	
D2 (Control Condition)	-.60	.16	-.18	[-.91, -.29]	
Trait Self-Criticism	.04	.13	.03	[-.20, .29]	
D1 X Trait Self-Criticism	-.09	.16	-.03	[-.41, .22]	
D2 X Trait Self-Criticism	-.05	.15	-.02	[-.35, .25]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .001$.

*** $p < .001$.

Table 7.

Predicting Post-Intervention Negative Affect from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.18***
Pre-Intervention NA	.61	.05	.42	 [.50, .71]	
<u>Step 2</u>					.20***
Pre-Intervention NA	.61	.05	.42	 [.50, .72]	
D1 (Compassion Condition)	-.51	.13	-.17	 [-.77, -.25]	
D2 (Cognitive Condition)	-.37	.13	-.12	 [-.63, -.11]	
<u>Step 3</u>					.23***
Pre-Intervention NA	.53	.06	.37	 [.42, .64]	
D1 (Compassion Condition)	-.51	.13	-.17	 [-.76, -.26]	
D2 (Cognitive Condition)	-.36	.13	-.12	 [-.61, -.10]	
Trait Self-Criticism	.27	.06	.19	 [.16, .38]	
<u>Step 4</u>					.23***
Pre-Intervention NA	.53	.06	.37	 [.42, .63]	
D1 (Compassion Condition)	-.51	.13	-.17	 [-.76, -.26]	
D2 (Cognitive Condition)	-.35	.13	-.12	 [-.61, -.10]	
Trait Self-Criticism	.26	.09	.18	 [.08, .43]	
D1 X Trait Self-Criticism	-.01	.13	-.01	[-.26, .23]	
D2 X Trait Self-Criticism	.08	.13	.03	[-.18, .34]	

Note. The control condition is the reference group. Bolded 95% CIs are significant at $p < .05$. NA = Negative affect.

*** $p < .001$.

Table 8.

Predicting Post-Intervention Arousal from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.22***
Pre-Intervention Arousal	.88	.07	.46	[.74, 1.02]	
<u>Step 2</u>					.22***
Pre-Intervention Arousal	.88	.07	.46	[.74, 1.02]	
D1 (Compassion Condition)	-.07	.17	-.02	[-.41, .27]	
D2 (Cognitive Condition)	-.17	.17	-.04	[-.51, .17]	
<u>Step 3</u>					.22***
Pre-Intervention Arousal	.85	.07	.45	[.70, .99]	
D1 (Compassion Condition)	-.07	.17	-.02	[-.41, .26]	
D2 (Cognitive Condition)	-.16	.17	-.04	[-.50, .17]	
Trait Self-Criticism	.13	.07	.07	[-.01, .28] ^t	
<u>Step 4</u>					.23***
Pre-Intervention Arousal	.83	.07	.44	[.69, .97]	
D1 (Compassion Condition)	-.06	.17	-.02	[-.40, .27]	
D2 (Cognitive Condition)	-.16	.17	-.04	[-.50, .18]	
Trait Self-Criticism	.33	.12	.18	[.10, .57]	
D1 X Trait Self-Criticism	-.43	.17	-.14	[-.76, -.10]	
D2 X Trait Self-Criticism	-.14	.17	-.04	[-.49, .20]	

Note. The control condition is the reference group. Bolded 95% CIs are significant at $p < .05$.

^ttrending $p < .1$; *** $p < .001$.

Table 9.

Predicting Post-Intervention State Self-Criticism from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.37***
Pre-Intervention SC	.62	.03	.61	[.55, .68]	
<u>Step 2</u>					.40***
Pre-Intervention SC	.62	.03	.61	[.56, .69]	
D1 (Compassion Condition)	-.36	.08	-.17	[-.52, -.20]	
D2 (Cognitive Condition)	-.29	.08	-.13	[-.45, -.13]	
<u>Step 3</u>					.44***
Pre-Intervention SC	.47	.04	.46	[.39, .54]	
D1 (Compassion Condition)	-.34	.08	-.16	[-.50, -.19]	
D2 (Cognitive Condition)	-.28	.08	-.13	[-.43, -.13]	
Trait Self-Criticism	.26	.04	.26	[.19, .34]	
<u>Step 4</u>					.45***
Pre-Intervention Self-Criticism	.47	.04	.46	[.39, .55]	
D1 (Compassion Condition)	-.34	.08	-.16	[-.49, -.19]	
D2 (Cognitive Condition)	-.28	.08	-.13	[-.43, -.13]	
Trait Self-Criticism	.38	.06	.37	[.26, .49]	
D1 X Trait Self-Criticism	-.21	.08	-.12	[-.36, -.06]	
D2 X Trait Self-Criticism	-.14	.08	-.07	[-.29, .02]	

Note. The control condition is the reference group. Bolded 95% CIs are significant at $p < .05$. SC = State self-criticism.

*** $p < .001$.

Table 10.

