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RELATION OF EMOTION REGULATION DIFFICULTIES, SELF-COMPASSION, AND POSTTRAUMATIC STRESS SYMPTOMS

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RELATION OF EMOTION REGULATION DIFFICULTIES, SELF-COMPASSION, AND POSTTRAUMATIC STRESS SYMPTOMS

By

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B.A., California State University, Monterey Bay, 2017

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The members of the Committee appointed to examine
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ABSTRACT

Exposure to potentially traumatic events is associated with high emotion regulation difficulties, development of posttraumatic stress disorder, and elevated healthcare expenditures. Emotion regulation difficulties are related to worse clinical and sub-clinical posttraumatic stress symptomology relative to use of effective emotion regulation strategies. Yet, significant variance in posttraumatic stress symptom severity remains unexplained after accounting for emotion regulation difficulties, suggesting identification of additional explanatory variables is warranted. Considerable research suggests high (vs. low) self-compassion, which entails extending kindness to oneself, is related to more effective emotion regulation and low posttraumatic stress symptom severity. As such, self-compassion may be one variable that accounts for variance in the relation of posttraumatic stress symptomology above and beyond emotion regulation. However, no research has specified the relation of posttraumatic stress symptom severity, emotion regulation difficulties, and self-compassion in a singular statistical model. Accordingly, the present study examined these relations among a sample of college students exposed to at least one potentially traumatic event ($N = 145$; $M_{age} = 19.68$, $SD_{age} = 2.77$; Range = 18–23). Results suggested emotion regulation difficulties were significantly and inversely related to self-compassion and positively related to posttraumatic stress symptom severity. Self-compassion was inversely related to posttraumatic stress symptom severity. However, self-compassion did not account for a significant amount of variance of posttraumatic stress symptom severity above and beyond that accounted for by emotion regulation difficulties. Results are discussed in terms of additional variables that may modify the ER-SC relation in PTE exposed individuals and the implementation of experimental and longitudinal designs to improve upon present research.

Thesis Advisor: _____

Dr. Christopher R. Berghoff

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Symptoms

Potentially traumatic events (PTEs) are upsetting or life-threatening experiences that include direct exposure to, or witness of, an event that may lead to psychiatric symptoms such as irritable behavior, hypervigilance, and sleep problems (American Psychiatric Association [APA], 2013). Indeed, such exposure can lead to clinically relevant problems in the form of posttraumatic stress disorder (PTSD), a psychiatric diagnosis defined by the presence of symptoms lasting 30 days or more following exposure to a PTE that are demarcated into four clusters: re-experiencing (e.g., intrusive memories, nightmares); avoidance (e.g., thoughts, situations); negative alterations in cognition and mood (e.g., guilt, feeling cut off from others); and hyperarousal (e.g., hypervigilance, heightened startle reaction; APA, 2013). Prevalence rates of PTE exposure and resulting traumatic stress symptoms are climbing (Kennell & Associates, 2013). In the U.S., up to 70% of adults report exposure to at least one PTE during their lifetime, many of whom report exposure to more than one event (Benjet et al., 2015). College students also experience high rates of PTE exposure. Approximately 23% of college students report exposure to a PTE by the end of their freshmen year (Reed et al., 2011), with many reporting multiple PTE exposures (Banyard & Cantor, 2004), which seems to lead to rapid development of trauma related psychopathology. Indeed, college students report higher rates of symptoms consistent with diagnosable PTSD relative to the general population (Boyraz et al., 2016; Kilpatrick et al., 2013; Reed et al., 2011).

PTE exposure is associated with several community- and individual-level negative outcomes. Generally, PTE exposure is related to poor physical health and high healthcare expenditures, with estimates suggesting more than $4 billion are spent each year on healthcare

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costs related to the experience of PTEs (Breslau et al., 1998; Brunellos et al., 2001; Kessler & Frank, 1997). Within college student populations, PTE exposure has been linked to various forms of ineffective behavior (e.g., impulsive behaviors; poor attendance), as well as poor academic outcomes including poor interpersonal functioning and high drop-out rates (Baker et al., 2016; Boyraz et al., 2013; Kennell & Associates, 2013). Consequentially, the study of PTE exposure within the college student population appears particularly important to study.

Though causes of the high frequency PTE exposure among college students are unclear, it may be the result of behavioral expressions of underdeveloped brain structure. For example, research suggests college-aged individuals experience pruning of the prefrontal and parietal cortices, which, when complete, attenuates the impulsive behavior and poor planning with which these brain structures are associated (Romer, 2010). These qualities of an underdeveloped brain may lead to high rates of risky decisions in college student populations, such as excessive substance use that may, in turn, exacerbate existing impulsivity and ineffective decision making, thus leading to rates of high PTE exposure (Arterberry et al., 2019; Elhai & Simons, 2007; Radomski et al., 2016).

Such factors may also underlie the maintenance of psychiatric problems following exposure to PTEs. For example, substance use appears to function as an avoidant coping mechanism that can exasperate problems following exposure to PTEs, suggesting a bi-directional relation to which college students may be particularly susceptible, given higher rates of avoidance behavior reported by students relative to other populations (Arterberry et al., 2019). Yet, to date, direct methods of modifying brain structure have not been identified, limiting the clinical utility of neurobiological investigations. Accordingly, the present study aimed to identify related, though more malleable, factors associated with posttraumatic stress (PTS) among college

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students when PTE exposure does occur. One such characteristic that has received attention from researchers is emotion regulation (ER) difficulties.

ER difficulties are defined herein as the inability to maintain present moment awareness, understanding, and acceptance of unwanted private experiences, and engaging in impulsive behaviors that are incongruent with one's valued aims and incompatible with current environmental contingencies (Gratz & Roemer, 2004). Thus, ER difficulties may be one behavioral expression of neurobiological correlates of impulsive and disorganized behavior underlying PTE exposure and subsequent PTS symptoms. Though prospective research is lacking, high ER difficulties appear associated with, and may be a potential risk factor for, risky behavior such as substance use and risky sexual behavior (Weiss et al., 2015). This association appears strong within college student populations (Barker et al., 2015; Gratz et al., 2015, 2016; Rosenstein et al., 2018; Soler et al., 2016; Tull et al., 2011a) and may be once cause of the elevated likelihood of experiencing a PTE reported for college students (Reed et al., 2009). Moreover, ER difficulties are related to high PTS symptom severity and the presence of a PTSD diagnosis following exposure to PTEs (Tull et al., 2007a). Individuals who report high PTS also indicate problems in key aspects of ER, including difficulty deploying contextually sensitive ER strategies (Tull et al., 2020), likely due to low present moment awareness and overreliance on avoidant coping strategies (Tull et al., 2007a), which may lead to difficulty engaging in goal-directed behavior (Shepherd & Wild, 2014; Tull et al., 2007a). In sum, ER difficulties appear to contribute to PTS symptom severity as both a risk factor for experiencing a PTE and as an exacerbating factor in the development of more severe PTS symptoms.

