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# The Influence of Core Self-Evaluation, Mindfulness, and Rumination on Emotional Distress

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## Abstract

Core self-evaluation (CSE) is a broad and latent trait which describes the fundamental appraisals made about one's capabilities, competence and worth. The aim of this study was to investigate the relationship between CSE and emotional distress and to explore how mindfulness and rumination influence this relationship. Participants ($N = 351$) undertook an online survey consisting of four psychometric scales; Core Self-Evaluation Scale, Five Factor Mindfulness Questionnaire short form, Ruminative Response Scale short form, and the Depression Anxiety Stress Scale. Study results indicated that core self-evaluation was negatively associated with emotional distress and that this relationship was partially mediated by mindfulness and rumination. When global factors of mindfulness and rumination were used, mediation in series was not present. However, when mindfulness was substituted for its sub-factor of non-judging of inner experience and rumination was substituted for its sub-factor of brooding, mediation in series was present. Results also showed that core self-evaluation had a stronger influence on depression than anxiety or stress. It was concluded that targeting core self-evaluation in interventions is likely to have efficacy in prevention and treatment of emotional distress. Where core self-evaluation is resistant to change, targeting mindfulness or rumination may also have efficacy in prevention and treatment of emotional distress.

**Keywords** Core self-evaluation · Rumination · Mindfulness · Depression · Anxiety · Stress

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## Introduction

Core self-evaluation is a relatively new personality trait that has gained popularity in organisational literature (Chang et al., 2012). Core self-evaluation can be described as the fundamental appraisals made about one's self-worth and competence (Judge et al., 1997). Research has shown that core self-evaluation has many implications in an organisational setting, specifically, studies found a strong link between an individual's core-self-evaluation and their job satisfaction and performance (Judge et al., 1998). Core self-evaluation consists of four underlying traits; self-esteem, generalised self-efficacy, neuroticism and locus of control (Judge et al., 2002). All of these traits have been thoroughly investigated in a mental health setting and have been found to have significant relationships with depression and anxiety (Kotov et al., 2010). However, despite such findings suggesting that core self-evaluation may also have implications for mental health, little research has been undertaken to support this relationship. The current study aimed to fill this gap in the literature by investigating the relationship between core self-evaluation and emotional distress and the possible mediating roles of mindfulness and rumination.

### Overview of Core-Self Evaluation

Core Self-Evaluation (CSE) is a broad and latent trait which describes the fundamental appraisals made about one's capabilities, competence and worth (Judge et al., 1997). CSE is a relatively new trait which is becoming more predominant in organisational literature as being predictive of wellbeing and performance outcomes (Chang et al., 2012). CSE is suggested to influences outcomes both directly, via a process of emotional generalisation (e.g., positive self-view leads to positive outcomes), and indirectly, by influencing cognitions (e.g., positive self-view leads to positive thoughts) and behaviour (e.g., positive self-view encourages an individual to act in positive ways; Judge et al., 1997).

CSE was originally proposed as an integrative theoretical framework to explain the dispositional causes of job satisfaction. Initial research into CSE brought together the traits of self-esteem (an overall appraisal of an individual's worth; Rosenberg, 1965), generalised self-efficacy (an individual's appraisal of how they may cope in any given situation; Chen et al., 2001), locus of control (a generalised belief about whether people consider themselves or external factors to be in control of their life; Yu and Fan [2016]), and neuroticism (an individual's tendency to respond negatively to threats, fears, loss or frustration; Lahey, 2009). This was supported via a meta-analytic study that found strong relationships between these four traits, and demonstrated that they could be better represented by a higher-order factor representing CSE (Judge et al., 2002). This higher-order CSE factor was then shown to have greater predictive power than any of the underlying traits on their own (Judge et al., 2004, 2002). Subsequent research then established that CSE had strong positive effects on job satisfaction, no matter the attributes of the job (Judge et al., 1997, 1998). Further studies reinforced these findings, but also added evidence to

suggest that CSE promoted positive outcomes in relation to goal setting, motivation, and performance (Chang et al., 2012; Erez & Judge, 2001), as well as income and socioeconomic status (Judge & Hurst, 2007).

Expanding upon the organisational focus of CSE research have been several studies investigating its link to mental health constructs. From these, it has been shown that CSE is predictive of subjective wellbeing and physiological health functioning (Tsaousis et al., 2007), coping processes utilised by individuals (Kammeyer-Mueller et al., 2009), mindfulness and life satisfaction (Kong et al., 2014), emotional distress (Cross et al., 2021), and aggression (Chatzimike-Levidi & Collard, 2022).