Predicting Post-Intervention State Shame from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.38***
Pre-Intervention State Shame	.54	.03	.62	 [.48, .59]	
<u>Step 2</u>					.41***
Pre-Intervention State Shame	.53	.03	.62	 [.48, .59]	
D1 (Compassion Condition)	-.28	.07	-.15	 [-.41, -.14]	
D2 (Cognitive Condition)	-.28	.07	-.15	 [-.41, -.14]	
<u>Step 3</u>					.44***
Pre-Intervention State Shame	.43	.03	.49	 [.36, .49]	
D1 (Compassion Condition)	-.27	.07	-.15	 [-.40, -.14]	
D2 (Cognitive Condition)	-.27	.07	-.15	 [-.40, -.14]	
Trait Self-Criticism	.20	.03	.23	 [.14, .26]	
<u>Step 4</u>					.45***
Pre-Intervention State Shame	.43	.03	.49	 [.36, .49]	
D1 (Compassion Condition)	-.27	.07	-.15	 [-.40, -.14]	
D2 (Cognitive Condition)	-.27	.07	-.15	 [-.40, -.14]	
Trait Self-Criticism	.31	.05	.35	 [.21, .40]	
D1 X Trait Self-Criticism	-.17	.06	-.12	 [-.30, -.05]	
D2 X Trait Self-Criticism	-.15	.07	-.10	 [-.29, -.02]	

Note. The control condition is the reference group. Bolded 95% CIs are significant at $p < .05$.

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

Table 11.

Predicting Post-Intervention Negative Affect from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.22***
Pre-Intervention NA	.61	.05	.42	[.50, .71]	
<u>Step 2</u>					.22***
Pre-Intervention NA	.61	.05	.42	[.50, .72]	
D1 (Cognitive Condition)	.14	.13	.05	[-.12, .40]	
D2 (Control Condition)	.51	.13	.17	[.25, .77]	
<u>Step 3</u>					.22***
Pre-Intervention NA	.53	.06	.37	[.42, .64]	
D1 (Cognitive Condition)	.15	.13	.05	[-.10, .41]	
D2 (Control Condition)	.51	.13	.17	[.26, .76]	
Trait Self-Criticism	.27	.06	.19	[.16, .38]	
<u>Step 4</u>					.22***
Pre-Intervention NA	.53	.06	.37	[.42, .63]	
D1 (Cognitive Condition)	.16	.13	.05	[-.10, .41]	
D2 (Control Condition)	.51	.13	.17	[.26, .76]	
Trait Self-Criticism	.24	.09	.17	[.06, .42]	
D1 X Trait Self-Criticism	.09	.13	.04	[-.17, .35]	
D2 X Trait Self-Criticism	.01	.13	.01	[-.23, .26]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .05$. NA = Negative affect.

 $p < .001$.

Table 12.

Predicting Post-Intervention Arousal from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.38***
Pre-Intervention Arousal	.88	.07	.46	[.74, 1.02]	
<u>Step 2</u>					.41***
Pre-Intervention Arousal	.88	.07	.46	[.74, 1.02]	
D1 (Cognitive Condition)	-.10	.17	-.02	[-.44, .24]	
D2 (Control Condition)	.07	.17	.02	[-.27, .41]	
<u>Step 3</u>					.44***
Pre-Intervention Arousal	.85	.07	.45	[.70, .99]	
D1 (Cognitive Condition)	-.09	.17	-.02	[-.43, .25]	
D2 (Control Condition)	.07	.17	.02	[-.26, .41]	
Trait Self-Criticism	.13	.07	.07	[-.01, .28] ^t	
<u>Step 4</u>					.45***
Pre-Intervention Arousal	.83	.07	.44	[.69, .97]	
D1 (Cognitive Condition)	-.10	.17	-.02	[-.43, .24]	
D2 (Control Condition)	.06	.17	.02	[-.27, .40]	
Trait Self-Criticism	-.10	.12	-.05	[-.33, .13]	
D1 X Trait Self-Criticism	.29	.18	.08	[-.06, .63]	
D2 X Trait Self-Criticism	.43	.17	.14	[.10, .76]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .05$.

^ttrending $p < .1$; *** $p < .001$.

Table 13.

Predicting Post-Intervention State Self-Criticism from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.37***
Pre-Intervention SC	.62	.03	.61	[.55, .68]	
<u>Step 2</u>					.40***
Pre-Intervention SC	.62	.03	.61	[.56, .69]	
D1 (Cognitive Condition)	.07	.08	.03	[-.09, .23]	
D2 (Control Condition)	.36	.08	.17	[.20, .52]	
<u>Step 3</u>					.44***
Pre-Intervention SC	.47	.04	.46	[.39, .54]	
D1 (Cognitive Condition)	.06	.08	.03	[-.09, .22]	
D2 (Control Condition)	.34	.08	.16	[.19, .50]	
Trait Self-Criticism	.26	.04	.26	[.19, .34]	
<u>Step 4</u>					.45***
Pre-Intervention SC	.47	.04	.46	[.39, .55]	
D1 (Cognitive Condition)	.06	.08	.03	[-.09, .21]	
D2 (Control Condition)	.34	.08	.16	[.19, .49]	
Trait Self-Criticism	.17	.06	.16	[.05, .28]	
D1 X Trait Self-Criticism	.08	.08	.04	[-.08, .23]	
D2 X Trait Self-Criticism	.21	.08	.12	[.06, .36]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .05$. SC = State self-criticism.

