# Self-Compassion Helps Preserve Emotional Well-Being

# When Experiencing Failure by Promoting

# More Adaptive Causal Attributions

by

Tara Leigh Conway

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Department of Psychology

University of Manitoba

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**Abstract**

The beneficial nature of self-compassion is well-established, but the mechanism by which it exerts its benefits has received little attention. This study sought to address this gap in the literature by evaluating the effect of self-compassion on responses to failure using the framework of attribution theory. Participants were randomly assigned to either a self-compassion (SC; N=413) or expressive writing task (EW; N=416), in order to experimentally manipulate state self-compassion, measured pre- and post-writing using the State Self-Compassion Scale (SSC). It was expected that SSC would increase post-writing for the SC group and would decrease for the EW group. All participants were then exposed to a failure manipulation (test failure) and causal attributions were assessed by asking participants to rate the perceived cause of their test performance on four causal dimensions: locus, stability, globality, and controllability. Measures of state shame (State Shame & Guilt Scale; Experiential Shame Scale) and affect (positive and negative) were administered pre- and post-failure to capture failure-induced distress (i.e., post-failure state shame and affect, controlling for pre-failure levels). Serial mediation regression analyses were conducted to evaluate whether the group effect (SC vs. EW) on failure-induced distress would be mediated by post-writing SSC and failure attributions. It was hypothesized that those in the SC group would have higher SSC than those in the EW group, and that this would lead to more adaptive attributions for failure (i.e., less internal, less stable, less global, and more controllable), which would in turn be associated with less failure-induced distress. Results supported all study hypotheses. The SC group increased, and the EW group decreased in SSC, and there was a significant group difference post-writing. This group effect on SSC predicted more adaptive attributions for failure, which in

turn predicted better emotional responses to failure (i.e., less SSG Shame, ESS Shame, and negative affect, and more positive affect). Effects were not moderated by depressive symptomatology, however self-compassionate writing was more effective for participants higher in depression. These results provide novel evidence suggesting that self-compassion helps preserve emotional well-being when experiencing failure by promoting healthier causal attributions for the failure. Clinical implications are discussed.

*Keywords:* self-compassion, attributions, failure, shame, expressive writing

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Promoting More Adaptive Causal Attributions

It has been said that success is stumbling from failure to failure with no loss of

enthusiasm. Indeed, perseverance can increase your chances of eventual success

(Duckworth, Peterson, Matthews, & Kelly, 2007), but the pain of failure often saps us of the

courage to continue when the going gets tough (Förster, Grant, Idson, & Higgins, 2001; J.

Johnson, Panagioti, Bass, Ramsey, & Harrison, 2016). What enables some people to respond

with grace in the face of failure, while others succumb to despair? A growing body of

research suggests that one answer may be the ability to treat oneself with compassion (e.g.,

Leary, Tate, Adams, Allen, & Hancock, 2007; Neff, 2003).

*Self-compassion* is a concept rooted in Eastern religious and philosophical thought

that has rapidly gained in popularity in the West over the past decade, both amongst

psychologists and the general population. Despite accumulating evidence of the benefits of

self-compassion, however, much of the research is correlational in nature and the

mechanism by which it exerts its beneficial effects remains unclear, as will be discussed in

the literature reviews that follow. In order to address these limitations, the present study

sought to examine, using a randomized controlled, experimental design, a possible

mechanism by which self-compassion buffers individuals against failure-induced distress.

**Self-Compassion**

***Definition***

The most commonly cited definition of self-compassion maintains that it consists of

three components: treating oneself with kindness, particularly in times of suffering, rather

than responding to failure with harsh self-criticism; a mindful, dispassionate attitude

toward personal shortcomings, wherein one neither avoids painful emotions nor becomes consumed by them; and an understanding that one is part of a common humanity, in which feelings of failure and inadequacy are a normal part of the human experience, as opposed to feeling alone in one's suffering (Neff, 2003a). Each component thus represents a bipolar dimension: self-kindness versus self-judgement; mindfulness versus over-identification with emotions; and common humanity versus isolation.

Other approaches to conceptualizing self-compassion exist, such as the biopsychosocial approach of Paul Gilbert (Gilbert, 2005), which views self-compassion (or self-reassurance) as a form of self-to-self relating in which two "social mentalities" (patterns of neurophysiological activity that have evolved due to their importance for social functioning) are activated: care-seeking and care giving. However, measures of self-compassion and compassion for others appear to be uncorrelated (López, Sanderman, Ranchor, & Schroevers, 2018), contrary to what would be expected based on this conceptualization. Further, self-reassurance is closely related to Neff's view of self-kindness (Hermanto & Zuroff, 2016), but does not appear to encompass the broader aspects of mindfulness and common humanity. Yet, these are considered central in distinguishing self-compassion from previous concepts, such as unconditional positive regard (Rogers, 1961), which some regard as problematically focused on the individual (Barnard & Curry, 2011). Given that the vast majority of research in the area of self-compassion is based on Neff's conceptualization, it will be the focus of this literature review.

***Empirical Associations of Trait Self-Compassion***

The tendency to respond to suffering with self-compassion, or trait self-compassion, is most commonly measured by a total score on the Self-Compassion Scale (SCS; Neff, 2003b; see discussion in Measurement of Self-Compassion section below). This measure has been repeatedly demonstrated to be correlated with lower levels of psychopathology. A meta-analysis (MacBeth & Gumley, 2012) of 14 publications with a total of 32 effect sizes reported that the relationships between scores on the SCS and symptoms of depression ($r$=-0.52), anxiety ($r$=-0.51), and stress ($r$=-0.54) corresponded to large effect sizes. A comparable result ($r$=-0.55) was found in a meta-analysis of 19 studies that examined the association between trait self-compassion and psychopathology among adolescents (I. C. Marsh, Chan, & MacBeth, 2018). Consistent with these results, a recent systematic review concluded that lower levels of trait self-compassion are observed across a range of clinical disorders, including anxiety disorders (generalized anxiety disorder, obsessive compulsive disorder, and social anxiety disorder), mood disorders (bipolar and unipolar depression), posttraumatic stress disorder, and alcohol use disorder (Dimitra, Eirini, Christos, Agathi, & Anastassios, 2020).

Trait self-compassion has also been found to buffer individuals from the emotional consequences (i.e., depression and anxiety) of perceived stress (Lathren, Bluth, & Park, 2019; Y. Zhang, Luo, Che, & Duan, 2016) and to predict less depression, panic, and symptoms of posttraumatic stress following a traumatic experience (Zeller, Yuval, Nitzan-Assayag, & Bernstein, 2015). It appears to mediate the relationship between trait procrastination and stress (Sirois, 2014) and to moderate (i.e., attenuate) the effects of maladaptive perfectionism, low implicit self-esteem, and weak positive attention bias on

depression (Ferrari, Yap, Scott, Einstein, & Ciarrochi, 2018; Phillips, Hine, & Marks, 2018). This buffering effect on depression has additionally been demonstrated to translate into less suicidal behaviour (Chang et al., 2017; Kelliher Rabon, Sirois, & Hirsch, 2018). Importantly, a study that followed participants over the course of a year found, using cross-lagged panel analyses that control for autoregressive effects, that trait self-compassion predicted subsequent depression symptoms, but not vice versa (Krieger, Berger, & Holtforth, 2016). One way self-compassion may undermine psychopathology is by promoting help-seeking, as it is associated with less perceived risk of disclosure and stigma related to seeking counselling among men (Heath, Brenner, Vogel, Lannin, & Strass, 2017).

Research on attachment style has also implicated self-compassion in mitigating potential negative outcomes associated with anxious and avoidant attachment. Specifically, trait self-compassion mediated the association between these attachment styles and psychopathology (i.e., depression and anxiety; Joeng et al., 2017) as well as eudaimonic well-being (i.e., a meaningful life full of productive activity and striving to fulfill one's potential) among older adults (Homan, 2018).

Indeed, in addition to negative relationships with psychopathology, trait self-compassion appears to be positively associated with various measures of well-being. A meta-analysis (Zessin, Dickhäuser, & Garbade, 2015) of 79 samples (134 effect sizes) found medium to large effects of trait self-compassion on psychological well-being (i.e., eudaimonic well-being; $r=0.62$), negative affect ($r=0.47$), positive affect ($r=0.39$), and cognitive well-being (i.e., life satisfaction; $r=0.47$). Trait self-compassion is associated with more positive automatic thoughts (Arimitsu & Hofmann, 2015) and has been shown to predict emotional well-being above and beyond the effects of psychological flexibility (i.e.,

mindful acceptance and defusion; Marshall & Brockman, 2016). College students high in trait self-compassion also appear to be less vulnerable to distress associated with thwarted goal progress and to report greater identity development over the course of an academic year (Hope, Koestner, & Milyavskaya, 2014). The benefits of self-compassion even extend beyond the individual, as SCS scores are correlated with empathy, perspective taking, altruism, and forgiveness (Neff & Pommier, 2013).

Remarkably, trait self-compassion is also associated with physical health. A recent meta-analysis (Phillips & Hine, 2019) that included 94 peer-reviewed studies (240 effect sizes) found significant associations with overall physical health ($r=0.22$), functional immunity ($r=0.20$), cardiovascular health ($r=0.14$), and stress hormones/neurotransmitters ($r=0.14$). It also found positive associations with health behaviours, including a composite of health behaviours ($r=0.30$), sleep ($r=0.29$), danger avoidance (e.g., risky sex, road safety; $r=0.29$), nutrition and exercise ($r=0.24$), and medical practices ($r=0.20$); however, it did not predict maladaptive bodily routines (e.g., poor dental hygiene) or substance abuse. Interestingly, the effect on health-promoting behaviours only partially explains the relationship between trait self-compassion and physical health (Dunne, Sheffield, & Chilcot, 2018). Further, trait self-compassion is associated with greater well-being among those with chronic pain, predicting less pain-related fear, depression, and disability, and greater pain acceptance, valued action, and use of coping strategies (Edwards et al., 2019), and with greater self-rated health among those with chronic illnesses, such as arthritis, inflammatory bowel disease, chronic fatigue syndrome, and fibromyalgia (Sirois, 2020).

In summary, an extensive body of research over the past two decades has demonstrated positive associations between trait self-compassion, as measured with the SCS, and a variety of measures of psychological and physical well-being. Of particular relevance to the present study, this research points to better mental health outcomes for individuals high in trait self-compassion, and suggests that more adaptive responses to distressing life events and distressing emotions (e.g., greater acceptance and help-seeking) may at least partly explain this.

### *Increasing Self-Compassion*

Correlational findings using trait measures of self-compassion are important for identifying areas in which self-compassion *may* engender more positive outcomes for individuals who possess a high degree of it, but experimental designs are required if we are to draw any causal conclusions. Fortunately, over the past decade there has been a surge of interest among researchers in how to promote higher levels of trait self-compassion. Indeed, dozens of intervention studies have been published in the past five years. For the purpose of this review, I will consider two categories of self-compassion interventions separately: compassion-based therapies and self-compassion inductions. The former describes a range of multi-session therapeutic interventions that relate, directly or indirectly, to self-compassion or compassion more broadly (i.e., including giving compassion to, and receiving compassion from, others), and which typically involve evaluation of long-term benefits. Self-compassion inductions, on the other hand, refer to studies that use brief interventions (most commonly short writing tasks) to temporarily create a more compassionate mindset in participants, and then evaluate the immediate impact of this on various outcome measures. These can be considered trait-level versus

state-level interventions, although the line between these is often blurred (e.g., when self-compassion is induced several times over the course of a week, the effects found following the final induction may reflect the combination of a temporary increase in (state) self-compassion as well as trait-level changes that have occurred over the course of the study). As the present study utilized a writing task-based induction of self-compassion, this category of intervention will receive a more in-depth discussion. However, a review of compassion-based therapies that includes detailed descriptions of each can be found in Kirby (2017).

**Compassion-Based Therapies.** Compassion-based therapies arose out of the 'third-wave' cognitive-behavioural tradition (Gilbert, 2010) and generally consist of psychoeducation about self-compassion, cognitive techniques (e.g., compassionate imagery, awareness of uncompassionate automatic thoughts), and mindfulness techniques (Kirby, 2017), although some approaches focus exclusively on compassionate or loving-kindness meditation (e.g., Feliu-Soler et al., 2017). The two most prominent approaches are Compassion-Focused Therapy (CFT; Gilbert, 2009), which is based on Gilbert's (2005) evolutionary approach to self-compassion, and Mindful Self-Compassion (MSC; Neff & Germer, 2013), based on the work of Neff (2003a).

Along with the considerable increase in attention paid to self-compassion over the past decade, there has been a commensurate growth of compassion-based therapies. Although traditionally comprised of eight or more weekly, in-person, group-based sessions, self-compassion programs have been adapted for use online (e.g., Finlay-Jones, Kane, & Rees, 2017) and in briefer formats (Dundas, Binder, Hansen, & Stige, 2017).  Additionally, they have been successfully used in a variety of countries (e.g., Japan, Arimitsu, 2016;

Greece, Mantelou & Karakasidou, 2017; Iran, Afshani et al., 2019; China, Guo, Zhang, Mu, & Ye, 2019) and with diverse populations, such as adolescents (Bluth, Gaylord, Campo, Mullarkey, & Hobbs, 2016), women with prenatal depression and anxiety (Guo et al., 2019), women experiencing distress related to infertility (Afshani et al., 2019), people suffering from posttraumatic stress (Au et al., 2017), and homeless veterans (Held & Owens, 2015).

The efficacy of compassion-based therapies reinforces the correlational findings discussed above. One meta-analysis of 21 studies (Kirby, Tellegen, & Steindl, 2017) found significantly improved trait self-compassion ($d$=0.70) and reduced anxiety ($d$=0.49), depression ($d$=0.64) and psychological distress ($d$=0.47) post-treatment. More recently, a meta-analysis (Wilson, Mackintosh, Power, & Chan, 2019) that focused exclusively on studies conducted using individuals with classifiable mental health symptoms (clinical or subclinical) showed that self-compassion-related interventions were non-inferior to active control interventions (i.e., other psychotherapies and/or pharmacotherapy) and produced significant reductions in depression (Hedge's $g$=0.56) and anxiety ($g$=0.69) symptoms, as well as increases in self-compassion ($g$=0.72), compared to passive control conditions (e.g., waitlist).

Self-compassion-related interventions have been found to be effective in treating psychotic disorders, major depressive disorder, eating disorders, suicidality, borderline personality disorder, and chronic pain (Graser & Stangier, 2018), and have been demonstrated to have a variety of psychosocial benefits. A recent meta-analysis (Ferrari et al., 2019) of 27 studies found large effects on eating behaviours ($g$=1.76) and rumination ($g$=1.37), moderate effects on stress ($g$=0.67), depression ($g$=0.66), anxiety ($g$=0.57), mindfulness ($g$=0.62), and self-criticism ($g$=0.56), and small but significant effects on

positive affect ($g$=0.48), negative affect ($g$=0.33), and life satisfaction ($g$=0.40). Although these interventions had a medium effect on trait self-compassion overall (Hedge's $g$=0.75), the size of this effect differed substantially depending on the population studied, with large effects reported for both community ($g$=0.83) and clinical samples ($g$=0.82), but only small effects for university samples ($g$=0.47). Interestingly, although reductions in depression tended to remain significant when evaluated at one- to three-month follow-ups ($g$=0.33), increases in trait self-compassion largely disappeared ($g$=0.19). Thus, although self-compassion-related interventions have demonstrated robust benefits for psychological well-being, it is unclear whether these benefits pertain specifically to the effects of self-compassion.

**Self-Compassion Inductions.** This review will focus on studies that have used self-compassion writing tasks, as this is the approach utilized in the present study and in the vast majority of brief self-compassion inductions. There are two notable exceptions, however: one involved a loving-kindness meditation that was found to buffer participants from the physiological and subjective stress brought about by the Trier Social Stress Test (Arch, Landy, & Brown, 2016), and the other a compassion-focused imagery task that promoted greater self-reassurance and happiness, compared to a control imagery task, among psychotic patients with paranoid ideation (Ascone, Sundag, Schlier, & Lincoln, 2017).

Although some researchers have based their writing task prompts on Gilbert's Compassion-Focused Therapy (e.g., Arimitsu & Hofmann, 2017), most are based on the methodology first used by Leary et al. (2007). This involved asking participants to recall a personal experience involving failure, humiliation, or rejection that made them feel badly

about themselves. They were then asked to write about this experience in a self-compassionate manner, using three prompts that were designed to elicit common humanity, self-kindness, and mindfulness: common humanity writing entailed listing ways "other people also experience similar events;" self-kindness writing involved expressing "understanding, kindness, and concern to themselves in the same way that they might express concern to a friend who had undergone the experience;" and the mindfulness prompt asked them to "describe their feelings about the event in an objective and unemotional fashion" (Leary et al., 2007, p. 899).

Using a sample of university students, Leary et al. (2007) compared the effects of this writing task to self-esteem writing, expressive writing, and no-writing control tasks. They found that those in the self-compassion condition reported significantly less negative affect than did those in the other conditions, which did not differ. An effect of self-compassionate writing on reducing negative affect (including self-conscious affect such as shame and guilt) and/or increasing positive affect associated with a recalled shameful or otherwise distressing personal experience has been replicated in several studies that have compared it to other types of writing tasks or distraction controls (Friis, Johnson, & Consedine, 2017; E. A. Johnson & O'Brien, 2013; Odou & Brinker, 2015; Przezdziecki & Sherman, 2016; J. W. Zhang & Chen, 2016). Although one study found that self-compassionate writing increased negative affect compared to emotionally-neutral writing, this is likely due to the fact that they did not include a distress recall component in the control condition (Wong & Mak, 2016). This does illustrate, however, that self-compassionate writing, although helpful, may not completely negate the distress associated with the recall of a painful experience.

In addition to mitigating distress, self-compassionate writing has been demonstrated to positively impact cognitions and self-improvement motivation. Cognitive effects include increased body acceptance among breast cancer survivors (Przezdziecki & Sherman, 2016), greater acceptance and forgiveness related to an experience of regret (J. W. Zhang & Chen, 2016), reduced fear of negative evaluation in socially anxious individuals (Cândea & Szentágotai-Tătar, 2018), and less perceived risk of disclosing a distressing personal experience among those who have a fear of receiving compassion (Dupasquier, Kelly, Moscovitch, & Vidovic, 2018). The belief that one has the ability to improve personal shortcomings is also increased following the induction of state self-compassion, along with motivation to engage in personal improvement, make amends, and avoid repeating a past transgression (Breines & Chen, 2012; J. W. Zhang & Chen, 2016). Whether this motivation actually translates into behaviour change is less clear, however: one study found that participants in the self-compassion writing condition spent more time studying for a subsequent test after an initial failure (Breines & Chen, 2012), while another found that they actually spent less time flossing than those in the control group after receiving critical feedback about the effectiveness of their flossing technique (Friis et al., 2017). More research is thus required in order to clarify whether state self-compassion promotes adaptive behaviours. Although behaviours were not directly assessed, the present study sought to shed some light on this issue by examining the impact of state self-compassion on causal attributions, which have been found to predict adaptive behaviours, such as perseverance and achievement striving (Le Foll, Rascle, & Higgins, 2006, 2008; Perry, Chipperfield, Hladkyj, Pekrun, & Hamm, 2014).

Several studies using the Leary et al. (2007) writing task have incorporated follow-up measurements, in order to evaluate whether repeated induction of state self-compassion (typically every day or two over the course of one or two weeks) leads to enduring benefits for well-being. One study demonstrated increased trait self-compassion and decreased rumination and concern over sports-related mistakes among college athletes, and these effects were maintained one month post-intervention (Mosewich, Crocker, Kowalski, & DeLongis, 2013). Other studies have reported decreased shame-proneness (Cândea & Szentágotai-Tătar, 2018), even when failing to find a significant increase in trait self-compassion (E. A. Johnson & O'Brien, 2013). A study conducted with Chinese university students, which found that self-compassionate writing was associated with more negative affect than control writing (as mentioned above), nonetheless found that physical symptoms (e.g., fatigue, indigestion, and sleep problems) were decreased at a three-month follow-up for the self-compassion group but not for the control group (Wong & Mak, 2016). Finally, Shapira and Mongrain (2010) found increased happiness and decreased depression symptoms three months after participants completed self-compassionate writing, and this effect on happiness was maintained at a six-month follow-up.

Thus, it is clear that inducing state self-compassion has both immediate benefits (e.g., reduced distress and more adaptive attitudes toward perceived shortcomings) as well as longer-term effects on well-being (e.g., reduced depression, shame-proneness, and physical symptoms). There is also evidence that self-compassionate writing is as effective for improving mood and reducing anxiety as cognitive reappraisal, which is a core cognitive-behavioural therapy technique with strong empirical support (Arimitsu &

Hofmann, 2017; Cândea & Szentágotai-Tătar, 2018; Ehret, Joormann, & Berking, 2018), and

may even be more effective for people suffering from especially severe levels of depression

(Diedrich, Grant, Hofmann, Hiller, & Berking, 2014; Ehret et al., 2018), who tend to have

difficulty employing cognitive reappraisal as an emotion regulation strategy (Visted,

Vøllestad, Nielsen, & Schanche, 2018). Indeed, it appears that inducing a self-

compassionate mindset may enhance the effectiveness of subsequent cognitive reappraisal

(Diedrich, Hofmann, Cuijpers, & Berking, 2016). These benefits are rather remarkable,

given the brevity and simplicity of self-compassionate writing.

### *Relationship to Self-Esteem*

Before turning to the consideration of possible mechanisms underlying the benefits

of self-compassion, some discussion of self-esteem is warranted, given its close relationship

with self-compassion. Indeed, from its inception it was acknowledged that self-compassion

has considerable overlap with self-esteem: both reflect a positive emotional stance toward

the self that is believed to motivate productive behaviour and protect against self-

judgement (Neff, 2003a). It is no surprise, then, that measures of these two variables tend

to be very highly correlated with one another (e.g., $r$=0.69 in Krieger, Hermann,

Zimmermann, & grosse Holtforth, 2015). However, self-compassion is thought to be

distinct from self-esteem in that it does not involve an evaluative component, depend upon

matching some standard set for the self,  or require downward social comparison or

unrealistically positive views of oneself to maintain; in this way it was purported to provide

the benefits of self-esteem without the pitfalls (Neff, 2003a). Research has indeed

demonstrated that self-compassion predicted more stable and less contingent feelings of

self-worth and, unlike self-esteem, was not associated with narcissism (Neff & Vonk, 2009).

Further, semipartial correlations with a variety of variables, such as equanimity and rumination, have shown that controlling for shared variance weakens or negates the relationship with self-esteem, whereas self-compassion remains significantly, independently correlated (Barnard & Curry, 2011). This suggests that although global self-esteem, as measured by the Rosenberg Self-Esteem Scale (Rosenberg, 1965), may capture some aspects of what is encompassed by self-compassion, the latter nonetheless involves additional, and beneficial, features.

Despite these differences, it cannot be ignored that there is a considerable amount of shared variance between self-compassion and self-esteem. This prompted some researchers to ask whether they might in fact be developmentally linked. In an interesting longitudinal study of high school students, Donald et al. (2018) used autoregressive cross-lagged models to show that level of self-esteem at each time point predicted subsequent changes in self-compassion, but not vice versa. They argue that "evaluations of worthiness of the self are important antecedents of the capacity to extend compassion to oneself" (Donald et al., 2018, p. 626). Though more research is required to better understand this relationship, it may be the case that self-compassion represents a more developed form of self-esteem that leads to a more transcendent sense of self.

Given the conceptual and empirical overlap with self-compassion, it was important in the present study to control for the potentially confounding effect of self-esteem. This was done by administering the Rosenberg Self-Esteem Scale and confirming that there were no group differences on this measure. This ensured that observed group differences following the experimental manipulations were not attributable to global self-esteem. This does not rule out the possibility that self-esteem may interact with study variables or

manipulations (e.g., impacting participants' emotional response to test failure), however

such effects would be over-and-above the effects under consideration in the present study

(e.g., the effect of state self-compassion on emotional response to test failure). While

potentially interesting, these effects of self-esteem are not germane to the purpose of the

study and thus will not be addressed.

### Mechanism of Action of Self-Compassion

Despite over a decade and a half of research that has documented the benefits of

having high self-compassion, and the emergence of empirically-supported compassion-

based therapies, little is known about the mechanism underlying these effects. Recently,

the Self-Compassion Scale has faced mounting criticism (see Measurement of Self-

Compassion section below), with some even expressing concern that self-compassion may

be little more than neuroticism with a different name (i.e., a jangle fallacy; Pfattheicher et

al., 2017). It therefore behooves researchers to shift their focus from the benefits of self-

compassion to more fundamental questions about its nature. Indeed, this is the focus of the

present study. Before discussing the particular aims of this study, however, it is important

to review what is currently understood regarding the mechanism of self-compassion.

**Emotion Regulation.** One important approach to addressing the question of *how*

self-compassion provides its benefits is to consider self-compassion within the framework

of other well-established psychological theories. To this end, emotion regulation has been

advanced as a potential mechanism. Emotion regulation is a very broad concept that

encompasses both the generation of emotions and the modulation of their intensity,

duration, and expression (Inwood & Ferrari, 2018). Emotion regulation can occur through

both bottom-up (i.e., brought about by the perception of stimuli) and top-down (i.e.,

brought about by cognitive appraisals of an event) processes (Finlay-Jones, 2017). Most

empirically-supported psychotherapies seek to promote adaptive emotion regulation in

one form or another (e.g., increasing acceptance, problem solving, and cognitive

reappraisal, and/or decreasing avoidance, rumination, and emotion suppression), and the

link between various regulatory strategies and psychopathology is well-established (Aldao,

Nolen-Hoeksema, & Schweizer, 2010). Given this body of research, it is reasonable to

hypothesize that emotion regulation would play an important role in the observed benefits

of self-compassion.

Self-compassionate writing and meditation have been found to have effects

comparable to the emotion regulation strategy of cognitive reappraisal (Arimitsu &

Hofmann, 2017; Cândea & Szentágotai-Tătar, 2018), and appear to provide additional

benefits for people with depression, who may find this latter strategy difficult to apply

(Diedrich et al., 2014, 2016; Ehret et al., 2018; Visted et al., 2018). Thus, it may be the case

that self-compassion facilitates a more positive attitude toward distressing situations in a

less overt, and thus less effortful, manner than does explicit cognitive reappraisal. Indeed,

neuroimaging research suggests that compassionate meditation increases activity in brain

regions associated with positive affect, whereas cognitive reappraisal activates cognitive

control regions and reduces activity associated with negative emotion (Engen & Singer,

2015). This has important implications for the treatment of depression, as it has been

proposed that absence of positive emotion is even more problematic than presence of

negative emotion in this condition (Gruber, Oveis, Keltner, & Johnson, 2011).

In general, all of the self-compassion therapies and inductions reviewed above can

be regarded as positive cognitive restructuring interventions, insofar as they attempt to

change the way participants view stressful situations (Allen & Leary, 2010). Unfortunately, relatively few studies of self-compassion have explicitly examined emotion regulation strategies. Increased acceptance (Przezdziecki & Sherman, 2016; J. W. Zhang & Chen, 2016) and incremental beliefs about personal shortcomings (Breines & Chen, 2012) have been observed following self-compassion inductions, while trait self-compassion has been found to correlate positively with cognitive reappraisal and acceptance (Bakker, Cox, Hubley, & Owens, 2019), as well as positive/growth-based interpretations of a test failure, and to correlate negatively with denial, mental disengagement, and focus on/venting of emotions (Neff, Hsieh, & Dejitterat, 2005). Relatedly, trait self-compassion is negatively associated with rumination (Blackie & Kocovski, 2018), which has been found to at least partially mediate its relationship with depression (Bakker et al., 2019; E. A. Johnson & O'Brien, 2013; Krieger, Altenstein, Baettig, Doerig, & Holtforth, 2013; Wadsworth et al., 2018) and anxiety (Raes, 2010). Cognitive-behavioural avoidance has similarly been found to mediate the self-compassion-depression relationship (Bakker et al., 2019; Krieger et al., 2013). Finally, a recent systematic review found that trait self-compassion (i.e., SCS) and emotion dysregulation (i.e., the Difficulties in Emotion Regulation Scale or the Emotion Regulation Skills Questionnaire) were negatively related, and that the latter mediated the relationships between self-compassion and posttraumatic stress symptoms (i.e., intrusion and avoidance), stress, and unipolar depression (Inwood & Ferrari, 2018). However, only five studies met inclusion criteria (i.e., validated measures of self-compassion and emotion regulation, with an explicit analysis of their relationship) and all used a cross-sectional design.