Though evidence suggests a relation of high ER difficulties and elevated PTS symptom severity following PTE exposure, a considerable amount of variance in PTS symptom severity

remains unexplained after accounting for this association (e.g., Bonn-Miller et al., 2011; Kashdan et al., 2006; Tull et al., 2007a; Tull et al., 2012; Tull et al., 2016; Vujanovic et al., 2010). This is problematic given the numerous negative outcomes and unfavorable impacts on college student quality of life. Delineation of variables that may further account for PTS symptom severity that follows PTE exposure may clarify malleable factors that mitigate PTS development and associated negative outcomes. As such, the present study aimed to identify a construct that accounted for symptom severity variance following PTE exposure after accounting for ER difficulties. As discussed in detail below, it was posited that self-compassion (SC) may be one such construct.

SC is defined as extending kindness toward oneself during times of perceived failure (Neff, 2003a). Low SC appears detrimental for individuals who have experienced PTE exposure. For instance, low (vs. high) SC is associated with higher overall PTS symptom severity (Kearney et al., 2011), as well as overreliance on avoidant coping strategies (Thompson & Waltz, 2008), one maintaining factor of PTSD (Tull et al., 2007a). Low SC is also related to high self-reported guilt (Davis et al., 1996), suggesting SC may be a risk factor for individuals with PTS. For instance, individuals exposed to a PTE often develop negative cognitive patterns regarding themselves and the world (e.g., "The world is a dangerous place"; "I am a bad person"; the event was "My fault"), which may exacerbate feelings of guilt and self-blame. High SC may counteract feelings of guilt that perpetuate PTS symptom severity. Though research is limited, evidence suggests younger individuals report lower levels of SC relative to the general population (e.g., Hwang et al., 2016). This further suggests college students are a population whereby understanding the relation of PTS, ER, and SC is warranted.

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The discussion of literature below will demonstrate that ER processes, specifically difficulties in the identification and deployment of ER-oriented behavioral strategies, are related to broad-based behavioral functioning, including PTS symptom severity. Yet, as introduced above and discussed below, even after accounting for ER difficulties, a considerable amount of variance in PTS symptom severity following PTE exposure remains unexplained. As such, SC will be identified as a variable likely to account for a significant amount of variance associated with ER difficulties and PTE exposure related distress. This discussion leads to the introduction of the present study, which aimed to a) clarify the relation of SC, ER, and PTS symptom severity and b) identify the PTS symptom severity variance accounted for by SC over and above ER difficulties in a sample of college students.

Posttraumatic Stress

Research suggests up to 70% of U.S. adults will be exposed to a PTE at least once, with approximately 30% exposed to four or more, during their lifetime (Benjet et al., 2015). The prevalence rates of PTE exposure, however, appear to vary among different populations (i.e., combat veterans, first responders, college students, general population). For example, combat veterans and first responders experience greater exposure to PTE's given the high-risk nature of their positions (e.g., repeated exposure; Cameron et al., 2019; Torchalla & Strehlau, 2017) relative to the general population. Notably, college students report especially high rates of PTE exposure, which includes the unexpected death of a loved one (i.e., illness, suicide, murder), physical or sexual assault, and life-threatening accidents (Elhai & Simons, 2007). Approximately 23% of undergraduate students report at least one PTE exposure by the completion of their freshmen year (Read et al., 2011) and among *all* college students, approximately 70% report PTE exposure (Cusack et al., 2018). It appears PTE exposure is occurring at high rates during the

formative years of college. Additionally, many students have been exposed to a PTE prior to beginning college, potentially leading to heightened vulnerability once in college (Finkelhor et al., 2016).

Of individuals exposed to a lifetime PTE, approximately 8.3% will experience symptoms of PTSD (Kilpatrick et al., 2013). This rate is higher among college students. Approximately 12% of college students exposed to a PTE report symptomology consistent with a PTSD diagnosis (Boyraz et al., 2016). The presence of a PTSD diagnosis, as well as sub-threshold PTS symptoms that follow PTE exposure, is associated with poor long- and short-term outcomes at the individual level. Such outcomes include disrupted occupational, social, and physical health problems, which likely contribute to reported low quality of life (Holowka & Marx, 2012; King et al., 2006; Kleykamp, 2013; Ophuis et al., 2018; Schnurr & Lunney, 2016; Vogt et al., 2016). Individuals with PTSD are less productive at work (Breslau, 2001; Breslau et al., 2004; Wald & Taylor, 2009) and miss more workdays than individuals without a psychiatric diagnosis (13.8 vs. 1.8 days per month, respectively; Breslau et al., 2004). They are also more likely to interpret social interactions as negative relative to individuals without PTSD, which, in turn, is related to poor interpersonal functioning and satisfaction (Kern et al., 2018). Presence of PTSD is also associated with high rates of migraine headaches and cardiovascular and metabolic disorders, among others (Boscarino, 2008; El-Gabalawy et al., 2018; Ryder et al., 2018; Vasterling et al., 2008). Likewise, individuals with subthreshold PTS demonstrate significantly greater work-related errors (Baek et al., 2017), difficulties in family and peer relationships (Pietrzak et al., 2009), and experience increased risk of diabetes and the presence of pain, migraine headaches, and other physical health ailments (El-Gabalawy et al., 2018; Pacella et al., 2013) relative to individuals who report no PTS symptomology.

College students exposed to PTEs experience considerable adverse effects to their mental, physical, and academic functioning. For example, PTE exposure is related to high depression and anxiety symptoms among college students (Cusack et al., 2018), especially among those who experience interpersonal traumatic events (Overstreet et al., 2017). Traumatic experiences are also strongly correlated with physical health symptoms among undergraduate students (Goldsmith et al., 2012). For example, trauma experienced during childhood (i.e., physical, sexual, emotional, neglect) is significantly and positively related to the experience of physical health symptoms during the college years (Heshmati et al., 2021). Among college students, such physical health problems include headaches, gastrointestinal symptoms, sinus infections, and musculoskeletal pain (Boyraz & Waits, 2018). PTE exposure (versus no exposure) among college students is also related to higher dropout rates (Baker et al., 2016; Boyraz et al., 2013). Baker and colleagues (2016) reported that female students who experience two or more events of sexual violence are at greater risk for dropping out of college after four years relative to female students who reported no sexual violence (56% vs. 85% remained enrolled, respectively). Moreover, students with a PTSD diagnosis are significantly less likely to finish college than students without PTSD even after accounting for cognitive ability, family psychiatric history, and comorbid psychiatric symptoms (Vilaplana-Pérez, et al., 2020). As such, PTE exposure is related to broad negative outcomes for college students.