*** $p < .001$.

Table 14.

Predicting Post-Intervention State Shame from Condition and the Interaction Between Trait Self-Criticism and Condition

	<i>B</i>	<i>SE</i>	β	95% CI	ΔR^2
<u>Step 1</u>					.22***
Pre-Intervention Shame	.54	.03	.62	 [.48, .59]	
<u>Step 2</u>					.22***
Pre-Intervention Shame	.53	.03	.62	 [.48, .59]	
D1 (Cognitive Condition)	.00	.07	.00	[-.14, .13]	
D2 (Control Condition)	.28	.07	.15	 [.14, .41]	
<u>Step 3</u>					.22***
Pre-Intervention Shame	.43	.03	.49	 [.36, .49]	
D1 (Cognitive Condition)	.00	.07	.00	[-.13, .13]	
D2 (Control Condition)	.27	.07	.15	 [.14, .40]	
Trait Self-Criticism	.20	.03	.23	 [.14, .26]	
<u>Step 4</u>					.23***
Pre-Intervention Shame	.43	.03	.49	 [.36, .49]	
D1 (Cognitive Condition)	.00	.07	.00	[-.13, .13]	
D2 (Control Condition)	.27	.07	.15	 [.14, .40]	
Trait Self-Criticism	.13	.05	.15	 [.04, .23]	
D1 X Trait Self-Criticism	.02	.07	.01	[-.11, .15]	
D2 X Trait Self-Criticism	.17	.06	.12	 [.05, .30]	

Note. The compassion condition is the reference group. Bolded 95% CIs are significant at $p < .05$.

*** $p < .001$.

Table 15.

Moderated Mediation Analyses Predicting Post-Intervention State Self-Reassurance via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.48	.35	10.02	.00	2.79	4.16
Condition	-0.43	.20	-2.19	.03	-0.81	-0.04
Trait SC	-0.31	.08	-3.79	.00	-0.47	-0.15
Trait SC x Condition	0.21	.09	2.23	.03	0.02	0.39
Trait Self-Compassion	0.16	.08	1.89	.06	-0.01	0.33
Post-intervention state self-reassurance (Model b/c' path)						
Constant	0.95	.20	4.76	.00	0.56	1.35
Condition	-0.01	.08	-0.07	.94	-0.15	0.14
Soothing Affect	0.68	.05	14.24	.00	0.58	0.77
Trait Self-Compassion	-0.02	.06	-0.31	.75	-0.13	0.10

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .33$, $MSE = .62$,

$F(4,375) = 11.50$, $p = .00$. Model b/c' path, $R^2 = .60$, $MSE = .54$, $F(3, 376) = 72.27$, $p = .00$.

Table 16.

Direct and Condition Indirect Effects Predicting Post-Intervention State Self-Reassurance via Soothing Affect

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		-.01	.08	-.07	.94	-.15	.14
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.14	.08			-.30	.01
Trait SC	1.92	-.02	.05			-.13	.09
Trait SC	2.80	.10	.08			-.07	.26
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.14	.07			.00	.28

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +1/- 1 SD from the mean.

Table 17.

Moderated Mediation Analyses Predicting Post-Intervention Self-Compassion (State Self-compassion Scale; Neff et al., 2021) via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.45	.35	9.91	.00	2.76	4.13
Condition	-0.43	.20	-2.19	.03	-0.81	-0.04
Trait SC	-0.31	.08	-3.77	.00	-0.47	-0.15
Trait SC x Condition	0.21	.09	2.26	.02	0.03	0.39
Trait Self-Compassion	0.17	.09	1.97	.05	0.00	0.33
Post-intervention state self-compassion (Model b/c' path)						
Constant	1.03	.16	6.45	.00	0.71	1.34
Condition	0.03	.06	0.48	.63	-0.09	0.15
Soothing Affect	0.40	.04	10.66	.00	0.33	0.48
Trait Self-Compassion	0.37	.05	7.97	.00	0.28	0.47

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .33$, $MSE = .62$,

$F(4,374) = 11.64$, $p = .00$.. Model b/c' path, $R^2 = .63$, $MSE = .34$, $F(3, 375) = 72.27$, $p = .00$.

Table 18.

Direct and Condition Indirect Effects Predicting Post-Intervention State Self-Compassion (State Self-Compassion Scale; Neff et al., 2021) via Soothing Affect

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		.03	.06	.48	.63	-.09	.15
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.08	.05			-.18	.01
Trait SC	1.92	-.01	.03			-.07	.05
Trait SC	0.06	.06	.05			-.04	.16
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.08	.04			.00	.17

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +1/- 1 SD from the mean.

Table 19.