Psychophysiological research has also found a link between self-compassion and emotion regulation. Vagally-mediated heart rate variability (vmHRV) reflects the ability of the parasympathetic nervous system to rapidly modulate heart rate (via the vagus nerve), and thus is a measure of capacity to reduce physiological arousal associated with distressing emotions (i.e., a physiological correlate of adaptive emotion regulation; Steinfurth et al., 2018). Trait self-compassion was found to be positively associated with vmHRV, even after controlling for trait anxiety and rumination (Svendsen et al., 2016), and this effect on vmHRV was found to predict better emotional responses to the Trier Social Stress Test among participants high in trait self-compassion (Luo, Qiao, & Che, 2018). Additionally, loving-kindness meditation has been shown to increase vmHRV, which was found to create an upward-spiral in which increased vagal tone predicted more positive emotion that further increased vagal tone (Kok et al., 2013), adding further support to the view that self-compassion increases positive emotion. It is also worth noting that, although most research has linked vmHRV with implicit emotion regulation, the ability to (explicitly) use cognitive reappraisal to modulate amygdala activity (and thereby regulate unpleasant emotions) has also been found to be associated with high vmHRV (Steinfurth et al., 2018).

In summary, self-compassion is related to more adaptive emotion regulation; specifically, it appears to be positively associated with cognitive restructuring and acceptance, and negatively associated with rumination and avoidance. However, most of the research on this topic has employed a cross-sectional design, which precludes causal inferences. Indeed, well-controlled, experimental studies are sorely needed to evaluate whether increasing self-compassion leads to a subsequent increase in emotion regulation. Further, given how broad the conceptualization of emotion regulation is, and given that

different emotion regulation strategies show distinct relationships with psychological well-being, specific aspects of emotion regulation should be examined in order to increase conceptual clarity. The present study seeks to address these gaps in the literature by examining the role of cognitive appraisals as a potential mechanism by which self-compassion promotes emotional well-being, using a randomized controlled, experimental design. In addition to using a design that permits inferences about causality, this study examines cognitive appraisals of perceived failure through the lens of attribution theory, thus linking self-compassion research with this well-established field.

**Attribution Theory**

It is widely accepted that human beings are inherently motivated to understand why things happen. By providing an explanation for events, people are able to gain a sense of control over their environment, which has important implications for health and psychological well-being (Chipperfield et al., 2012). Perceived control arises not only in situations where we can directly control our environment, but also when we believe that we can influence, or even just predict, what will happen (Rothbaum, Weisz, & Snyder, 1982). Thus, according to attribution theory (Weiner, 1985), whenever an unexpected, undesirable, or personally important outcome arises, it triggers a causal search for reasons to explain that outcome.

There are a variety of factors that influence the outcome of this search (i.e., causal antecedents), including the specific information available to us, causal rules or beliefs, and cognitive biases such as the actor-observer effect (i.e., being more likely to blame others for their poor performance, while blaming the situation for our own), and there are essentially an infinite number of possible explanations for any particular event (i.e., causal ascriptions;

Weiner, 2000). For example, poor performance on a test could be explained by failure to study sufficiently, being distracted during the test, not getting enough sleep the night before, being graded unfairly, etc. Not surprisingly, the explanation selected has important implications for subsequent emotions and behaviours: if someone believes they have been graded unfairly they may experience anger and appeal the grade, whereas if they believe it was due to lack of studying they may feel chastened and put more effort into preparing for the next test. The focus of attribution theory is this prediction of emotion, motivation, and behaviour based on the explanations people give for the outcome of events.

Although causal ascriptions are theoretically infinite in number, proponents of attribution theory contend that they can be categorized according to a few fundamental causal dimensions. In his model, Weiner (1985) specified three dimensions: locus, stability, and controllability. *Locus* refers to the degree to which a cause is internal to the individual (e.g., because of something they did or a quality they possess) versus external (e.g., because of something someone else did or a situational factor). *Stability* refers to the degree to which a cause is expected to persist over time (e.g., having a chronic illness) as opposed to being a transient effect (e.g., being sick with the flu). *Controllability* refers to the degree to which a cause is within the control of someone (e.g., effort put into a task), though not necessarily the person making the attribution, versus outside of their control (e.g., luck). Weiner also included *globality* in his model, which refers to the degree to which a cause is considered to persist across many different situations or affect many aspects of a person's life (e.g., general intelligence) versus being context-specific (e.g., knowledge of quantum physics), although he was undecided as to whether it should be considered as a component of stability (i.e., stability across context) or whether it should be considered as a separate

dimension, as other researchers have done, particularly within the field of attributional style (i.e., the predisposition or tendency to make particular types of attributions, regardless of the situation; Gladstone & Kaslow, 1995; C. Peterson et al., 1982; Sweeney, Anderson, & Bailey, 1986; Thomas & Dineen, 1995). Thus, all causal ascriptions can be categorizing as reflecting a cause that is more or less internal, stable, global, and controllable.

It should be noted that attribution theory is concerned with the consequences of subjective experience. Accuracy of causal attributions may be important for functionality (e.g., successfully adapting to your environment), but how we construe events impacts our emotion and motivation regardless of whether we are perceiving the cause accurately. Similarly, although outcomes can directly provoke emotions independent of causal attributions (e.g., sadness at the loss of a loved one), attribution theory is only concerned with emotions that are secondary to how we make sense of those outcomes. In this way, attribution theory describes the top-down emotion-generating process. By creating a parsimonious model of this process that generates falsifiable predictions, attribution theory provides a useful framework for understanding how self-compassion impacts emotion regulation.

Although he has since developed a model of *interpersonal* motivation (Weiner, 1993), Weiner's (1985) original model concerned *intrapersonal* motivation, particularly within the context of achievement. This is especially relevant to the present study, which uses an experimental manipulation of test failure among university students as a means of assessing the impact of self-compassion on attributions for negative life events. As shame is the emotion typically associated with academic failure, and is the primary well-being

outcome assessed in the present study, it is important to first introduce and define this concept before turning to a discussion of shame and self-compassion from an attribution theory perspective.

**Shame**

Shame is an important emotion that has been shown to be associated with a variety of problematic and maladaptive outcomes, including depression, poor physical health, defensiveness, social isolation, substance abuse, and criminal behaviour (Dearing, Stuewig, & Tangney, 2005; Kim, Thibodeau, & Jorgensen, 2011; Pineles, Street, & Koenen, 2006; Randles & Tracy, 2013; Stuewig et al., 2015; Tangney, Stuewig, & Martinez, 2014; Tangney, Stuewig, & Mashek, 2007). Defining shame is no simple task, as there have been a variety of traditions, each with a somewhat different view of what shame is (or is not), that have emerged over the past five decades (Clark, 2010; Elison, 2005; Gausel & Leach, 2011; Gilbert, 2003; H. B. Lewis, 1971; Sabini & Silver, 1997; Tangney et al., 2007). However, the majority of research on the topic has arisen out of the tradition best represented by the work of June Price Tangney. In this view, shame is assumed to be an intensely distressing, self-conscious emotion that arises in situations of perceived moral failure, in which the entire self is negatively evaluated (Tangney, 1991).

Central to the conceptualization of shame is its distinction from another dysphoric, self-conscious emotion: guilt. Both emotions are believed to arise in situations of moral failure; however, whereas shame follows judgement of the *self* as bad, guilt is traditionally viewed as arising from the perception that one's *behaviour* was bad (Ferguson, 2005; H. B. Lewis, 1971; M. Lewis, 2003; Niedenthal, Tangney, & Gavanski, 1994; Tangney, 1996; Teroni & Deonna, 2008). This self vs. behaviour distinction is purported to explain why

guilt appears to motivate constructive, approach behaviours (e.g., cooperation, reduced recidivism), while shame motivates maladaptive withdrawal and avoidance (de Hooge, Zeelenberg, & Breugelmans, 2007; Roos, Hodges, & Salmivalli, 2014; Schmader & Lickel, 2006; Tangney et al., 2014; Tracy & Robins, 2006).

Over the past decade, however, a growing body of research has demonstrated that, like guilt, shame is sometimes adaptive, prosocial, and can motivate approach and repair behaviours (Gausel & Brown, 2012; Gausel, Leach, Vignoles, & Brown, 2012; Gausel, Vignoles, & Leach, 2016; Leach & Cidam, 2015; Tanaka, Yagi, Komiya, Mifune, & Ohtsubo, 2015; Tangney et al., 2014). Consequently, rather than asking *whether* shame is adaptive, research has begun to examine *when* shame is adaptive. As discussed below, attributions appear to be of central importance in answering this question.

### *Attributions and Shame*

In attribution theory, each causal dimension is associated with distinct cognitive and affective consequences. Locus of causality, not surprisingly, is central to the experience of self-conscious emotions, such as shame and pride (Hareli & Hess, 2008; Maymon, Hall, Goetz, Chiarella, & Rahimi, 2018; Weiner & Litman-Adizes, 1980). For example, success on an easy test would be unlikely to produce feelings of pride, so long as credit for the success is attributed to the level of difficulty (i.e., an external attribution), whereas failure on an easy test would be expected to produce shame, insofar as it is more difficult to externalize the blame. As may be apparent from these examples, the dimension of controllability is also relevant to self-conscious emotions. Indeed, this is the dimension that is believed to distinguish shame from guilt; an internal, uncontrollable personal failure is viewed as producing shame, while an internal, controllable personal failure produces guilt (Hareli &

Hess, 2008; S. E. Peterson & Schreiber, 2012; Weiner, 2018). This reflects the traditional

distinction between shame and guilt, noted earlier, as arising from a defect in *who I am*

versus *what I did* (Niedenthal et al., 1994).

Shame research also implicates stability and globality as key determinants in the

response to potentially shame-inducing experiences. Shame has traditionally been

regarded as involving a perception of the entire self as bad or unacceptable (Tangney,

1991); in other words, shame is seen as arising from an internal, stable, global, and

uncontrollable attribution for a personal failure (Crocker et al., 2014; Thompson, Altmann,

& Davidson, 2004; Tracy & Robins, 2004, 2006; Van Vliet, 2009). According to attribution

theory, stability attributions are associated with expectancies for future success (or

failure), and thereby with hope (or hopelessness) and the likelihood of subsequent

achievement striving (Cox & Yang, 2012; Le Foll et al., 2006, 2008; Lyden, Chaney,

Danehower, & Houston, 2002; Maymon et al., 2018; S. E. Peterson & Schreiber, 2012;

Weiner & Litman-Adizes, 1980). Thus, insofar as shame reflects an internal, stable, global,

and uncontrollable attribution for failure, it is understandable that it would motivate

withdrawal and avoidance behaviours, such as those outlined earlier. Indeed, the

association between shame-proneness and depression (Kim et al., 2011) is consistent with

attribution theory's view of depression as arising from internal, stable, and uncontrollable

attributions (Weiner & Litman-Adizes, 1980), as well as the related work on attributional

style (i.e., the tendency to make particular types of attributions), which has consistently

demonstrated a relationship between depression and the tendency to make internal, stable,

and global attributions for negative events (Gladstone & Kaslow, 1995; Sweeney et al.,

1986; Thomas & Dineen, 1995).

More recently, however, shame has been found to promote adaptive approach behaviours under certain circumstances, as noted earlier. Whether shame motivates approach or avoidance appears to depend upon whether the cause or consequence of behaviour is viewed as reparable, whether the self is seen as malleable, and whether others are believed to be likely to respond with forgiveness and acceptance (Cibich, Woodyatt, & Wenzel, 2016). Put into attribution terms, when the cause of a personal failure is perceived as unstable, people have hope and are motivated to approach and repair. Indeed, a meta-analysis of studies in which failure or social image was perceived to be reparable demonstrated a similar relationship between shame and constructive approach as was found for guilt, which is generally regarded as a prosocial emotion (Leach & Cidam, 2015).

In light of these findings, some researchers have argued that what is currently encompassed by "shame" should be separated into two distinct emotions: one for situations in which a person perceives themselves to have a specific flaw, and one for when the whole self is viewed as flawed (Gausel & Leach, 2011). Their rationale is based on a critical review of the literature in which results were carefully interpreted in the context of the particular methodology used, and which highlighted the distinct outcomes of specific and global shame: the former appears to motivate approach behaviours, while the latter promotes avoidance. This makes sense, as a specific flaw may be remedied, but there is not much hope for a wholly awful person, other than to hide themselves from further judgement. Thus, attributions of globality and stability, although not explicitly linked with shame in Weiner's model, do appear to be highly relevant to the psychological and behavioural consequences of failure.

A qualitative study of recovery from shame found that movement toward more external (vs. internal), unstable, and specific (vs. global) attributions was associated with improved well-being (Van Vliet, 2009). This is consistent with attribution theory and research, particularly Attributional Retraining studies, which have demonstrated increases in emotional well-being (e.g., more hope, happiness, and pride, and less shame, anxiety, anger, helplessness, and apathy), expectations for success, persistence, and robust improvement in academic performance among students who are taught to shift attributions for failure from stable and uncontrollable to unstable and controllable (Hamm, Perry, Chipperfield, Murayama, & Weiner, 2017; Parker et al., 2018; Perry et al., 2014; Perry, Stupnisky, Daniels, & Haynes, 2008; Perry, Stupnisky, Hall, Chipperfield, & Weiner, 2010). These findings, when considered in light of those discussed earlier regarding the relationship between self-compassion and emotion regulation (e.g., positive cognitive restructuring), suggests that the benefits of self-compassion (e.g., for reducing shame-proneness; Cândea & Szentágotai-Tătar, 2018; Conway & Johnson, 2014; E. A. Johnson & O'Brien, 2013) may involve shifting attributions for distressing events to be more adaptive (e.g., less internal, stable, global, and uncontrollable attributions for academic failure).

**Attributions and Self-Compassion**

Although self-compassion appears to be associated with positive cognitive restructuring, and there is evidence that it is both negatively associated with unhelpful ways of thinking about events (e.g., "This is awful!" and "I am such a loser") and positively associated with helpful thoughts (e.g., "Everybody goofs up now and then" and "In the long run, this doesn't matter"; Leary et al., 2007), only a handful of studies have examined how self-compassion affects cognitive attributions for events. Consistent with the hypothesis

that self-compassion encourages more adaptive attributions, studies have found that trait

self-compassion is associated with more controllable attributions for stressful life events

(Chishima, Mizuno, Sugawara, & Miyagawa, 2018) and with lower levels of self-blame (i.e.,

internal attributions) for sexual assault, which was shown to mediate the negative

association between SCS and PTSD symptom severity (Hamrick & Owens, 2018). Self-

compassionate writing has also been demonstrated to promote more incremental beliefs

about (i.e., less stable attributions for) personal shortcomings (Breines & Chen, 2012).

On the other hand, two studies that examined the effect of self-compassionate

writing on causal ascriptions found inconsistent results. Leary et al. (2007) assessed

whether writing task condition influenced the degree to which a previously-recalled

negative event was attributed to "other people," "something they did," "bad luck," and "the

kind of person they are." They found that those in the self-compassion condition attributed

their negative experience to "the kind of person they are" more than did those in the self-

esteem, expressive writing, or no-writing control conditions. The groups did not differ with

regard to the other causal ascriptions. Interestingly, however, those in the self-compassion

group did not assign more blame to themselves than did those in the other groups. Further,

this group difference in attribution to "the kind of person you are" was not replicated in a

second study that used the same methodology (E. A. Johnson & O'Brien, 2013).

How should we interpret these findings? How can someone attribute the cause of an

event to "the kind of person they are," without it affecting the degree to which they blame

themselves? This highlights the problem with inferring causal attributions from causal

ascriptions: different people may interpret them differently. For example, failure "due to

bad luck" is often regarded by researchers as reflecting an external and unstable cause

(Perry et al., 2008). However, it can also be perceived as a personal characteristic, which would make it internal and stable (Weiner, 2006). Further, insofar as people learn and grow with experience, "the kind of person they are" may be expected to change, making it unstable (Weiner, 1983).

In addition to lacking clarity and precision in the measurement of attributions, previous research has failed to control for the types of events for which participants are making attributions. This is especially problematic when providing only a few options for participants to select as the cause of the event (Weiner, 1983). Indeed, the instructions used in the Leary et al. (2007) study were to recall "something that involved failure, humiliation, or rejection" (p. 899). However, an attribution to "the kind of person they are" would mean two very different things, and have considerably different emotional consequences, if the event being considered were rejection when asking someone on a date versus being shunned after standing up for an important personal belief. While the former might be expected to lead to maladaptive shame, loss of self-esteem, and behavioural withdrawal, the latter may be associated with feelings of pride and preserved, or even enhanced, self-esteem.

This highlights the need for research to utilize an upsetting experience that is shared among all participants, and equally relevant to all, so that differences in attributions can be meaningfully interpreted. The present study thus used a manipulated test failure experience to determine whether level of state self-compassion would impact attributions for the failure. By keeping the failure experience constant across all participants, and by asking them to explicitly rate the causal dimensions associated with their causal ascription (which was itself an open-ended, not forced-choice, response), the present study addressed

the shortcomings of previous attempts to ascertain the impact of self-compassion on

attributions for distressing experiences.

**Measurement of Self-Compassion**

Before discussing the specific hypotheses and methodology employed in the present

study, it is important to consider the operationalization of self-compassion. The trait of self-

compassion is most commonly measured with Neff's (2003b) Self-Compassion Scale (SCS),

as mentioned earlier. This is a 26-item self-report measure based on Neff's tripartite

conceptualization of self-compassion, described above.

Although the original SCS was developed in English with participants from the

United States (Neff, 2003b), it has since been published in at least 16 different languages

and used in research all over the world, including Brazil (e.g., Montero-Marín et al., 2016),

China (e.g., Zhang, Luo, Che, & Duan, 2016), Germany (e.g., Coroiu et al., 2018), Italy (e.g.,

Petrocchi et al., 2013), Iran (e.g., Afshani, Abooei, & Fahadan, 2019), South Korea (e.g.,

Joeng et al., 2017), Turkey (e.g., Deniz, Kesici, & Sumer, 2008), and Canada (e.g., E. A.

Johnson & O'Brien, 2013). Further, Neff has provided evidence for the validity of the SCS in

a diverse range of samples (Neff et al., 2019), including both university and community

samples, as well as among practicing Buddhist meditators (Neff, Whittaker, & Karl, 2017).

According to Neff, the SCS measures a single second-order self-compassion factor

that is comprised of six unipolar factors, which include three opposing pairs: self-kindness

versus self-judgement, common humanity versus isolation, and mindfulness versus over-

identification (Neff & Costigan, 2014). Typically, research using the SCS treats the construct

as unidimensional; indeed, the vast majority of research presented earlier was based on the

use of a total scale score (i.e., the sum of all 26 items, with the 13 negatively-valenced items

reverse-scored). In the past several years, however, this has come under increasing

scrutiny, with some arguing that the original factor structure proposed by Neff is invalid.

### Controversy Regarding Use of Total Scale Score

In her original examination of the SCS factor structure, Neff (2003b) included six

first-order factors along with a single second-order factor. Subsequent confirmatory factor

analyses of the SCS, however, found that an intercorrelated six-factor model was a better fit

to the data than a hierarchical model (Cunha, Xavier, & Castilho, 2015; Petrocchi et al.,

2013; Williams, Dalgleish, Karl, & Kuyken, 2014), although it has also failed to satisfy

structural equation modeling criteria for a good fit (e.g., López et al., 2015). A subsequent

exploratory factor analysis of the SCS suggested a two-factor solution, in which negatively-

and positively-worded items loaded onto separate, largely independent factors (López et

al., 2015).

Such a model is not unprecedented; for example, Marsh, Scalas, and Nagengast

(2010) examined the factor structure of the Rosenberg Self-Esteem Scale and found that,

contrary to common usage, a single-factor model was a very poor fit to their data. Instead,

they argued for a model that incorporated two response-style method factors,

corresponding to negatively- and positively-worded items. Such a distinction between

positive and negative items is consistent with the more general observation that self-rated

mood is characterized by two largely independent factors corresponding to positive and

negative affect (Watson et al., 1995). Further support for a distinction between negative

and positive aspects of self-compassion comes from neuroimaging research that

demonstrated distinct neural substrates for self-criticism and self-reassurance (Longe et

al., 2010). Indeed, over the past several years, criticism of the use of a total scale score and

evidence in support of a two-factor model of the SCS has accumulated (Brenner, Heath, Vogel, & Credé, 2017; Brenner et al., 2018; Montero-Marín et al., 2016; Muris, 2016; Muris & Petrocchi, 2017; Muris, van den Broek, Otgaar, Oudenhoven, & Lennartz, 2018). In particular, it has been charged that the negative factor of the SCS is actually nothing more than neuroticism (Pfattheicher et al., 2017).

In response, Neff has published several studies defending the use of the total scale score. Using bifactor exploratory structural equation modelling, which she argues is a superior approach, she demonstrated that a total score accounts for over 90% of item variance, whereas a two-factor solution is not a good fit (Neff, 2016; Neff, Tóth-Király, & Colosimo, 2018; Neff et al., 2019, 2017). She has also provided evidence that both compassionate (captured by positive items) and reduced uncompassionate (captured by reverse-scored negative items) self-responding are central to self-compassion (Neff, Long, et al., 2018), and that the latter is meaningfully distinct from neuroticism, depression, and anxiety due to its ability to predict additional variance in life satisfaction and other measures of well-being (Neff, Tóth-Király, et al., 2018).

Other studies that considered the positive and negative components of the SCS separately have demonstrated that the negative factor (typically referred to as either self-criticism or self-coldness) is positively associated with severity of depression symptoms, while the opposite is true for the positive factor (Ehret, Joormann, & Berking, 2015). Further, this positive factor was found to weaken the relationship between the negative factor and depression (Kaurin, Schönfelde, & Wessa, 2018; Körner et al., 2015), suggesting some degree of independence of the factors. However, this buffering effect has not been consistently observed (López, Sanderman, & Schroevers, 2018).

In summary, empirical evidence has been published to both support and contest the validity of the SCS total scale score as a measure of a singular self-compassion construct. Although the controversy remains unresolved, the large body of research that has utilised the SCS total score has demonstrated that it is meaningfully related to a variety of well-being outcomes. In the present study, which focused on state self-compassion (i.e., the State Self-Compassion Scale, discussed below), the SCS was used to ensure that there were no group differences  at baseline in trait self-compassion, which could confound the results of the experimental manipulation. Accordingly, to the extent that the variance in the SCS captures both trait self-compassion and something else (e.g., neuroticism), establishing that the groups do not differ on this additional trait would actually be beneficial, as opposed to undermining results. Thus, the use of the total scale score was deemed to be justified for the purposes of the present study.

### State Self-Compassion

The present study is concerned with whether state self-compassion influences attributions for failure. State self-compassion refers to the transient experience of self-compassion. It is most commonly measured with the State Self-Compassion Scale (SSC; Breines & Chen, 2013), which was developed by rephrasing items from the SCS to reflect this "in the moment" quality (e.g., "I try to be understanding and patient towards those aspects of my personality I don't like" was rephrased as, "Right now, I'm being understanding towards myself"). As trait self-compassion represents the tendency to experience self-compassionate states, it makes sense that SSC scores are strongly correlated with SCS scores (e.g., $r = 0.61$; Breines & Chen, 2013).

As discussed earlier, most correlational and treatment outcome research considers the effects of trait self-compassion, though the section on self-compassion inductions provided a discussion of state self-compassion effects. Note, however, that most of these induction studies did not explicitly measure state self-compassion, but rather assumed based on methodology that such a state had been achieved. Thus, the explicit measurement of state self-compassion in the present study reflects another important methodological contribution.

**The Present Study**

*Overview*

The aim of the present study was to evaluate whether a self-compassionate mindset (i.e., higher state self-compassion) promotes more adaptive cognitive and affective responses to failure. Specifically, would inducing group differences in state self-compassion lead to differences in causal attributions for test failure, and would this in turn be associated with less failure-induced state shame and negative affect? In order to facilitate causal inferences about the role of state self-compassion, a randomized controlled, experimental design was employed, in which writing tasks (self-compassion vs. expressive writing) were used to manipulate state self-compassion prior to exposing participants to the failure manipulation.

Thus, the present study included two sequential manipulations: a state self-compassion manipulation (i.e., inducing higher than baseline state self-compassion in the self-compassion writing group and lower than baseline state self-compassion in the expressive writing group), followed by a failure manipulation, which was identical for all participants. Although the primary predictor variable of interest was state self-compassion

(measured with the State Self-Compassion Scale; Breines & Chen, 2013), the independent

(i.e., directly manipulated) variable was writing task condition. The purpose of the writing

tasks was to manipulate state self-compassion, as this is not a variable that can be directly

manipulated (i.e., you cannot randomly assign participants to feel specified levels of state

self-compassion). Indeed, this was done in order to avoid a quasi-experimental design,

wherein naturally occurring levels of state self-compassion would be used as the predictor

in hypothesis testing. To permit causal inference, it was important to capture

experimentally-induced levels of state self-compassion, and thus the group (i.e., writing

task) effect on state self-compassion was used to predict attributions and failure-induced

distress. In other words, post-manipulation state self-compassion was examined as a

potential mediator of the group effect (see Planned Analyses section below).

The primary outcome variables are post-failure mood: positive and negative affect

(based on Leary et al., 2007) and state shame (State Shame and Guilt Scale, Marschall,

Sanftner, & Tangney, 1994; Experiential Shame Scale, Turner, 2014). Causal attributions for

failure were expected to mediate the relationship between state self-compassion and post-

failure affect, such that state self-compassion would promote more adaptive attributions

for failure (i.e., less internal, less stable, less global, and more controllable), thus resulting

in less failure-induced distress. Thus, attributions were examined as both an outcome (i.e.,

predicted by the group effect on state self-compassion) and a mediator.

Expressive writing (Pennebaker, Colder, & Sharp, 1990) was chosen as the

comparison condition for a few reasons. It is an active, therapeutic intervention with long-

term benefits for physical health and psychological well-being (Gortner, Rude, &

Pennebaker, 2006; Kállay, 2015), and is the most frequently used comparison condition for

the self-compassion writing task. Yet, it has also been found to temporarily amplify distress immediately following writing, relative to self-compassionate writing (E. A. Johnson & O'Brien, 2013; Leary et al., 2007; Reis et al., 2015; Wong & Mak, 2016). This is understandable, given that expressive writing, unlike self-compassionate writing, does not encourage positive reappraisal of a distressing event, but rather encourages exploring one's (presumably distressing) feelings about the event. This was seen as a desirable characteristic, as the purpose of the writing tasks was to induce differences in state self-compassion. Although previous studies did not actually measure state self-compassion, it was hypothesized that in the absence of instructions explicitly encouraging a self-compassionate perspective, thinking about a shameful experience would decrease state self-compassion. Thus, expressive writing was used with the aim of providing a stronger contrast to the self-compassion condition than would be expected if an emotionally-neutral task were used as the comparison.

### *Hypotheses*

**Hypothesis 1.** Due to the mediating effect of higher levels of state self-compassion, it was hypothesized that participants in the self-compassion condition would report attributions for test failure that are less internal/more external, less stable, less global/more specific, and more controllable than those in the expressive writing condition.

**Hypothesis 2.** Due to the mediating effect of higher levels of state self-compassion, it was hypothesized that participants in the self-compassion condition would report less failure-induced distress (i.e., less state shame, less negative affect, and more positive affect) than those in the expressive writing condition.

**Hypothesis 3.** It was hypothesized that attributions for failure would predict failure-induced distress, with less internal/more external, less stable, less global/more specific, and more controllable attributions being associated with less distress (i.e., less state shame, less negative affect, and more positive affect) in response to the test failure manipulation.

**Hypothesis 4.** It was hypothesized that the self-compassion writing task would promote a less negative emotional response to test failure, compared to the expressive writing condition, through the sequential mediation of higher state self-compassion that in turn would promote more adaptive attributions for the failure.