### Core Self-Evaluation and Emotional Distress

While the study by Cross et al. (2021) provides the first direct support for the association between CSE and emotional distress, the underlying traits of CSE (i.e. neuroticism, self-esteem, self-efficacy, and locus of control) have all individually been linked to it.

**Neuroticism.** The relationship between neuroticism and emotional distress has been studied comprehensively. Predominantly, literature has focused on the relationship between neuroticism and depression. Neuroticism refers to the tendency of an individual to respond with negative emotions to threats, frustration and other situations (Lahey, 2009). Given this definition, it is not surprising that many studies have found that individuals with higher levels of neuroticism also show more severe depressive symptomology (Kotov et al., 2010; Muris, 2002), and, that neuroticism is a risk factor in the development and maintenance of depression (Bonsaksen et al., 2018; Hankin et al., 2007; Jylhä & Isometsä, 2006).

While the relationship between neuroticism, anxiety, and stress has been studied to a lesser degree, a positive relationship has been well supported. Higher levels of neuroticism create a vulnerability to stress (Schneider, 2004), which in turn elevates the risk of developing an anxiety disorder (Kotov et al., 2010; Muris, 2002).

**Generalised Self-Efficacy.** The relationship between self-efficacy and emotional distress has also been established. Self-efficacy can be defined as an overall appraisal an individual makes about how well they may cope in any given situation (Rosenberg, 1965). Lower levels of self-efficacy result in an individual perceiving themselves as less able to cope and has been found to act as a risk factor for both major depressive disorder (Bonsaksen et al., 2018) and anxiety disorders (Muris et al., 2005a). A relationship is also present between self-efficacy and stress wherein the lower an individual's level of self-efficacy, the higher their level of anxiety (Roddenberry & Renk, 2010).

**Locus of Control.** Locus of control is defined as the extent to which an individual believes they have influence over outcomes in their life. It is comprised of two categories: internal and external (Chen et al., 2001). An individual with an internal locus of control attributes outcomes to their own efforts, whereas an individual with an external locus of control attributes outcomes to chance or the environment (Masini et al., 2018). Individuals with an external locus of control tend to be more prone to

depression, stress, and anxiety (Moyal, 1977; Omani Samani et al., 2017; Ormel & Schaufeli, 1991).

**Self-Esteem.** Self-esteem can be defined as an individual's appraisal of their overall self-worth and has been frequently linked with depression. Low self-esteem and self-worth is associated with increased depressive symptomology (Ormel & Schaufeli, 1991; Yu & Fan, 2016). Similarly, low self-esteem can lead to higher levels of anxiety (Sowislo & Orth, 2013).

**Conclusion.** Given the relationship between the underlying traits of CSE and emotional distress, and the initial findings by Cross et al. (2021), there does appear to be a relationship between these constructs. However, the nature of this relationship, and the factors that may mediate it, remain unclear.

### Core Self-Evaluation and the Mediating Roles of Mindfulness and Rumination

There is evidence linking mindfulness and rumination to CSE and its sub-factors (Cross et al., 2021; Kong et al., 2014; Muris et al., 2005b) and to emotional distress (Nolen-Hoeksema, 2000; Calmes & Roberts, 2007). However, these have not been examined together.

**Mindfulness.** Mindfulness is defined as bringing one's attention to the present moment in a non-judgemental and accepting fashion (Kabat-Zinn, 1992). In this way mindfulness can be conceptualised as a trait or dispositional manner of relating to the present moment (Brown & Ryan, 2003; Kabat-Zinn, 1992; Kabat-Zinn et al., 2000; Mesmer-Magnus et al., 2017). More recent conceptualisations of mindfulness have suggested that it is a multi-faceted construct. Currently, the most empirically supported model to emerge from this literature proposes that there are five related facets of mindfulness, being the ability to observe experiences (internal and external), the ability to describe experiences in words, the tendency to act with awareness of present experiences (rather than be on "auto-pilot"), the tendency to be non-judgemental of inner experiences, and the tendency to remain non-reactive and to detach from inner experiences (Gu et al., 2016).