Collectively, annual societal costs associated with PTE exposure are significant. Epidemiological research suggests the US economy loses approximately $4.4B annually due to PTSD related work impairments, such as missed workdays and decreased efficiency while at work (Breslau et al., 1998; Brunellos et al., 2001; Kessler & Frank, 1997). The Department of Defense expended approximately $300 million on healthcare services for individuals diagnosed

with PTSD in 2012 (Kennell & Associates, 2013). Furthermore, the US economic burden of sexual assault-related trauma is estimated to be approximately $133,000 total per victim, or $3.3 trillion population-wide, which includes medical costs, victim property damage, criminal justice activities, and decreased work productivity (Peterson et al., 2017). PTS related costs appear to be increasing in academic settings as well. According to the Center for Collegiate Mental Health (CCMH, 2019), university counseling centers have experienced a 30–40% annual increase in the number of students seeking mental health services between 2009 and 2015. Though anxiety- and depression-related symptoms are the most prevalent psychiatric concerns reported by students (62.7% and 49.3%, respectively; CCMH, 2019), such problems may be exacerbated by exposure to PTEs (Cusack et al., 2018). As such, PTE exposure and resulting PTS symptoms is related to considerable negative societal costs.

In sum, PTE exposure and resultant PTS symptoms and PTSD diagnoses are highly prevalent and associated with numerous societal and personal costs. Moreover, these deleterious effects appear to extend to college student populations. Accordingly, clarification of behavioral constructs that account for variance in PTS-related distress following PTE exposure may inform the development of behavioral interventions that effectively enhance recovery from, and reduce personal and societal costs associated with, PTS symptoms. One body of research that may inform the specification of such variables is that of emotion and ER, which is reviewed below. First, emotion will be discussed broadly from a functional perspective, leading to the discussion of how emotion regulation operates in various contexts, including that of PTS symptoms.

Emotion and Emotion Regulation

Emoting is a behavior defined as synchronized changes in organismic states in response to internal and external stimuli (Scherer, 1987) that result in the subjective experience of having

an emotion. Research has suggested four components that are associated with all emotions: cognition; behavior; affect; and physiology experienced prior to, during, and/or after exposure to environmental stimuli (Kleinginna & Kleinginna, 1981; Lench et al., 2011; Scherer, 1987; Tyng et al., 2017). To illustrate these components, the example of an individual attending a theme park will be used.

The cognition component encompasses experienced cognitive evaluations and interpretations. For example, an individual may learn to cognitively relate theme parks and fun experiences through verbal rules (e.g., being told 'theme parks are fun') or direct exposure to theme park related stimuli that was previously paired with positive experiences (e.g., flashing lights, crowds, and bright colors; Hayes et al., 2001). Cognitive relations acquired through this learning history, including evaluations and interpretations of both external and internal stimuli, will increase the likelihood the individual will experience pleasant emotion when walking through the theme park front gate. The behavior component encompasses overt bodily actions (e.g., facial, postural, vocal). An individual at a theme park may express an open-mouthed smile, contraction of the muscles around the eyes, and express themselves vocally by laughing (Campos et al., 2013; Van Cappellen, 2019). The affect component encompasses experienced affect, defined as a simple, broad, long-lasting psychophysiological state (e.g., feeling good or bad) that contributes to the experience of a felt emotion, which is often short-lived relative to affect (Clore & Ortony, 2008; Russell, 2009). For example, an individual who attends a theme park may experience positive *affect* while there. When riding a rollercoaster, they may have a more temporary *emotional* experience of exhilaration or joy. Finally, the physiology component encompasses autonomic bodily changes (e.g., altered heart rate, blood sugar level, pupil dilation, etc.). Following our example, the individual riding the rollercoaster may experience increased

electrodermal conductance (i.e., electrical conductance of skin that is increased when one perspires; Wickramasuriya & Faghih, 2020) and respiration rate. Beyond defining emotion, researchers are clarifying the function of emotions, which I turn to next.

Function of Emotion

Emotions are context specific, enhance individuals' ability to behave effectively given encountered environmental opportunities and difficulties, and are related to positive outcomes such as quality of life and good physical health (Brackett & Salovey, 2004; Frijda, 1986; John & Gross, 2004; Oatley & Jenkins, 1992; Scherer, 1987). Emotion appears to be particularly influential in three areas of life: interpersonal, intrapersonal, and social (Hwang & Matsumoto, 2019). Interpersonally, emotion may be functional in terms of how individuals interact between one another, especially when an individual seeks to appear likeable and accepted (Leary, 2015). For example, an individual at a dinner party may approach another guest and smile, thus expressing positive emotion that may signal to the other guest that they want to engage in conversation. These behaviors will likely enhance the probability of a pleasant and effective interpersonal interaction. Intrapersonally, emotions appear to support responses to environmental contingencies (Tooby & Cosmides, 2008). Tasting spoiled food at a dinner party occasions the emotion of disgust that, in turn, increases the likelihood the individual will, quickly and without much thought or effort, expel the food from their mouth. Socially, emotion can provide feedback regarding one's behavior and social status, thus influencing subsequent behavior. The individual at the dinner party who expressed disgust towards the provided food may make a comment to the host about disliking the food. In turn, the guest may receive negative feedback from the host if the comment was rude in nature, thus leading to the experience of guilt about having made the

comment. This emotion may increase the likelihood the guest will engage in reparative behavior (e.g., apologizing or complimenting the host; Tangney et al., 1996).

Yet, poorly controlled emotion may also increase the likelihood of experiencing unwanted outcomes such as psychopathology and life problems (Hayes et al., 1996; Mennin et al., 2006; Mennin & Farach, 2007). For example, fear, typically elicited by perceived environmental danger or threat cues (Cisler et al., 2010), is associated with several common responses: efforts to reason or problem solve (i.e., cognitive); fight, flee, or freeze responses (i.e., behavioral); subjective experiences of negative affect (i.e., affective); and increased heart rate, muscle tension, and sweating (i.e., physiological; Cannon, 1932; Garfinkel & Critchley, 2016; Norrholm & Jovanovic, 2018). An individual who experiences fear when driving over long bridges may experience a variety of responses. When lacking ability to regulate fear, the individual may become overwhelmed and engage in ineffective behavior. They may try to reason with themselves or others about the benefits of taking a longer route that does not cross over a bridge, or they may flee the situation, perhaps by exiting the freeway as they approach the bridge. These behaviors may decrease quality of life by impairing progress towards important values-congruent goals, such as timely arrival to work or a desired social engagement. As such, emotions can lead to dysfunction due to an individual's inability to regulate emotions. Accordingly, research suggests the inability to regulate emotions, as outlined below, is a cardinal feature of several psychiatric disorders, including PTSD.

Emotion Regulation

Researchers have recently directed efforts toward understanding how individuals' ability to regulate emotional experiences may contribute to the formation, maintenance, and recovery from psychopathology (Barlow et al., 2004; Gross & Jazaieri, 2014; Kring & Werner, 2004).