## Method

### Overview

This study was conducted as a single online survey comprised of self-report questionnaires, an experimentally manipulated writing task (either self-compassion or expressive writing), and an across-the-board failure manipulation with causal attribution measurement. Participants were randomly assigned to either the self-compassion writing or expressive writing condition. All aspects of the study were identical in both conditions, with the exception of the writing task instructions. However, in order to minimize differences between groups, both writing tasks followed a similar format. See Figure 1 for a depiction of the study design. Participants were instructed to complete the task in one sitting, with no interruption, and survey duration was used to identify those who likely failed to follow this instruction.
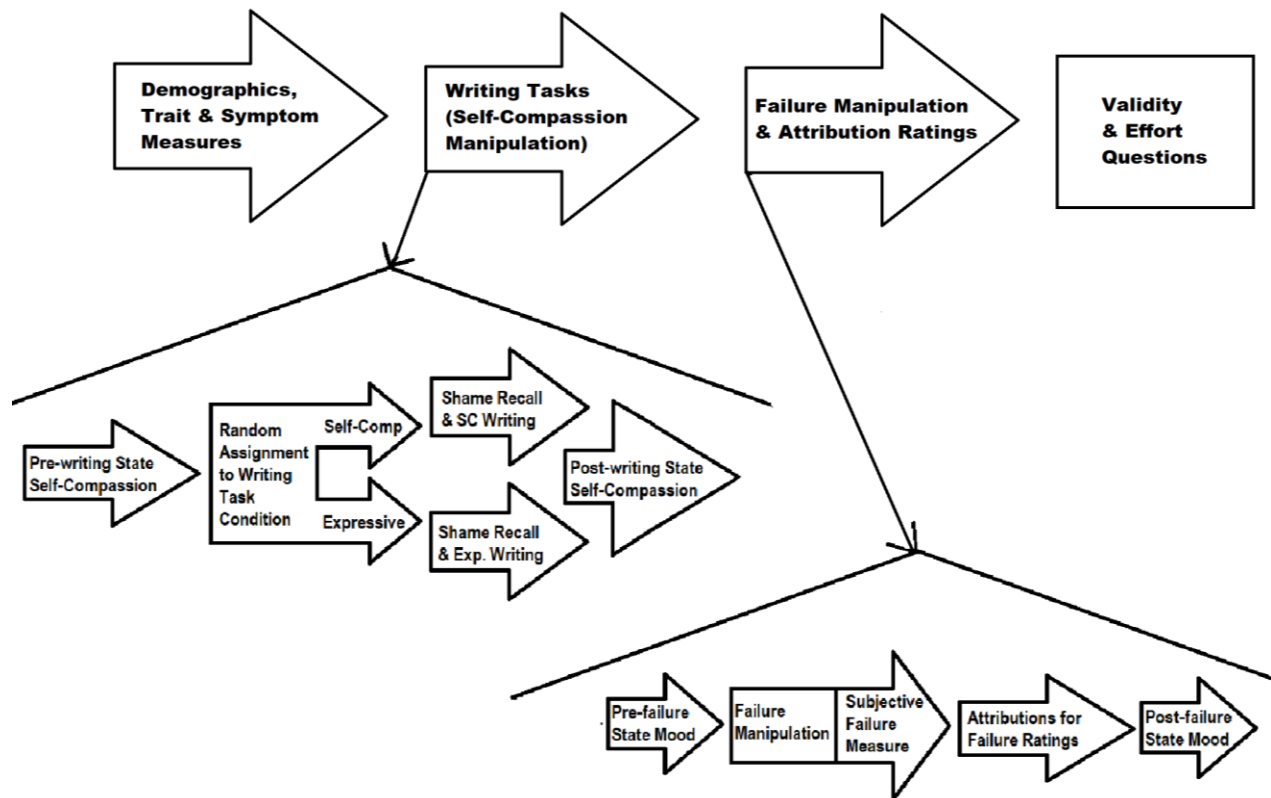
*Figure 1*. Illustration of study procedure (arrows point to more detailed depiction of study component).

**Participants**

Participants were recruited from the University of Manitoba psychology participant pool. Participants received partial course credit in exchange for their participation. Although typically used merely for convenience, in the present study the use of a student sample was important for increasing validity of the failure manipulation, as test failure is expected to be a salient and highly relevant type of failure experience for undergraduate students.

***Estimated Sample Size Required to Achieve Adequate Power***

Given the novel nature of the present study, it is difficult to estimate the magnitude of hypothesized effects. However, a common rule-of-thumb for estimating the minimum sample size needed to achieve adequate power in structural equation modelling using maximum likelihood estimation is the *N:q* rule, which considers the ratio of sample size (*N*) to model parameters that require statistical estimates (*q*). Twenty is considered to be an ideal sample size-to-parameters ratio (Kline, 2011). In the present study, the most complex model tested involves 14 parameters. Thus, it is estimated that a minimum sample size of 280 would be required to achieve adequate power.

***Quality Control Procedures Used to Ensure the Integrity of the Dataset***

A total of 1364 participants consented to participate in the study, of which 1286 provided enough data to evaluate one or more of the study hypotheses (i.e., completed a writing task intervention and at least 95% of one or more of the outcome measures). Based on the recommendations of Meade and Craig (2012), several steps were taken to identify careless responding, which was a particular concern in the present study given the use of a lengthy online survey design and undergraduate student sample. Indeed, a very large initial sample was sought in order to permit the use of conservative inclusion criteria while maintaining adequate power for hypothesis testing.

Survey duration was one means of identifying potentially problematic responses, as this has been shown to be particularly useful for identifying careless responding (Leiner, 2019). Most participants took one to two hours to complete the study, which is consistent with what was anticipated. Participants were excluded if the total duration was less than 40 minutes, excluding a prompted break prior to the intervention, estimated to be the least

amount of time in which the study could be reasonably completed based on test trials of

the survey conducted prior to data collection. This corresponded to the bottom 2% of

responses (*n*=24). Although this is a conservative cut-off that may have excluded

participants who were able to quickly, yet appropriately, complete the study, it was

observed that 17 of the 24 excluded in this manner would have, in any event, been omitted

on account of the other criteria detailed below. Participants were also excluded if they took

an excessive amount of time to complete the survey, as it was very important that the study

be completed in one sitting, aside from the prompted break, so as not to invalidate the

relationships between state measurements. An upper limit of five hours was chosen,

corresponding to the top 1%, (*n*=12) of participants, based on the distribution of survey

completion times; above this point the separation between participants notably increased

from only a few minutes between participants to upwards of 15 minutes. Indeed,

completion times of the 12 excluded participants ranged from five hours and 18 minutes to

almost 32 hours.

      Participants were excluded if they demonstrated inconsistent responding on an

Even-Odd Consistency Index using a conservative threshold of 0.65 (*n*=80), or if they failed

more than one instructed response item (*n*=56). Thus, 172 participants, approximately

13% of the sample, were excluded based on these validity checks, which is consistent with

what would be expected based on previous research (Buchanan & Scofield, 2018; Meade &

Craig, 2012). Participants were also asked at the end of the survey if they had responded

accurately and truthfully to survey questions, and it was emphasized that their response

would not impact compensation for their participation, but was important for the

researchers to ensure quality of the data, which has been found to yield honest responding

(Meade & Craig, 2012). An unexpectedly large number of participants reported that their responses were not accurate and truthful (*n*=166). However, the large initial sample size obtained allowed for extra caution to be exercised by also excluding these participants.

Finally, participants were excluded if they did not report experiencing at least some degree of subjective failure (i.e. the failure manipulation was unsuccessful; *n* = 119), as has been done in previous self-compassion research using manipulated test failure (Breines & Chen, 2013). Thus, participants were excluded if they gave a rating of *4* or more on a 7-point scale ranging from 1 = *My performance was much worse than I expected* to 7 = *My performance was much better than I expected* (total sample: *M* = 1.68, *SD* = 1.61). Excluding these participants was crucial, given that the purpose of the study was to examine attributions for failure. It is important to note, however, that the failure manipulation was successful for the vast majority of participants (see Manipulation Checks section below). In addition to these exclusions, scale means for included participants were only calculated if at least 95% of items were answered.

### *Comparison of Excluded and Included Participants*

Independent samples t-tests comparing those who were excluded to those included in the final sample (i.e., those used to test hypotheses) showed no significant differences between the two groups on mean age or assignment to writing task condition (i.e., self-compassion or expressive writing). However, Fisher's exact test revealed that the final sample contained significantly more females (72% vs. 64%, *p* = .003) and fewer participants with a first language other than English or French (25% vs. 33%, *p* = .001) than the excluded participants.

### *Final Sample Characteristics and Power*

The final sample consisted of 829 participants, with 413 in the self-compassion group and 416 in the expressive writing group. The sample was mostly female (72%) and young ($M$ = 20.39, $SD$ = 4.44; minimum = 18, maximum = 65), though ethnically diverse (49% White/European, 16% Filipino or Southeast Asian, 10% South Asian, 8% Black/African, 7% East Asian, 4% First Nations, Inuit or Métis, 2% Middle Eastern or North African).

According to G*Power version 3.1.9.7 (Faul, Erdfelder, Buchner, & Lang, 2009), the power to detect a small ($d$ = 0.20) difference between two independent means with a two-tailed test at $\alpha$ = 0.05 with this sample is 82%, and over 99% for two dependent means. Previous research that compared the impact on negative affect for the self-compassion writing task to expressive writing found a medium-sized effect (E. A. Johnson & O'Brien, 2013), thus the present sample was expected to have sufficient power to detect group differences. Although G*Power cannot be used to calculate power for mediation regression, power for indirect effects has been demonstrated to be higher than that for total effects (Pieters, 2017).  Thus, considering a linear multiple regression with three predictors in place of a serial mediation regression with two mediators (as used for Hypothesis 4), at $\alpha$ = 0.05 power to detect even a small effect ($R^2$ = 0.02) would be 94% with this sample. Indeed, the minimum sample needed for adequate power in the serial mediation regressions used in Hypothesis 4 was estimated to be 280, which is far less than the actual sample obtained. Altogether, it appears that the final sample of 829 was able to provide adequate power.

**Measures**

*Trait and Symptom Measures*

Trait measures and a measure of depressive symptomatology were included in the present study in order to assess whether the self-compassion group and expressive writing group were equivalent at baseline on variables that were expected to affect the outcomes of interest (i.e., state self-compassion, attributions for failure, and failure-induced affect, including state shame). Thus, trait self-compassion, global self-esteem, depression symptomatology, shame-proneness, and attributional style were assessed prior to having participants complete the state self-compassion and failure manipulations.

**Self-Compassion Scale** (SCS; Neff, 2003; see Appendix A). The SCS consists of 26-items, 13 positively- and 13 negatively-valenced, and was administered using a scale ranging from 1 (*almost never*) to 7 (*almost always*). Negatively-valenced items were reverse-coded in order to calculate a total scale score, where higher values reflect more trait self-compassion. Although the use of a total score has been questioned (e.g., Brenner, Heath, Vogel, & Credé, 2017), there is also evidence to support its use (e.g., Neff, Tóth-Király, & Colosimo, 2018). In the current study, the SCS was only used to ensure that there were no group differences on trait self-compassion, and thus an average item score was deemed to be an appropriate measure (see Measurement of Self-Compassion section in introduction for a more detailed discussion of the SCS factor structure). The SCS has shown very good test-retest reliability over a period of three weeks ($r = .93$; Neff, 2003), as well as high internal consistency ($\alpha = .90$; Johnson & O'Brien, 2013). In the present sample, internal consistency was also high ($\alpha = .94$).

**Rosenberg Self-Esteem Scale** (RSE; Rosenberg, 1965; see Appendix B). The RSE contains 10 items, five positively-valenced and five negatively-valenced, and uses a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The RSE has shown good discriminant and concurrent criterion-related validity, and high internal consistency ($\alpha$ = .91; Sinclair et al., 2010). In the present sample, the RSE similarly showed high internal consistency ($\alpha$ = .91).

**Beck Depression Inventory** (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; see Appendix C). In addition to being used to assess group equivalence, the BDI was included as part of a guise for covering the true purpose of the study (see the Manipulation of Academic Failure section for more information about the deception used). The BDI consists of 21 items, rated for severity on a scale from 0 to 3. It has been shown to have adequate convergent validity and good discriminant validity with measures of anxiety (Weeks & Heimberg, 2005), as well as good internal consistency ($\alpha$ = .84; Lovibond & Lovibond, 1995). In the present sample, the BDI showed high internal consistency ($\alpha$ = .92).

**Test of Self-Conscious Affect-3** (TOSCA; Tangney, Dearing, Wagner, & Gramzow, 2000; see Appendix D). The short form of the TOSCA was used, which consists of 11 items presenting hypothetical scenarios of social/moral transgressions and asking participants to rate, on a scale from 1 (*not likely*) to 5 (*very likely*), the likelihood that they would respond in certain ways, reflecting proneness to experiencing shame, guilt, detachment, and externalization. Research suggests that the Guilt subscale measures motivation to make amends for personal wrongdoing, while the Shame subscale measures the tendency to experience negative self-conscious affect (Giner-Sorolla, Piazza, & Espinosa, 2011). Thus, the TOSCA permits evaluation of maladaptive, "guilt-free" shame by enabling calculation of

Shame subscale residual scores that control for variance shared with the Guilt subscale

(Tangney et al., 2000). Accordingly, in the present study, TOSCA Guilt was included as a

covariate in all analyses using TOSCA Shame.

The Shame subscale has been found to have moderate test-retest reliability over a

period of 11 weeks ($r$ = .66) and moderate internal consistency ($\alpha$ = .77; Andrews, Qian, &

Valentine, 2002).  The TOSCA shame scale showed moderate internal consistency in the

present sample ($\alpha$ = .78).

**Attributional Style Questionnaire** (ASQ; Dykema, Bergbower, Doctora, &

Peterson, 1996; see Appendix E). The ASQ is a measure of an individual's tendency to make

stable and global attributions (it does not include measures of locus or controllability). It

presents 12 hypothetical situations and asks participants to identify the most important

cause of each situation (i.e., to provide a causal ascription for each), then to rate the

likelihood that each cause will persist over time (i.e., stability) and the likelihood that it will

affect other situations (i.e., globality) using a scale from -3 (*will never affect you*; *affects only*

[this sort of event]) to +3 (*will always affect you*; *affects all other areas*). In the present

sample, the stability subscale showed good internal consistency ($\alpha$ = .81) and the globality

subscale showed moderate internal consistency ($\alpha$ = .78).

***State Measures***

State self-compassion was the primary predictor variable used in the present study,

and state measures of shame and general affect were the primary outcome variables of

interest. All state measures were administered twice (i.e., pre- and post-manipulation) in

order to capture effects brought about by the manipulations.

**State Self-Compassion Scale** (SSC; Breines & Chen, 2013; see Appendix F). The SSC contains 16-items rated on a scale from 1 (*Not at all true*) to 7 (*Extremely true*). As mentioned in the introduction, the items are based on the trait-level SCS and adapted to assess present-moment feelings (e.g., *I'm kind to myself when I'm experiencing suffering* vs. *I'm trying to be kind and reassuring to myself*). For the present study, one item was omitted during the pre-writing task administration, as it references a specific event (*In the scheme of things, this is not that big of a deal*) and thus was not appropriate at that point in the study. Although the SSC has been found to have only moderate internal consistency ($\alpha =$ .76; Breines & Chen, 2013), in the present sample it showed good internal consistency (pre-writing $\alpha$ = .86, post-writing $\alpha$ = .88).

**State Shame and Affect**. Three measures were used to assess state shame and affect: the State Shame and Guilt Scale (SSG; Marschall, Sanftner, & Tangney, 1994; see Appendix G), the Experiential Shame Scale (ESS; Turner, 1998; see Appendix H), and a self-report measure of current affect based on Leary et al. (2007; see Appendix I). The use of these three measures enabled examination of different types of distress that may be triggered by failure: withdrawal/avoidance-based "guilt-free" shame, anxious/agitated shame, decreased positive affect, and general negative affect.

The SSG is a 15-item measure of state shame, guilt, and pride, rated on a scale from 1 (*Not feeling this way at all*) to 5 (*Feeling this way very strongly*). The five Shame subscale items focus on the withdrawal and avoidance (i.e., maladaptive) aspects of shame (e.g., *I want to sink into the floor and disappear*). In the present sample, this subscale showed good internal consistency (pre-failure $\alpha$ = .88, post-failure $\alpha$ = .90). As for TOSCA Shame, SSG Guilt was used as a covariate in analyses involving SSG Shame in order to control for shared

variance and thus obtain a measure of "guilt-free," maladaptive state shame, reflecting the traditional conceptualization of shame (Tangney et al., 2007). The Pride subscale was not used in the present study.

The ESS is a 10-item measure that asks participants to rate how they feel in the moment using 7-point scales. Items reflect features associated with the experience of shame, including three physical (e.g., 1 = *Normal heartbeat,* 7 = *Rapid heartbeat*), four emotional (e.g., 1 = *Content*, 7 = *Distressed*), and three social items (e.g., 1 = *I feel like hiding*, 7 = *I feel like being sociable*). It is an "opaque" measure of shame (i.e., it purposefully lacks face validity), thus it may mitigate socially desirable responding compared to other measures of shame, such as the SSG. Further, it captures a different aspect of shame than does the SSG by focusing on self-conscious anxious distress (Rüsch et al., 2007). In the present sample, the ESS showed moderate internal consistency (pre-failure $\alpha$ = .76, post-failure $\alpha$ = .79), which is consistent with previous research (Turner, 2014).

The general affect measure included 18 items assessing negative and positive affect. It is based on a 16-item scale that has been used in previous research on the self-compassion writing task (E. A. Johnson & O'Brien, 2013; Leary et al., 2007). It consists of 12 negative items (e.g., *sad, irritated,* and *uneasy*) and four positive items (e.g., *delighted, pleased*), which are reverse-coded to obtain a single negative affect score. Each item is rated on a scale ranging from 1 (*not at all*) to 7 (*extremely*). In light of the apparent independence of positive and negative affect (Goldstein & Strube, 2007; Krieger et al., 2015; Larson, 1987), in the present study a positive affect scale and a negative affect scale were calculated in order to examine the impact of state self-compassion on each of these variables separately. Additionally, due to the focus on shame in the present study, two

items were added to the negative affect scale that assessed the degree to which

participants were feeling "ashamed" and "guilty."

The 16-item scale has demonstrated high internal consistency ($\alpha$ = .94; Johnson &

O'Brien, 2013), as did the overall 18-item version used in the present sample (pre-failure $\alpha$

= .93, post-failure $\alpha$ = .94). Internal consistency was also high for the positive affect

subscale (pre-failure $\alpha$ = .93, post-failure $\alpha$ = .90) and the negative affect subscale (pre-

failure $\alpha$ = .93, post-failure $\alpha$ = .94) used in the present study.

### *Attributions for Failure*

In order to assess causal attributions for test performance, which was used in the

failure manipulation (see Procedure below), a series of questions were developed (see

Appendix J). Participants were first asked to identify the single most important cause of

their performance (i.e., to provide a causal ascription for their failure). This was phrased in

a neutral manner in order to avoid suspicion that they had been made to fail. Use of an

open-ended text box allowed participants to specify any causal ascription they wished.

They were then asked to rate this cause on each of the four causal attribution dimensions

(external vs. internal locus, unstable vs. stable, specific vs. global, and uncontrollable vs.

controllable). Brief descriptions of these dimensions were provided for clarity (e.g., *How*

*stable over time is this cause? In other words, how likely is it to remain unchanged and cause*

*similar events to happen in the future? (1) Will not persist in time and cause similar events,*

*(7) Will certainly persist in time and cause similar events.*), based on the measures of

stability and globality used by Husky, Mazure, Maciejewski, & Swendsen (2007). Thus,

higher scores reflected more internal, stable, global, and controllable attributions.

**Procedure**

After obtaining informed consent, participants were asked to provide demographic information and to complete the trait and symptom measures described earlier. After completing these questionnaires, they were encouraged to take a break prior to continuing the study, as it was emphasized that it was important they complete the remainder of the survey without any break or interruption. Next, participants completed the SSC to obtain baseline scores and then completed either the self-compassionate writing or expressive writing task, depending on which group they had been randomly assigned to at the beginning of the study. The SSC was re-administered following the writing tasks to obtain post-writing SSC, which was the primary mediator used in hypothesis testing.

*State Self-Compassion Manipulation*

The writing tasks were based on the methodology of Leary et al. (2007), however several enhancements were made for the sake of clarity and participant engagement. One modification was the use of audio recorded prompts, in addition to brief written prompts, for all components of the writing tasks. Participants were also required to spend a minimum amount of time on each part of the task (specified below) before they could proceed to the next section. The written prompts and scripts for the audio prompts are provided in Appendix K.

Prior to beginning the writing tasks, participants were asked to watch a brief psychoeducational video that provided an introduction to either self-compassion or expressive writing, and which described their benefits for health and well-being. This was another novel component of the procedure, which was intended to enhance engagement with, and understanding of, the subsequent writing tasks. These videos were comprised of

narrated PowerPoint presentations that were created specifically for this study (scripts are

provided in Appendix K). The self-compassion and expressive writing videos were

approximately seven and four minutes long, respectively; as self-compassion is more

complex than expressive writing, it took longer to explain. In order to ensure that

participants watched the videos, they were required to correctly answer a short quiz on the

content (see Appendix K). This also served to reinforce the main points conveyed in the

videos. Participants who failed to correctly answer all questions were required to re-watch

the psychoeducational video and re-take the quiz until they correctly answered all

questions.

**Shame Recall.** Next, based on the procedure used in previous research (E. A.

Johnson & O'Brien, 2013; Leary et al., 2007), participants were asked to recall a negative

personal experience, preferably a fairly recent experience, which continues to cause them

distress (see "Shame Recall Script" in Appendix K). For example, they were asked to "bring

to mind a personal experience in which you felt very ashamed of yourself. Try to bring to

mind an experience from your past that you still feel regret about and that you would like

to feel better about." This experience served as the focus for the subsequent self-

compassionate or expressive writing. Although this procedure typically involves asking

participants to write down their shame experience, this was not required in the present

study. The reason for this was to minimize the risk that participants would select a

relatively superficial experience out of an aversion to disclosing an intensely shame-

provoking experience. To prevent participants from skipping the shame recall task, as

mentioned above, they were required to listen to the entire four-minute-long audio prompt

before they could continue with the study. The length of the prompt was designed to

promote extended engagement with the memory, akin to a guided meditation or guided imaginal exposure. Participants then rated how ashamed they felt from 1 (*Not at all ashamed*) to 7 (*Completely ashamed*), as a measure of the success of the shame induction and to ensure there were no group differences. Following shame recall, participants completed either the self-compassion or expressive writing task.

**Self-Compassion Writing Task.** The self-compassion writing task was intended to increase state self-compassion by encouraging participants to think about their previously-recalled shame experience from a more compassionate perspective. The first part of the task was intended to foster self-kindness in relation to the shame experience, and was similar to that used by Leary et al. (2007). Participants were asked to imagine that a good friend had gone through the experience they just recalled. They were instructed to describe in writing what they might say to their friend in order to help them to be less critical and more kind and loving toward themselves.

Next, while still imagining that the experience had happened to someone else, participants were asked to list as many explanations as they could think of for why the event occurred, to think about how other people might find themselves in similar situations, and then to think about how feeling ashamed is part of being human. This was done to encourage common humanity. Although based on the prompt used by Leary et al. (2007), more detail was added to aid with contextualizing the experience and connecting it to experiences common to all people, similar to the approach taken by other researchers (Williamson, 2014).

Finally, participants were encouraged to adopt a mindful, dispassionate perspective on the experience by labelling all the emotions they experienced without getting caught up

in them. They were instructed to visualize the emotions as coloured balloons (e.g., anger might be a red balloon). When they noticed an emotion they were asked to write it down and then visualize the balloon floating away. Importantly, they were encouraged to not get caught up in thinking about why that emotion is there, only to notice its presence and then to watch it float away. This was a departure from the approach taken by Leary et al. (2007), which was done to promote mindfulness while avoiding confusion about what it means to "describe their feelings about the event in an objective and unemotional fashion" (Leary et al., 2007, p. 899). Scripts for the self-compassion prompts are provided in Appendix K.

**Expressive Writing Task.** As mentioned earlier, the wording for the expressive writing task was based on Leary et al. (2007), but was expanded in order to enhance clarity and engagement, based on the work of Pennebaker and colleagues (Pennebaker, 1997; Pennebaker et al., 1990). Participants were asked to write about the shame experience they previously recalled, expressing all the emotions they have about it (see Appendix K). They were encouraged to really let go and explore their feelings, without worrying about the quality of their writing (Pennebaker, 1997).

### *Manipulation of Academic Failure*

After completing the writing task (self-compassion or expressive writing) and the post-writing SSC, participants completed the SSG, ESS, and affect measure described earlier, in order to obtain baseline (i.e., pre-failure) scores, which were used as covariates in hypothesis testing (i.e., to allow assessment of failure-induced distress through the use of residual scores). Thus, post-writing SSC and pre-failure measures of distress were assessed concurrently, immediately prior to the failure manipulation.

Before completing the test, participants were told, "This last part of the study involves completing a test of mathematical and verbal reasoning. We want to see whether the therapeutic intervention you just completed will affect your performance on this test" (see Appendix L). In reality, the test was designed to create feelings of subjective failure. It was introduced by describing it as "similar to test items found on the SAT, a standardized test given to high school students in the US, and used as a determinant for admission to college." This was intended to give the impression that university students should be able to correctly answer the questions. In reality, the test items were taken from a collection of practice Graduate Record Examination (GRE) questions and selected to be particularly challenging (see Appendix L). Participants were informed that they would have five minutes to complete the test, and this time limit helped to ensure that they would be unable to perform well (e.g., they would not have time to look up the answers online).

Feedback included the percentage of questions correctly answered, as well as information about how they performed relative to their peers, which was stated as a percentile and accompanied by descriptive text (*This means that your score was equal to or better than ___% of people who have completed this test, and worse than ___% of people*). In order to enhance the salience of this percentile-based feedback, immediately prior to presentation of the test, participants had been asked to rate their perceived ability in math and verbal reasoning, relative to their peers (i.e., to estimate in which percentile range they fall).

Participants were provided with accurate feedback about how many items they answered correctly, but they were given false feedback about how well they performed relative to their peers, in order to reduce the likelihood that test difficulty would be

perceived to be the main explanation for poor test performance. Importantly, the percentile

they were told they fell in depended on how they actually performed, in order to make the

feedback more plausible. Thus, a score of 0 to 2 out of 20 corresponded to feedback of "1st

percentile," 3 or 4 was "5th percentile," 5 or 6 was "9th percentile," 7 or 8 was "18th

percentile," 9 or 10 was "27th percentile," 11 or 12 was "35th percentile," 13 or 14 was "52nd

percentile," ," 15 or 16 was "67th percentile," 17 or 18 was "75th percentile," and 19 or 20

was "85th percentile."

Immediately after receiving test feedback (i.e., the failure manipulation),

participants were asked about the extent to which their performance matched their

expectations, using a scale from 1 (*much worse than* expected) to 7 (*much better than*

expected). This was used as a measure of subjective perception of failure, which is more

strongly related to shame than is objective performance (Turner, 2014), in order to test the

effectiveness of the failure manipulation and thereby to exclude participants who did not

report subjective failure. Although it was expected that participants would provide a score

below the midpoint (i.e., indicating that they performed worse than expected), a bipolar

scale was used to help counter suspicions that all participants were made to fail.

Participants were then asked about their attributions for the cause of their (poor)

performance using the attribution questions described earlier. Next the SSG, ESS, and affect

measure were re-administered to obtain post-failure scores, which were the primary

outcome variables in the study.

**Planned Analyses**

All data was analysed in SPSS version 21 (IBM Corp., 2012) with the custom

dialogue PROCESS Beta version 140712 installed.  PROCESS was designed by Andrew

Hayes, and allows for mediation analysis in SPSS (Hayes, 2012). In addition to providing estimates of the indirect effects, PROCESS permits inference about significance by generating bootstrapping-based confidence intervals. All mediation and linear regression analyses, as well as t-tests, were conducted using 10,000 bootstrap samples. This approach uses random sampling with replacement, completed 10,000 times, to generate a sampling distribution for the indirect effect, rather than making assumptions about the parameters of the distribution (e.g., assuming it is normally distributed) as other approaches do (e.g., the Sobel test). This non-parametric approach also provides greater power than the Sobel test (Hayes, 2012).