Typically, these facets are integrated into a single measure of mindfulness and have been associated with a range of psychological health benefits. For instance, individuals with high trait mindfulness are likely to experience lower levels of stress and distress (Bao, Xue, & Kong, 2015; Kong et al., 2014; Rau & Williams, 2016) including lower levels of depression (Shorey et al., 2015). Trait mindfulness has also been shown to be positively associated with CSE (Kong et al., 2014) and self-esteem (Brown & Ryan, 2003), and to have a negative association with neuroticism (Rau & Williams, 2016). However, it has been demonstrated that the facets of mindfulness can have different individual relationships with mental health constructs, such as emotional distress (Baroni et al., 2018; Gu et al., 2016).

**Rumination.** Rumination is a multidimensional and multifaceted cognitive construct which involves repetitively and passively thinking about one's mood and it's possible causes and consequences (Nolen-Hoeksema, 1991; Smith & Alloy, 2009). Rumination has also been described as an expression of neuroticism (Nolen-Hoeksema, 1991) and has been linked to depression and anxiety (Calmes & Roberts,

2007). Individuals who engage in rumination are more likely to experience more severe depression for a longer duration (Nolen-Hoeksema, 1991) and experience more anxiety or anxious moods than those who do not ruminate (Muris et al., 2005a; Nolen-Hoeksema, 2000). Rumination has also been linked to underlying factors of CSE, in particular a strong positive association between rumination and neuroticism has been shown (Muris et al., 2005b; Roelofs et al., 2008). Finally, rumination has been shown to mediate the relationships between CSE and emotional distress, both directly and indirectly, through forgiveness (Cross et al., 2021).

Not all repetitive thinking has been suggested to be maladaptive, however, with models of rumination suggesting that there are two types of rumination, being negative maladaptive repetitive thinking patterns and more adaptive reflective thinking patterns. These have been labelled as brooding and reflective pondering, respectively (Treynor et al., 2003; Watkins, 2008). Research on this breakdown of rumination has been largely supported. It has been shown that brooding and reflection are differentially associated with emotional distress and negative cognitive biases (Cross et al., 2021; Joormann et al., 2006; Pedersen et al., 2022; Watkins, 2009).

**Relationship between Mindfulness and Rumination.** It is also important to note that mindfulness and rumination have been linked to each other. A negative relationship has been shown to exist between mindfulness and rumination. (Kearns et al., 2016). This relationship has been suggested to be the underlying path through which higher levels of mindfulness reduce the potential for experiencing depressive symptomology (Svendsen et al., 2017). In particular, the brooding subtype of rumination has been shown to moderate the influence of mindfulness interventions on distress, whereas reflection did not (Conley et al., 2018).

### The Current Study

The present study aims to build on the existing research relating to CSE and its association with emotional distress. In particular, this study sought to examine the combined mediating influences of mindfulness and rumination on this relationship. Based on the existing research, it was hypothesised that CSE would be negatively associated with emotional distress and rumination, that CSE would be positively associated with mindfulness, that mindfulness and rumination would both individually act as mediators in the relationship between CSE and emotional distress and, that mindfulness and rumination would mediate the relationship between CSE and emotional distress in series.

## Method

### Participants

Participants were selected through convenience sampling and were recruited using Facebook, Reddit, LinkedIn, and word of mouth. Information was gathered from 367 potential participants. There were 16 respondents under the age of

18 who were excluded from the final sample. The final sample consisted of 351 adults from the general population (25.1% male, 73.5% female and 1.4% other) aged between 18 and 69 ($M = 26.6$, $SD = 10.5$). Participants were predominantly American (29.3%), Australian (22.5%), and European (13.7%).

## Scales and Measures

**Core Self-Evaluation Scale (CSES-Life).** The CSES (Judge et al., 2003) is a 12-item self-report scale used to measure CSE. Questions on this scale are answered using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree' to measure self-evaluations regarding one's worth, their competence, emotional state, and control over their life. The CSES has demonstrated reliability through internal consistency (average Cronbach's $\alpha = 0.84$) and validity as showed by high correlations with each of the four components of CSE (Judge et al., 2003). In the current study, two items in this scale were altered to refer to an individual's life rather than their work (i.e., the term 'career' was changed to 'life'). In this study it again demonstrated strong reliability (Cronbach's $\alpha = 0.88$).