Two conceptualizations of ER currently dominate the psychological literature. The first, termed the Process Model, largely defines ER in terms of cognitive processes (Gross, 1998, 2015; McRae & Gross, 2020). This definition highlights cognition as the primary factor that shapes subjective experience of emotion (Ford & Gross, 2018; Gross, 1998) and suggests regulation of emotion is best conceptualized as time-limited behaviors (i.e., ER strategies) used to modify or control emotional experience or resultant behavioral expression (Gross, 1998). This model specifies two categories of ER strategies: antecedent-focused and response-focused. Antecedent-focused ER is defined as behavioral attempts to manipulate input to the system during emotion generation. Antecedent-focused strategies include the selection or modification of the situation (e.g., avoiding walking outside late at night due to fear of being sexually assaulted), deployment of attention (e.g., narrowly attending to individuals who may resemble a sexual assault assailant), and cognitive change (e.g., reframing the experience of seeing someone who may resemble an assailant as less threatening). Response-focused ER is defined as cognitive efforts to counteract emotional responses that follow emotion generation by suppressing emotional urges (e.g., 'bottling up', denying, or avoiding emotions, or expressive suppression such as binge drinking) or modulating overt behavioral responses (e.g., attempts to de-amplify anger by going for a walk; Koechlin et al., 2018). In both suppression and modulation, ER strategies appear to be directed towards the decrease of expressive behaviors in order to lessen the negative impact of the situation on emotional experiences (Gross, 2002; Purnamaningsih, 2017).

The second model of ER, which I will term the functional model of ER, highlights the functional nature of emotions, as well as the context in which they occur, when defining and evaluating the effectiveness of ER processes and related behavioral strategies. Accordingly, the functional model does not define ER as emotional control per se. Rather, ER is defined as several

specific skills, which include "a) awareness and understanding of emotions, b) acceptance of emotions, c) ability to control impulsive behaviors and behave in accordance with desired goals when experiencing negative emotions, [and] d) ability to use situationally appropriate ER strategies flexibly to modulate emotional responses in order to meet individual goals and situational demands" (Gratz & Roemer, 2004, pp. 42–43). Each of these ER skills are discussed below.

Awareness and Clarity versus Lack of Attending to Emotion

Emotional awareness is a multidimensional construct defined as an individual's ability to be aware of and describe the emotional experience of the self and others (Gratz & Roemer, 2004). Separate from emotional awareness is emotional understanding (i.e., clarity), which is defined as "the extent to which individuals know (and are clear about) the emotions they are experiencing" (Gratz & Roemer, 2004, p. 47). Both awareness and clarity of emotional experiences appear useful as ER skills. Extant research suggests present moment awareness is advantageous, particularly in the presence of unwanted emotions or private experiences (Cardaciotto et al., 2008; Donald et al., 2016). For example, evidence suggests emotional awareness is related to low deviant behavior and drug use (Mayer et al., 2004). Moreover, broad-based present moment awareness (i.e., mindfulness) is related to high psychological flexibility (Adele & Feldman, 2004), compassion for others (Fulton, 2005), work productivity (e.g., task performance; Dane, 2010), and engagement in health promoting behavior (Murphy et al., 2012), as well as good physical health outcomes (Glomb et al., 2011). Furthermore, the integration of mindfulness-oriented strategies (including both emotional awareness and clarity) into psychosocial interventions is related to decreased anxiety, depression, and PTS symptom severity, as well as increased quality of life (Beauchemin et al., 2008; Boden et al., 2012;

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Greeson et al., 2015; Kearney et al., 2011; Klainin-Yobas et al., 2012; Smith et al., 2011; Vujanovic et al., 2011).

Conversely, low levels of attending to and clarity of emotion appear associated with the presence of psychiatric disorders such as major depressive disorder (Donges et al., 2005; Weissman et al., 2020) and PTSD (Frewen et al., 2008a; Pugach et al., 2019). Individuals with generalized anxiety disorder (Mennin et al., 2005) and symptoms of uncued panic attacks (Tull & Roemer, 2007) report low levels of emotional clarity. Difficulties with emotional awareness are also related to physical health problems. Chronic pain patients who report low attending to the present moment also, perhaps paradoxically, report high presence and intensity of physical pain (Burger et al., 2016). Yet, research also indicates excessive attention to emotional experience is associated with elevated anxiety symptoms (Britton, 2019; Eisenlohr-Moul et al., 2012; Sahdra et al., 2017) and low emotional clarity among individuals with panic disorder (Baker et al., 2004), which suggests additional ER skills may be required to support effective functioning when one is faced with distressing emotional experiences.

Acceptance versus Avoidance of Emotion

Acceptance is defined as the intentional embrace of unwanted private experiences, without engaging in behaviors that seek to control or eliminate these experiences, when such behaviors are unhelpful in achieving one's aims (Hayes et al., 1996). Acceptance of emotional experiences appears necessary for effective responding in the context of unwanted or negative emotional experiences. Research indicates acceptance of emotion is related to higher psychological health, including decreases in anxiety and depression symptoms, relative to individuals who avoid private experiences (Baer et al., 2008; Danitz et al., 2016; Ford et al., 2018). Acceptance of emotions is also related to high quality of life in the context of anxiety,

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anorexia nervosa, and stress (Eustis et al., 2016; Nyklíček & Kuijpers, 2008; Wildes & Marcus, 2010). Indeed, research evaluating the effectiveness of acceptance-based behavioral therapies provides evidence of the beneficial effects of employing acceptance across a range of psychiatric disorders. Engagement in therapeutic packages that emphasize acceptance as a core clinical target, such as acceptance and commitment therapy (Hayes et al., 2012) and dialectical behavior therapy (Linehan, 2013), appears to lead to symptom reduction and improved quality of life for individuals with anxiety, mood, personality, eating, trauma-related, and substance use disorders (Gratz & Gunderson, 2006; Howell & Passmore, 2019; Kelson et al., 2019; Lang et al., 2017; Lee & Song, 2018; Li et al., 2019; Linardon et al., 2018; Morton et al., 2012; Roemer & Orsillo, 2010; Roemer et al., 2008; Steil et al., 2018; Twohig & Levin, 2017), as well as those who struggle with ineffective health behaviors and chronic pain (Hughes et al., 2017; Simpson et al., 2017). Moreover, acceptance appears to mediate good outcomes that follow provision of acceptance-based treatments. Acceptance accounts for the effects of treatment on experienced pain, unhelpful pain-related cognition, and physical functioning in samples of chronic pain patients (Cederberg et al., 2015; Ravn et al., 2017). In sum, acceptance of private emotional experiences appears related to engagement in behaviors that lead to high quality of life.

Conversely, emotional avoidance (i.e., behavioral attempts to reduce both positive and negative emotions; Feldner et al., 2003) is related to the development and exacerbation of psychological suffering (Bardeen et al., 2013a; Kashdan et al., 2006). Research suggests efforts directed towards emotional control and avoidance of internal experiences underlie many psychiatric disorders (Fledderus et al., 2010; Hayes et al., 1996; Kashdan et al., 2006; Spinhoven et al., 2015; Taylor et al., 2004; Wheaton & Pinto, 2017) and is related to higher levels of anxiety relative to individuals who engage in acceptance of emotion (Bardeen et al., 2013a). Avoidance

also appears to mediate the relation of beliefs about emotions and depression and anxiety symptoms, such as worry, irritability, and fatigue (Sydenham et al., 2016). In sum, research suggests directed efforts towards avoiding unwanted private experiences are related to increased psychopathological symptoms, which may deter individuals from directing efforts towards behaviors that are congruent to one's personally chosen values.