To evaluate Hypotheses 1 and 2, mediation regression analyses using group as the independent variable and post-writing SSC as the mediating variable were conducted, to examine the indirect effect on attributions for failure (Hypothesis 1) and failure-induced distress (Hypothesis 2). By using group (self-compassion vs. expressive writing) as the independent variable and post-writing SSC as the mediator, these analyses examined the effects of experimentally-manipulated state self-compassion on attributions for, and emotional response to, a subsequent failure experience, which facilitates causal inferences. Four mediation regressions were conducted for Hypothesis 1, using each of the four attribution variables (i.e., locus, stability, globality, and controllability) as dependent variables. Similarly, four mediation analyses were conducted for Hypothesis 2, one for each of the four state mood variables (i.e., SSG Shame, ESS Shame, negative affect, positive affect). Post-failure state mood variables were used as the outcome variables, and corresponding pre-failure mood variables were used as covariates, as the use of residual values, which are uncorrelated, is preferable to the use of change scores (van Breukelen,

2013). Post-failure SSG Guilt was also entered as a covariate for the regression predicting

SSG Shame, in order to obtain a measure of "guilt-free" state shame.

Hypothesis 3 employed linear regression analyses to evaluate the relationships

between attributions and mood variables. This approach was chosen as it enabled

examination of the unique effects of each attribution variable separately, as well as their

combined effect on failure-induced distress. Separate regressions were conducted for each

of the four state mood variables, and as for Hypothesis 2, post-failure mood variables were

the outcomes, while corresponding pre-failure mood variables were entered as covariates

(along with post-failure SSG Guilt for the regression predicting SSG Shame).

Hypothesis 4 was tested using serial multiple mediation regressions, in which group

(self-compassion vs. expressive writing) was the independent variable (IV), post-writing

SSC was the first mediator ($M_1$), attribution rating was the second mediator ($M_2$), and post-

failure mood was the outcome. As for the previous hypotheses, pre-failure mood was

entered as a covariate, along with post-failure SSG Guilt for the regressions predicting SSG

Shame. A conceptual model of the serial multiple mediation regression approach is

provided in Figure 2. As there were four attribution variables and four state mood

variables, a total of 16 regressions were conducted.
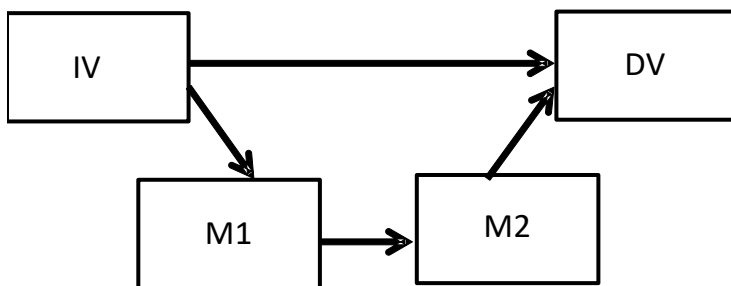


*Figure 2*. Serial multiple mediation model conceptual diagram.

## Results

### Preliminary Analyses

#### *Evaluation of Baseline Group Differences*

Independent samples t-tests revealed no differences between the self-compassion and expressive writing groups on trait self-compassion (SCS), self-esteem (RSE), shame-proneness (TOSCA Shame), tendency to make global or stable attributions (ASQ Globality and Stability), depression symptoms (BDI), response to the shame recall task (i.e., shame intensity), performance on the test used for the failure manipulation (i.e., number of correct responses), response to the failure manipulation (i.e., subjective failure), number of instructed response items failed, or baseline (pre-writing task) state self-compassion (SSC). Further, groups did not differ on age, sex, first language, self-reported GPA, or self-reported math or verbal ability. Thus, random assignment was successful at creating two equivalent groups of participants.

#### *Descriptive Statistics*

Table 1 provides the means, standard deviations, minima, and maxima for each of the scales and outcome variables. Intercorrelations for all the trait and symptom scales are provided in Table 2 and correlations with state measures and attribution ratings are provided in Table 3. Normality was assessed for each variable used in hypothesis testing, both through visual inspection of Q-Q plots and by calculating skewness and kurtosis for each.  Using 10,000 bootstrap samples, 95% confidence intervals indicated that the distributions of many of the variables were significantly skewed (see Table 1). However, with the exceptions of pre- and post-failure state positive affect, the amount of skew was small (i.e., magnitude < 0.50) for all variables used in hypothesis testing. The measures of

positive affect suffered from a floor effect, with 27% and 47% of participants reporting

mean pre- and post-failure scores of 1 (out of 7), respectively, which is the lowest possible

value. Most of the variables showed significant kurtosis (see Table 1).

Although non-normality can lead to underestimation of the magnitude of correlation

coefficients and reduced power when conducting statistical tests such as linear regression

(Dunlap & Burke, 1995), these tests assume normality of error variance, not necessarily

normality in the distributions of variables. Accordingly, standardized residual plots were

examined to determine whether error variance was approximately normally distributed.

Visual inspection revealed at least some deviation from normality in all plots, particularly

for the positive affect variables. Positive affect variables also appeared to violate the

assumption of homoscedasticity. Nonetheless, as non-normality was not very substantial,

particularly with regard to skewness, no transformations were applied. Further,

heteroscedasticity does not result in biased OLS regression coefficients, but in biased and

inconsistent standard error estimators (Hayes, 2012); as confidence intervals for all

regression analyses were based on non-parametric bootstrapping, regression results

should not be impacted by issues related to heteroscedasticity. Nonetheless,

heteroscedasticity-consistent standard errors were used for mediation regression analyses

in which positive affect was the dependent variable.

Table 1

*Descriptive statistics for study variables.*

| | Mean[a] | Standard Deviation | Minimum | Maximum | Skewness | Kurtosis |
|---|---|---|---|---|---|---|
| SCS Total | 97.99 | 26.44 | 26.00 | 171.00 | 0.03 | -0.06 |
| RSE | 27.81 | 6.03 | 10.00 | 40.00 | -0.11 | -0.29* |
| BDI | 12.57 | 10.03 | 0.00 | 57.00 | 1.13* | 1.18* |
| TOSCA Shame | 35.22 | 7.83 | 11.00 | 52.00 | -0.43* | -0.08 |
| ASQ Stability | 59.81 | 10.76 | 16.00 | 84.00 | -0.66* | 0.79* |
| ASQ Globality | 56.65 | 12.76 | 14.00 | 84.00 | -0.49* | -0.04 |
| SSC - PRE | 4.68 | 0.95 | 1.60 | 6.93 | -0.26* | 0.06 |
| SSC - POST | 4.60 | 0.99 | 1.38 | 6.94 | -0.35* | 0.03 |
| SSG Guilt - POST | 2.52 | 1.09 | 1.00 | 5.00 | 0.32* | -0.84* |
| SSG Shame - PRE | 2.42 | 1.09 | 1.00 | 5.00 | 0.48* | -0.75* |
| SSG Shame - POST | 2.50 | 1.17 | 1.00 | 5.00 | 0.46* | -0.83* |
| ESS - PRE | 3.79 | 0.99 | 1.70 | 7.00 | 0.29* | -0.38* |
| ESS - POST | 4.09 | 1.05 | 1.80 | 6.80 | 0.04 | -0.63* |
| Positive Affect - PRE | 2.13 | 1.38 | 1.00 | 7.00 | 1.95* | 3.38* |
| Positive Affect - POST | 1.69 | 1.11 | 1.00 | 7.00 | 2.91* | 9.20* |
| Negative Affect - PRE | 3.28 | 1.42 | 1.00 | 7.00 | -0.10 | -0.80* |
| Negative Affect - POST | 3.40 | 1.56 | 1.00 | 7.00 | -0.06 | -0.97* |
| Locus | 4.24 | 2.17 | 1.00 | 7.00 | -0.18* | -1.34* |

| | | | | | | |
|---|---|---|---|---|---|---|
| Stability | 3.91 | 1.91 | 1.00 | 7.00 | -0.02 | -1.09* |
| Globality | 3.64 | 2.00 | 1.00 | 7.00 | 0.06 | -1.25* |
| Controllability | 4.85 | 1.84 | 1.00 | 7.00 | -0.49* | -0.72* |

a Means for trait and symptom measures (SCS, RSE, BDI, TOSCA, ASQ) refer to scale means; means for state and attribution measures refer to item means.

*Note:* SCS = Self-Compassion Scale; RSE = Rosenberg Self-Esteem Scale; BDI = Beck Depression Inventory; TOSCA = Test of Self-Conscious Affect-3; ASQ = Attributional Style Questionnaire; SSC = State Self-Compassion Scale; SSG = State Shame & Guilt Scale; ESS = Experiential Shame Scale.

* 95% confidence interval does not include zero

Table 2

*Intercorrelations of trait and symptom scales.*

| | SCS | RSE | BDI | TOSCA Shame | ASQ Stability | ASQ Globality |
|---|---|---|---|---|---|---|
| RSE | .71** | 1 | | | | |
| BDI | -.62** | -.70** | 1 | | | |
| TOSCA Shame | -.53** | -.52** | .46** | 1 | | |
| ASQ Stability | -.31** | -.32** | .36** | .28** | 1 | |
| ASQ Globality | -.22** | -.27** | .29** | .21** | .61** | 1 |

*Note*: SCS = Self-Compassion Scale; RSE = Rosenberg Self-Esteem Scale; BDI = Beck Depression Inventory; TOSCA = Test of Self-Conscious Affect-3; ASQ = Attributional Style Questionnaire; Correlations with TOSCA Shame and SSG Shame are partial correlations controlling for TOSCA Guilt and SSG Guilt, respectively.

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

Table 3

*Intercorrelations of state and attribution measures.*

| | SSC PRE | SSC POST | SSG Shame PRE | SSG Shame POST | ESS PRE | ESS POST | POS Affect PRE | POS Affect POST | NEG Affect PRE | NEG Affect POST | Locus | Stability | Globality | Controllability |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCS | .75** | .59** | -.43** | -.38** | -.42** | -.43** | .30** | .28** | -.41** | -.46** | -.15** | -.16** | -.17** | .16** |
| RSE | .72** | .55** | -.50** | -.39** | -.44** | -.37** | .30** | .27** | -.41** | -.43** | -.17** | -.18** | -.23** | .16** |
| BDI | -.67** | -.51** | .47** | .35** | .46** | .42** | -.26** | -.18** | .48** | .45** | .18** | .21** | .26** | -.10** |
| TOSCA Shame | -.48** | -.38** | .33** | .33** | .25** | .30** | -.10* | -.14** | .27** | .35** | .09* | .14** | .15** | -.14** |
| ASQ Stab. | -.31** | -.28** | .22** | .20** | .28** | .27** | -.19** | -.15** | .34** | .31** | .04 | .17** | .18** | -.06 |
| ASQ Glob. | -.23** | -.19** | .19** | .11** | .20** | .18** | -.08 | -.06 | .26** | .23** | .00 | .10** | .22** | -.03 |
| SSC PRE | 1 | .69** | -.46** | -.38** | -.41** | -.37** | .28** | .22** | -.43** | -.45** | -.16** | -.18** | -.21** | .15** |
| SSC POST | .69** | 1 | -.59** | -.37** | -.60** | -.43** | .44** | .29** | -.61** | -.49** | -.14** | -.14** | -.21** | .15** |
| SSG Shame PRE | -.46** | -.59** | 1 | .50** | .54** | .36** | -.29** | -.22** | .57** | .45** | .10** | .12** | .19** | -.09* |
| SSG Shame POST | -.38** | -.37** | .50** | 1 | .26** | .45** | -.15** | -.28** | .28** | .57** | .14** | .22** | .23** | -.16** |
| ESS PRE | -.41** | -.60** | .54** | .26** | 1 | .59** | -.53** | -.35** | .69** | .49** | .15** | .16** | .18** | -.09** |
| ESS POST | -.37** | -.43** | .36** | .45** | .59** | 1 | -.33** | -.49** | .48** | .72** | .20** | .23** | .28** | -.11** |
| POS Affect PRE | .28** | .44** | -.29** | -.15** | -.53** | -.33** | 1 | .66** | -.51** | -.32** | -.14** | -.07 | -.10* | .04 |
| POS Affect POST | .22** | .29** | -.22** | -.28** | -.35** | -.49** | .66** | 1 | -.25** | -.36** | -.19** | -.12** | -.13** | .10* |
| NEG Affect PRE | -.43** | -.61** | .57** | .28** | .69** | .48** | -.51** | -.25** | 1 | .67** | .18** | .16** | .23** | -.12** |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEG Affect POST | -.45** | -.49** | .45** | .57** | .49** | .72** | -.32** | -.36** | .67** | 1 | .22** | .22** | .32** | -.17** |
| Locus | -.14** | -.14** | .10** | .14** | .15** | .20** | -.14** | -.19** | .18** | .22** | 1 | .40** | .33** | -.04 |
| Stability | -.17** | -.15** | .12** | .22** | .16** | .23** | -.07 | -.12** | .16** | .22** | .40** | 1 | .47** | -.10* |
| Globality | -.21** | -.22** | .19** | .23** | .18** | .28** | -.10* | -.13** | .23** | .32** | .33** | .47** | 1 | -.13** |
| Controll-ability | .15** | .16** | -.09* | -.16** | -.09** | -.11** | .038 | .10* | -.12** | -.17** | -.04 | -.10* | -.13** | 1 |

*Note*: SCS = Self-Compassion Scale; RSE = Rosenberg Self-Esteem Scale; BDI = Beck Depression Inventory; TOSCA = Test of Self-Conscious Affect-3; ASQ = Attributional Style Questionnaire; SSC = State Self-Compassion Scale; SSG = State Shame and Guilt Scale; ESS = Experiential Shame Scale; POS = positive; NEG = negative; Correlations with TOSCA Shame and SSG Shame are partial correlations controlling for TOSCA Guilt and SSG Guilt, respectively.

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

### Manipulation Checks

**Self-Compassion Manipulation.** To assess whether the state self-compassion manipulation was successful, repeated measures t-tests were performed for each group to compare pre- and post-writing SSC. As expected, the self-compassion group significantly increased in SSC following the writing task ($M_{pre}$ = 4.69, $SD_{pre}$ = 0.94, 95% CI [4.60, 4.78]; $M_{post}$ = 4.82, $SD_{post}$ = 0.93, 95% CI [4.73, 4.91]; $M_{post-pre}$ = 0.13, $t(409)$ = 3.61, 95% CI [0.06, 0.21], $d$ = 0.17), while the expressive writing group significantly decreased ($M_{pre}$ = 4.67, $SD_{pre}$ = 0.97, 95% CI [4.58, 4.77]; $M_{post}$ = 4.37, $SD_{post}$ = 1.00, 95% CI [4.28, 4.47]; $M_{post-pre}$ = -0.30, $t(414)$ = -8.46, 95% CI [-0.37, -0.23], $d$ = 0.41). Additionally, the manipulation effectively created a group difference on post-writing SSC, with the self-compassion group

reporting higher SSC than the expressive writing group, as demonstrated using an independent samples t-test. The difference between the groups post-writing was a significant, medium-sized effect ($M_{SC-EW}$ = 0.45, $t(825)$ = 6.68, $p<.001$, 95% CI [.33, .54], $d$ = 0.47). These results show that, whereas the groups did not differ on SSC at baseline, due to the experimental manipulation brought about by the writing tasks (i.e., increased SSC in the self-compassion group and decreased SSC in the expressive writing group), there was a significant difference post-writing. Thus, the state self-compassion manipulation was effective.

Additionally, those in the self-compassion group reported lower levels of distress and more positive affect immediately following the writing task, compared to the expressive writing group (pre-failure SSG "guilt-free" Shame: $M_{SC}$ = 2.32, 95% CI [2.23, 2.40] vs. $M_{EW}$ = 2.51, 95% CI [2.42, 2.61]; pre-failure ESS Shame: $M_{SC}$ = 3.83, 95% CI [3.70, 3.96] vs. $M_{EW}$ = 4.24, 95% CI [4.13, 4.36]; pre-failure negative affect: $M_{SC}$ = 3.38, 95% CI [3.19, 3.56] vs. $M_{EW}$ = 3.88, 95% CI [3.71, 4.05]; pre-failure positive affect: $M_{SC}$ = 2.35, 95% CI [2.17, 2.53] vs. $M_{EW}$ = 1.96, 95% CI [1.80, 2.12]).

**Failure Manipulation.** As discussed in the Participant Flow section above, participants were excluded if they did not report experiencing at least some degree of subjective failure (i.e., greater than 3/7 on the subjective failure item, where 1 = *much worse than I expected* and 7 = *much better than I expected*). A total of 119 participants were excluded for this reason.

Of the 829 participants included in hypothesis testing, 807 (97%) reported that their performance was "much worse" than expected (i.e., a score of 1). Actual scores on the test ranged from 0 to 7 out of 20, with 76% of participants scoring 2 or lower, thus falling

in the "1st percentile" feedback category (see Manipulation of Academic Failure section

above). The highest score achieved corresponded to the "18th percentile" feedback. Despite

the extremely limited variability in the subjective rating of performance item, it was

significantly correlated with score ($r = .11$, $p = .003$), such that the better participants

actually performed, the less subjective failure they reported. In the full sample, subjective

failure was similarly correlated with score ($r = .11$, $p < .001$, $N = 1281$), and was also

correlated with perceived math ($r = .14$, $p < .001$) and verbal ability ($r = .06$, $p = .028$), such

that those who perceived themselves as better in these domains (prior to completing the

test) were more likely to report that their test performance was worse than expected.

Additionally, state shame and affect were significantly affected by the failure

manipulation: SSG Shame increased ($M_{pre-post} = -0.09$, 95% CI [-.15, -.02], $d = 0.07$), ESS

shame increased ($M_{pre-post} = -0.30$, 95% CI [-.37, -.24], $d = 0.32$), negative affect increased

($M_{pre-post} = -0.12$, 95% CI [-.20, -.04], $d = 0.10$), and positive affect decreased ($M_{pre-post} = 0.41$,

95% CI [.31, .50], $d = 0.42$). Altogether, these results suggest that the failure manipulation

was successful.

**Primary Analyses**

*Hypothesis 1*

Hypothesis 1 predicted that, due to mediating effect of state self-compassion,

participants in the self-compassion condition would report more adaptive attributions for

failure than those in the expressive writing condition. Specifically, participants in the self-

compassion condition were expected to report higher levels of post-writing SSC compared

to those in the expressive writing condition, which would in turn be associated with

attributions for failure that are less internal/more external, less stable, less global/more

specific, and more controllable than those in the expressive writing condition. Mediation

analyses are depicted in Figures 3 to 6 and results are summarized in Table 4. In these

analyses, a positive effect indicates a higher attribution dimension rating in the expressive

writing group, compared to the self-compassion group. As unstandardized indirect effects

are reported, the effect corresponds to the group difference in attribution ratings on the 7-

point scale used.

As can be seen in Table 4, all four indirect effects were significant. These results

indicate that those in the self-compassion group, due to higher reported levels of SSC,

reported less internal, less stable, less global, and more controllable attributions for test

failure. Thus, Hypothesis 1 was supported.
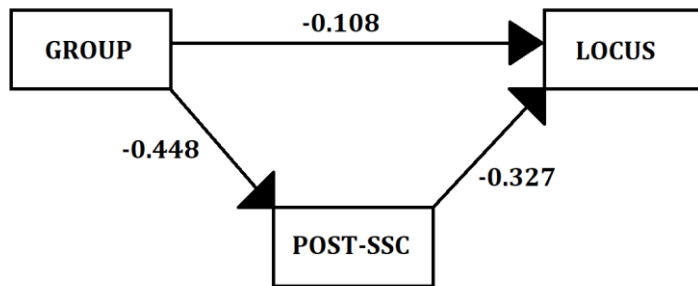


*Figure 3*. Mediation model with regression coefficients for locus attribution (SSC refers to

post-writing State Self-Compassion Scale score).
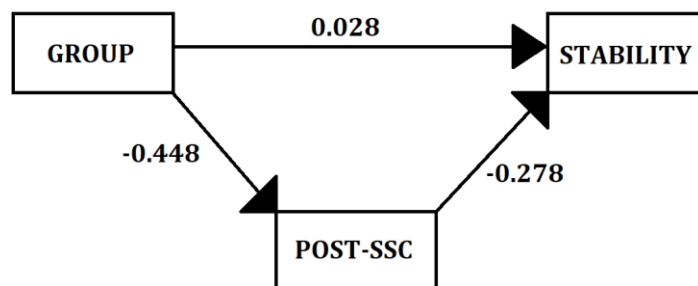


*Figure 4*. Mediation model with regression coefficients for stability attribution (SSC refers

to post-writing State Self-Compassion Scale score).
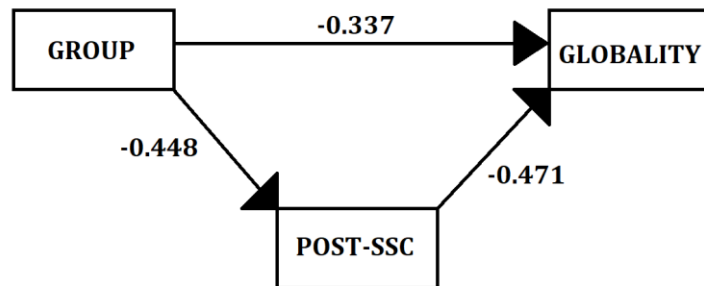
*Figure 5*. Mediation model with regression coefficients for globality attribution (SSC refers to post-writing State Self-Compassion Scale score).
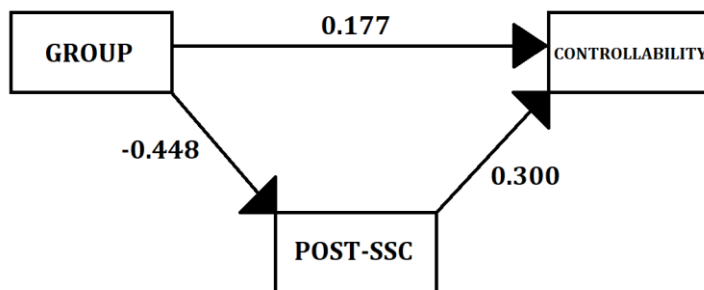


*Figure 6*. Mediation model with regression coefficients for controllability attribution (SSC refers to post-writing State Self-Compassion Scale score).

Table 4

*Total, direct, and unstandardized indirect effects of group (self-compassionate writing vs.*

*expressive writing) on causal attributions, mediated by State Self-Compassion.*

| Outcome | Total Effect [95% CI] | Direct Effect [95% CI] | Indirect Effect [95% CI] |
|---|---|---|---|
| Locus | .038 | -.108 | .146 |
|  | [-.258, .335] | [-.410, .194] | [.070, .240] |
| Stability | .151 | .028 | .123 |
|  | [-.110, .412] | [-.238, .293] | [.058, .206] |
| Globality | -.126 | -.337 | .211 |
|  | [-.399, .147] | [-.610, -.064] | [.129, .316] |
| Controllability | .043 | .177 | -.134 |
|  | [-.208, .294] | [-.077, .431] | [-.217, -.070] |

### Hypothesis 2

Hypothesis 2 predicted that, due to mediating effect of state self-compassion,

participants in the self-compassion condition would report less failure-induced distress

than those in the expressive writing condition. Specifically, participants in the self-

compassion condition were expected to report higher levels of post-writing SSC compared

to those in the expressive writing condition, which would in turn be associated with less

post-failure state shame and negative affect, and more post-failure positive affect.

Mediation analyses are depicted in Figures 7 to 10 and results are summarized in Table 5.

In these analyses, a positive effect indicates that the expressive writing group reported

higher levels of post-failure state shame, negative affect, or positive affect, controlling for pre-failure levels, compared to the self-compassion group. For the analysis predicting post-failure SSG Shame, post-failure SSG Guilt was entered as a covariate to obtain a measure of "guilt-free" shame. As for Hypothesis 1, unstandardized indirect effects are reported so that the magnitude of the effect can be interpreted based on the original variable scales (i.e., out of 7 for ESS Shame, negative affect, and positive affect, and out of 5 for SSG Shame).

As can be seen in Table 5, all four indirect effects were significant. These results indicate that those in the self-compassion group, due to higher reported levels of SSC, reported less failure-induced distress than did those in the expressive writing group. Specifically, controlling for pre-failure levels, those in the self-compassion group reported less post-failure SSG Shame, ESS Shame, and negative affect, and more post-failure positive affect. Thus, Hypothesis 2 was supported.
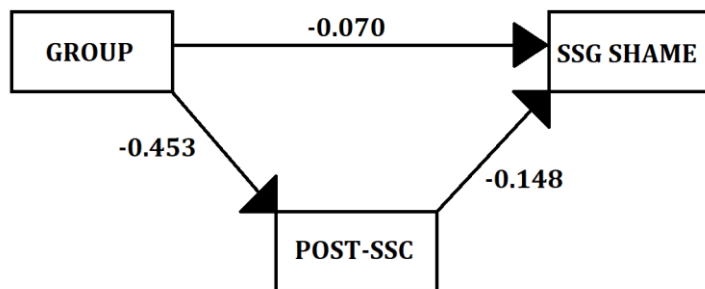


*Figure 7*. Mediation model with regression coefficients for failure-induced "guilt-free" State Shame and Guilt Scale Shame (SSC refers to post-writing State Self-Compassion Scale score).
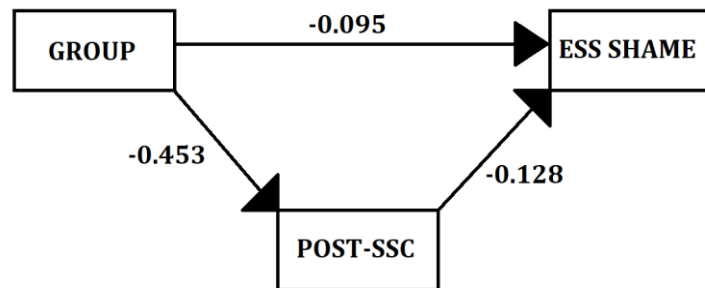
*Figure 8*. Mediation model with regression coefficients for failure-induced Experiential

Shame Scale Shame (SSC refers to post-writing State Self-Compassion Scale score).
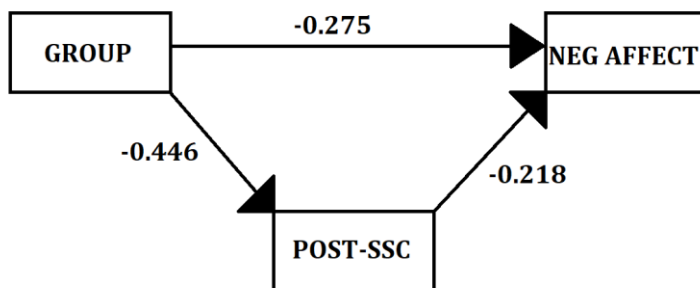


*Figure 9*. Mediation model with regression coefficients for failure-induced negative affect

(SSC refers to post-writing State Self-Compassion Scale score).
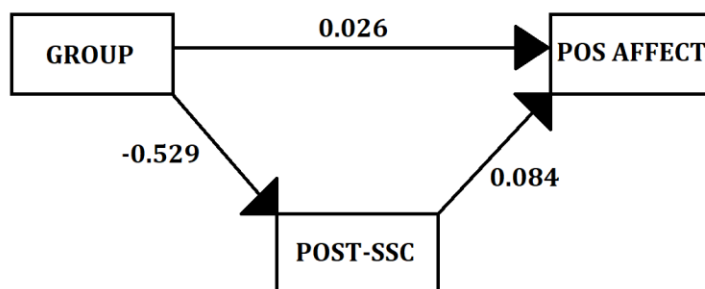


*Figure 10*. Mediation model with regression coefficients for failure-induced positive affect

(SSC refers to post-writing State Self-Compassion Scale score).