**Depression Anxiety Stress Scales 21 (DASS-21).** The DASS-21 (Lovibond & Lovibond, 1995) is a 21-item questionnaire designed to measure an individual's emotional distress, in terms of depression, anxiety and stress (Lovibond & Lovibond, 1995). It is answered using a 4-point scale from 'did not apply to me at all' to 'applied to me very much'. The DASS is comprised of three subscales each containing seven items. The depression subscale measures an individual's level of depression through the presence of depressive symptomology (i.e., hopelessness). The anxiety subscale measures an individual's level of chronic arousal (i.e., difficulty relaxing). Finally, the stress subscale measures an individual's level of emotional strain (i.e., irritability; Lovibond & Lovibond, 1995). The DASS-21 has been proven to be a very reliable measure emotional distress with high internal consistency (total scale Cronbach's $\alpha = 0.93$) and has been shown to have adequate construct, convergent and, discriminative validity (Henry & Crawford, 2005). This was repeated in the present study (Cronbach's $\alpha = 0.94$).

**Ruminative Response Scale (RRS) Short Form.** The RRS (Treynor et al., 2003) short form is a 10-item scale used to measures an individual's tendency to ruminate in terms of the two dimensions of rumination; reflective pondering and brooding. It is answered using a 4-point scale ranging from 'almost never' to 'almost always'. It has shown good reliability with strong internal consistency (Cronbach's $\alpha = 0.85$) and good external and construct validity (Parola et al., 2017). Good scale reliability was again shown in the present study (Cronbach's $\alpha = 0.85$).

**Five Factor Mindfulness Questionnaire (FFMQ-15) Short Form.** The FFMQ-15 (Baer et al., 2006) is 15-item scale used to measure trait mindfulness in terms of its facets of observing, describing, acting with awareness, non-judging of inner experience, and non-reactivity to inner experience. The FFMQ-15 is answered using a 5-point Likert scale ranging from 'almost never' to 'almost always'. The scale has

demonstrated high convergent validity, and has previously been found to have sufficient reliability (Cronbach's $\alpha = 0.64–0.80$) (Gu et al., 2016). In the present study sufficient reliability was reported as well (Cronbach's $\alpha = 0.77$).

### Procedure

Participants self-selected into the study following the links from social media platforms. The study was conducted using the online Qualtrics survey platform. Once participants had completed a consent page, they proceeded on to the study questionnaire. This included demographic questions and the study measures. At the completion of the questionnaire, a de-briefing statement was provided.

### Statistical Analysis

Data analysis was conducted using the Jamovi software, including the "medmod" module for the mediation in series analysis. Screening of the individual relationships between the survey scales, and their subscales, was initially conducted using correlational analysis. The proposed mediation in series model was then analysed. As recommended by Hayes (2013), regression/path coefficients are presented in an unstandardised form. Confidence intervals were indicated via bootstrapping ($n = 5000$).

## Results

Table 1 shows descriptive statistics of the variables of interest including skewness and kurtosis statistics.

### Correlation Analyses

A correlation analysis was conducted to examine the relationships between CSE, emotional distress, mindfulness and rumination. Results (Table 2) indicated that all the factors were related. In terms of emotional distress, depression had the strongest relationship with CSE. Interestingly, two of the mindfulness sub-factors ("Observe" and "Non-reactivity") did not demonstrate individual relationships with emotional distress.

### Mediation Analysis

**Model 1.** The mediation in series model was tested using total scale measures. The results indicated that CSE predicted emotional distress ($t(349) = -13.6$, $p < 0.001$). It also predicted mindfulness ($t(349) = 11.8$, $p < 0.001$) and rumination ($t(348) =$

**Table 1** Descriptive statistics ($n = 351$)

| | M | SD |
|---|---|---|
| CSE | 37.50 | 8.23 |
| ED | 20.20 | 13.30 |
| Anxiety | 5.57 | 4.63 |
| Depression | 6.89 | 5.70 |
| Stress | 7.77 | 4.72 |
| Rumination | 23.75 | 6.05 |
| Brooding | 12.10 | 3.49 |
| Reflection | 11.40 | 3.37 |
| Mindfulness | 47.10 | 7.99 |
| Observing | 9.74 | 2.58 |
| Describing | 9.65 | 2.76 |
| Awareness | 9.01 | 2.52 |
| Non-Judging | 9.62 | 2.86 |
| Non-Reactivity | 9.07 | 2.45 |

*M* = Mean; *SD* = Standard deviation

−8.248, $p < 0.001$). Mindfulness did not, however, predict rumination ($t(348) = -0.8$, $p = 0.416$) but it did predict emotional distress ($t(347) = -2.96$, $p < 0.01$). Rumination was also predictive of emotional distress ($t(347) = 5.99$, $p < 0.001$). When taking into account the mediation paths, the influence of CSE on emotional distress was lessened, but still present ($t(347) = -7.2$, $p < 0.001$). As reported in Table 3, the indirect paths through each of the mediators contributed to the overall relationship individually, but mediation in series was not present (Fig. 1).