Moderated Mediation Analyses Predicting Post-Intervention State Self-Compassion (Compassionate engagement and Action Scale; Gilbert et al., 2017) via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.48	.35	10.02	.00	2.79	4.16
Condition	-0.43	.20	-2.19	.03	-0.81	-0.04
Trait SC	-0.31	.08	-3.79	.00	-0.47	-0.15
Trait SC x Condition	0.21	.09	2.23	.03	0.02	0.39
Trait Self-Compassion	0.16	.08	1.89	.06	-0.01	0.33
Post-intervention state self-compassion (Model b/c' path)						
Constant	1.77	.33	5.29	.00	1.11	2.43
Condition	0.17	.13	1.39	.17	-0.07	0.42
Soothing Affect	1.08	.08	13.61	.00	0.92	1.24
Pre-Intervention Level	0.30	.10	3.01	.00	0.10	0.49

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .33$, $MSE = .62$,

$F(4, 375) = 11.50$, $p = .00$. Model b/c' path, $R^2 = .62$, $MSE = .38$, $F(3, 376) = 78.26$, $p = .00$.

Table 20.

Direct and Condition Indirect Effects Predicting Post-Intervention State Self-Compassion (Compassionate Engagement and Action Scale; Gilbert al., 2017) via Soothing Affect

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		.17	.13	1.39	.17	-.07	.42
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.23	.13			-.49	.03
Trait SC	1.92	-.03	.09			-.20	.14
Trait SC	2.80	.16	.14			-.10	.43
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.22	.11			.00	.45

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +/- SD from the mean.

Table 21.

Moderated Mediation Analyses Predicting Post-Intervention State Negative Affect via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.67	.34	10.76	.00	3.00	4.34
Condition	0.37	.19	1.92	.06	-0.01	0.76
Trait SC	0.03	.14	0.18	.85	-0.25	0.30
Trait SC x Condition	-0.18	.09	-1.97	.05	-0.36	0.00
Pre-Intervention Level	-0.08	.03	-2.78	.01	-0.13	-0.02
Post-intervention state negative affect (Model b/c' path)						
Constant	5.82	.35	16.48	.00	5.13	6.52
Condition	0.17	.10	1.70	.09	-0.03	0.37
Soothing Affect	-1.00	.06	-16.06	.00	-1.12	-0.88
Pre-Intervention Level	0.23	.03	6.98	.00	0.17	0.30

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .34$, $MSE = .61$,

$F(4, 375) = 12.66$, $p = .00$. Model b/c' path, $R^2 = .71$, $MSE = .95$, $F(3, 376) = 126.31$, $p = .00$.

Table 22.

Direct and Condition Indirect Effects Predicting Post-Intervention State Negative Affect Via Soothing Affect

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		.17	.10	1.70	.09	-.03	.37
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.18	.12			-.41	.05
Trait SC	1.92	-.02	.08			-.18	.13
Trait SC	2.80	.13	.12			-.11	.37
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.18	.10			-.03	.38

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +1/- 1 SD from the mean.

Table 23.

Moderated Mediation Analyses Predicting Post-Intervention State Negative Arousal via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.37	.33	10.28	.00	2.72	4.01
Condition	0.41	.20	2.08	.04	0.02	0.79
Trait SC	0.01	.14	.10	.92	-0.27	0.29
Trait SC x Condition	-0.20	.09	-2.10	.04	-0.38	-0.01
Pre-Intervention Level	-0.02	.02	-1.15	.25	-0.07	0.02
Post-intervention state negative affect (Model b/c' path)						
Constant	3.88	.51	7.54	.00	2.87	4.89
Condition	-0.08	.17	-.50	.62	-0.42	0.25
Soothing Affect	-0.45	.10	-4.32	.00	-0.65	-0.24
Pre-Intervention Level	0.34	.04	7.83	.00	0.26	0.43

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .32$, $MSE = .62$,

$F(4, 375) = 10.88$, $p = .00$. Model b/c' path, $R^2 = .19$, $MSE = 2.72$, $F(3, 376) = 29.99$, $p = .00$.

Table 24.

Direct and Condition Indirect Effects Predicting Post-Intervention State Negative Arousal

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		-.08	.17	-0.50	.62	-.42	.25
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.09	.06			-.22	.01
Trait SC	1.92	-.01	.04			-.09	.06
Trait SC	2.80	.06	.06			-.05	.19
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.09	.05			-.01	.20

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +1/- 1 SD from the mean.

Table 25.

Moderated Mediation Analyses Predicting Post-Intervention State Self-Criticism via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.41	.32	10.80	.00	2.79	4.03
Condition	0.40	.20	2.04	.04	0.01	0.78
Trait SC	0.08	.15	0.53	.60	-0.21	0.36
Trait SC x Condition	-0.20	.09	-2.13	.03	-0.38	-0.02
Pre-Intervention Level	-0.09	.04	-2.08	.04	-0.17	0.00
Post-intervention state self-criticism (Model b/c' path)						
Constant	2.16	.22	9.88	.00	1.73	2.59
Condition	0.07	.07	0.99	.32	-0.07	0.20
Soothing Affect	-0.43	.04	-10.09	.00	-0.51	-0.34
Pre-Intervention Level	0.36	.03	12.38	.00	0.30	0.42

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .33$, $MSE = .61$,

$F(4, 375) = 11.72$, $p = .00$. Model b/c' path, $R^2 = .69$, $MSE = .43$, $F(3, 376) = 114.68$, $p = .00$.