Table 5

*Total, direct, and unstandardized indirect effects of group (self-compassionate writing vs. expressive writing) on emotional response to failure, mediated by State Self-Compassion.*

| Outcome | Total Effect [95% CI] | Direct Effect [95% CI] | Indirect Effect [95% CI] |
|---|---|---|---|
| SSG Shame | -.037 | -.069 | .067 |
| | [-.131, .056] | [-.162, .024] | [.037, .108] |
| ESS Shame | -.062 | -.095 | .058 |
| | [-.179, .056] | [-.213, .024] | [.026, .101] |
| Negative Affect | -.226 | -.275 | .097 |
| | [-.386, -.066] | [-.435, -.115] | [.050, .162] |
| Positive Affect | -.008 | .026 | -.044 |
| | [-.167, .151] | [-.134, .187] | [-.095, -.010] |

*Note*: SSG=State Shame & Guilt Scale; ESS=Experiential Shame Scale. For regressions involving SSG Shame, SSG Guilt was entered as a covariate to obtain results for "guilt-free" shame.

### Hypothesis 3

Hypothesis 3 predicted that more adaptive attributions for failure would be associated with less distress in response to the failure manipulation. Specifically, it was expected that attributions for failure would predict failure-induced state shame, negative affect, and positive affect, with less internal/more external, less stable, less global/more specific, and more controllable attributions being associated with less distress in response to the failure manipulation. This was tested using four separate linear regressions, with all

four attribution variables as predictors in each equation and each of the four post-failure

mood variables as the dependent variable in each separate equation. The corresponding

pre-failure mood variable was entered as a covariate in each equation (e.g., pre-failure SSG

Shame for the equation predicting post-failure SSG Shame) in order to examine the

relationship of attributions with residual mood scores. For the regression equation

predicting post-failure SSG Shame, post-failure SSG Guilt was also entered as a covariate to

obtain a measure of "guilt-free" shame.

Regression results were largely consistent with the hypothesis. The combined effect

of the four attribution variables on emotional response to failure was significant for all four

outcomes (SSG Shame: $F_{change}(4, 816)$ = 16.26, $R^2_{change}$ = .024, p<.001; ESS: $F_{change}(4, 819)$ =

13.41, $R^2_{change}$ = .040, p<.001; negative affect: $F_{change}(4, 817)$ = 15.07, $R^2_{change}$ = .038, p<.001;

positive affect: $F_{change}(4, 424)$ = 4.22, $R^2_{change}$ = .022, p=.002). Examination of the unique

effects of each attribution variable showed that failure-induced state shame was

significantly predicted by stability (SSG Shame: $B$= .038, 95% CI [.011, .064]; ESS: $B$= .034,

95% CI [.001, .068]), globality (SSG Shame: $B$= .049, 95% CI [.021, .078]; ESS: $B$= .068, 95%

CI [.035, .103]), and controllability (SSG Shame: $B$= -.050, 95% CI [-.076, -.024]; ESS: $B$= -

.025, 95% CI [-.058, -.008]), but not by locus. Thus, attributions for failure that were more

stable, more global, and less controllable predicted more state shame following the failure

manipulation. Only globality ($B$= .106, 95% CI [.059, .152]) and controllability ($B$= -.062,

95% CI [-.105, -.020]) significantly predicted negative affect, with more global and less

controllable attributions being associated with greater negative affect. Finally, although the

combined effect of the four attribution variables significantly predicted positive emotion

following failure, none of the variables emerged as significant predictors on their own.

### *Hypothesis 4*

Hypothesis 4 predicted that state self-compassion and attributions would serially mediate the group effect on failure-induced distress. Specifically, the self-compassion writing task was expected to promote a less negative emotional response to failure, compared to the expressive writing task, on account of higher levels of state self-compassion that would, in turn, promote more adaptive attributions for the failure. This was tested using 16 serial multiple mediation regression analyses, where group was the independent variable, post-writing SSC was the first mediator, attribution variables (individually) were the second mediator, and post-failure mood was the dependent variable. As was done in Hypotheses 2 and 3, the corresponding pre-failure mood variable was entered as a covariate, as was post-failure SSG Guilt for the regressions predicting post-failure SSG Shame.

Serial mediation analyses for the four analyses predicting SSG Shame are depicted in Figures 11 to 14 and results for all 16 regression analyses are summarized in Table 6. All of the indirect effects were found to be significant, with the exception of the effect on ESS Shame mediated by controllability attributions. Overall, these results support Hypothesis 4. Results indicated that, compared to the expressive writing group, those in the self-compassion group reported higher post-writing SSC, which was associated with more adaptive attributions for test failure (i.e., less internal, less stable, less global, and more controllable attributions), which in turn resulted in less failure-induced distress (i.e., less state shame, less negative affect, and more positive affect).
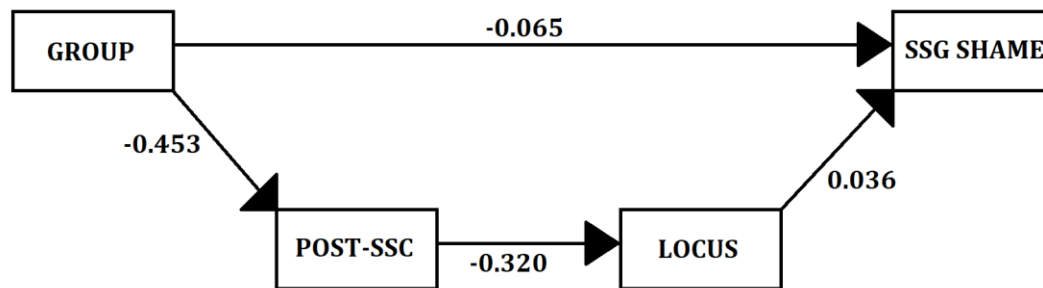
*Figure 11*. Model with regression coefficients of group effect on failure-induced "guilt-free" State Shame and Guilt Scale Shame, serially mediated by post-writing State Self-Compassion Scale scores and locus attribution.
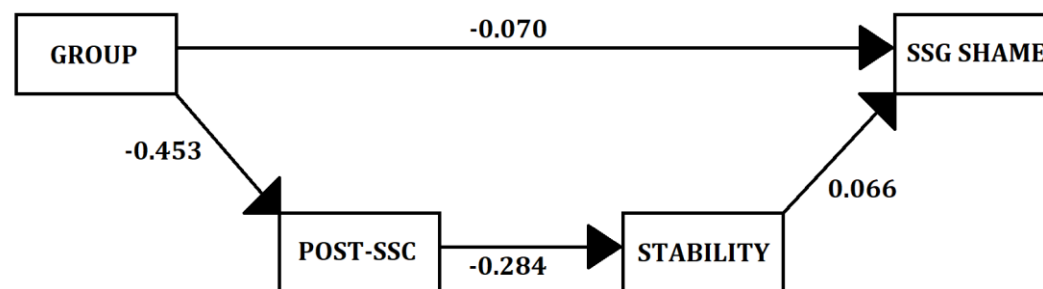


*Figure 12*. Model with regression coefficients of group effect on failure-induced "guilt-free" State Shame and Guilt Scale Shame, serially mediated by post-writing State Self-Compassion Scale scores and stability attribution.
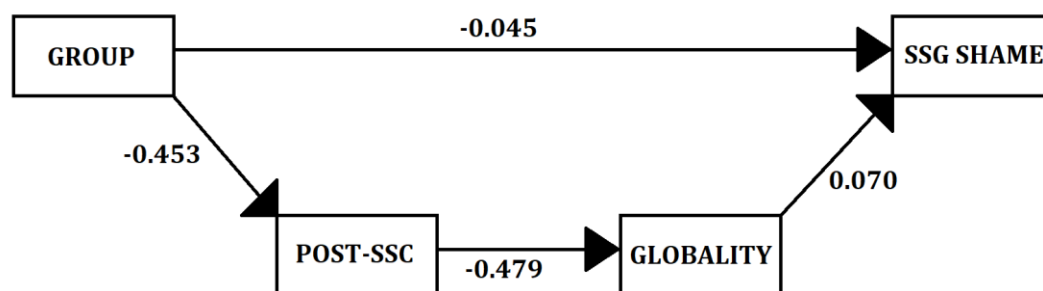


*Figure 13*. Model with regression coefficients of group effect on failure-induced "guilt-free" State Shame and Guilt Scale Shame, serially mediated by post-writing State Self-Compassion Scale scores and globality attribution.
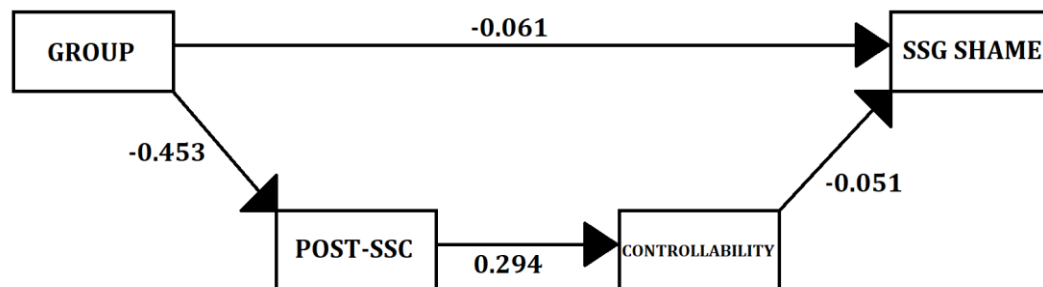
*Figure 14.* Model with regression coefficients of group effect on failure-induced "guilt-free"

State Shame and Guilt Scale Shame, serially mediated by post-writing State Self-

Compassion Scale scores and controllability attribution.

Table 6

*Total, direct, and unstandardized indirect effects of group (self-compassionate writing vs. expressive writing) on emotional response to failure, mediated by State Self-Compassion (M1) and causal attribution (M2).*

| Outcome | Total Effect [95% CI] | Causal Attribution | Direct Effect [95% CI] | Indirect Effect [95% CI] |
|---|---|---|---|---|
| SSG Shame | -.037 [-.131, .056] | Locus | -.065 [-.158, .027] | .005 [.002, .012] |
| | | Stability | -.070 [-.162, .021] | .009 [.004, .016] |
| | | Globality | -.045 [-.137, .047] | .015 [.008, .026] |
| | | Controllability | -.061 [-.153, .032] | .007 [.003, .014] |
| ESS Shame | -.062 [-.179, .056] | Locus | -.088 [-.205, .030] | .008 [.003, .016] |
| | | Stability | -.095 [-.212, .022] | .010 [.004, .018] |
| | | Globality | -.063 [-.180,.053] | .019 [.011, .032] |
| | | Controllability | -.090 [-.208, .029] | .004 [.000, .011] |

| | | | | |
|---|---|---|---|---|
| Negative | -.226 | Locus | -.267 | .010 |
| Affect | [-.386, -.066] | | [-.426, -.108] | [.004, .020] |
| | | Stability | -.277 | .012 |
| | | | [-.435, -.119] | [.005, .024] |
| | | Globality | -.230 | .027 |
| | | | [-.387, -.073] | [.015, .045] |
| | | Controllability | -.263 | .009 |
| | | | [-.422, -.103] | [.003, .020] |
| Positive | -.008 | Locus | .017 | -.012 |
| Affect | [-.167, .151] | | [-.143, .178] | [-.028, -.004] |
| | | Stability | .021 | -.007 |
| | | | [-.139, .181] | [-.020, -.002] |
| | | Globality | .007 | -.011 |
| | | | [-.153, .167] | [-.029, -.003] |
| | | Controllability | .015 | -.007 |
| | | | [-.146, .175] | [-.020, -.001] |

*Note*: SSG=State Shame & Guilt Scale; ESS=Experiential Shame Scale. For regressions involving SSG Shame, SSG Guilt was entered as a covariate to obtain results for "guilt-free" shame.

**Supplemental Analyses**

Although the sample used in the present study consisted of university students, it was noted that a large proportion of participants endorsed symptoms of depression. As can be seen in Table 1, the mean for the Beck Depression Inventory was 12.57 (out of a total of

63), which corresponds to mild depressive symptomatology (Aaron T. Beck, Steer, &

Carbin, 1988), and the standard deviation was 10.03. Indeed, 32% of the sample reported

mild symptom levels (i.e., a score of 10 to 18), 15% reported moderate symptom levels (i.e.,

a score of 19 to 29), and 8% reported severe symptom levels (i.e., a score of 30+). This

distribution of BDI scores provided a good opportunity to examine the potential role of

depression in moderating study effects. In the following supplemental analyses,

moderation regression and moderated mediation regressions were conducted to evaluate

whether BDI severity impacted efficacy of the writing tasks or the effect of post-writing SSC

on attributions for failure and failure-induced distress.

### *Impact of Depression on Efficacy of the State Self-Compassion Manipulation*

In order to assess whether the efficacy of the state self-compassion manipulation

was impacted by depressive symptomatology, a moderation regression analysis was

conducted in which group (SC vs. EW) was the IV and post-writing SSC was the DV. Pre-

writing SSC was entered as a covariate, as was trait self-compassion (SCS). Previous

research has demonstrated that those who are lower in trait self-compassion benefit more

from self-compassionate writing (Leary et al., 2007), and this was also found to be the case

in the present study. Indeed, the effect of self-compassionate writing on state self-

compassion was larger for participants in the bottom 25% on the SCS ($M_{pre}$ = 3.79, 95% CI

[3.64, 3.94], $SD_{pre}$ = 0.79; $M_{post}$ = 4.20, 95% CI [4.01, 4.38], $SD_{post}$ = 0.99; $d$ = 0.49), compared

to those in the top 25% ($M_{pre}$ = 5.54, 95% CI [5.43, 5.66], $SD_{pre}$ = 0.62; $M_{post}$ = 5.45, 95% CI

[5.32, 5.58], $SD_{post}$ = 0.71; $d$ = 0.17). Given that a large negative correlation was observed

between BDI and SCS scores in the present study (see Table 2), SCS was controlled for in

the moderation analysis in order to establish whether BDI independently impacted responses to the writing tasks.

Results showed that BDI scores significantly moderated the group effect on SSC (slope of interaction = -.015, *SE* = .005, 95% CI [-.025, -.006]). The effect of group on post-writing SSC was -.287 for those with low BDI scores (2.52), -.441 for those with mild depressive symptoms (BDI of 12.56), and -.595 for those with moderate symptoms (BDI of 22.60). Thus, the more depressed participants were, the more effective the writing tasks were at manipulating SSC.

In order to better understand the impact of depression on responses to the writing tasks, changes in post-writing SSC and corresponding effect sizes were calculated for each group separately using a subsample of participants that reported mild to severe depression symptoms (i.e., a score of 10 or higher; *n* = 456; Aaron T. Beck, Steer, & Carbin, 1988). It was observed that the magnitude of the decrease in SSC for the EW group was comparable in the depressed subsample ($M_{post-pre}$ = -0.25, *d* = 0.34) and the overall sample ($M_{post-pre}$ = -0.30, *d* = 0.41). In contrast, self-compassionate writing appeared to be more effective for those participants who endorsed symptoms of depression, as the increase in SSC was larger for the subsample ($M_{post-pre}$ = 0.30, *d* = 0.40) than it was in the overall sample ($M_{post-pre}$ = 0.13, *d* = 0.17). Thus, the moderating effect of BDI on task efficacy appears to be primarily related to enhanced effectiveness of self-compassionate writing for those with depression.

### *Impact of Depression on Hypothesis 1 Results*

Moderated mediation analyses were conducted in which BDI was added to Hypothesis 1 regression analyses as a moderator of the path between post-writing SSC and attributions. Results showed that the mediating effect of post-writing SSC on group

differences in causal attributions was not significantly moderated by BDI scores (locus: -.003, *SE* = .007, 95% CI [-.016, .010]; stability: .003, *SE* = .006, 95% CI [-.008, .014]; globality: .006, *SE* = .006, 95% CI [-.006, .018]; controllability: -.007, *SE* = .006, 95% CI [-.018, .004]). Thus, the role of SSC in promoting more adaptive attributions for failure, as observed in the results for Hypothesis 1, was not impacted by level of depression.

***Impact of Depression on Hypothesis 2 Results***

The same moderated mediation approach described above was used to assess the impact of depression on Hypothesis 2 results (i.e., that the SC group reported less failure-induced distress than the EW group due to the mediating effect of post-writing SSC). Results showed that BDI scores did not moderate this mediating effect of SSC on group differences in failure-induced state shame and negative affect (SSG Shame: -.002, *SE* = .002, 95% CI [-.006, .002]; ESS Shame: .004, *SE* = .003, 95% CI [-.001, .009]; negative affect: .001, *SE* = .003, 95% CI [-.006, .008]). However, the effect on positive affect was significantly moderated by BDI (-.009, *SE* = .004, 95% CI [-.016, -.001]), such that the mediating effect of SSC was not significant for participants endorsing significant depressive symptomatology (BDI of 3.85: -.087, 95% CI [-.186, -.023]; BDI of 14.67: -.037, 95% CI [-.096, .010]; BDI of 25.48: .014, 95% CI [-.040, .083]). Thus, SSC protected against failure-induced state shame and negative affect similarly for depressed and non-depressed individuals, whereas the protective effect on positive affect became non-significant as depression level increased.

## Discussion

Failure is a painful yet unavoidable part of life. It can result in feelings of shame and hopelessness, which may make it very difficult to persevere and find future success. Understanding how to mitigate such maladaptive responses to failure is therefore of great

importance. Self-compassion may be especially relevant in this regard, as it has been found

to buffer individuals from the negative consequences of distressing life experiences

(Lathren et al., 2019; Zeller et al., 2015; Y. Zhang et al., 2016). However, surprisingly few

studies have examined mechanisms by which it may achieve this effect. Accordingly, the

present study was conducted in order to address this gap in the literature. Importantly,

whereas previous research has generally relied on quasi-experimental and cross-sectional

evidence, the present study employed a randomized, controlled, and experimental design

to facilitate causal inference. By experimentally manipulating both state self-compassion

and subjective failure, this study demonstrated that having a self-compassionate mindset

promoted more adaptive attributions for, and emotional responses to, an experience of

failure.

**Experimentally-Manipulated State Self-Compassion Predicted Attributions for**

**Failure (Hypothesis 1)**

Participants in the self-compassion group reported more state self-compassion (i.e.,

SSC) than did those in the expressive writing group; consequently, they reported less

internal, less stable, less global, and more controllable attributions for a subsequent test

failure. This reflects a more adaptive response, as demonstrated by previous attributional

research that has linked internal, stable, and uncontrollable attributions for failure with

higher levels of shame, guilt, anxiety, and boredom, as well as lower expectations for future

success, more hopelessness and helplessness, and reduced achievement

striving/perseverance (Cox & Yang, 2012; Hareli & Hess, 2008; Le Foll et al., 2006, 2008;

Lyden et al., 2002; Maymon et al., 2018; S. E. Peterson & Schreiber, 2012; Weiner & Litman-

Adizes, 1980). Similarly, a tendency to make internal, stable, and global attributions for

negative events is associated with depression (Gladstone & Kaslow, 1995; Sweeney et al., 1986; Thomas & Dineen, 1995).

These results differ from those of two other examinations of the self-compassion writing task that failed to find a consistent effect on causal ascriptions (E. A. Johnson & O'Brien, 2013; Leary et al., 2007). This is likely explained by the different methodologies employed: whereas the present study looked directly at causal attributions for an across-the-board test failure experience, these previous studies assessed agreement with a few specific causal ascriptions (i.e., other people, something they did, bad luck, and the kind of person they are) for previously recalled personal experiences of failure, humiliation, or rejection. The lack of precision in attribution measurement, combined with the potentially large variation in situations recalled, would likely limit the ability to find consistent effects.

The results of the present study are consistent with previous studies that linked trait self-compassion with more controllable attributions for stressful life events (Chishima et al., 2018) and less self-blame for sexual assault (Hamrick & Owens, 2018), as well as a study that showed self-compassionate writing promoted more incremental (i.e., less stable) beliefs about personal shortcomings (Breines & Chen, 2012). The present study expands on this previous work by additionally demonstrating an effect of self-compassion on globality attributions.

Unlike Chishima et al. (2018) and Hamrick and Owens (2018), the present study used an experimental methodology that facilitates causal inference. Although Breines and Chen (2012) used a self-compassionate writing manipulation, they did not explicitly assess state self-compassion, making it unclear whether the group effect they reported was specifically attributable to differences in self-compassion, or some other feature of the

writing tasks used. The present study addressed this issue by showing a relationship

between experimentally-induced SSC scores and subsequent attributions. Further, Breines

and Chen (2012) did not explicitly assess attributions; rather, they inferred incremental

beliefs about personal shortcomings from participants' written responses. In contrast, the

present study directly assessed participant beliefs about the cause of a failure experience,

including explicit ratings of that cause on each attribution dimension in order to capture

their subjective perceptions. Thus, Hypothesis 1 results represent an important

contribution to the literature by showing that experimentally-induced state self-

compassion promotes more adaptive causal attributions for failure.

**Experimentally-Manipulated State Self-Compassion Predicted Failure-Induced**

**Distress (Hypothesis 2)**

Due to their higher level of SSC, participants in the self-compassion group reported

less failure-induced distress (i.e., post-failure mood controlling for pre-failure mood) than

did those in the expressive writing group. Four different mood variables were examined,

including two types of state shame, negative affect, and positive affect, each of which

captured a somewhat different aspect of distress.

The State Shame and Guilt Scale (SSG; Marschall, Sanftner, & Tangney, 1994), which

permits assessment of "guilt-free" shame, captures the traditional view of shame as a

maladaptive emotion that motivates withdrawal and avoidance (Tangney et al., 2007).

From the perspective of Gausel and Leach's (2011) conceptual model of the experience of

moral failure, the SSG Shame scale reflects perception of a *global* self-defect (vs. a *specific*

self-defect, which is viewed as potentially constructive). This is depicted in the SSG items, "I

feel worthless" and "I feel like I am a bad person." According to the model, the perception of

a global self-defect leads to feelings of inferiority, which is the term they apply to the emotional experience referred to as "shame" by more traditional shame theorists, such as Tangney and colleagues. This feeling of inferiority is captured by the SSG with the items, "I feel humiliated, disgraced" and "I feel small." The behavioural consequence of this is self-defence through withdrawal and avoidance, captured by participants' desire to "sink into the floor and disappear." Thus, the finding in the present study that the group effect on SSC mitigated SSG Shame in response to failure suggests that a self-compassionate mindset discourages global, maladaptive (i.e., traditional) shame.

The Experiential Shame Scale (ESS; Turner, 1998), on the other hand, captures a more general, anxious-distress aspect of shame. It is an opaque measure, which does not *appear* to assess shame and is unrelated to social desirability (Turner, 2014). The ESS asks participants to reflect on specific aspects of their current experience, such as their heart rate, temperature, physiological arousal, mental clarity, and general distress. It also asks about interpersonal aspects, such as a desire to hide or to be sociable. Not surprisingly, it is highly correlated with state anxiety (Rüsch et al., 2007), though also highly correlated with other measures of state shame (Turner, 2014). Thus, the finding in the present study that the group effect on SSC led to less failure-induced increases in ESS suggests that a self-compassionate mindset helps to mitigate self-conscious distress and physiological arousal when experiencing failure.

The negative affect variable (Leary et al., 2007) assessed a broad range of unpleasant emotions, including low-mood (i.e., sad, down, depressed, dejected), anxious distress (i.e., tense, nervous, uneasy, anxious), aggravation (i.e., mad, annoyed, angry, irritated), shame, and guilt. Thus, the finding in the present study that the group effect on

SSC led to less failure-induced negative affect indicates that state self-compassion buffers against overall dysphoric mood[1]. Similarly, the positive affect items encompassed both high and low energy positive mood (i.e., delighted, happy, cheerful, pleased). Although a floor effect was observed for this variable, reflecting generally very low levels of positive affect in the sample, a significant effect was still observed, such that higher SSC levels induced by self-compassionate writing (vs. expressive writing) helped to prevent loss of positive mood following failure feedback. Accordingly, a self-compassionate mindset appears to both preserve positive emotion and to stave off negative emotion when experiencing failure.

These results add to previous research that found self-compassion inductions produced short-term emotional benefits (Arch et al., 2016; Friis et al., 2017; E. A. Johnson & O'Brien, 2013; Leary et al., 2007; Odou & Brinker, 2015; Przezdziecki & Sherman, 2016; J. W. Zhang & Chen, 2016). However, most previous research has focused on the immediate mood effects of self-compassionate writing, whereas the present study examined whether a self-compassionate mindset protects against distress brought about by a *subsequent* failure experience. Although this sort of buffering effect has been demonstrated following loving-kindness meditation (Arch et al., 2016), previous research on self-compassionate writing did not demonstrate that it protected against critical feedback (Friis et al., 2017).

There is an important methodological difference between the Friis et al. (2017) study and the present study that may explain the conflicting results: whereas they looked at group (self-compassionate vs. self-critical writing) differences on positive and negative affect, the present study examined the conditional group effect on SSC. This is an important

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[1] Although shame and guilt items were included in the negative affect measure in order to capture emotional distress more broadly, it is worth noting that excluding these items did not change the results.

distinction, as the writing tasks are unlikely to purely impact state self-compassion; thus, simple group differences have the potential to include confounding effects that make interpretation of the results difficult. Indeed, as can be seen in Table 5, the direct group effect on negative affect (but not state shame or positive affect) was significant and in the opposite direction as the indirect effect. This indicates that aspects of the writing tasks that are independent of their effect on state self-compassion led to larger post-failure increases in negative affect for the SC group, compared to the EW group. It is worth noting, however, that despite the larger increase, post-failure negative affect was not higher in the SC group ($M$ = 3.31) than in the EW group ($M$ = 3.49). Indeed, the direct negative effect of group on negative affect may be seen as the SC group "catching up" to the EW group, who reported significantly more negative affect pre-failure (see Manipulation Checks). There was also a negative correlation between pre-failure negative affect and subsequent increase in negative affect following failure ($r$ = -.315, $p$ < .01), indicating that those who were in a more negative mood before the failure manipulation reported being less affected by it. This may be impacted by measurement (e.g., reluctance to choose extreme scores), but it may also be the case that failure was simply not as upsetting to those who were already upset. Indeed, after recalling a deeply shameful personal experience, it may not be particularly concerning to receive feedback that you performed poorly on an inconsequential test.

Whatever its explanation, the presence of this direct group effect on negative affect that opposed the indirect effect reveals the problem of only examining simple group differences when one is seeking to make claims about self-compassion. If total effects had been used in the present study, rather than indirect effects through SSC, we would have erroneously inferred that state self-compassion does not protect against failure-induced

distress. The present study therefore improves upon previous research by explicitly measuring and statistically isolating the group effect on state self-compassion, and showing that it did indeed help to buffer participants against the effects of failure.

**Attributions for Failure Predicted Failure-Induced Distress (Hypothesis 3)**

The causal attributions participants made for failure predicted their emotional response to it. In general, more internal, stable, global, and uncontrollable attributions were associated with more shame and negative affect, and less positive affect. When looking at the unique effects of each attribution variable, it was observed that those who made attributions that were more stable, global, or uncontrollable experienced more state shame, while general negative affect was predicted by global and uncontrollable attributions. Although the overall pattern of attributions predicted positive affect, none of the attribution variables were uniquely associated with it.

These results are consistent with the predictions of attribution theory and previous research. For example, attributing failure to internal causes has been shown to predict higher levels of shame, guilt, anxiety, and boredom (Hareli & Hess, 2008; Maymon et al., 2018). Stability attributions have similarly been shown to predict shame, anxiety, and boredom, and additionally have been linked with hopelessness and reduced expectation of future success (Cox & Yang, 2012; Le Foll et al., 2006, 2008; Lyden et al., 2002; Maymon et al., 2018; S. E. Peterson & Schreiber, 2012; Weiner & Litman-Adizes, 1980). Attributional style research has also repeatedly demonstrated a connection between depression and a tendency to make internal, stable, and global attributions for negative events (Gladstone & Kaslow, 1995; Sweeney et al., 1986; Thomas & Dineen, 1995). Additionally, research on Attributional Retraining has demonstrated the benefits of promoting less stable and more

controllable attributions for academic failure, including reduced negative emotion (e.g., shame, anger, and apathy), increased positive emotion (e.g., happiness and pride), less test anxiety, more hope, and less helplessness (Hamm et al., 2017; Hamm, Perry, Clifton, Chipperfield, & Boese, 2014; Parker et al., 2018; Perry et al., 2014, 2008, 2010)

Thus, the results of Hypothesis 3 replicate previous attribution research by showing that internal, stable, global, and uncontrollable attributions for failure were associated with more state shame and negative affect, and less positive affect. Further, by examining unique effects of each attribution variable, the results add to these previous findings by showing that certain dimensions are more relevant to particular emotional outcomes than others. Specifically, stability, globality, and controllability all uniquely predicted state shame, while general negative affect was uniquely predicted only by globality and controllability.