Goal Directed versus Impulsive Behavior

The functional model of ER also posits one's ability to inhibit impulsive behaviors and engage in goal-congruent behaviors when experiencing unwanted private experiences is an indicator of good ER (Gratz & Roemer, 2004; Malesza, 2019; Tull & Gratz, 2008). Goal-directed behavior is defined as behavior oriented towards meeting the needs of the individual and situation (Gratz & Roemer, 2004). Notably, both emotional awareness and acceptance are related to effective goal-related behavior. Engagement in an intervention that emphasizes acceptance of unwanted thoughts and feelings is associated with higher goal directed behavior relative to individuals who do not practice acceptance (Goodman et al., 2014). Moreover, acceptance-based interventions used in workplace settings appear effective for increasing goal directed behavior (i.e., increased work performance, decreased work-related errors) and reducing employee stress (Moran, 2011). In sum, research suggests engaging in goal-directed behaviors, particularly in the presence of unwanted private experiences, may contribute to overall good quality of life.

Despite positive outcomes associated with goal directed behavior, many individuals struggle to engage in such behavior when experiencing emotional distress. Researchers indicate failure to engage in behaviors that align with one's personally chosen goals or values, often referred to as impulsive or disorganized behavior (Hayes et al., 1999), is related to low quality of life and high psychiatric problems (Chamberlain & Grant, 2019; Seligowski et al., 2014). Value

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incongruent or impulsive behavior is related to presence of an obsessive-compulsive disorder diagnosis (Gillan et al., 2011), high depression symptomology (Chase et al., 2018; Fritzsche et al., 2016), purging behavior (Pisetsky et al., 2017), and suicide risk (Ghorbani et al., 2017). Drug and alcohol problems, which some researchers suggest may be an indication of ER ability deficits (Dvorak et al., 2014), are also associated with low frequency of goal-directed behavior (Fox et al., 2008; Greenberg et al., 2016; Lanesman et al., 2019; Morrell et al., 2010; Verdejo-García et al., 2008). Finally, individuals with borderline personality disorder, in which ER deficits are a primary presenting feature, report difficulty engaging in goal-directed behavior when experiencing unwanted or unpleasant emotion, which often manifests as substance misuse, self-harm, and risky sexual behavior (Barker et al., 2015; Gratz et al., 2015; Gratz et al., 2016; Rosenstein et al., 2018; Soler et al., 2016; Tull et al., 2011a). Collectively, research suggests individuals experiencing emotional distress have difficulty responding in contextually appropriate ways and may benefit from the establishment of more flexible behavioral patterns.

Flexible versus Inflexible Use of ER Strategies

The flexible use of ER entails willingness to use relevant ER strategies to modulate behavioral responses that support progress towards individual goals or desires in the context of situational demands (Gratz & Roemer, 2004). Researchers have recommended considering the demands of the situation and goals of the individual when assessing the effectiveness of ER strategy selection and deployment (Gratz & Roemer, 2004; Ma et al., 2018; Thompson, 1994; Thompson & Calkins, 1996). For example, psychological flexibility, a construct closely aligned with ER and defined as engaging in personally chosen present moment value-guided behaviors despite the presence of unwanted thoughts, feelings, or bodily sensations (Hayes et al., 1996), is associated with good outcomes. Cross-sectional research investigating the relation of

psychological flexibility and psychiatric symptomology suggests high psychological flexibility is related to low anxiety, depression, and somatization symptoms among college students (Masuda & Tully, 2012). Increasing psychological flexibility appears to be helpful for decreasing avoidance of private experiences among individuals with anxiety and depression symptoms and may predict less distress and better treatment outcomes relative to individuals with inflexible use of ER strategies (Berking et al., 2009; Dalrymple & Herbert, 2007). Moreover, longitudinal research suggests flexible and contextually sensitive ER strategy deployment is related to positive outcomes including increased quality of life after six months (Densham et al., 2016).

Notably, some research supports the effectiveness of control and change-oriented ER strategy use, as delineated in the process model of ER, thus highlighting the benefit of flexible deployment of ER strategies. For example, reappraisal (e.g., assigning a different meaning to a distressing emotional experience to lessen the psychological impact) is a common ER strategy deployed in the service of down-regulation of emotion (Brockman et al., 2016; Dixon et al., 2019; Gross, 2002). Research suggests such control-oriented strategies are effective in modifying emotional experiences (Goldin & Gross, 2010). Yet, *excessive* and inflexible use of control and change-oriented ER strategies is related to negative outcomes, including heightened negative affect (Machell et al., 2014) and general emotional distress (Bardeen et al., 2014). Additionally, lack of contextual consideration, combined with excessive efforts to control or modulate emotional experiences, leads to a variety of negative outcomes that include the development and maintenance of psychiatric symptoms and disorders (Fitzpatrick et al., 2016; Greenberg, 2002; Mennin et al., 2006; Schnell & Herpertz, 2018). For example, eating (Gianini et al., 2013; Haynos et al., 2018; Svaldi et al., 2012), anxiety (Aldao & Nolen-Hoeksema, 2012; McLaughlin et al., 2011), and mood disorders (Joormann & Gotlib, 2010; Mkrtchian et al., 2017; Rude &

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McCarthy, 2003) are related to inflexible use of ER strategies. Moreover, researchers have identified associations of ER difficulties and PTS symptom severity, which are reviewed below.

ER and PTSD

Effective use of ER strategies appears inversely related to dysfunction in PTSD symptom clusters, presence of a PTSD diagnosis, and sub-threshold PTS symptoms following PTE exposure (Bardeen et al., 2013b; Bonn-Miller et al., 2011; Ehring & Quack, 2010; Tull et al., 2007a; Weiss et al., 2013a; Weiss et al., 2013b), as well as positively correlated with overall adaptive functioning (Cloitre et al., 2005). Broadly speaking, high ER difficulties appear related to high PTSD symptom severity relative to low ER difficulties (Bonn-Miller et al., 2011; Ehring & Quack, 2010; Kashdan et al., 2006; Tull et al., 2007a; Vujanovic et al., 2010). High awareness and clarity of private experiences is related to high goal-directed behavior among PTE exposed individuals (O'Bryan et al., 2017). Conversely, low emotional awareness appears to be a risk factor for the development of PTSD symptoms among PTE exposed individuals (Viana et al., 2018). Low emotional awareness is also related to the presence of a PTSD diagnosis, high total PTSD symptom severity, and high re-experiencing, avoidance, and arousal symptoms (Cloitre et al., 1997; Ehring & Quack, 2010; Frewen et al., 2008b; McLean et al., 2006; Tripp & McDevitt-Murphy, 2015).