Table 26.

Direct and Condition Indirect Effects Predicting Post-Intervention State Self-Criticism

Direct effect of Condition on Trait SC							
		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		.07	.07	0.99	.32	-.07	.20
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	-0.08	.05	-.19			-.19	.02
Trait SC	-0.01	.03	-.08			-.08	.06
Trait SC	0.07	.05	-.04			-.04	.17
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.08	.04			.00	.17

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +1/- 1 SD from the mean.

Table 27.

Moderated Mediation Analyses Predicting Post-Intervention State Shame via Soothing Affect

	<i>B</i>	<i>SE</i>	<i>t</i>	<i>p</i>	<i>LLCI</i>	<i>ULCI</i>
Soothing Affect (Model a-path)						
Constant	3.33	.31	10.58	.00	2.71	2.94
Condition	0.40	.20	2.04	.04	0.01	0.79
Trait SC	0.04	.14	0.27	.79	-0.24	0.32
Trait SC x Condition	-0.19	.09	-2.07	.04	-0.38	-0.01
Pre-Intervention Level	-0.05	.04	-1.25	.21	-0.14	0.03
Post-intervention state shame (Model b/c' path)						
Constant	1.82	.18	10.37	.00	1.47	2.16
Condition	0.00	.06	-0.01	.99	-0.11	0.11
Soothing Affect	-0.29	.04	-8.18	.00	-0.36	-0.22
Pre-Intervention Level	0.32	.03	12.04	.00	0.26	0.37

Note. $N = 380$. The compassion condition is the reference group. Trait SC = Trait self-criticism. Model a-path, $R^2 = .32$, $MSE = .62$,

$F(4, 375) = 10.95$, $p = .00$. Model b/c' path, $R^2 = .42$, $MSE = .32$, $F(3, 376) = 90.14$, $p = .00$.

Table 28.

Direct and Condition Indirect Effects Predicting Post-Intervention State Shame

Direct effect of Condition on Trait SC							
Condition		Effect	SE	t	p	Boot LLCI	Boot ULCI
Condition		.00	.06	-0.01	.99	-.11	.11
Conditional indirect effects							
Mediator	Level of Moderator	Effect	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC	1.05	-.06	.04			-.13	.01
Trait SC	1.92	-.01	.02			-.06	.04
Trait SC	2.80	.04	.04			-.03	.11
Index of moderated mediation							
Mediator		Index	SE (Boot)			Boot LLCI	Boot ULCI
Trait SC		.06	.03			.00	.12

Note. .95 CI, 10,000 Bootstraps for per percentile bootstrap confidence intervals, Mediator values are the mean and +/- SD from the mean.

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Appendices

Appendix A.

Shame Induction Prompt

Please ensure you are in a quiet private place where you can pay attention without distractions, listen to the audio instructions and easily view the virtual screen you are on.

Our study is interested in understanding the psychological strategies that are more versus less helpful to people when they are experiencing self-critical thoughts and feelings of shame, and whether the effectiveness of a strategy differs depending on the individual. To test out the various strategies we are interested in, we first need you as a participant to reflect on something you feel ashamed and self-critical about so that we can assess the impact of our interventions on people who are currently experiencing feelings of shame.

[Next page]

To feel shame or ashamed about something means that you feel inadequate in some way, and you think others would think negatively about you if they knew about it. Things we feel ashamed of often make us feel so badly about ourselves that we want to deny them, hide, run away or sink to the floor and disappear.

In a moment we will be asking you to reflect on something about yourself that you feel ashamed of. Please take a few moments to choose something about yourself to reflect on.

This should be something that feels painful and uncomfortable to think about, but you should feel able to tolerate thinking about it for the remainder of the study (which will be about 30-45 minutes).

Please do not choose anything related to trauma (for instance, abuse, rape, or a situation where someone was in physical danger or harm).

[Next page]

Now, think back to that thing you're ashamed of, and bring to mind a situation where you remember that your feelings of shame about that specific thing were particularly pronounced.

Pay attention to what it feels like at this moment to be evoking this memory and feeling of shame.

Allow yourself to really connect with what you felt in that moment.

What feelings arise for you as you bring this source of shame to mind?

What fears do you have about how others might view you if they knew this about you?

What thoughts do you have about yourself when you reflect on this source of shame?

What is the key fear that you have about this?

What sensations do you notice in your body?

[Next Page]

On the next page we will ask you to write about these feelings of shame. During this task please try to let go and express all your thoughts and innermost feelings in relation to your source of shame. Write freely without worrying about mistakes. Try to write everything that comes to mind. You may find it helpful to use present tense (for example, "I feel..." or "I worry...") to help you stay connected to what you are feeling.

If you are having difficulty engaging with a feeling of shame, just start writing and you may find this helps.

If you feel unable to tolerate your feelings and/or you become triggered, please pull back from the reflection. You may then choose something different to think about that is also a source of shame and/or inadequacy but that feels more tolerable to reflect on.