The relevance of stability and globality to state shame is consistent with conceptualizations of shame as a dysphoric emotional response to the perception of the self as wholly and irreparably flawed (Tangney & Dearing, 2002), and the view of attribution theory that shame arises from uncontrollable causes (Hareli & Hess, 2008; S. E. Peterson & Schreiber, 2012; Weiner, 2018). Although shame, as a self-conscious emotion, would be expected to arise in response to internal attributions (and indeed, locus was positively correlated with state shame measures), the lack of a unique effect of locus in the present study indicates that stability and globality, which were significantly positively correlated with locus, are more important for explaining individual variation in shame intensity. Thus, whether or not failure is one's fault, it appears that if the cause is likely to lead to ongoing failure in many areas of one's life, and there is nothing that can be done to prevent it, shame (as captured by the SSG and ESS) is likely to result.

In contrast, stability did not uniquely predict general negative affect, while globality and controllability did. Thus, when failure is caused by something that has a wide-ranging impact on one's life, yet is out of their control, these results suggest it will trigger distress regardless of whether the situation is temporary or likely to persist. As with state shame, shared variance with globality appeared to render the effect of locus on negative affect insignificant. Indeed, it is understandable that it would be upsetting to experience global and uncontrollable failure, whether or not it was your fault.

**Attributions Mediated the Effect of Experimentally-Manipulated State Self-Compassion on Failure-Induced Distress (Hypothesis 4)**

The results supporting Hypotheses 1, 2, and 3 establish that there are positive relationships between state self-compassion, adaptive attributions for failure, and emotional well-being in the face of failure. Hypothesis 4 sought to evaluate whether this pattern of relationships was consistent with a causal model in which state self-compassion buffers against failure-induced distress by promoting more adaptive attributions for failure. In other words, is the effect of state self-compassion on attributions a mechanism by which it promotes better responses to upsetting events? A series of serial mediation regression analyses were conducted to test this model. As with Hypotheses 1 and 2, group (self-compassion vs. expressive writing) was used as the independent variable in order to statistically isolate experimentally manipulated (post-writing) SSC, which was the first mediating variable. Causal attribution variables were each evaluated as secondary mediators, with residual mood variables as the outcomes.

All of the 16 indirect effects examined were in the hypothesized direction, and all but one were significant, according to 95% confidence intervals generated using 10,000

bootstrap samples. Thus, the results supported the hypothesis that attributions would mediate the buffering effect of state self-compassion on failure-induced distress demonstrated in Hypothesis 2. In other words, inducing a higher degree of state self-compassion in one group, and a lower degree in the other, led to participants in the former group (i.e., the self-compassion group) making more adaptive attributions for test failure (i.e., as being caused by something less internal, stable, global, and uncontrollable), which allowed them to preserve their emotional well-being to a greater extent than did those in the latter group (i.e., the expressive writing group).

Thus, it appears that a self-compassionate mindset is beneficial when experiencing failure at least in part because it helps us to interpret the experience in a more positive way. In addition to showing that thinking about an upsetting experience in a self-compassionate manner helps to enhance emotional well-being (see Manipulation Checks section of results), as has been demonstrated in previous studies (Chishima et al., 2018; Friis et al., 2017; E. A. Johnson & O'Brien, 2013; Odou & Brinker, 2015; Przezdziecki & Sherman, 2016; J. W. Zhang & Chen, 2016), this study also showed that being in a self-compassionate mindset helps people to think about experiences in a less distress-provoking way.

Previous research has demonstrated that trait self-compassion is associated with more positive automatic thoughts (Arimitsu & Hofmann, 2015) and less catastrophizing and personalizing thoughts (Reis et al., 2015). It has also been associated with less rumination, which was found to mediate the relationship between SCS and lower levels of depression and anxiety (Bakker et al., 2019; Blackie & Kocovski, 2018; E. A. Johnson & O'Brien, 2013; Krieger et al., 2013; Raes, 2010; Wadsworth et al., 2018). Thus, trait self-

compassion has been linked to less problematic ways of thinking, though this research is largely based on cross-sectional data. Further, those studies that have used an experimental approach, studying the effect of self-compassionate writing on beliefs about an upsetting experience, failed to assess state self-compassion and evaluated causal beliefs about a recalled event *after* participants had reconsidered the event from a self-compassionate perspective (Breines & Chen, 2012; E. A. Johnson & O'Brien, 2013; Leary et al., 2007). This is problematic, as it may be the case that observed effects are due to cognitive reappraisal, as opposed to state self-compassion per se. Thus, the present study adds to these findings by employing an experimental methodology and demonstrating that state self-compassion discourages problematic interpretations of a *subsequent* failure experience, thereby promoting better emotional well-being.

This is an important extension of the literature, as it provides a plausible mechanism (i.e., the promotion of more adaptive attributions for negative events) for why being more prone to experiencing a self-compassionate state (i.e., being high in trait self-compassion) would lead to more positive reactions to negative life events (Lathren et al., 2019; Zeller et al., 2015; Y. Zhang et al., 2016). It also helps to explain previous research that found a short self-compassion meditation, but not an acceptance-based meditation, enhanced the effect of subsequent cognitive reappraisal on negative mood in participants diagnosed with depression (Diedrich et al., 2016). Based on the results of the present study, it appears that a self-compassionate mindset makes it more likely that people will spontaneously generate more helpful explanations for upsetting events, which would make it easier to generate the alternative thoughts required for cognitive reappraisal.

It is worth noting that state self-compassion was not related to subjective perception of failure in the full sample, prior to removing those who did not report subjective failure, and trait self-compassion was only very weakly correlated with subjective failure ($r$ = -.063, $p$ = .025). This is consistent with the view of self-compassion as promoting well-being (e.g., less failure-induced shame and distress) while also enabling people to take responsibility for failures and shortcomings, rather than coping through avoidance, such as by denying or diminishing perceptions of personal failure (Breines & Chen, 2012; Neff et al., 2005). This, combined with the results discussed above showing that state self-compassion promoted more specific/less global attributions for failure, is relevant to the distinction between specific and global shame presented in the introduction. Indeed, the results of the present study suggest that state self-compassion may encourage specific "shame," as defined by Gausel and Leach (2011), which is associated with adaptive approach and self-improvement behaviours, and may undermine global shame, as traditionally defined (Tangney, 1991), which is associated with maladaptive withdrawal and avoidance behaviours. As discussed above with regard to Hypothesis 2, there was evidence that global shame was mitigated by state self-compassion, insofar as SSG Shame is a measure of this maladaptive form of state shame. In the absence of an explicit measure of specific shame, it is unclear whether this was promoted. It was observed, however, that the relationship between post-failure "guilt-free" SSG Shame and negative affect was moderated by post-writing SSC, such that at higher levels of SSC the positive association between these two measures was weaker (effect at low SSC = 0.34 vs. high SSC = 0.29, interaction effect = -0.03, $t$(814) = -2.05, 95% CI [-.054, -.001]).

At a conceptual level, it makes sense that greater self-compassion would promote more adaptive attributions for failure, and thus less global, maladaptive shame. One of the components of self-compassion, mindfulness, emphasizes non-judgement and dispassionate self-awareness (Shonin & van Gordon, 2016). Mindfulness is effective for treating the overly general, catastrophic, and rigid thinking that typically accompanies mental health problems such as depression, anxiety, and borderline personality disorder (Gu, Strauss, Bond, & Cavanagh, 2015; Levin, Hildebrandt, Lillis, & Hayes, 2012; Lynch, Chapman, Rosenthal, Kuo, & Linehan, 2006; Roemer & Orsillo, 2009). Another component, self-kindness, might make thinking about ones flaws less threatening, allowing for more constructive, realistic thinking about the cause of failure. The third component, common humanity, involves the normalizing of faults, which is clearly relevant to adaptive shame responding. It involves perceiving shortcomings and failures as a normal part of life, something that is common to everyone, as opposed to being something that makes us unique and isolated. Thus, failure does not make one wholly and irreparably flawed. Indeed, Van Vliet (2009) found that a shift toward more specific attributions was associated with reframing the causes of failure as "normal human foibles" (p. 145). Also relevant to common humanity, Wenzel, Woodyatt, and Hedrick (2012) found that when perpetrators reaffirmed values that they shared with their victims, but had violated, it allowed them to take responsibility for their moral transgressions without a loss to self-regard. Finally, the perception of common humanity likely increases the expectation that others will be forgiving, which is one of the factors identified by Cibich et al. (2016) as conducive to adaptive shame responding. After all, if we believe that failures and mistakes

are common to everyone, then we should not expect to be singled out or treated especially harshly for ours.

**Supplemental Analyses and Clinical Implications**

The observation that over half of participants in the present study reported at least mild depressive symptoms on the Beck Depression Inventory (i.e., a score of 10 or higher; BDI; Beck, Steer, & Carbin, 1988) prompted additional analyses to be conducted looking at whether study effects would be moderated by BDI scores. Results showed that the efficacy of the writing task manipulation of SSC was significantly moderated by BDI, such that there was a more pronounced impact on SSC for those endorsing more severe depressive symptomatology. This provides evidence in support of the generalizability of the state self-compassion manipulation used in the present study to a clinical population. The moderation effect appeared to be mainly attributable to a greater benefit from self-compassionate writing among participants with elevated BDI scores, as the effect of expressive writing appeared to be consistent across participants. The disproportionate benefit for depressed individuals in the SC group may have to do with them having lower baseline SSC, and thus more room for improvement. Given the simplicity of the SC task, it may be that it is more impactful for those to whom self-compassionate thinking is particularly foreign.

Moderation results also supported the generalizability of study results to a depressed sample, as the role of SSC as a mediator of the group effect on attributions and failure-induced state shame and negative affect was not moderated by BDI. Although the effect of SSC on positive affect was moderated by BDI, this is likely an artefact of the floor effect that was observed for the positive affect variable. The mean of both pre- and post-

failure positive affect approached the minimum value as depression level increased, which would have led to reduced variability between post-writing SSC and post-failure positive affect, and thus an indirect effect that approached zero, as BDI increased (i.e., a significant moderation effect). Accordingly, it is reasonable to conclude based on the results of the supplemental analyses that state self-compassion promotes adaptive responding to failure in a similar manner regardless of depression level.

The clinical relevance of study results are also demonstrated by their consistency with the literature on attributional style in depression. Depression is characterized by a cognitive triad of negative beliefs about the self, the world, and the future, which lead to cognitive distortions (e.g., overgeneralization, fortune telling, personalization) that negatively impact thoughts, feelings, and behaviours (Aaron T. Beck, 1979). The role of causal attributions in these cognitive distortions is readily apparent. For example, personalization is the belief that you are to blame for some negative outcome, regardless of the facts, which implicates a problematic internal locus attribution, while overgeneralizing involves a perception that a particular outcome reflects a stable and global negative cause (i.e., a belief that it will always happen across all contexts). Indeed, depression has been repeatedly found to be associated with the tendency to make attributions for negative events that are internal, stable, and global (Gladstone & Kaslow, 1995; Sweeney et al., 1986; Thomas & Dineen, 1995). Thus, insofar as a self-compassionate mindset promotes more adaptive attributions, it is likely to be beneficial for mitigating the negative consequences associated with depression.

As discussed in the introduction, trait self-compassion has been demonstrated to protect individuals from depression (Krieger et al., 2016), and a growing body of research

over the past decade has demonstrated the effectiveness of self-compassion-based

therapies for treating a variety of mental health concerns, including depression, anxiety,

chronic pain, eating disorder, suicidality, and borderline personality disorder, which

highlights the clinical relevance of self-compassion in general. The results of the present

study complement this body of research by suggesting targeted, specific ways in which self-

compassion might be efficiently and effectively incorporated into clinical practice.

In particular, cognitive reappraisal is a common and effective therapy technique that

involves generating alternative, more helpful thoughts and perspectives, but which can be

challenging for people with depression (Visted et al., 2018). However, there is evidence

that a self-compassionate mindset enhances the effectiveness of reappraisal for people

with depression (Diedrich et al., 2016). This is understandable in light of the present

study's findings that state self-compassion encourages adaptive attributions for upsetting

events. These findings suggest that it may enhance psychotherapy outcomes if self-

compassion induction techniques are incorporated as a precursor to cognitive reappraisal.

Indeed, there is evidence that the reverse may be true, as higher levels of self-criticism

have been shown to reduce the effectiveness of psychotherapy (Löw, Schauenburg, &

Dinger, 2020).

Notably, whereas current self-compassion-based therapies involve various

techniques designed to increase trait self-compassion over the course of several sessions

(see Compassion-Based Therapies section of introduction), the present study demonstrates

the immediate benefits of *state* self-compassion. Although beneficial, increasing trait self-

compassion can be time-consuming, challenging, and transient. Indeed, a recent meta-

analysis showed that the improvement in trait self-compassion (i.e., SCS) observed at the

end of self-compassion interventions largely disappears within a few months (Ferrari et al., 2019). In contrast, state self-compassion can be induced with a relatively short and simple exercise, such as self-compassionate writing or loving-kindness meditation (Graser & Stangier, 2018), and self-compassionate writing appears to be particularly beneficial for people with symptoms of depression and for those who are lower in trait self-compassion, as was demonstrated in the present study.

In summary, although an undergraduate student sample was used in the present study, more than half of the sample reported elevations on the BDI reflecting mild to severe depressive symptomatology. While not equivalent to a clinical sample, this provides some support for the clinical relevance of study results. Finding that the BDI did not moderate the extent to which the group effect on SSC impacted attributions and failure-induced state shame and negative affect indicates that state self-compassion provides similar protective effects when experiencing failure regardless of depressive symptomatology. Yet, self-compassionate writing is particularly effective for those with symptoms of depression. Altogether, these results highlight the relevance of study findings to a depressed clinical population and suggest that self-compassionate writing may be a useful adjunct to traditional psychotherapies.

**Strengths and Novel Features of Study**

***Experimental Design***

This study used a randomized controlled, experimental design that consisted of two sequential manipulations. The first manipulation was intended to increase state self-compassion in some participants, using a variation on the self-compassion writing task first employed by Leary et al. (2007), and to decrease it in other participants through expressive

writing. This manipulation was successful: the self-compassion group increased significantly from baseline, the expressive writing group decreased significantly from baseline, and there was a significant difference between the groups post-writing that corresponded to a medium-sized effect ($d$ = 0.47). Vitally, random assignment to condition was used to ensure there were no group differences at baseline, and a variety of relevant variables, including trait self-compassion, global self-esteem, shame-proneness, attributional style, and depressive symptomatology, were assessed in order to verify that random assignment was successful. This is an important strength of the study design.

### *Manipulation of State Self-Compassion*

The inclusion of a writing task-based manipulation of state self-compassion was an important feature of the study, as it permitted a true experimental design that facilitated causal inference, as opposed to a quasi-experimental one in which pre-existing levels of state self-compassion would be used to predict response to failure. Furthermore, although the study was not intended to evaluate the efficacy of the self-compassion writing task, nor to examine how it differs from expressive writing, it did, nonetheless, replicate the finding that self-compassionate writing promoted less state shame and negative affect post-writing compared to expressive writing. This was important for establishing that the writing task intervention used in this study with the present sample was comparable to what was reported in previous studies (E. A. Johnson & O'Brien, 2013; Leary et al., 2007).

Unlike previous studies, however, state self-compassion was explicitly assessed in this study. Thus, whereas prior research inferred that state self-compassion was responsible for the observed benefits of self-compassionate writing, this study was able to provide empirical evidence supporting this assumption. This feature is one way in which

the present study expanded on previous research using the self-compassion writing task. Had state self-compassion not been assessed and used as a mediator in hypothesis testing, interpretation of the results would have required consideration of all possible ways in which self-compassionate and expressive writing may differ (e.g., direct effects on negative affect that may be unrelated to differences in self-compassion; Johnson & O'Brien, 2013). As the focus of the present study was not the writing tasks themselves, this would be an unnecessary complication that, while potentially interesting and worth examining in its own right, distracts from the goal of understanding the specific effect of self-compassion on reactions to failure.

Additionally, the self-compassion and expressive writing tasks used in the present study included several novel features, which were incorporated in order to increase participant engagement and compliance. Task instructions were delivered via audio recordings, with only brief written prompts used to reinforce the main points delivered in the audio prompts. This was intended to increase understanding of task instructions as well as engagement with the tasks (e.g., prompts could include more description and examples of what is being asked, without requiring participants to read lengthy text-based instructions). Additionally, it provided a means of increasing compliance: audio instructions cannot be quickly skimmed, unlike written instructions, and the length of the recordings could be controlled in order to ensure all participants spent a minimum amount of time with each task, as they were unable to move on to the next item until each recording had finished.

Additionally, although participants were required to type their responses to the self-compassion and expressive writing prompts, they were not required to write about the

experience recalled during the shame recall portion. Previous research on the efficacy of the self-compassion writing task (Conway & Johnson, 2016) suggested that intensity of the shame experience recalled correlated with magnitude of the emotional benefit from self-compassionate writing. However, there is concern that participants may be reluctant to disclose intensely shameful experiences. Thus, to mitigate the risk that they would select a relatively superficial experience, they were only asked to think in detail about the experience. Comparing the intensity of state shame reported immediately following shame recall in the present study ($M$ = 4.75 on a scale from 1 = *Not at all ashamed* to 7 = *Completely ashamed*) to that obtained in a previous study using the self-compassion writing task ($M$ = 2.58 on a scale from 1 = *Not particularly ashamed* to 5 = *Completely ashamed*; Conway & Johnson, 2014) did indeed suggest that participants in the present study recalled more intensely shameful experiences. Whereas the present sample mean was significantly above the middle of the scale (i.e., a score of 4; $t(828)$ = 11.86, $p$ <.001), the previous study mean was significantly below the middle of the scale (i.e., a score of 3; $t(56)$ = -3.25, $p$ = .002).

Another novel component of the writing tasks used in the present study was the incorporation of psychoeducation. Although not typically included in the self-compassion writing task, the use of psychoeducation is a common element of self-compassion therapies (e.g., Mindful Self-Compassion) and has been used to augment self-compassionate writing previously (Mosewich et al., 2013). Prior to shame recall, participants were introduced to their respective writing task by watching a short video that gave an overview of the task and described the benefits associated with it. To ensure they paid attention to the video, and to reinforce the main points, they were then required to correctly answer questions on

the content before proceeding. Psychoeducation was incorporated for two primary purposes. First, it was designed to increase participant expectations that the writing task (either self-compassion or expressive writing) would be beneficial for them, in order to increase their engagement with the task. Second, it provides additional information about each of the writing tasks in order to increase understanding of, and compliance with, task instructions. Indeed, when using the self-compassion writing task in past research, non-compassionate responding to prompts (particularly mindfulness prompts) has been observed, suggesting that there may be confusion about what is intended by these prompts (Conway & Johnson, 2014; Robitaille, Conway, & Johnson, 2016). Psychoeducation, along with more descriptive prompts, were used to mitigate this potential issue.

### Manipulation of Subjective Failure

The second experimental manipulation used in this study involved inducing subjective failure by providing participants with false information about their performance on a test of mathematical and verbal reasoning, so as to make them believe they performed more poorly than their peers. They were then asked to identify the cause of their failure and the causal attributions underlying it (i.e., to rate the causal ascription they identified along four dimensions: internal vs. external locus, stable vs. unstable, global vs. specific, and controllable vs. uncontrollable). This failure manipulation was also successful: the vast majority of participants reported that they performed more poorly than they had expected. However, since the purpose of the study was to examine attributions for failure, participants who did not report such subjective failure were not included in hypothesis testing.

Test failure was selected for two reasons. Weiner's (1985) attributional model of motivation was based on achievement motivation, as discussed earlier, and thus applying the model to attributions for test failure is particularly appropriate. Most importantly, however, given that the sample consisted of university students, this is an experience that would be expected to be salient and meaningful for all participants. Indeed, the use of a student sample in the present study was not simply a matter of convenience, but served to enhance internal validity.

The use of an across-the-board failure experience, combined with explicit measurement of causal attribution dimensions, was another important aspect of the study design. As discussed in the introduction, one of the limitations of previous attempts to examine whether self-compassion influences attributions for distressing life events was that they failed to control for the type of experience for which participants were making attributions (E. A. Johnson & O'Brien, 2013; Leary et al., 2007). If there is considerable variability across participants, it reduces the likelihood of finding consistent shifts in the types of attributions made. Additionally, the approach to assessing attributions in these studies involved asking participants to rate agreement with only a handful of causal ascriptions (i.e., other people, something they did, bad luck, and the kind of person they are). This is problematic, as these causes may or may not be particularly relevant to the experience recalled, and they are likely to be interpreted differently by different participants (Weiner, 1983, 2006).

Indeed, when looking for a consistent effect across participants, you need to assume that a particular cause can be similarly interpreted from one participant to another. However, the meaning attached to a causal ascription depends on the outcome it explains.

Attributing test failure to "bad luck" may help preserve well-being, while attributing a debilitating injury to "bad luck" may be associated with feelings of anger and a belief that life is unfair, leading to despair and depression. The use of manipulated test failure and direct assessment of causal dimensions in the present study ensured that attributions could be similarly interpreted for all participants.

### *Measurement of Failure-Induced Distress*

The final component of the study was the assessment of failure-induced distress. In order to isolate the variance in distress variables attributable to the failure manipulation, residual scores were used as the outcome variables, which controlled for pre-failure levels of distress. This was important, as there were group differences in emotion brought about by the writing tasks, as mentioned earlier, so it was crucial that this be controlled for. Residual scores were used, rather than change scores, as they are uncorrelated with pre-failure variables and thus provide a better control of such baseline differences (van Breukelen, 2013).

Multiple measures of distress were used to capture a range of emotional outcomes. However, state shame was of particular interest, as it is a common emotional consequence of failure and is traditionally associated with maladaptive responses, such as behavioural withdrawal and avoidance (Tangney et al., 2007). Previous research has demonstrated that self-compassionate writing is associated with lower levels of state shame, compared to expressive writing, as well as reduced shame-proneness (E. A. Johnson & O'Brien, 2013). Thus, state shame provided a particularly relevant outcome measure for evaluating a possible mechanism by which a self-compassionate mindset encourages an adaptive response to failure. Two different measures of state shame were used, in order to capture

both traditional, "guilt-free" shame (with the State Shame and Guilt Scale) as well as an anxious-distress aspect of shame (with the Experiential Shame Scale). Emotional distress more broadly was also captured using a measure of general negative and positive affect (Leary et al., 2007).

### *Incorporation of Self-Compassion with Attribution Theory*

The results of the present study add to the research on self-compassion and its relationship with the emotional consequences of failure (e.g., shame) by demonstrating that causal attributions are a plausible mechanism by which self-compassion undermines maladaptive responding to failure. Indeed, incorporating attribution theory into our understanding of self-compassion is an important and novel contribution of this study. It is well-established that how we interpret events plays a key role in determining how we feel and ultimately behave in response to them, and Weiner's (1985) attribution theory provides a clear and parsimonious model of how particular interpretations for failure will lead to particular psychological outcomes. It reflects the top-down emotion generating/modulating process discussed in the introduction, but is simultaneously more specific and conceptually clear than the broad concept of emotion regulation, and also more broadly applicable than specific emotion regulation strategies that have been connected with self-compassion previously, such as rumination. This made it a very useful model to draw upon in order to examine the role of self-compassion in promoting an adaptive failure response.

Few prior studies have assessed the impact of self-compassion on attributions. Two studies found effects of SCS on controllability and locus attributions, but relied on cross-sectional data (Chishima et al., 2018; Hamrick & Owens, 2018). Another used an

experimental design but an indirect means of inferring stability attributions (i.e., expressed incremental beliefs about a personal weakness in self-compassionate writing), and failed to measure state self-compassion, which raises the possibility that results are attributable to cognitive restructuring, not self-compassion per se (Breines & Chen, 2012). Finally, two other studies failed to control for the event for which attributions were being made and relied on causal ascriptions (E. A. Johnson & O'Brien, 2013; Leary et al., 2007), which is problematic because it makes it difficult to draw meaningful conclusions about the results, as discussed earlier. Further, none of these studies considered attributions as a potential mechanism by which a self-compassionate mindset promotes emotional well-being in response to upsetting events, although the cross-sectional results of Hamrick and Owens (2018) indicated that lower levels of self-blame mediate the negative relationship between trait self-compassion and PTSD severity. As discussed in the introduction, there has been very little experimental examination of potential mechanisms at all prior to this study.

By explicitly examining how state self-compassion influenced the causal attributions participants made for a failure experience, we are not limited to inferring the beneficial role of self-compassion from its impact on self-report measures of mood. Indeed, when this is the only outcome evaluated you run the risk of 'begging the question.' For example, a negative relationship could be interpreted as proof that self-compassion is adaptive because it reduces shame; however, a positive relationship could also be interpreted as proof of adaptiveness, because awareness of distressing emotions could be assumed to reflect mindfulness and non-avoidance. By stating that state self-compassion encourages less internal, less stable, less global, and more controllable attributions for test failure, we

can provide a much more clear and specific characterization of how self-compassion exerts

its beneficial effect and undermines maladaptive shame responding.

Indeed, a major advantage of linking self-compassion with attribution theory is that

it enables the results of the present study to be interpreted in light of what is already

known about the causal attribution dimensions of locus, stability, globality, and

controllability. As discussed earlier, associations between causal attributions and a variety

of important outcomes have been demonstrated, including expectancies for future success,

hopefulness, helplessness, achievement striving, perseverance, and academic success (Cox

& Yang, 2012; Hamm et al., 2017, 2014; Le Foll et al., 2006, 2008; Lyden et al., 2002; Parker

et al., 2018; Perry et al., 2014, 2008, 2010; S. E. Peterson & Schreiber, 2012; Weiner &

Litman-Adizes, 1980). Thus, although the present study did not evaluate these outcomes,

by demonstrating the impact of self-compassion on attributions, hypotheses can be made

about how self-compassion would likely affect these outcomes.

Studies such as this one that link previously unrelated fields of psychology are

important for reducing "silos" and integrating knowledge in order to generate more

parsimonious, unified theories, which is important for avoiding construct replication, i.e.,

jangle fallacies, which some have accused self-compassion of being (Pfattheicher, Geiger,

Hartung, Weiss, & Schindler, 2017). Attribution theory is a well-established model that is

applicable to a wide range of topics and, unlike many theories in social science, has yielded

replicable results (Le Foll et al., 2006, 2008; S. E. Peterson & Schreiber, 2012; Weiner,

2018). By examining self-compassion through the lens of attribution theory, we create a

clear, parsimonious, and falsifiable model of a mechanism of self-compassion that can be

used to integrate seemingly incompatible results from a variety of fields. Indeed, a recent

special issue of the *Journal of Organizational Behavior* was devoted to promoting the application of attribution theory to that field, in recognition of both the usefulness of the theory and its current underutilization (Martinko & Mackey, 2019; Weiner, 2019). The field of self-compassion may be wise to heed this example.

**Limitations of the Present Study**

***Reliance on Self-Report***

As is often the case in psychological research, this study relied exclusively on self-report. This can result in single-source bias, a type of common method variance which has the potential to inflate correlations between variables (Avolio, 1991; Ng & Feldman, 2012; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Interestingly, however, although common method variance is generally assumed to reflect bias that undermines validity, there is evidence to suggest that self-report-specific (method) variance is stable, has a genetic basis, and captures accurate perspectives of self-raters that are not accessible to others (Kandler, 2012; Kandler et al., 2010).

Even if meaningful, it is still possible that method variance related to personality characteristics that were not part of the conceptual model being evaluated contributed to correlations between variables. For example, neuroticism may lead a participant to report less state self-compassion, less adaptive attributions for failure, and more failure-induced distress, thereby influencing scores on all of these measures and leading to significant correlations that would not exist outside of their relationship with neuroticism. However, it is precisely to avoid such confounds that a randomized controlled, experimental approach was taken. Indeed, by comparing groups that were equivalent at baseline, it helps to rule

out the influence of extraneous variables, particularly those that were measured and found not to differ between the groups.