**Model 2.** In order to improve the model, the correlation matrix was used to investigate whether the mediator variables may be substituted for sub-factors which showed stronger associations with CSE and emotional distress. In terms of rumination, brooding showed a stronger relationship with CSE and emotional distress than the total rumination score or reflective pondering. Given this, the variable of rumination was substituted for brooding in model 2. This is also in line with past research that suggests that brooding is maladaptive and mediates the influence of other psychological variables on emotional distress (Conley et al., 2018; Cross et al., 2021). Similarly, the variable of mindfulness was substituted for non-judging of inner experience in the revised model as it demonstrated the strongest relationships with the other variables. This is consistent with past research that has shown differential relationships between the mindfulness facets and emotional distress (Baroni et al., 2018; Gu et al., 2016). The revised model is shown in Fig. 2 (Table 4).

The results indicated that CSE predicted both non-judging ($t(349) = 8.99$, $p < 0.001$) and brooding ($t(348) = -8.52$, $p < 0.001$). The two mediators were also related ($t(348) = -6.63$, $p < 0.001$) and were predictive of emotional distress ($t(347) = -5.68$, $p < 0.001$; $t(347) = 3.66$, $p < 0.001$, respectively). CSE maintained a relationship with emotional distress once these mediators were taken into account ($t(347) = -7.71$, $p < 0.001$), indicating partial mediation. The analysis of the indirect

**Table 2** Correlation matrix of emotional distress and it's predictors

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. CSE | – | | | | | | | | | | | | |
| 2. Reflection | −0.31*** | – | | | | | | | | | | | |
| 3. Brooding | −0.54*** | 0.57*** | – | | | | | | | | | | |
| 4. RRS Total | −0.48*** | 0.88*** | 0.89*** | – | | | | | | | | | |
| 5. Observe | 0.17** | 0.22*** | −0.03 | 0.10 | – | | | | | | | | |
| 6. Describing | 0.30*** | −0.00 | −0.20*** | −0.11* | 0.27*** | – | | | | | | | |
| 7. Awareness | 0.36*** | −0.18*** | −0.34*** | −0.30*** | 0.06 | 0.26*** | – | | | | | | |
| 8. Non-judging | 0.43*** | −0.35*** | −0.49*** | −0.47*** | 0.02 | 0.29*** | 0.44*** | – | | | | | |
| 9. Non-reactivity | 0.35*** | 0.06 | −0.17** | −0.07 | 0.34*** | 0.26*** | 0.08 | 0.06 | – | | | | |
| 10. FFMQ Total | 0.53*** | −0.09 | −0.41*** | −0.29*** | 0.55*** | 0.70*** | 0.61*** | 0.62*** | 0.55*** | – | | | |
| 11. Depression | −0.69*** | 0.36*** | 0.47*** | 0.47*** | −0.09 | −0.28*** | −0.36*** | −0.47*** | −0.15** | −0.45*** | – | | |
| 12. Anxiety | −0.39*** | 0.31*** | 0.42*** | 0.42*** | 0.10 | −0.19*** | −0.32*** | −0.42*** | −0.00 | −0.29*** | 0.62*** | – | |
| 13. Stress | −0.45*** | 0.30*** | 0.46*** | 0.46*** | 0.02 | −0.19*** | −0.37*** | −0.47*** | −0.08 | −0.37*** | 0.67*** | 0.73*** | – |
| 14. DASS Total | −0.59*** | 0.37*** | 0.51*** | 0.50*** | 0.01 | −0.25*** | −0.40*** | −0.52*** | −0.10 | −0.43*** | 0.88*** | 0.87*** | 0.90*** |

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

**Table 3** Indirect effects of cse on emotional distress in model 1

| Effects | B | SE | 95% CI | *p* |
|---|---|---|---|---|
| CSE➔Mindfulness➔Emotional Distress | −0.12 | 0.04 | −0.20, −0.05 | 0.002 |
| CSE➔Rumination➔Emotional Distress | −0.21 | 0.05 | −0.30, −0.12 | <0.001 |
| CSE➔Mindfulness➔Rumination➔Emotional Distress | −0.01 | 0.01 | −0.04, 0.02 | 0.435 |