Trauma survivors report difficulties tolerating (i.e., accepting) and regulating unwanted emotions (Briere & Richards, 2007), as well as high avoidant (Batten et al., 2002; Marx & Sloan, 2002; Tull et al., 2020; Walsh et al., 2010) and disorganized behavior, such as aggressive (Tull et al., 2007b) and risky sexual behavior (Cavanaugh et al., 2009; Reisner et al., 2009; Weiss et al., 2019). Emotional avoidance is also related to PTSD-associated problems. Research indicates emotional avoidance partially accounts for the relation of elevated PTSD symptom severity and

high worry (Tull et al., 2011b). Notably, after controlling for PTS symptom severity, high emotional avoidance is associated with elevated symptoms of depression and anxiety relative to low emotional avoidance (Tull et al., 2004). This research suggests emotional avoidance may exacerbate psychopathology above and beyond PTS symptom severity. Additionally, longitudinal research indicates high avoidance and low social support predict depression symptoms among individuals exposed to a PTE at 12-month follow-up assessments (Forbes et al., 2020). Furthermore, individuals diagnosed with PTSD struggle to maintain consistent goal directed behavior and often engage in impulsive acts associated with high ER difficulties (e.g., substance use; Grant & Potenza, 2012; Tripp et al., 2015; Tull et al., 2012; Tull et al., 2016; Veilleux et al., 2014; Weiss et al., 2012; Weiss et al., 2013a). Experimental research suggests individuals exposed to PTEs who inflexibly select ER strategies irrespective of situational demands report higher PTSD symptom severity relative to individuals who flexibly select ER strategies (Levy-Gigi et al., 2015).

Collectively, ER difficulties are related to poor physical health, social and occupational functioning, and quality of life, as well as high psychiatric symptomology across a range of diagnoses, including PTSD and high PTS symptom severity following PTE exposure. Indeed, individuals with elevated PTS struggle to deploy effective ER strategies when needed (Tull et al., 2020), often rely on potentially problematic excessive use of avoidance strategies, and have difficulty managing impulsive and otherwise disorganized behavior, and engaging in goal-directed behaviors (Shepherd & Wild, 2014; Tull et al., 2007a). Yet, research also indicates significant variance in PTS symptom severity remains after accounting for ER difficulties (e.g., Bonn-Miller et al., 2011; Kashdan et al., 2006; Tull et al., 2007a; Tull et al., 2012; Tull et al., 2016; Vujanovic et al., 2010), suggesting a need for elucidation of additional factors that may

buffer against negative sequelae of PTE exposure. SC may be one construct that accounts for PTS symptom severity above and beyond that of ER.

Self-Compassion

Compassion is defined as responding with kindness, common humanity, and mindfulness, in a non-judgmental way, toward the troubles and adversities of others (Pommier et al., 2019). SC is compassion focused inward (Germer & Neff, 2013) and has been theorized in terms of three components (Neff, 2003a, 2003b; Neff et al., 2007). First is self-kindness, which is defined as being gentle towards oneself when experiencing pain. For example, when one makes an error or experiences failure, an individual with high SC will often treat themselves with kindness, such as they would a child or friend. Conversely, an individual with low SC may resort to self-deprecation or self-judgement, possibly by shifting their attention from themselves to others in unhelpful comparisons.

Second is common humanity, which is defined as seeing personal sorrow or inadequacies as part of the greater human experience, by remembering one is not unaccompanied in their hardships. For example, when one experiences rejection from a social group, an individual with high SC will tend to accept the painful experience as part of the larger human condition. Conversely, an individual with low SC may isolate themselves and resort to seeing themselves as alone in their suffering.

Third is mindfulness, defined as having a stable attitude to one's unwanted private experiences, perhaps by simply noticing one's surroundings, feelings, thoughts, and sensations. For example, one may be met with unwanted thoughts about an intimate relationship. When faced with such thoughts, individuals who have high SC tend to maintain a balanced approach (i.e., neither avoiding nor catastrophizing) to unwanted emotions, perhaps by holding them in

mindful awareness, free of judgment. Conversely, an individual with low SC may become overwhelmed by such unwanted private experiences and suppress or exaggerate their feelings. As such, SC is conceptualized as a way of relating to the self and one's private experiences, in which painful or distressing feelings are not avoided but are instead held in awareness with kindness, a sense of shared humanity, and understanding.

SC is one strategy that may be useful for individuals who experience ER difficulties and PTS symptomology. Research suggests SC may support effective ER skills, including emotional clarity, willingness to experience, and acceptance of unwanted emotional experiences, specifically among college students. High SC is associated with high emotional awareness, high personal forgiveness, and low avoidance of painful or unwanted experiences (Leary et al., 2007; Neff, 2003b; Neff et al., 2007; Zhang & Chen, 2016). In addition, research suggests high SC is associated with effective control over impulsive behavior during stressful situations. For example, in the context of high worry, individuals with low SC reported elevated rates of impulsive behaviors (Mantzios, 2014), whereas individuals with high SC engage in behaviors congruent with personally chosen values (Finlay-Jones et al., 2015). Moreover, individuals who engage in compassion training are more willing to experience unwanted emotional experiences without judgment or intent of influencing them (Jazaieri et al., 2017), relative to individuals do not engage in compassion training. Collectively, this evidence suggests good SC may be a necessary pre-condition of effective ER skill deployment and, as such, may account for additional variance in outcomes beyond that of ER.

High SC also appears related to low psychopathology and associated problems. Meta-analysis suggests low SC is inversely related to depression, anxiety, and stress symptoms in both clinical and non-clinical samples (Macbeth & Gumley, 2012). Furthermore, SC is related to low

rumination and worry, suggesting SC may buffer the association of general negative affect and

anxiety and depression symptomology (Raes, 2010). Research also suggests SC may promote

helpful mood regulation in extremely depressed samples (Diedrich et al., 2014), more so than

acceptance or reappraisal strategies. Researchers investigating the effect of SC and acceptance

strategies among depressed individuals found those in the SC group reported greater decreases in

low mood than individuals in the acceptance group (Ehret et al., 2018), suggesting SC may

account for variance in the relation of psychopathology and ER. Moreover, this research

highlights theoretical postulates that acceptance of unwanted emotions is an incomplete

implementation of SC, in that acceptance of emotions alone may not be an effective ER strategy.

Rather, the combination of acceptance, self-kindness, and mindfulness appears necessary for

positive change (Neff, 2003a).