Please note that your responses will remain fully confidential and will be fully deidentified.

If you feel you have nothing to write about, please continue to re-write or expand on what you have written and continue to focus on actively re-experiencing the situation in the present moment.

[Next page]

Please write in the box for **5 full minutes**. To review the instructions, see below.

Please write in the box:

Appendix B.

Intervention Rationales

Compassion-based condition

The exercise will involve trying to see some of your experiences from the lens of a caring, compassionate other.

Often when we are feeling ashamed, we experience a lot of inner hostility and expect that others would be hostile or unkind toward us if they knew more about us. We often have a hard time accessing and imagining compassionate perspectives. This combination of hostility and lack of compassion can keep us stuck in shame.

In this exercise, we are going to try to access more compassionate ways of looking at our shame.

Cognitive restructuring condition

The exercise will involve trying to think about some of your experiences through a more rational, objective lens.

Often when we are feeling ashamed we do not think as rationally and often distort pieces of information, exaggerate or focus in on negative pieces of information, and overlook or dismiss positive pieces of information.

In this exercise, we are going to try to develop more balanced, rational thinking about our source of shame.

Distraction-based control condition

The exercise will involve hearing a passage read from the book “The Hobbit.”

Often when we are feeling ashamed, we feel stuck in our shame and start to ruminate on it, which can make us feel worse.

In this exercise, we are going to let go of our focus on shame for a little bit to listen to a story.

Appendix C.

Compassion Intervention Text

Now that you have brought to mind a source of shame, we are going to guide you through a 10-15 minute long exercise that may help you gain new perspectives on what you are going through.

[Next page]

Please sit comfortably in your chair, feet flat on the floor, sitting straight, with your back off the back of your chair, shoulders back and chest open. If you are comfortable, gently close your eyes, or if you prefer you can gently direct your gaze downwards. Take a moment to notice breath sensations in your body. You may notice cool air beneath the nostrils, or you may notice your chest or abdomen rising and falling. If you can, let your breathing slow down and become a bit deeper.

In a moment, we will be guiding you to get in touch with a compassionate, caring part of yourself – a part of yourself that’s motivated to help others when they are suffering, by really trying to see and understand what they’re feeling and trying to make them feel better. We all have this ability to be compassionate. We are all born with it even though sometimes it can be challenging.

To get in touch with this compassionate part of yourself, it can be helpful to think back to a time when you felt compassion for a person or animal, and you had this desire to help them and comfort them through an emotionally difficult or painful experience. It really doesn’t matter what you did or if you were actually helpful – what really matters here is that you connect with the feeling in your body and mind of wanting to see and understand what they were going through and wanting to be helpful. So, don’t worry about choosing the “perfect” situation. Just

pick one and try to explore the feelings that come up in your body and in your mind as you remember yourself back in that situation.

Once you have chosen a situation, go to the next page.

[Next page]

Now, take a couple of minutes to bring yourself to that moment you chose, when you felt compassion for another person or animal. Connect with this moment by perhaps closing your eyes and imagining yourself expanding with compassion and connecting to a desire to really see what they are feeling and needing, and with the desire to help them. Remember, there is no right or wrong way to do this; you're learning something new.

See if you can feel compassion and care in your body right now. If you can feel it, even momentarily, notice what it feels like. This can feel many different ways. It might feel like a subtle opening, or an expansiveness, or warmth. You might feel it in your chest, or you might feel it in your belly. You may have an image that comes to mind, or simply notice yourself slowing down.

If you do not feel much in your body or you begin to feel uncomfortable or you find your mind wanting to think about other things, those are all common reactions and not a problem. Just do your best to bring yourself back, even for a moment, and imagine how compassion might feel in your body and mind.

Stay with this feeling of compassion for a few moments.

[Next page]

[Re-engaging with the source of shame and self-critical thoughts and feelings]

On the next page, we will ask you to reread what you wrote about your feelings of shame.

As you do this stay connected with the compassionate part of yourself that wants to alleviate suffering, feeling your feet on the ground, letting your heart open, re-read what you wrote about your feelings of shame, imagining it is someone else who wrote it – perhaps a friend, or a stranger, or a child – and you are reading it as someone caring and compassionate who wants to really understand and be helpful.

[Next page]

Please reread what you wrote about your feelings of shame (*To review instructions, see below*): [Full participant response embedded text]

[Next page]

[Generating new ways of responding]

Staying connected to the compassionate part of yourself, what feelings come up for you as you as you read this?

Is there a gesture you feel motivated to offer this person?

What would you like this person to feel from you?

What would you like them to know?

On [this] page, please allow yourself to write whatever is arising from the compassionate part of yourself to the part of yourself that is feeling ashamed.

As you connect with the compassionate part of yourself, consider, what you feel would be helpful for this ashamed part of yourself.

You might choose to empathize with and validate your feelings; express your understanding of how painful this experience is; and/or share your desire to care for and support yourself, your desire to give yourself a hug, your wish for this part of you to take in a kinder, more compassionate perspective on this experience.