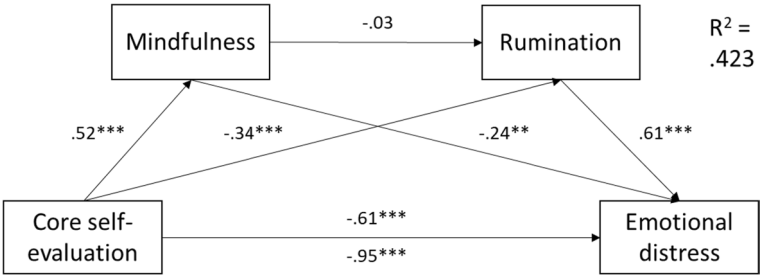


**Fig. 1** Model 1 with unstandardised β statistics. *Note* $*p<0.05$, $**p<0.01$, $***p<0.001$

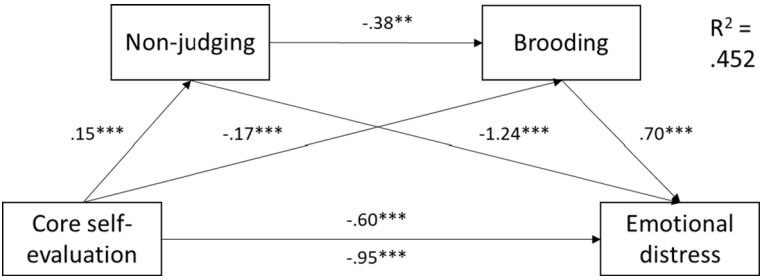


**Fig. 2** Model 2 with unstandardised β statistics. *Note.* $*p<0.05$, $**p<0.01$, $***p<0.001$

**Table 4** Indirect effects of CSE on emotional distress in model 2

| Effects | B | SE | 95% CI | *p* |
|---|---|---|---|---|
| CSE➔Non-judging➔Emotional Distress | −0.18 | 0.05 | −0.28, −0.09 | <0.001 |
| CSE➔Brooding➔Emotional Distress | −0.12 | 0.04 | −0.20, −0.05 | 0.001 |
| CSE➔Mindfulness➔Brooding➔Emotional Distress | −0.04 | 0.02 | −0.07, −0.01 | 0.012 |

paths indicated that both mediators contributed to the mediation effect individually and in series.

**Depression, anxiety, and stress.** The depression, anxiety, and stress subscales were substituted into Model 2 as the dependant variable to investiagte the effect on these specific types of emotional distress. As demonstrated in Fig. 3, all models were supported. Table 5 shows the indirect contributions of the mediators.

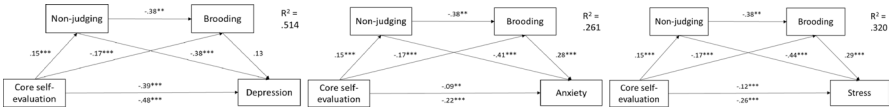


**Fig. 3** Model 2 with unstandardised β statistics for specific forms of emotional distress. *Note* $*p < 0.05$, $**p < 0.01$, $***p < 0.001$

**Table 5** Indirect effects of CSE on specific emotions

| Effects | B | SE | 95% CI | *p* |
|---|---|---|---|---|
| CSE➔Non-judging➔Depression | −0.06 | 0.02 | −0.09, −0.02 | 0.001 |
| CSE➔Brooding➔Depression | −0.02 | 0.01 | −0.05, 0.01 | 0.127 |
| CSE➔ Non-judging➔Brooding➔Depression | −0.01 | 0.01 | −0.02, −0.00 | 0.169 |
| CSE➔Non-judging➔Anxiety | −0.06 | 0.01 | −0.10, −0.03 | <0.001 |
| CSE➔Brooding➔Anxiety | −0.12 | 0.04 | −0.08, −0.02 | <0.001 |
| CSE➔Non-judging➔Brooding➔Anxiety | −0.04 | 0.02 | −0.03, −0.00 | 0.007 |
| CSE➔Non-judging➔Stress | −0.07 | 0.02 | −0.10, −0.03 | <0.001 |
| CSE➔Brooding➔Stress | −0.12 | 0.04 | −0.08, −0.02 | 0.002 |
| CSE➔Non-judging➔Brooding➔Stress | −0.02 | 0.01 | −0.03, −0.00 | 0.010 |

This shows that for depression, non-judgement of inner experiences was the main contributor to the mediation effect and mediation in series was not present. For anxiety and stress, mediation in series was present. In these, both non-judging and brooding contributed individually and together to the mediation pathways, but brooding contributed the greatest proportion of this effect.