SC and PTSD

Researchers have dedicated considerable resources to the investigation of the relation of

SC and PTS symptom severity in clinical and non-clinical PTSD samples, leading to the general

conclusion that low SC is detrimental in the context of PTE exposure. For example, low SC is

related to high overall and avoidance-related PTSD symptom severity (Kearney et al., 2011;

Thompson & Waltz, 2008). Indeed, research suggests low SC is related to overuse of avoidance

strategies, and this relation appears to be maintained in the context of PTS. Cross-sectional

research investigating the relation of PTS symptom severity and alcohol use in a sample of

military veterans suggests SC accounts for the relation of PTS and alcohol misuse (Forkus et al.,

2019). Low SC is also related to high guilt and self-blame (Davis et al., 1996), leading

researchers to suggest SC may be a useful therapeutic target when treatment goals include

increasing positive, and decreasing negative, views of the self (Neff & McGehee, 2010).

Research investigating SC as a predictor of PTS symptom severity suggests baseline SC predicts PTSD symptom severity 12-months later (Hiraoka et al., 2015). Moreover, engagement in psychosocial interventions that include components aimed at decreasing self-judgment, isolation, and over-identification, and increasing self-kindness, appear helpful as evidenced by decreased PTS symptom severity among individuals with PTSD (Hoffart et al., 2015). Researchers investigating the effectiveness of a 12-week SC program among individuals exposed to PTEs reported decreased PTSD symptoms after treatment (Kearney et al., 2013). As such, enhancement of SC abilities may be a beneficial target for therapeutic interventions that aim to reduce PTS symptomology.

In sum, SC may assist in, and may be a necessary pre-condition of, effective deployment of ER strategies in the context of unwanted private experiences such as anxiety, depression, and PTS. SC is inversely related to self-criticism, depression, anxiety, rumination, and avoidance of emotional experiences, and is positively related to life satisfaction and social connectedness (Barnard & Curry, 2011; Leary et al., 2007; Macbeth & Gumley, 2012; Neff, 2003a; Neff & Vonk, 2009) in a variety of populations, including individuals exposed to PTEs. SC also appears to support effective ER strategy use, including increased emotional clarity, willingness to experience painful or unwanted emotions, acceptance, and decreased impulsive behaviors. Researchers have recently attempted to leverage these known positive associations of SC to support effective ER strategy use among individuals exposed to PTEs, yet no research has identified the role SC may have in the ER-PTS relation. Thus, the present study aimed to a) clarify the relation of SC, ER, and PTS symptom severity and b) identify the PTS symptom severity variance accounted for by SC over and above ER difficulties.

Emotion Regulation, Self-Compassion, and Posttraumatic Stress

As reviewed above, high ER and SC appear related to symptom remittance among PTE exposed individuals. However, research is mixed regarding the specific role of ER and SC in this context. In the paragraphs below, theoretical considerations regarding how and why ER and SC may influence responses to PTE exposure, organized by PTSD symptom cluster (i.e., exposure to a PTE; intrusion; avoidance; negative alterations in cognition and mood; and altered arousal and reactivity), will be delineated. Though many processes of ER and SC are likely relevant across symptom clusters, the following discussion with highlight processes that appear particularly useful to consider within each PTSD symptom cluster. In so doing, unique and shared aspects in the function of ER and SC to PTE exposure and PTS symptom severity will be clarified.

For example, college parties are common on college campuses and typically offer opportunities to make new friends, gain social status, and experiment with alcohol or other substances, yet are also a prime setting in which PTE exposure may occur. As previously noted, college-aged individuals experience rapid brain development, particularly in the prefrontal and parietal cortices. Low ER may be a behavioral manifestation of this still emerging developmental process. For example, impulsive behavior is associated with underdeveloped prefrontal and parietal cortices and is a cardinal feature of ER difficulties (Romer, 2010). Underdeveloped brain structures also appear related to increased substance use and may inhibit one's ability to effectively process information and modulate behavior (Lubman et al., 2007). Moreover, evidence suggests low ER is associated with greater risk-taking behavior (e.g., binge drinking; Radomski et al., 2016) in social settings where PTEs are likely to occur. Though one must be careful not to excuse behavior of a perpetrator nor blame a survivor, low ER manifested as impulsive and disorganized behavior may set the occasion for over-intoxication, possibly leading

an individual to commit sexual violence against another student or impairing a potential victim from effectively guarding against such events. Consequently, low ER may directly and indirectly lead to elevated rates of PTE exposure in college student populations.

A common response to PTE exposure is the experience of distressing and intrusive experiences related to the event, such as recurring nightmares about the PTE, becoming overwhelmed by intrusive memories of the event during waking hours, or experiencing dissociative reactions. Low ER, specifically nonacceptance, awareness, and clarity facets, which largely overlap with the SC facet of mindfulness, may contribute to worsened intrusion symptoms. Low emotional acceptance may manifest as avoidance of, or attempts to suppress, unwanted thoughts. Paradoxically, such efforts are related to the development and maintenance of intrusive thoughts at a later time (Henschel et al., 2021), including the presence of nightmares. Low awareness may lead to lack of attention to thoughts deemed as distressing, up to the time that thoughts increase in intensity and capture the individual's attention, at which point they may appear intrusive (Hellerstedt et al., 2016; Takarangi et al., 2017). Moreover, low clarity may lead to difficulty differentiating the form or quality of emotion that arises in the context of intrusive thoughts when they are noticed, potentially enhancing experiences of distress, thus occasioning further avoidance behavior, such as dissociative experiences. In the context of excessive avoidance of unwanted private experiences, habituation to thoughts, memories, and other cognitive representations of the traumatic event is impaired (Foa & Rothbaum, 1998), which may provide a context for elevated distress and further avoidance behavior when such cognition is noticed. This interactive process may, ultimately, lead to the maintenance and exacerbation of intrusive experiences.

Low self-kindness, as defined in SC, may further complicate intrusive symptoms beyond the effects of ER. A common expression of low self-kindness is the adoption of negative judgments towards one's thoughts. If judgement is extended toward thoughts and the self, such that a thought is labeled 'bad' or the individual views themselves as 'bad' for having such thoughts, the mere presence of unwanted thoughts may lead to elevated distress. As described above, this distress could increase the likelihood of various forms of avoidance behavior, thus leading to a lack of habituation and paradoxical increases in frequency or severity of intrusive experiences. Alternatively, willingness to approach one's unwanted thoughts with openness, curiosity, and kindness towards the self may support efforts to engage in more adaptive and flexible responding when intrusion symptoms occur. As such, high ER and SC may buffer experiences of distress and engagement in avoidance behaviors that are likely to contribute to the onset and maintenance of intrusion symptoms.

Individuals often engage in emotional and behavioral avoidance following PTE exposure, which is theorized as an attempt to escape from distressing internal (e.g., thoughts and emotions) and external (e.g., people and places) reminders of the event (Feldner et al., 2003). Low ER, in the form of poor acceptance, appears to be particularly relevant in this context. For example, an individual who witnesses a mass shooting may try to avoid unwanted thoughts, memories, or physical locations that serve as reminders of the event. Low acceptance may occasion or increase the frequency or intensity of such efforts. For example, research indicates avoidant behavior is associated with low willingness to experience what one has without attempting to change the form or frequency of such experiences, whereas acceptance is associated with high willingness (Eifert & Heffner, 2003). Moreover, research indicates avoidance behavior limits immediately experienced distress, yet exacerbates traumatic stress symptomology over time (Bardeen, 2015).