For example, you might say, “I see how hard this is for you, and how painful it is. I see how much you have been suffering with these feelings. It is so hard to be going through this and to feel so alone with it. Many people would have a difficult time dealing with what you’re dealing with. It’s a lot.”

Or you might say, “I want you to know that I care about you and accept you even when you are feeling upset or down. I know that you are doing the best you can to navigate all the difficulties of life. I want to encourage you to be patient with yourself through this situation and to recognize that it’s okay to be having a hard time.”

[Next page]

Please write whatever is arising from the compassionate part of yourself to the part of yourself that is feeling ashamed *(To review the full instructions, see below):*

For example, you might say, “I see how hard this is for you, and how painful it is. I see how much you have been suffering with these feelings. It is so hard to be going through this and to feel so alone with it. Many people would have a difficult time dealing with what you’re dealing with. It’s a lot.”

Or you might say, “I want you to know that I care about you and accept you even when you are feeling upset or down. I know that you are doing the best you can to navigate all the difficulties of life. I want to encourage you to be patient with yourself through this situation and to recognize that it’s okay to be having a hard time.”

Please write for at least **five minutes**.

[Next page]

[Re-read response]

Now that you have finished responding to your feelings of shame from this compassionate perspective, we would like to you read over what you wrote and try to allow yourself to really take in, even for a moment, the compassion being expressed to you from this compassionate part of yourself.

On the next page, read what you wrote to yourself in a warm, supportive tone of voice, staying connected with your compassionate self. While you are reading what you wrote, try to think about the compassion you felt toward a loved one (that person or animal you chose earlier in the exercise).

Even if it feels fake and put on, that's okay. Just try it anyway. Notice how it feels in your body as you do this and try to let yourself experience your emotions as you do this. For example, you may let yourself cry if sadness comes up. To stay grounded, it can help to pay attention to your breath, and place your feet flat on the floor, as you read what you wrote back to yourself.

Appendix D.

Cognitive Restructuring Intervention Text

Now that you have brought to mind a source of shame, we are going to guide you through a 10-15 minute long exercise that may help you gain new perspectives on what you are going through.

[Next page]

[Re-engaging with the source of shame and self-critical thoughts and feelings]

On the next page, we would like you to read back over what you wrote about your feelings of shame.

As you do this, please look out for a thought that feels most central for you, and most related to your chosen shame experience.

You may find you wrote about your feelings or you wrote specific thoughts about yourself (For example, "There is something wrong with me") or thoughts about what others might think about you (for example, "People would think I'm screwed up if they knew more about me").

[Next page]

Please reread what you wrote about your feelings of shame: [Full embedded participant shame induction response]

Now that you have reread what you wrote about your feelings of shame, **please write the thought** that feels most central to your chosen shame experience. This should be a thought that you would you think could be beneficial start thinking about differently.

For example, "There is something wrong with me" or thoughts about what others might think about you, for example, "People would think I'm screwed up if they knew more about me". Please write it here:



[Next page]

Now, we would like you to try and use your logical mind to assess the evidence for and against the thought.

For example, a thought could be: "I am unlovable."

Evidence **for** the thought might be: "My boyfriend broke up with me and I am no longer invited to social gatherings."

Evidence **against** the thought might be: "I have close friends that care about me and I have some successful relationships."

Here is another example:

A thought could be: "I am worthless."

Evidence **for** the thought might be:

- "Nobody acknowledges my hard work"
- "I have poor grades"
- "I have not gotten the co-op job I wanted"

Evidence **against** the thought might be:

- "I recently did well on my school project"

- "The people who come to the place I volunteer at tell me they are happy to see me"
- "My dog is always happy to see me"

On the next pages, we will ask you to write evidence for and against the thought. Take a few minutes to really think about all the various pieces of objective or factual evidence you can come up with for and against the thought.

[Next page]

Your chosen thought: [Participant chosen thought response embedded]

If you would like to change or adjust the thought you have chosen to focus on for this exercise, please write down your updated thought in the box below. If you do not want to change or adjust the thought you chose to focus on for this exercise, please leave this box blank.

[Next page]

Please begin by filling in a minimum of 3 pieces evidence for the thought. Remember to write about factual pieces of evidence.

Please spend at least **two minutes** on this.

EVIDENCE FOR:

[Next page]

On [this page] please fill in evidence against the thought.

To answer this, it is helpful to ask yourself the following questions:

“Does my thought tell the full story of what happened?”

“What might I be missing or forgetting?”

“Have I had any experiences that show that this thought is not completely true all the time?”

“Are there any small things that contradict my thoughts that I might be discounting as not important?”

“Are there any strengths or positives in me or the situation that I am ignoring?”

[Next page]

Please fill in a minimum of **3** pieces of evidence **against** the thought. *(To review the instructions, see below)*

Please spend at least **two minutes** on this.

EVIDENCE AGAINST:

--

[Generating new ways of responding]

Once we gather evidence for and against our thoughts, we can update our thoughts with more accurate, balanced and less biased alternative thoughts.