Another potential concern with self-report is socially desirable responding, particularly when asking about feelings of shame and failure (Ones, Viswesvaran, & Reiss, 1996). However, this may have been mitigated by the use of an online survey approach, which has been found to increase reporting of sensitive information as well as reporting accuracy (Kreuter, Presser, & Tourangeau, 2008). Further, socially desirable responding may not be as significant of a problem as is often believed; even when present, there is evidence that it does not reduce predictive validity, and it has been found to be related to real individual differences in conscientiousness and emotional stability (Barrick & Mount, 1996; Ones et al., 1996).

Indeed, the issue of the validity of self-report is much more complex than is generally assumed. Most importantly for the purposes of the present study, self-report appears to be a valid means of measuring current emotional states (Robinson & Clore, 2002). Although people are not good at incorporating their own nonverbal behavioural information into their self-assessments (Hofmann, Gschwendner, & Schmitt, 2009), they are better than observers when using internal information to make evaluations that predict future emotional experiencing (Spain, Eaton, & Funder, 2000). Since the variables of interest in the present study were state self-compassion, state shame, positive affect, negative affect, and attributions for failure, there is good reason to believe that self-report was a valid measurement approach. Indeed, according to attribution theory the 'true' cause of failure is of less interest than subjective perception and expectation, with regard to predicting subsequent thoughts, feelings, and behaviours (Weiner, 2000).

In addition to these issues of potential bias and confounding variance, another way in which the use of self-report data may undermine internal validity is when participants engage in careless responding. This is particularly a concern for a lengthy online survey using an undergraduate student sample, as was the case in the present study. Indeed, because participation in research is required for course credit, it is reasonable to suspect that many participants may not have been motivated to provide accurate, thoughtful responses, but rather to get through the survey as quickly as possible. To mitigate the risk of careless responding, a variety of validity checks were used throughout the study to identify suspect data. Thanks to the large number of participants that were tested, it was possible to set a relatively conservative threshold for inclusion, while still ending up with a large final sample, ensuring adequate power.

A large number of participants ($n = 457$) were excluded as a result of these conservative inclusion criteria. Approximately 13% of participants ($n = 172$) were excluded based on survey duration, Even-Odd Consistency Index, or failure of instructed response items, which is consistent with what would be expected based on previous research (Buchanan & Scofield, 2018; Meade & Craig, 2012). An additional 9% ($n = 119$) were excluded because the failure manipulation was not successful. This is not especially concerning, particularly as 97% of those included reported a high degree of subjective failure. However, a surprisingly large number of participants reported that their answers were not truthful and should be excluded ($n = 166$). There are several possible explanations for this unexpected result. It may be that an unusually large proportion of participants were not engaged in the survey, which would make sense given its length. It

may alternatively be that participants were reluctant to respond truthfully, which may be attributable to the emotionally-distressing content.

Unfortunately, although the use of an online survey allowed for a much larger sample size than could have been obtained through in-person administration, without actually observing participants to see if they were distracted or took breaks, it is impossible to rule out this possible cause of poor data quality. Although the study employed more validity checks than are typically used, this remains a significant limitation. However, it is important to note that online surveys produce better quality data than do other methods of questionnaire self-administration (Rada & Domínguez-Álvarez, 2014). Additionally, the consequence of poor quality data would most likely be increased error variance that would reduce the likelihood of finding support for study hypotheses. Given that the data supported the hypotheses, this is less of a concern. Although it is possible that stronger effects could have been found with better quality data, it is also possible that the use of validity checks in the present study was successful in eliminating problematic responses.

Examination of descriptive statistics for the scales used in the present study suggests that participants were reasonably attentive and responded appropriately. Scale means and standard deviations were generally comparable to those found in other studies (Breines & Chen, 2013; Conway & Johnson, 2014; Krieger et al., 2015; Turner, 2014) and, aside from the measures of depression and positive affect, did not show substantially skewed distributions. It is to be expected that Beck Depression Inventory scores would be skewed, with relatively few participants scoring at the high end of the scale, since a non-clinical sample was used. However, the positive affect measure showed a floor effect, which was not expected. It seems likely that this reflects a genuine lack of positive emotion among

participants at the time of completing the study. Indeed, it was not likely to be experienced as a particularly enjoyable activity.

This highlights another potential issue with self-report measures: constrained variability, which can lead to reduced power to find significant relationships. Although nonparametric bootstrapping was used to generate confidence intervals for inference about significance, and in general the data supported the hypotheses with regard to positive affect, it was observed that positive affect was the only mood variable that was not predicted uniquely by attribution variables in Hypothesis 3. Relatedly, although consistent with previous research using the scale (Breines & Chen, 2013), baseline levels of state self-compassion were found to be fairly high, with over three quarters of the sample falling above the midpoint of the scale. Although there did not appear to be a ceiling effect in the overall sample, the level of negative skew increased from pre- to post-writing in the self-compassion group (-0.19 vs. -0.46), but not in the expressive writing group (-0.25 vs. -0.19). Thus, there may have been some constraint inadvertently put on increases in state self-compassion for the self-compassion group. In addition to being unable to go beyond the limit of the scale (i.e., a ceiling effect), it is possible that participants may have underreported increases in state self-compassion due to reluctance to select an extreme score. These factors may have contributed to the larger magnitude change in state self-compassion observed in the expressive writing group.

### *Use of an Undergraduate Student Sample*

The use of an undergraduate student sample in the present study raises concern about external validity. It is widely appreciated that the use of student samples is convenient, but limits generalizability. However, although the present sample was quite

young and was mostly female, it was also ethnically diverse. Since the sample was drawn

from an introductory psychology class, it is likely that participants had completed between

a few months to a couple of years of university, which would make them somewhat more

educated than the average in the community. However, it is important to note that

according to 2016 Canadian census data, half of the population of Manitoba had completed

a college or university certificate, and only 14% had not completed high school (Statistics

Canada, 2016).

Although it limits generalizability to some extent, there are some benefits to the use

of an undergraduate sample. Not only did it permit a larger sample size than would

otherwise have been feasible, it also provided a sample that was particularly likely to

respond to the failure manipulation. Indeed, it is reasonable to expect that all participants

were very familiar with answering test questions similar to those used in the study, though

the ones used were selected to be particularly challenging. Completing a timed test in an

online setting is not expected to be unusual for these participants, whereas it would likely

be a novel experience for many participants in a community sample. Indeed, the

methodology used would likely introduce many more confounds in a community sample.

For example, whereas poor performance by a student who routinely completes course

quizzes online may be attributed to lack of ability, someone who has been out of school for

decades may be more likely to attribute their failure to discomfort with the test format.

This would affect the likelihood of observing an effect of self-compassion.

On the other hand, there is reason to suspect that the self-compassion manipulation

would have been more effective if a community sample had been used. As mentioned in the

introduction, a recent meta-analysis found that the average effect size for self-compassion

interventions, including the self-compassion writing task, is smaller in studies that used university students, compared to community or clinical samples (Ferrari et al., 2019). This is encouraging, as it suggests that the results of the present study may generalize to other samples, provided an appropriate failure task can be devised.

Although test failure was assumed to be an experience that would be equally relevant for all participants, given that they were all university students, it is also possible this may not have been the case. Tests of math and verbal ability are undoubtedly more relevant to students than to community members in general, but not all students are equally invested in their academic performance. Self-reported GPA and perceived math and verbal ability were examined, which may capture academic striving to some extent, and there were no differences observed between groups, however it may have been beneficial to assess academic motivation more directly. For example, it is possible that the impact of state self-compassion on reactions to test failure may have been moderated by the perceived importance of academic achievement.

### *Lack of a Neutral Control Group*

Whereas previous studies that have employed the self-compassion writing task have compared its effects against both expressive writing and a no-writing control group (E. A. Johnson & O'Brien, 2013; Leary et al., 2007), the present study did not include this latter condition. Neutral control groups are important for determining whether treatment effects actually differ from what would otherwise be observed, given that the passage of time and incidental aspects of a study unrelated to the active intervention have the potential to influence outcome measures. Indeed, when the purpose of a study is to assess the efficacy of a particular treatment, this type of control is crucial.

In the present study, although it was observed that the self-compassion group reported higher post-writing SSC than did the expressive writing group, it does not necessarily follow that the former is an effective means of enhancing SSC. In fact, much of the group difference was due to a decrease in the expressive writing group. Although pre-post assessment of SSC did confirm that it increased in the self-compassion condition, it cannot be guaranteed that this increase was significantly larger than might have occurred in a neutral control condition. There is reason to suspect that this may have been the case, as previous research has found that, although the self-compassion condition resulted in significantly lower levels of negative affect and state shame compared to the expressive writing condition, it did not differ significantly from the neutral control condition (E. A. Johnson & O'Brien, 2013).

However, when considering this limitation, it is important to keep in mind the purpose of the present study, which was not to evaluate the efficacy of self-compassionate writing. Rather, it sought to examine the consequences of state self-compassion. The purpose of the writing tasks was therefore to provide a means of experimentally manipulating this variable. Unlike in an efficacy study, a robust treatment effect in the present study was not of paramount importance. Instead, it is more desirable to maximize variability by obtaining groups with mean SSC scores distributed across the range of values. The main benefit of adding a neutral control group, or any third group with a mean SSC that differed from that of the self-compassion and expressive writing groups, would be to increase the number of levels (i.e., variability) in the independent variable. In the present study, mean pre-writing SSC was significantly above the scale mid-point, and even with the decrease brought about by expressive writing, two-thirds of participants in that group

remained above the mid-point post-writing. Thus, from the perspective of maximally manipulating variability in SSC, rather than a neutral control, it would have been more beneficial to have included a group that induced a large decrease in SSC (e.g., a self-criticism condition).

It is also important to consider that adding a neutral control would have had a considerable cost associated with it: it would have either necessitated recruiting 50% more participants or would have substantially reduced statistical power due to reduced group sample sizes. Accordingly, the overall benefit of including a neutral control group in the present study is not as clear as it would be for an efficacy study. On the other hand, a third condition that induced low post-writing SSC would have been a significant improvement.

### *Magnitude of Effects*

Finally, although significant, many effects were small. For example, despite yielding significant mediation effects, the correlations between state self-compassion and attributions ranged from -0.14 to -0.22, which corresponded to roughly a quarter to a half of a point difference in attribution ratings for every point difference in post-writing state self-compassion. Similarly, attributions accounted for only a few percent of the total variance in failure-induced affect variables. Not surprisingly, then, serial mediation effects were a small fraction of these effects (on the order of one hundredth of a point in the outcome variable for a point difference in the group variable), given that it entails multiplying three sequential effects. Considering that the magnitude of the intervention used to manipulate SSC was not very large, as the tasks were quite simple and brief, it may not be particularly surprising that the downstream effects would be small. Nonetheless, without replication these results should be interpreted with caution.

With regard to Type I error, given the use of 95% confidence intervals, because testing the primary study hypothesis involved a total of 44 effects that were assessed for significance (four for Hypothesis 1, four for Hypothesis 2, four overall effects plus 16 unique effects for Hypothesis 3, and 16 indirect effects for Hypothesis 4), it would be expected that two effects would be significant due to chance. However, as 35 out of the 44 effects were significant and supported the hypotheses, it is highly likely that real effects were detected. Whether these effects would have meaningful, real-world implications, however, is unclear, and requires further research.

**Future Directions for Research**

This study provided experimental evidence supporting causal attributions as a plausible mechanism by which a self-compassionate mindset encourages more positive, adaptive responses to negative life events, such as academic failure. Although supported by a strong theoretical rationale, these results reflect a novel addition to the literature on self-compassion. Accordingly, it is important that the findings be replicated in future research. This is also important for determining whether meaningful, real-world effects could be found. For example, a future study might look at real-life test failure using a classroom-based self-compassion induction prior to receiving test feedback. Such a study might also incorporate follow-up testing in order to see if those who experience academic failure while in a more self-compassionate mindset have better academic outcomes, similar to the approach taken in Attributional Retraining research. Indeed, future research should consider a wider range of outcome variables beyond failure-induced shame and affect.

Research using non-student samples is also needed to establish the generalizability of the results. This will require modification of the methodology, as test failure would not

be as appropriate with a non-student sample. Whether the observed effect of state self-compassion extends to other types of failure will be important for establishing causal attributions as a general mechanism underlying the benefits of self-compassion. For example, it would be interesting to evaluate the effect of a self-compassionate mindset on an interpersonal failure experience, such as social rejection. It would be very important to consider the impact on causal attributions of any such modifications to the failure experience, however, as it should not be taken for granted that the same pattern that is adaptive for test failure (as outlined in Weiner's (1985) attributional model of intrapersonal motivation) is the same pattern that is adaptive for other experiences.

Whether the results could be replicated using clinical samples is of particular interest. The present study found that inducing a self-compassionate mindset through self-compassionate writing was particularly effective for participants reporting depressive symptomatology. Further, the benefits of state self-compassion for promoting more adaptive attributions for failure and less failure-induced state shame and negative affect were not moderated by depression level, revealing the generalizability of study results. Nonetheless, although a large proportion of participants endorsed symptoms of depression, this is not equivalent to a clinically depressed sample, and thus it is important for future research to replicate study findings in such a sample.

Considering the results of the present study in the context of previous research that found a self-compassionate mindset enhanced subsequent cognitive reappraisal for participants diagnosed with major depressive disorder (Diedrich et al., 2016) points to a potential benefit of incorporating state self-compassion inductions into psychotherapy. Future research should examine whether adding a short self-compassion exercise at the

beginning of psychotherapy sessions leads to better outcomes. Although this might appear

very similar to the standard practice in Dialectical Behaviour Therapy of completing a

mindfulness exercise at the beginning of each session (Linehan, 2015), it is important to

keep in mind that only self-compassion meditation and not acceptance-based meditation

enhanced cognitive reappraisal in the Diedrich et al. (2016) study. It would also be

interesting to determine whether there were differential effects depending on the

presenting mental health concerns. For example, self-criticism was found to be particularly

detrimental to treatment outcomes in eating disordered patients (Löw et al., 2020), so

perhaps inducing a more self-compassionate mindset would especially benefit these

patients.

**Conclusions**

The present study is the first to examine causal attributions as a mechanism by

which state self-compassion promotes more positive reactions to failure. Through

randomized assignment to either a self-compassionate writing or expressive writing

condition, state self-compassion was experimentally increased and decreased, respectively.

An across-the-board test failure manipulation was used to evaluate whether group

differences in state self-compassion would lead to less internal, less stable, less global, and

more controllable attributions for failure, and whether these differences in attributions

would in turn lead to less failure-induced distress, with a particular focus on state shame.

The results supported all study hypotheses, providing preliminary evidence that

state self-compassion makes it more likely that failure experiences will be interpreted in

adaptive and less distress-inducing ways. This has important clinical implications, as it

suggests that inducing state self-compassion prior to engaging in cognitive therapy

techniques, such as cognitive reappraisal, may make such techniques easier or more

effective. Further, this study contributes to the unification of research in psychology by

bridging the previously unrelated fields of self-compassion and attribution theory.

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## Appendix A: Self-Compassion Scale

**Sample Items:**

I try to be understanding and patient towards those aspects of my personality I don't like.

When I see aspects of myself that I don't like, I get down on myself.

When I fail at something that's important to me I tend to feel alone in my failure.

When something upsets me I try to keep my emotions in balance.

## Appendix B: Rosenberg Self Esteem Scale

**Sample Items:**

On the whole, I am satisfied with myself.

I feel I do not have much to be proud of.

I feel that I'm a person of worth, at least on an equal plane with others.

**Appendix C: Beck Depression Inventory**

**Sample Items:**

0      I do not feel sad.

1      I feel sad

2      I am sad all the time and I can't snap out of it.

3      I am so sad and unhappy that I can't stand it.


0      I am not particularly discouraged about the future.

1      I feel discouraged about the future.

2      I feel I have nothing to look forward to.

3      I feel the future is hopeless and that things cannot improve.


0      I get as much satisfaction out of things as I used to.

1      I don't enjoy things the way I used to.

2      I don't get real satisfaction out of anything anymore.

3      I am dissatisfied or bored with everything.

**Appendix D: Test of Self-Conscious Affect – 3 (Short Version)**

**Sample Items:**

*You make plans to meet a friend for lunch. At 5 o'clock, you realize you stood your friend up.*

a) You would think: "I'm inconsiderate."                                    ____

b) You would think: "Well, my friend will understand."                     ____

c) You'd think you should make it up to your friend as soon as possible.   ____

d) You would think: "My boss distracted me just before lunch."             ____


*You break something at work and then hide it.*

a) You would think: "This is making me anxious. I need to either fix it or get

   someone else to."                                                        ____

b) You would think about quitting.                                          ____

c) You would think "A lot of things aren't made very well these days."      ____

d) You would think: "It's only an accident."                               ____


*You walk out of an exam thinking you did extremely well. Then you find out you did poorly.*

a) You would think: "Well, it's just a test."                              ____

b) You would think: "The instructor doesn't like me."                      ____

c) You would think: "I should have studied harder."                        ____

d) You would feel stupid.                                                   ____

**Appendix E: Attributional Style Questionnaire**

**Sample Items:**

Try to imagine yourself in the following situation:

1. You have trouble sleeping.

2. You are fired from your job.

3. A friend is very angry with you.

Decide what you feel would be the one main cause for the situation if it happened to you and write it down in the box provided.

1) How likely is it that the cause you gave will continue to affect you?

2) Is the cause you gave something that just affects [this situation], or does it affect other areas of your life?

**Appendix F: State Self-Compassion Scale**

**Sample Items:**

Please rate your agreement with the following statements based on how you are feeling at this moment:

I'm trying to be kind and reassuring to myself.

I'm being hard on myself.

Everyone makes mistakes sometimes.

These types of things seem to happen to me more than to other people.

**Appendix G: State Shame and Guilt Scale**

**Sample Items:**

I feel good about myself.

I want to sink into the floor and disappear.

I feel remorse, regret.

**Appendix H: Experiential Shame Scale**

**Sample Items:**

Physically, I feel:

Normal Heartbeat          1 2 3 4 5 6 7          Rapid Heartbeat

Emotionally, I feel:

Content          1 2 3 4 5 6 7          Distressed

Socially, I feel like:

Hiding          1 2 3 4 5 6 7          Being Sociable

**Appendix I: Affect Scale**

| | | |
|---|---|---|
| ____ happy | ____ down | ____ irritated |
| ____ tense | ____ annoyed | ____ depressed |
| ____ mad | ____ sad | ____ uneasy |
| ____ ashamed | ____ delighted | ____ anxious |
| ____ cheerful | ____ angry | ____ dejected |
| ____ pleased | ____ nervous | ____ guilty |

**Appendix J: Attribution Measurement**

Please answer the following questions about your test performance:

1) My performance was….

      (1)Much worse than I expected,

      (7) Much better than I expected

2) To what do you attribute your test performance? In other words, what is the single most important cause of your performance? (Even if there are multiple reasons why you performed as you did, please provide only the ONE CAUSE that you think is MOST IMPORTANT)

3) Is this cause attributable to something internal to you, or is the cause external to you? In other words, was your test performance primarily caused by something you did, or because of something about you? Or was it caused by something outside of yourself?

      (1) Entirely caused by something external,

      (7) Entirely caused by something about me

4) How stable over time is this cause? In other words, how likely is it to remain unchanged and cause similar events to happen in the future?

      (1) Will not persist in time and cause similar events,

      (7) Will certainly persist in time and cause similar events

5) Is this cause global, or is it specific to only this situation? In other words, does this cause affect only one area of your life, or does it affect multiple areas of your life?

      (1) Affects just one area of my life,

(7) Affects all areas of my life

6) How controllable is this cause (either by you or by someone else)?

(1) Not at all controllable,

(7) Completely controllable

**Appendix K: Shame Recall and Writing Task Instructions/Scripts**

**Shame Recall Script**

Now that you have ensured you will be able to devote your full attention without being interrupted for the next 30 or so minutes, you are ready to proceed with the remainder of the study.

For the first part of this exercise, you will be asked to bring to mind a personal experience in which you felt very ashamed of yourself. Try to bring to mind an experience from your past that you still feel regret about and that you would like to feel better about. For example, you may have done something that was unethical or immoral, like cheating on a test or committing a crime. Or you may have betrayed someone you care about. Or perhaps you lost control of yourself and said or did something that you still feel regret or remorse about. These are just some examples. It is important that you think of something personal for you, something that still causes you to feel deeply ashamed of yourself when you think of it.

Because shame is a very painful emotion that often makes us want to suppress our memories of it and avoid reminders of it, this might be very difficult for you to do. But please do your best. This is a crucial part of the exercise, and the results will be compromised if you do not complete this part of the study.

It is important that you think of a specific personal experience, preferably something that happened fairly recently. It's important that it is a memory that continues to be upsetting for you. Please make sure you think about something that still really bothers you, because you are going to be asked later to use this as the basis for a

therapeutic intervention. This will only be successful if you first bring to mind a deeply

distressing memory.

As you are thinking about this experience, try to imagine it as vividly as possible. Try

to bring to mind as many details about it as you can. The more you can immerse yourself in

the memory, the more benefit you will get from the therapeutic intervention. So, even

though it is painful, try to imagine that you are re-living the experience all over again.

Think about what happened: Who was there? What did you do? How did you feel? What

emotions were you experiencing? Which emotions were the strongest? What sensations

did you experience? What thoughts were going through your head? Were you feeling any

urges? Was there something that you did that you wish you hadn't? Or maybe something

that you didn't do that you wish you had?

Finally, think about what happened next. What was the outcome of the shameful

experience? Did someone say something to you? Did people treat you differently because of

it? Did you feel differently about yourself? Did you talk to others about it, or did you keep it

a secret? Did you react to the experience in a way that made things worse?

Please take as much time as you need to think about this experience of shame.

When you are ready to continue to the next part of the exercise, please click "next".

**Self-Compassion Task**

***Self-Compassion Psychoeducation Script***

As indicated earlier, the purpose of this study is to examine the relationship

between self-compassion, depression, and test performance. We greatly appreciate your

participation. This study involves several different conditions, as we want to compare the

effects of different types of interventions on subsequent test performance. You have been

selected to complete the self-compassion intervention. Because not all participants will be receiving the same treatment, it is very important that you do not share information about this survey with other students who may choose to participate. Your assistance with preserving the integrity of the study is greatly appreciated.

So what is self-compassion? Self-compassion is a concept rooted in Eastern religious and philosophical thought, particularly Zen Buddhism. However, self-compassion does not involve any religious or spiritual aspects, so it is appropriate for people of all backgrounds and religious beliefs. At its core, self-compassion is about treating yourself with kindness and understanding when you are experiencing suffering.

Self-compassion was first defined, by Dr. Kristin Neff, as consisting of three components: self-kindness; an understanding that one is part of a common humanity in which feelings of failure and inadequacy are a normal part of the human experience; and adopting a mindful, dispassionate attitude toward personal shortcomings. Let's look a little more closely at each of these aspects.

Self-kindness is about treating yourself with understanding and gentleness when you are experiencing suffering. Think about how you would comfort a good friend if they were going through a difficult time. You might tell them that you care about them and express this through gestures such as bringing them their favourite food. You might try to cheer them up with a fun activity. Or you might remind them about all the positive qualities they have and how much you admire them. There are many ways that we express kindness to our friends and loved ones, but we often forget to show ourselves this kindness. Self-kindness is about applying these strategies to care for ourselves when we are suffering.

Common humanity is about recognizing that feelings of failure and inadequacy are a normal part of life, something that all humans share at one point or another. When we are suffering, it can often feel like we are alone in our pain, which leads to isolation and makes us feel even worse. Especially when we feel ashamed of something we have done, we often want to hide ourselves, and we feel like we are uniquely bad. Or when experience tragedy, we might feel like everyone else has it better than us, that life is just easier for other people. These thoughts and feelings alienate us from the very people that could bring us comfort, and it makes it harder for us to move past our suffering and to heal. Common humanity is about recognizing that pain, loss, and failure happen to everyone, that this is something that unites and connects us. No matter how bad things seem, there is someone out there who knows exactly how you feel – you are never truly alone.

Finally, mindfulness is about looking at ourselves and our experiences from a balanced, dispassionate perspective. Often, when we are experiencing strong emotions, we have a difficult time disentangling those feelings from our thoughts and behaviours. For example, when we are in a bad mood, we are more likely to misinterpret other people's intentions as being intentionally hurtful. We might snap at someone even though they didn't do anything to us, because we are angry about something that happened earlier. When we feel like we have done something embarrassing, we often think that everyone is staring at us and judging us, even though most people are too pre-occupied with themselves to bother noticing what we are doing! Mindfulness is about taking a step back and observing our emotions without getting caught up in them. It's about noticing these emotions without judgement and without reacting to them. Mindfulness is about paying attention, on purpose, to what is happening without trying to change it. Practicing

mindfulness helps us to be more in control of our behaviour, because it means we don't automatically react based on strong emotions – even though we still feel strong emotions, we are able to take a more balanced view and to make wiser choices about how to respond. In fact, when we learn that we don't have to be totally consumed by our painful emotions, these emotions often lose some of their strength. Even though pain and suffering is an inevitable part of life, the misery that often accompanies it doesn't have to be. When we fixate on our negative emotions we needlessly increase and prolong our suffering. Mindfulness is about accepting what we cannot change, trusting that in time our pain will pass, so that we can put our effort and energy toward activities that improve and enhance our life, rather than dwelling on things that only make us miserable.

So why should you care about self-compassion? Well, a growing body of research evidence has shown that self-compassion helps people to lead healthy and productive lives. Numerous studies have found that high levels of self-compassion are associated with less depression, rumination, anger, and shame. Self-compassion promotes more positive and adaptive responses to difficult life events, increases optimism, happiness, and feelings of self-worth, and improves body image. Importantly, unlike self-esteem, which can help people feel good about themselves at the expense of looking down on other people, self-compassion actually promotes positive relationships by increasing empathy, perspective taking, forgiveness, altruism, agreeableness, and extraversion. And, although some people fear that if they are self-compassionate they will become lazy or end up wallowing in self-pity, research shows that the opposite is true: self-compassion actually increases motivation for self-improvement, helps people to take responsibility for their mistakes, and even increases initiative and curiosity. So why should you care about self-compassion?

Because research suggests it is a great way of improving your emotional wellbeing, your

relationships, and even your performance!

### *Self-Compassion Quiz Questions*

1) What is the primary purpose of this study?

    a. To examine the relationship between self-compassion, depression, and test

        performance.

    b. To examine the role of self-compassion in alleviating depression.

    c. To assess levels of self-compassion and depression in university students.

    d. It was not stated.

2) What are the origins of self-compassion?

    a. Zen Buddhism

    b. Self-Actualisation Theory

    c. Positive Psychology

    d. None of these

3) Which of the following statements about self-compassion are **NOT TRUE**?

    a. Self-compassion is a spiritual way of thinking about the self.

    b. Self-compassion is appropriate for everyone, regardless of religious beliefs.

    c. Self-compassion is about treating yourself with kindness and understanding.

    d. All of these are true.

4) Which of these is **NOT** a component of self-compassion?

    a. Self-esteem

    b. Self-kindness

    c. Common humanity

       d.  Mindfulness

5) What does self-compassion involve?

       a.  Taking a balanced view of a situation and not getting caught up in strong

           emotions.

       b.  Feeling good about yourself by comparing yourself to others.

       c.  Being judgemental of your mistakes to prevent them from happening again.

       d.  Feeling sorry for yourself and avoiding responsibility for failures.

6) What does common humanity mean?

       a.  That pain and feelings of failure and inadequacy are shared by everyone.

       b.  That we are all the same.

       c.  That we should do our best to deal with our problems without bothering

           others.

       d.  That everyone's pain is unique, so nobody can really understand our

           suffering.

7) What are some benefits of self-compassion?

       a.  All of these are benefits of self-compassion.

       b.  Increased empathy and altruism.

       c.  Less depression and rumination.

       d.  Initiative and motivation for self-improvement.

***Orientation to the Self-Compassion Task***

      Now that you know a little bit about self-compassion, it is time to give it a try. This

next part of the study will ask you to engage in an exercise that has been found in previous

research to be helpful for increasing self-compassion.

This part of the study should take about 30 minutes to complete. It is very important that you complete the whole exercise in one sitting, without taking any breaks, and without being distracted by anything. For this reason, we ask that you please find a quiet, private space where you will not be interrupted, prior to continuing on to the exercise.

Click "next" when you are ready to begin.