## Discussion

The current study aimed to test a model in which CSE was predicted to be negatively related with emotional distress, with mindfulness and rumination mediating it in series. The analyses undertaken supports, first, that CSE is negatively associated with both emotional distress and rumination, and positively associated with mindfulness. Analyses also supported that mindfulness and rumination both individually act as mediators in the relationship between CSE and emotional distress, however, it did not support the hypothesis that mindfulness and rumination mediate the relationship between CSE and emotional distress in series. However, the sub-factors of non-judging of inner experience and brooding (for mindfulness and rumination respectively) did mediate the relationship between CSE and emotional distress in series.

### Core Self-Evaluation and Emotional Distress

The finding that CSE was negatively related to emotional distress replicated previous research investigating the relationship between these two constructs (Cross et al., 2021). It was also in line with previous studies that found relationships between the underlying traits of CSE and factors of emotional distress, including; the positive associations neuroticism has demonstrated with depression (Kotov et al., 2010) and anxiety (Muris, 2002), the role of low self-efficacy as a risk factor for depression (Bonsaksen et al., 2018) and anxiety (Muris et al., 2005a), the finding that individuals with a tendency to have an external locus of control are more prone to depression and anxiety than those with who tend to have an internal locus of control (Moyal, 1977; Omani Samani et al., 2017; Ormel & Schaufeli, 1991), and research showing self-esteem is negatively related to depression and anxiety (Sowislo & Orth, 2013; Yu & Fan, 2016).

Although it was expected that depression and anxiety would demonstrate a relationship with CSE, based on the existing literature, it was less clear as to how stress may be related. The finding that stress had a negative relationship with CSE is consistent with the limited body of literture relating stress to the traits of CSE and suggests that CSE may be also related to broader representations of emotional distress (Schneider, 2004; Ormel & Schaufeli, 1991).

### Mediating Roles of Mindfulness and Rumination

The mediation results demonstrated that CSE influences emotional distress directly and indirectly through both mindfulness and rumination independently. The relationship found between rumination and emotional distress supports previous findings that rumination is associated with the onset and severity of depression and anxiety (Nolen-Hoeksema, 1991; Calmes & Roberts, 2007). The relationship found between mindfulness and emotional distress was also in line with existing literature showing higher levels of trait mindfulness are associated with lower levels of stress (Rau & Williams, 2016) and depression (Shorey et al., 2015). Associations between CSE and the mediators also support previous literature. The negative association found between CSE and rumination is consistent with previous studies linking rumination to its underlying trait of neuroticism (Trapnell & Campbell, 1999; Muris et al, 2005a, b). Similarly, the positive relationship between CSE and mindfulness is consistent with previous studies showing mindfulness is a predictor of CSE (Kong, Wang & Zhao, 2014).

The failure to find a relationship between mindfulness and rumination is contradictory to previous literature. It has typically been shown that there is a negative relationship between these two constructs (Kearns et al., 2016). Interpreted at a global level, this finding would suggest that rumination is not influenced by mindfulness and nor is its relationship with emotional distress. It instead suggests that mindfulness and rumination operate individually to influence the relationship between CSE and emotional distress. This is similar to findings of

research by Kearns et al. (2016). They, similarly, found a relationship between mindfulness and rumination, but that the influence of mindfulness on depressive symptoms was not mediated by rumination. Alternatively, and more likely, these relationships are confounded by the variety of subfactors included in the measurement of mindfulness through the FFMQ and rumination through the RRS. This idea was also supported by the refined analysis, where non-judging was substituted for mindfulness and brooding was substituted for rumination, utilising these subscales as mediators.