On the next page, we would like you to look back at the evidence for and against your chosen thought, and really think through and try to weigh the evidence for and against your initial thought and try to develop what is likely to be a more balanced thought.

For example, taking into account evidence for and against the thought, “I am unlovable”, someone could update their thought to: “I felt hurt that my boyfriend left me, and that I sometimes do not get invited to the gatherings I want to. However, I am loved by my friends and

they often tell me that they care a lot for me.” [Chosen thought and evidence for and against showed as embedded text]

[Next page]

Chosen thought: [Participant text response embedded]

Evidence for: [Participant text response embedded]

Evidence Against: [Participant text response embedded]

Please write your more balanced thought here (To review the instructions, see below):

Please spend at least **two minutes** on this.

[Re-read new responses]

On the next page, please reread the balanced thought that you came up with.

Balanced thought: [Participant’s new balanced thought text embedded]

Appendix E.

Distraction-based Control Condition Text

Now that you have brought to mind a source of shame, we are going to guide you through a 10 to 15 minute long exercise. First we are going to play you a 5-minute long audio and then have you do a short 5-minute written activity afterwards. Doing so may help you gain new perspectives on what you are going through.

[Next page]

Please listen to the following audio.

In a hole in the ground there lived a hobbit. Not a nasty, dirty, wet hole, filled with the ends of worms and an oozy smell, nor yet a dry, bare, sandy hole with nothing in it to sit down on or to eat: it was a hobbit-hole, and that means comfort.

It had a perfectly round door like a porthole, painted green, with a shiny yellow brass knob in the exact middle. The door opened on to a tube-shaped hall like a tunnel: a very comfortable tunnel without smoke, with paneled walls, and floors tiled and carpeted, provided with polished chairs, and lots and lots of pegs for hats and coats - the hobbit was fond of visitors. The tunnel wound on and on, going fairly but not quite straight into the side of the hill - The Hill, as all the people for many miles round called it - and many little round doors opened out of it, first on one side and then on another. No going upstairs for the hobbit: bedrooms, bathrooms, cellars, pantries (lots of these), wardrobes (he had whole rooms devoted to clothes), kitchens, dining rooms, all were on the same floor, and indeed on the same passage. The best rooms were all on the left-hand side (going in), for these were the only ones to have windows, deep-set round windows looking over his garden and meadows beyond, sloping down to the river.

This hobbit was a very well-to-do hobbit, and his name was Baggins. The Bagginses had lived in the neighbourhood of The Hill for time out of mind, and people considered them very respectable, not only because most of them were rich, but also because they never had any adventures or did anything unexpected: you could tell what a Baggins would say on any question without the bother of asking him. This is a story of how a Baggins had an adventure, found himself doing and saying things altogether unexpected. He may have lost the neighbours' respect, but he gained- well, you will see whether he gained anything in the end.

The mother of our particular hobbit -- what is a hobbit? I suppose hobbits need some description nowadays, since they have become rare and shy of the Big People, as they call us. They are (or were) a little people, about half our height, and smaller than the bearded Dwarves. Hobbits have no beards. There is little or no magic about them, except the ordinary everyday sort which helps them to disappear quietly and quickly when large stupid folk like you and me come blundering along, making a noise like elephants which they can hear a mile off. They are inclined to be at in the stomach; they dress in bright colours (chiefly green and yellow); wear no shoes, because their feet grow natural leathery soles and thick warm brown hair like the stuff on their heads (which is curly); have long clever brown fingers, good-natured faces, and laugh deep fruity laughs (especially after dinner, which they have twice a day when they can get it). Now you know enough to go on with. As I was saying, the mother of this hobbit - of Bilbo Baggins, that is - was the fabulous Belladonna Took, one of the three remarkable daughters of the Old Took, head of the hobbits who lived across The Water, the small river that ran at the foot of The Hill. It was often said (in other families) that long ago one of the Took ancestors must have taken a fairy wife. That was, of course, absurd, but certainly there was still something not entirely hobbit-like about them, - and once in a while members of the Took-clan would go and have

adventures. They discreetly disappeared, and the family hushed it up; but the fact remained that the Tookes were not as respectable as the Bagginses, though they were undoubtedly richer. Not that Belladonna Took ever had any adventures after she became Mrs. Bungo Baggins. Bungo, that was Bilbo's father, built the most luxurious hobbit-hole for her (and partly with her money) that was to be found either under The Hill or over The Hill or across The Water, and there they remained to the end of their days.

[Re-engaging with the source of shame and self-critical thoughts and feelings]

On the next page we would like you to read back over what you wrote about your feelings of shame.

[Next page]

What you wrote about your feelings of shame: [Participant text response embedded]

[Generating new ways of responding]

Having reviewed what you wrote about your source of shame, please take a few moments to reflect further on anything that is coming up for you now. On the next page, please let yourself write about the thoughts and feelings that you have now as you do this reflection.

[Next page]

Please write your reflection here (*To review the instructions, see below*):

Please write for at least **five minutes**.

[Next page]

[Re-read your reflection]

On the next page, please reread what you wrote.

[Next page]

Now please, reread what you wrote; [Full participant text response embedded]