### Self-Kindness Prompt

Now that you have thought in detail about your shame experience, I would like you to use this experience to practice self-compassionate writing.

First, try to imagine that a good friend has gone through the same shameful experience. Then, using the text box provided, describe what you might say to your friend to help them feel less ashamed of themselves. How might you encourage them to be less self-critical and more kind to themselves? What could you do to comfort them? Try to think of as many different ideas as possible.

Click "next" when you are ready to continue to the next part of the exercise.

### Common Humanity Prompt

Now, still imagining that it was a good friend who had been through the experience, try to make a list in the text box provided of situational factors that could explain why it happened. In other words, what might you say to your friend to show them that they didn't have total control over the outcome, that other external factors contributed to the situation. This doesn't necessarily mean that they aren't at all responsible, but usually there are many different ways to look at a situation. Most events have multiple different causes. Try to think of as many as you can.

Click "next" when you are ready to continue to the next part of the exercise.

Now, thinking about all of the different reasons you provided, try to think about how other people might find themselves in similar situations. That is, how common are those causes? Although the specifics of the situation may not be identical, are there some elements to the situation that are fairly common? Is it likely that other people will experience something similar at some point in their lives? In the text box provided, try to list as many different examples as you can of common situations that are in some way similar to the shameful experience you had. The idea here is to think about how it is common for all people to experience things like you did, even if the exact details aren't the same. Think about how everyone has felt ashamed of themselves, how this is something that is part of being human.

Click "next" when you are ready to continue to the next part of the exercise.

### *Mindfulness Prompt*

For the last part of the exercise, try to adopt a mindful perspective on your experience. That is, try to think about all the emotions that you felt during and after the experience, but without getting caught up in them. Without becoming overwhelmed by them.

To do this, it can be helpful to visualize your emotions as coloured balloons. So, for example, you might visualize anger as a red balloon, shame as a black balloon, sadness as a blue balloon, and so on. Give each emotion that you feel a name and a colour. By labelling your emotions in this way, it can help you get some distance from them, so that you can observe them without becoming overwhelmed by them. You might also visualize particularly strong emotions as larger balloons. Keep in mind that it's not important what you choose to visualize your emotions as, just pick whatever works for you.

Then, whenever you notice an emotion balloon appear, write down the name of the emotion in the text box provided, and then try to visualize the balloon as gently floating away. Try not to worry about why you are feeling that emotion, just notice its presence and then watch it float away. If you find that some emotions aren't going away, that's OK. You don't need to push them away, just let them float there. It may take some emotions longer than others to diminish and float away. Try to be patient with them. Just notice them and then move your attention, gently, to the next emotion that arises.

You may notice that some emotions keep coming back. That's OK, too. Just keep noticing them, writing them down, and then watching them float away. If you get irritated, just notice that, too! Try not to judge the emotions that you are experiencing. Just keep practicing noticing and labelling each emotion as it occurs.

Take a few minutes now to notice and write down your emotions related to the shameful experience you have been thinking about. When you are ready to continue to the next part of the survey, click "next".

**Expressive Writing Task**

***Expressive Writing Psychoeducation Script***

As indicated earlier, the purpose of this study is to examine the relationship between self-compassion, depression, and test performance. We greatly appreciate your participation. This study involves several different conditions, as we want to compare the effects of different types of interventions on subsequent test performance. You have been selected to complete the expressive writing intervention. Because not all participants will be receiving the same treatment, it is very important that you do not share information

about this survey with other students who may choose to participate. Your assistance with preserving the integrity of the study is greatly appreciated.

So what is expressive writing? Expressive writing was first developed by Dr. James Pennebaker and his colleagues as a way of satisfying the innate need we humans have to share our emotional experiences, while at the same time avoiding the problems inherent in face-to-face disclosure, such as embarrassment or lack of availability of someone to confide in. At its core, expressive writing is about helping people to deal with traumatic, stressful, or upsetting events by encouraging emotional expression through writing.

Expressive writing involves really immersing yourself in writing about a distressing event. The purpose is not to create a clear narrative or to try to see the experience from a new perspective. Indeed, when engaging in expressive writing, no concern should be given to things like spelling and grammar. It doesn't even matter if what you are writing is legible or makes any sense to someone else! All that matters is that you really let go and let yourself pour out all of your emotions onto the page. It is important that you find a quiet place to write where you won't be interrupted for at least 15 minutes, so you can really immerse yourself in the writing, and engaging in expressive writing about a particular event multiple times will increase the beneficial effects.

The key to benefitting from expressive writing is to write about your very deepest thoughts and feelings, and include as many details as you can about the upsetting event. It is especially important to write about experiences and details that you have never before told anyone about. Expressive writing is about getting it all out and not holding anything back.

So why should you care about expressive writing? Well, research over more than three decades has shown that expressive writing helps people to lead healthier, more functional lives. Indeed, more than 200 studies have been published on the benefits of expressive writing for physical, psychological, and social functioning. In particular, expressive writing has been found to improve physical health and physiological functioning, and to reduce health-care utilization. Furthermore, this improvement in physical health was found to occur independently of changes in health behaviours per se, suggesting a more direct benefit of expressive writing on physical well-being. Numerous studies, including randomized controlled trials, have also demonstrated significant improvements in psychological well-being and overall functioning following expressive writing. So why should you care about expressive writing? Because research suggests it is a simple way to deal with stressful experiences and to improve your physical and psychological well-being!

***Expressive Writing Quiz Questions***

1) What is the primary purpose of this study?

   a. To examine the relationship between self-compassion, depression, and test performance.

   b. To examine the role of self-compassion in alleviating depression.

   c. To assess levels of self-compassion and depression in university students.

   d. It was not stated.

2) What are some benefits of the expressive writing procedure?

   a. All of these are benefits.

   b. It facilitates emotional expression.

    c.  It reduces shame and embarrassment associated with face-to-face disclosure.

    d.  It provides a way for socially isolated people to express painful emotions.

3) Which of the following statements about expressive writing are NOT TRUE?

    a.  Expressive writing is about putting together a clear and well-written narrative of an upsetting experience.

    b.  Expressive writing can be used when you experience something that is too painful to talk about out loud.

    c.  Expressive writing is about letting go and describing everything that you feel.

    d.  Expressive writing is a therapeutic way to deal with a traumatic event.

4) What does expressive writing involve?

    a.  All of these are part of expressive writing.

    b.  Including all the details you can think of, especially ones you have never shared before.

    c.  Stream-of-consciousness style of writing about an upsetting experience.

    d.  Writing for at least 15 minutes without any distractions or interruptions.

5) What should you do to maximize the effectiveness of expressive writing?

    a.  All of these.

    b.  Write for more than 15 minutes without interruption.

    c.  Practice expressive writing about the same event for several days in a row.

    d.  Write about your very deepest thoughts and feelings.

6) What are some benefits of expressive writing?

    a.  All of these are benefits of expressive writing.

    b.  Improved physical health.

    c.   Increased psychological well-being.

    d.   Improvement in overall functioning.

7) Who could benefit from expressive writing?

    a.   All of these people could benefit from expressive writing.

    b.   Someone who has experienced a traumatic event that they haven't been able to talk about with anyone.

    c.   Someone who finds it difficult to open up to others.

    d.   Someone who has chronic physical health problems.

***Orientation to the Expressive Writing Task***

Now that you know a little bit about expressive writing, it is time to give it a try.

This part of the study should take about 30 minutes to complete. It is very important that you complete the whole exercise in one sitting, without taking any breaks, and without being distracted by anything. For this reason, we ask that you please find a quiet, private space where you will not be interrupted, prior to continuing on to the exercise.

Click "next" when you are ready to begin.

***Expressive Writing Prompt***

Now that you have thought in detail about your shame experience, I would like you to use this experience to practice expressive writing.

In the text box provided, please write about the experience, expressing all the emotions you have about it. These can include the emotions you felt at the time of the event, as well as emotions you feel now thinking about what happened. Try to really let go and explore all of your deepest feelings about the experience.

Don't worry about spelling or grammar or the quality of your writing. All that matters is that you write about what you are feeling. It doesn't have to make sense to anyone else. The point is just to get out all of your emotions, and not hold anything back. Try to identify subtle variations of emotion. For example, you might not only feel anger, you might also feel rage, or resentment, or indignation. Sadness might be a mixture of different emotions, like loss, loneliness, or sorrow. Try to really dig deep into your feelings. Be as detailed and comprehensive as you can. The more fully you express your emotions, the more benefit you will get from this task.

Please take your time completing this exercise. Don't rush, as you will be likely to miss the more subtle or more deeply buried emotions. All emotions are important. Each provides a different piece of information that is important for understanding yourself and your experience. Keeping emotions locked up inside can be detrimental to well-being. Use this exercise as an opportunity to really let go and explore all these feelings that may have previously been hidden.

Try to spend at least five minutes on this task. The longer you take the more benefit you will receive.

When you are ready to continue to the next part of the survey, click "next".

**Appendix L: Failure Manipulation**

**Introduction to Test**

**You're almost done!** There is just one more part to this study. It should only take about 10 to 15 more minutes to complete.

THANK YOU for devoting this time to our study. We realize it is very long and difficult to do without any breaks, and we *GREATLY* appreciate your effort!!!

This last part of the study involves completing a test of mathematical and verbal reasoning. We want to see whether the therapeutic intervention you just completed will affect your performance on this test. For this reason, it is *VERY IMPORTANT* that you **DO NOT TAKE A BREAK** prior to completing the test. Thank you for your cooperation!

You will have **FIVE minutes** to answer as many questions as you can. Test questions are similar to those found on the SAT, which is a standardized test given to high school students in the United States, and is used as a determinant for admission to college. Some questions are multiple choice, and others will require you to input your answer into a text box.

Before you complete the test, in order to help us analyze the results and ensure that our participant groups are equivalent, we would like you to first provide us with an estimate of your math and verbal abilities.

To do this, please indicate the approximate percentile that you think you typically perform at. In other words, what percentage of people your age do you think typically perform WORSE than you?

**Test Questions**

1) The denominator of a fraction is 4 less than the numerator. If the denominator is decreased by 2 and the numerator is increased by 1, then the numerator is eight times the denominator. Find the numerator of the fraction.

2) Find a number whose 20% is 35% of 144.

3) Find the distance of the mid-point of the line joining L(5,1) and M(-1,-1) from the point O(2,0).

4) If a/(a+b) = 17/23, then fill in the blank (a+b)/(a-b) = ___/11

5) 5 men can complete a work in 2 days, 4 women can complete it in 3 days and 5 children can complete it in 3 days. In how many days can 1 man, 1 woman and 1 child complete it working together?

6) Find the value of k for which the equations 4x+5y = 3 and kx + 15y = 9 have infinitely many solutions

7) How many elements does the power set of A contain if A = {x,y}?

8) The radius of the base of a solid cylinder is x cm and its height is 3 cm. It is re-cast into a cone of the same radius. Find the height of the cone in cm.

9) Cards numbered 1 through 10 are placed in an urn. One ticket is drawn at random. In how many chances out of 20 shall the card have a prime number written on it?

10) The average of 6 observations is 12. When the seventh observation is added the average decreases by 1. Find the seventh observation.

11) $y = x^2 + 3x - 7$ and $y - 5x + 8 = 0$

How many solutions are there to the system of equations above?

a. There are exactly 4 solutions.

b. There are exactly 3 solutions.

c. There are exactly 2 solutions.

d. There is exactly 1 solution.

e. There are no solutions.

12) What are the solutions of the following quadratic equation: $4x^2 - 8x - 12 = 0$ ?

a. $x = -1$ and $x = -3$

b. $x = -1$ and $x = 3$

c. $x = 1$ and $x = -3$

d. $x = 1$ and $x = 3$

e. None of the above.

13) Which of the following is an example of a function whose graph in the xy-plane has

no x-intercepts?

a. A linear function whose rate of change is not zero

b. A quadratic function with real zeros

c. A quadratic function with no real zeros

d. A cubic polynomial with at least one real zero

e. None of the above

14) If you join all the vertices of a heptagon, how many quadrilaterals will you get?

a. 72

b. 36

c. 25

d. 35

e. 120

15) How many 5 digit numbers are there with distinct digits?

    a. 144

    b. 27216
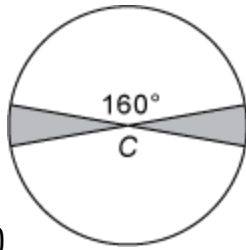
    c. 11486

    d. 6432

    e. 720

16) A polygon has 20 diagonals. How many sides does it have?

    a. 12

    b. 11

    c. 10

    d. 9

    e. 8

17) Find the number of words formed by permuting all the letters of the word

    INDEPENDENCE such that the E's do not come together.

    a. 24300

    b. 1632960

    c. 1663200

    d. 30240

    e. 12530

18)

The figure above shows a circle with centre $C$ and radius 6. What is the sum of the areas of the two shaded regions?

    a. $7.5\pi$

    b. $6\pi$

    c. $4.5\pi$

    d. $4\pi$

    e. $3\pi$

19) In an essay competition the odds against competitors A, B, C and D are 2:1, 3:1, 4:1 and 5:1 respectively. Find the probability that one of them wins the competition.

    a. 11/120

    b. 114/120

    c. 127/150

    d. 2/17

    e. 135/157

20) If $a^2 + b^2 = z$ and $ab = y$, which of the following is equivalent to $4z + 8y$ ?

    a. $(a + 2b)^2$

    b. $(2a + 2b)^2$

    c. $(4a + 4b)^2$

    d. $(4a + 8b)^2$

  e.  None of the above

21) Choose the best synonym for: COGENT

  a.  Tentative

  b.  Forced

  c.  Convincing

  d.  Truculent

  e.  Brusque

22) Choose the best synonym for: EGREGIOUS

  a.  obnoxious

  b.  toxic

  c.  social

  d.  flagrant

  e.  noxious

23) Choose the best synonym for: ASSIDUOUS

  a.  painstaking

  b.  diligent

  c.  pedantic

  d.  cursory

  e.  laborious

24) Choose the best synonym for: CONVIVIAL

  a.  terse

  b.  laconic

  c.  excited

    d. genial

    e. happy

25) Choose the best <u>synonym</u> for: OBSTINATE

    a. flaky

    b. perturbed

    c. passionate

    d. dilettantish

    e. stubborn

26) Choose the best <u>antonym</u> for: SURREPTITIOUS

    a. venerable

    b. tricky

    c. clandestine

    d. hazy

    e. artless

27) Choose the best <u>antonym</u> for: TURBID

    a. transparent

    b. bemused

    c. muddled

    d. auspicious

    e. dark

28) Choose the best <u>antonym</u> for: ASCETIC

    a. lachrymose

    b. erudite

    c.  acclaimed

    d.  prodigal

    e.  disciplined

29) Choose the best <u>antonym</u> for: INGENUOUS

    a.  shady

    b.  bucolic

    c.  candid

    d.  frank

    e.  honest

30) Choose the best <u>antonym</u> for: CAPRICIOUS

    a.  steadfast

    b.  pedantic

    c.  idiosyncratic

    d.  demure

    e.  capable

31) Although it is necessary to carry a relatively large number of provisions when traversing the Australian Outback, it is _____ that you keep your pack from becoming too _____.

    a.  crucial...ponderous

    b.  mandatory...insulated

    c.  helpful...elongated

    d.  imperative...compact

    e.  important...convoluted

32) He vowed to embrace a newfound _____ once the trial began; nonetheless the

accused resorted to his typical manner of _____ as soon as he took the stand.

    a. ingenuousness...naïveté

    b. mendaciousness...deceitfulness

    c. passion...exuberance

    d. candor...duplicity

    e. residence...decrepitude

33) Mr. Plainview is a man of secrecy. He deals with the mob and other _____

organizations, and regularly participates in their _____ activities.

    a. anarchistic...fraudulent

    b. amiable...illegitimate

    c. disdainful...scrupulous

    d. illegal...exhilarating

    e. clandestine...unlawful

34) The orator's speech was too _____; it would have been more succinct if she avoided

discussing _____ subjects.

    a. complicated...germane

    b. prolix...tangential

    c. resplendent...pertinent

    d. convoluted...complex

    e. terse...florid

35) Toward the end of her days, Jennings longed to experience something _____, but she

had already done so much in her life that nothing seemed to move or excite her.

    a.  banal

    b.  final

    c.  novel

    d.  unbelievable

    e.  fantastic

36) Being the _____ host that she was, Anika made sure to approach each lodger with

    _____ disposition.

    a.  convivial...an affable

    b.  churlish...a reputable

    c.  engaging...a specious

    d.  wicked...benign

    e.  amiable...a scrupulous

37) Although Maria usually dresses in _____ garments, she was feeling inspired and

    decided to wear an _____ outfit to the art opening.

    a.  cheap...expensive

    b.  frilly...elaborate

    c.  lousy...great

    d.  plain...extraordinary

    e.  decorative...ugly

38) Although the revision process can be _____, it is important to make sure your work

    gets _____ for even the most insignificant errors.

    a.  painful...looked at

    b.  tedious...proofread

    c.  annoying...examined

    d.  careful...authored

    e.  discerning...edited

39) Though electric refrigerators have become _____ during recent years, in many places foods are still preserved using _____.

    b.  commonplace...machines

    c.  prevalent...electronics

    d.  feasible...ice

    e.  ubiquitous...cellars

    f.  prominent...freezers

40) Due to substantial fluctuations in altitudinal and barometric pressure readings, the pilot lost her bearing and rapidly became _____; after a final evaluation of the situation, she deemed it _____ to start heading for the nearest viable runway.

    a.  shaky...important

    b.  anxious...fair

    c.  intoxicated...wise

    d.  disoriented...prudent

    e.  bewildered...safe

**Appendix M: Ethics Approval Certificate**

**UNIVERSITY OF MANITOBA**
Research Ethics
and Compliance

Human Ethics
208-194 Dafoe Road
Winnipeg, MB
Canada R3T 2N2
Phone +204-474-7122
E-mail: humanethics@umanitoba.ca

**PROTOCOL APPROVAL**

**TO:** **Tara Conway**
Principal Investigator

**(Advisor: Ed Johnson)**

**FROM:** **Kelley Main, Chair**
Psychology/Sociology Research Ethics Board (PSREB)

**Re:** **Protocol #P2018:053 (HS21843)**
**Causal attributions for shame and the mitigating role of self-compassion**

**Effective: May 9, 2018** **Expiry: May 9, 2019**

Psychology/Sociology Research Ethics Board (PSREB) has reviewed and approved the above research. PSREB is constituted and operates in accordance with the current *Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans*.

This approval is subject to the following conditions:
1. Approval is granted only for the research and purposes described in the application.
2. Any modification to the research must be submitted to PSREB for approval before implementation.
3. Any deviations to the research or adverse events must be submitted to PSREB as soon as possible.
4. This approval is valid for one year only and a Renewal Request must be submitted and approved by the above expiry date.
5. A Study Closure form must be submitted to PSREB when the research is complete or terminated.
6. The University of Manitoba may request to review research documentation from this project to demonstrate compliance with this approved protocol and the University of Manitoba *Ethics of Research Involving Humans*.

**Funded Protocols:**
- Please mail/e-mail a copy of this Approval, identifying the related UM Project Number, to the Research Grants Officer in ORS.

Research Ethics and Compliance is a part of the Office of the Vice-President (Research and International)
umanitoba.ca/research

**Appendix N: Recruitment Materials**

**Study Advertisement on Psychology Participation Pool Website**

The Relationship Between Emotional Well-Being and Test Performance

Principal Investigator: Tara Conway, Ph.D. Candidate, Clinical Psychology

Research Supervisor:  Dr. Johnson, Associate Professor, Psychology

Credit:  This online study is worth three (3) credits.

The purpose of this study is to examine whether emotional well-being predicts performance on a test of mathematical and verbal reasoning. *The study may be completed online any time within 48 hours of signing up. Once you begin the survey, however, you will have to complete it without interruption, as you will not be able to return to the survey at a later time.* This online survey should take approximately one hour to complete.

If you choose to register for this study, you may use the link provided to complete the *online* survey.

**Welcome Message for Online Survey**

Thank you for agreeing to participate in our study *The Relationship Between Emotional Well-Being and Test Performance.* You will receive three (3) credits for your participation.

The survey should take approximately an hour to complete. It is VERY IMPORTANT that you complete all portions of the survey in one sitting (i.e. with no breaks). **Please ensure that you are in a quiet place where you will have a full hour available to complete the survey without being disturbed, prior to beginning this survey.**

Thank you for your participation!

**Appendix O: Debriefing and Validity Questions**

*Almost done!! We just have a few more questions…*

Today you were asked to complete a variety of questionnaires, a math/verbal test, and to engage in therapeutic writing about a personal experience of shame. An important part of the study involved providing you with feedback on your test performance. However, *this feedback was false.* We intentionally provided you with feedback that you had performed poorly, because we were interested in measuring the attributions people made for an academic failure, to see whether the therapeutic writing conditions differed in their impact on those attributions. Please rest assured that the feedback you were given *is not an actual indication of your math or verbal ability.*

As the final part of this survey, we have a few questions about the responses you provided today. This information is crucial for us to ensure that we only use valid data in our study. Please note that your answers to the following questions will in no way affect the credits you receive for your participation.

It was necessary for you to actually *believe* that you had performed poorly, relative to others, in order for us to obtain valid data. Being completely honest, did you believe that the feedback you received on your test performance was accurate? (Yes/No)

Did you in any way suspect the true purpose of this study? (Yes/No)

Were you able to recall an actual personal experience of shame? (Yes/No)

Did you put effort into the therapeutic writing task? (Yes/No)

Did you do your best to answer as many math/verbal test questions correctly as you could? (Yes/No)

Did you complete the entire study without any interruption? (Yes/No)

Were you distracted at any point while completing the survey? (Yes/No)

It is also crucial that we only include participant responses that are accurate and truthful.

**In your honest opinion, should we use your data?** (Yes, use my data./No, don't use my data.)

In order to ensure that you receive participant pool credits, the following information is required. Following completion of the study this information will be deleted.

What is the name you use to register with the University of Manitoba?

What is your Psychology Sign-Up/Sona System user ID?

This study is being conducted as part of a doctoral dissertation. Would you like to receive a copy of the final report when it is completed (roughly summer of 2019)? (Yes/No)

(If respond "Yes": Please provide your email address that can be used to send you the final report.)

Thank you very much for your participation in this study!

We apologize for the use of deception in this study, which was necessary to obtain a valid measure of attributions for failure. You may be experiencing some distressing emotions as a result of your participation. We encourage you to save the contact information provided below for free local counselling, including crisis services, and to make use of these services if you continue to experience distress.

Because deception as to the actual purpose of the study is necessary in order to obtain

valid responses, it is very important that potential participants not be informed of this

deception. Accordingly, ***please do not share any information about this study*** with other

students who may choose to participate in the study.

If you have any questions or concerns about your participation in this study, please let the

experimenter know or contact the primary investigator (Tara Conway).

Thank you again for your participation!

**Local Free Counselling Resources available to you:**

Mobile Crisis Service & Crisis Response Centre

Mobile Crisis Service offers support for individuals experiencing a mental health or

psychosocial crisis. They provide services over the phone as well as a mobile service that

will come to your location. The Crisis Response Centre offers walk-in assessment and

treatment for those in mental crisis, along with referrals to other mental health services,

and is home to the Mobile Crisis Service.

Location: 817 Bannatyne Avenue, at the corner of Tecumseh

Phone: 204-940-1781

Hours: Open 24 hours a day, 7 days a week

Website: http://www.wrha.mb.ca/wave/2013/05/crisis-response-centre.php

<u>University of Manitoba Student Counselling and Career Centre</u>

Offers individual and group counselling, as well as **brief emergency triage appointments**

for students experiencing very high distress (available throughout the day).

Location: 474 University Centre, Fort Garry Campus

Phone: (204) 474-8592

Hours: Monday to Friday 8:30 am - 4:30 pm

Website: http://umanitoba.ca/student/counselling/


<u>University of Manitoba Psychological Service Centre</u>

Does NOT offer crisis services, but provides individual and family therapy, as well as

assessment services. In order to obtain services, you must contact the PSC to be put on

their waitlist.

Location: 161 Dafoe Building, Fort Garry Campus

Phone: (204) 474-9222

Spring/Summer Hours: Monday to Friday 9:00 am – 4:30 pm (except Wednesday open

until 8pm)

Website: http://umanitoba.ca/faculties/arts/departments/psych_services/


Klinic 24 Hour Crisis Line – (204) 786-8686

**Appendix P: Consent Form**



**Information and Consent Form**

**Study Name:** *The Relationship Between Emotional Well-Being and Test Performance*

**Principal Investigator**: *Tara Conway, Ph.D. Candidate, Clinical Psychology*

**Study Coordinator**: *Dr. Ed Johnson, Associate Professor, Psychology*

**Sponsor:** *None*

This consent form, a copy of which you may save or print for your records and reference at this time (it will not be available later on in the survey, but you may request a copy from the principal investigator at any time), is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to contact us. Please take the time to read this carefully and to understand any accompanying information.

The purpose of this study is to examine whether emotional well-being predicts performance on a test of mathematical and verbal reasoning. Participation in this study will require you to complete a series of self-report questionnaires (measuring variables such as self-compassion, self-esteem, depression, attributional style, and shame-proneness), a therapeutic writing task, and a timed test of mathematical and verbal reasoning. Demographic information (age, sex, English language experience, and ethnicity) will also be

collected. Some parts of this study may cause you to feel emotional distress. We expect that

this distress will subside following completion of the survey. However, if this distress is

very severe and/or does not go away, we encourage you to make use of the local crisis

services that are listed at the end of the survey and at the bottom of this consent form.

This is an online study that we estimate should take between one and one and a half

hours to complete. **Because we are interested in the effect of a therapeutic**

**intervention on mood and subsequent test performance, participants <u>MUST</u>**

**<u>complete the entire study in one sitting</u> (i.e. with no breaks or interruptions).**

Participants will receive **three (3)** research participation credits for completing the study.

Your participation in this study is completely voluntary. **Should you choose to**

**withdraw from the study at any point, you may do so without any penalty**. This means

that should you choose to withdraw at any point from the study you will still receive three

research participation credits.

All of the answers you provide will be kept confidential. Any information you

provide will be stored on the encrypted and password protected site, Qualtrics, and on

password-protected computers. Only the PI and study coordinator will have access to your

data. Once all the data are collected and analyzed for this project, we plan to share this

information with the research community in a presentation open to the community and in

writing as a doctoral dissertation. When presenting the results of this research, we will in

no way focus on individual participants' responses and will instead present the findings in

summary form. If you would like to receive a copy of the results of this study, please follow

the link at the end of the survey. This will redirect you to a site where you can provide your

contact information. You only need to provide this information if you wish to receive a copy

of the results; you are not required to provide this information to receive credit for your

participation.

Clicking "I agree" at the bottom of this page indicates that you have understood to

your satisfaction the information regarding participation in the research project and agree

to participate as a subject. In no way does this waive your legal rights nor release the

researchers, sponsors, or involved institutions from their legal and professional

responsibilities. **You are free to withdraw from the study at any time, without**

**prejudice or consequence. If you wish to withdraw, simply close the browser window**

**at any time**. If you do choose to withdraw from this study, we will destroy any data that

you have provided and not include it in the analysis. Your continued participation should

be as informed as your initial consent, so you should feel free to ask for clarification of new

information throughout your participation.

The University of Manitoba may look at your research records to see that the

research is being done in a safe and proper way.

This research has been approved by the Psychology/Sociology Research Ethics

Board. If you have any concerns or complaints about this project you may contact the

Human Ethics Coordinator at 204-474-7122, or by e-mail at humanethics@umanitoba.ca.

If you have read the information presented in this form and do not have any

questions about this study, please click "I agree" when you are ready to begin. You should

only click "I agree" if you agree to participate with full knowledge of the study presented to

you in this information and consent form and of your own free will. We suggest that you be

in a quiet place, when you have approximately **90 minutes** free, and where you can

complete this survey on your own and without interruption. We would appreciate it if you

could turn off all instant messaging programs, as well as any other programs, currently

running on your computer before continuing. Thank you for your consideration.

We strongly encourage you to save or print a copy of this consent form now for your

records, as it will not be available later. However, you may request a copy at any time from

the PI.


**Local Free Counselling Resources available to you:**

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psychosocial crisis. They provide services over the phone as well as a mobile service that

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