Selection of the brooding subfactor for rumination was consistent with past literature that indicates that this subfactor is more predictive of emotional distress (Cross et al., 2021; Joormann et al., 2006). Similarly, the five facets of mindfulness have also been shown to have different relationships to emotional distress (Baroni et al., 2018; Gu et al., 2016), with this study suggesting that non-judgment of inner experience has the strongest relationship with emotional distress and brooding. The findings of mediation in series with these factors indicates that individuals with higher levels of CSE are more prone to being non-judgemental of their inner experiences, less prone to brooding, and together these factors reduce the likelihood of experiencing emotional distress. This fits well with research showing that mindfulness, self-compassion, and rumination had a combined influence on depressive tendencies (Svendsen et al., 2017).

***Depression.*** The model had the most power for explaining depression. These findings were consistent with evidence in the literature repeatedly reporting strong associations between depression and the undying traits of CSE of neuroticism (Kotov et al., 2010; Muris, 2002), self-efficacy (Bonsaksen et al., 2018), external locus of control (Moyal, 1977; Ormel & Schaufeli, 1991) and self-esteem (Yu & Fan, 2016). Despite the mediating effect of mindfuless and brooding on the relationship with depression, much of the influence of CSE was still through its direct path (i.e. 81.3% of the variance it explained). Interestingly, brooding did not mediate the relationship with depression, once non-judgement was taken into consideration. This suggess that non-judgement is a primary driver of brooding in the context of depression.

***Anxiety.*** The relationship between CSE and anxiety was also partially mediated by non-judging of inner experience and brooding. This finding indicates that CSE influences anxiety both directly and indirectly through these mediators. This result is consistent with previous studies finding associations between anxiety and underlying factors of CSE (Jylha & Isometsa, 2006; Muris, 2002). Compared with depression, a greater proportion of CSE's influence on anxiety can be explained through the mediators.

***Stress.*** Again, partial mediation was shown in the application of Model 2 to stress. These results are consistent wth previous studies showing links between underlying factors of CSE and stress (Schneider, 2004; Roddenberry & Renk, 2010) and suggest that CSE influences stress both directly and indirectly through the mediators. The influence of CSE on stress was relatively even across the direct path (46.2%) and the indirect path through the mediators (53.8%).

### Clinical Implications

Results found in the current study have practical implications for the prevention and treatment of emotional distress. The results suggest that targeting CSE in clinical intervention may help to reduce emotional distress. Treatment addressing the CSE of a client presenting with depression, anxiety, or stress would appear to have a both direct effect on these emotional states and an indirect effect, by increasing mindfulness and reducing rumination. Conversely, for clients showing resistance to CSE intervention, they could benefit from treatments aiming to improve mindfulness and reduce rumination. Focusing such interventions on reducing judgment of inner experiences and brooding would be important when implementing these interventions. It is worth noting, however, that the expected benefits from these types of interventions, particularly for depression, are not likely to be as strong as those directly targeting CSE.

### Limitations and Future Directions

Despite the implications that can be drawn from the present study, findings should be interpreted with caution due to several limitations. Firstly, the cross-sectional nature of the study design prohibits identification of any causal pathways. Use of longitudinal research could help to clarify whether issues with CSE precede difficulties with mindfulness, rumination, and emotional distress. Sampling issues also limit the ability to generalise the findings. Similarly, intervention studies relating to CSE could also help with demonstrating whether changes to CSE create subsequent changes to the other variables. A further limitation arises due to the sample in the study, predominantly females from a Western culture. This may limit the applicability of the findings to males and individuals from non-Western cultures. Participants also self-selected into the study and were not necessarily experiencing clinical levels of emotional distress. Subsequently, future research could look to replicate this study with more diverse samples (e.g. gender, culture, clinical sample). Furthermore, self-report surveys are prone to social desirability bias, which could have influenced survey responses (Thomas et al. 2006). Utilising measures aside from self-report questionnaires could help to manage such response biases.

## Conclusion

The findings of this study showed that CSE was negatively related to emotional distress and rumination and positively related to mindfulness. These findings suggest that CSE has benefits for understanding aspects of mental health, including cognitive and emotional processes contributing to emotional distress. Findings of this study also reported that mindfulness and rumination partially mediated the relationship between CSE and emotional distress in parallel. However, when mindfulness was substituted for the sub-factor of non-judging of inner experience and rumination was

substituted for the sub-factor of brooding, mediation in series was present. These results provide support for the efficacy of targeting CSE in the treatment and prevention of emotional distress, whether emotional distress is used globally or when the components of depression, anxiety, or stress are used individually.

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

## Declarations

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

**Ethics approval** All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

**Informed consent** Informed consent was obtained from all individual participants included in the study.

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