Thus, nonacceptance and associated low willingness may influence increased avoidance behavior that is negatively reinforced in the short-term, at the expense of approach behavior that may lead to better long-term outcomes, including symptom reduction and increased quality of life.

Low self-kindness may further exacerbate avoidance symptoms. An examination of questionnaire items used to assess self-kindness suggests two overarching themes: self-care when distressed and tolerance toward undesirable aspects of the self. Limited self-care behavior in particular may be an establishing operation that increases the likelihood of unhelpful avoidance behavior when experiencing unwanted reminders of traumatic events (Li & Shun, 2016). For example, an individual who does not generally engage in self-care behaviors may be more attuned to short-term outcomes at the expense of long-term positive health behavior. Thus, such an individual may be more apt to avoid rather than approach unwanted thoughts, physical sensations, and emotions. The ineffectiveness of such actions (as described above) may exacerbate feelings of worthlessness and decrease overall tolerance toward distress. When such unwanted internal experiences return, an avoidance-related coping style, supported by low self-care behavior, may further compound these problems. In sum, individuals who are generally nonaccepting and engage in limited self-care when distressed may experience greater difficulty tolerating short-term distress that is often associated with initial attempts to approach unwanted thoughts and feelings.

A third cluster of symptoms associated with PTE exposure is negative changes in cognition or mood. Cognitive beliefs may include thoughts such as the event is the survivor's fault or that other people or the world are inherently dangerous. The clarity component of ER may contribute to the formation of such cognitions. Difficulty differentiating emotional states is

associated with exacerbation of misinterpretations of trauma related distress broadly (Viana et al., 2018). Thus, a sexually assaulted individual who lacks emotional clarity may report higher occurrences of distorted cognitions regarding the causes of the negative event. These negative cognitions could further perpetuate inappropriate self-blame and interfere with attempts to flexibly choose contextually sensitive coping strategies such as value guided actions (Schmader & Lickel, 2006). Indeed, such mood alterations, including excessive shame and depression are common following PTE exposure. Beyond the potential indirect association by way of low emotional clarity and distorted cognitions, low engagement in goal-directed behavior may influence negative changes in mood (Lejuez et al., 2011). For example, a lack of intentional effort toward personally meaningful behavior that support goal achievement may lead an individual to experience elevated depressive symptomology, which could increase the likelihood that one will neglect meaningful relationships, further perpetuating negative moods.

Low levels of common humanity may intensify negative changes in cognition and mood. For example, low common humanity may lead to an inability to identify the good in others, thus influencing beliefs that all other people are dangerous. Likewise, difficulties evaluating negative mood states as a natural part of the recovery process that others also must traverse following a PTE may lead to increased self-blaming and low engagement in helpful approach or value guided behaviors. An inability to approach resultant coping failures as a shared experience may exacerbate avoidance of meaningful positive contingencies could cause a downward spiral of low mood, shame, and additional avoidance.

A final common response that follows PTE exposure is heightened arousal and behavioral reactivity, which can include an exaggerated startle response and reckless behavior. Low strategies and impulse components of ER may be the most relevant variables in the context

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of hyperarousal symptoms. For example, the presence of a feared stimuli may trigger an individual's sympathetic nervous system. Lack of available coping techniques, or difficulty implementing acquired strategies in the moment, may lead to elevated physiological arousal and exaggerated startle (O'Bryan et al., 2015). Moreover, difficulty deploying ER strategies could lead to efforts to reduce arousal through impulsive or reckless behavior. Indeed, a key feature of low ER is difficulty refraining from impulsive behavior in the context of negative emotion. Thus, an individual with low impulse control difficulties, combined with difficulty implementing effective emotion regulation strategies in the midst of hyperarousal symptoms may be at a high risk of engaging in impulsive behavior that, in some cases, may put the individual in a fear inducing situation (i.e., context where PTEs commonly occur), further exacerbating existing hyperarousal symptoms.

Low SC, specifically within the common humanity component, may worsen hyperarousal symptoms above and beyond ER difficulties. For example, a student returning to college following PTE exposure may experience another common manifestation of reactivity, hypervigilance when around others. The sense of distrust and not fitting in that is a primary outcome of low common humanity may manifest as being on high alert, evidenced by behavior such as the student sitting with their back to the wall facing the exit, or standing at the back of a crowd. For this student who feels as though they are out of place and all alone in their suffering, fostering a sense of common humanity may lead to an increased sense of belonging and safety that could moderate excessive alertness when in the presence of others. Accordingly, high ER and SC may assist individuals in deploying effective ER strategies, including goal-directed behavior, and increasing one's sense of safety and belonging, thereby decreasing symptoms of arousal and reactivity.

In sum, ER is likely to account for variance in PTS such that PTE exposed individuals may benefit from increased awareness and understanding of unwanted emotions, acceptance of uncomfortable thoughts and physical sensations, engagement in goal-directed behaviors, and flexible deployment of ER strategies. SC may contribute additional variance in PTS beyond ER given the uniqueness of the self-kindness and common humanity components that may assist individuals exposed to PTEs relate to themselves and their experiences in a kinder way and as part of the human condition.

General Summary and Purpose

Seventy percent of individuals experience a PTE during their lifetime and approximately 8% go on to develop PTSD, which has numerous negative social and individual sequelae including elevated healthcare expenditure and low job performance. Notably, high ER difficulties such as low clarity, awareness, willingness to have, and acceptance of emotional experiences, in addition to low engagement in goal directed behaviors, are associated with presence of a PTSD diagnosis and high PTS symptom severity (Tull et al., 2007a). Yet, PTS symptom severity is not fully accounted for by ER. As such, identification of variables that account for PTS symptom severity variance above and beyond that accounted for by ER appears warranted. Research indicates high SC is related to effective ER strategy use and low distress in PTE exposed samples, suggesting SC may be one such construct. Yet, no research has specified the relation of PTS symptom severity, ER difficulties, and SC in a single statistical model. Thus, we aimed to identify the variance of PTS symptom severity accounted for by SC after controlling for ER difficulties. Specific aims and hypotheses are outlined below.

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Aims and Specific Hypotheses of the Present Study

> **Aim 1:** Identify the relation of PTS symptom severity, ER difficulties, and SC in a sample of individuals previously exposed to a PTE.

>> *H1:* ER difficulty scores will be inversely related to SC scores.

>> *H2:* ER difficulty scores will be positively related to PTS symptom severity scores.

>> *H3:* SC scores will be inversely related to PTS symptom severity scores.

> **Aim 2**: Identify the variance in PTS symptom severity accounted for by SC above and beyond that accounted for by ER difficulties.

>> *H4:* SC will account for a significant amount of variance in PTS symptom severity after accounting for participant sex and ER difficulties.

Method

Participants

Power Analysis

Researchers investigating the relation of PTS symptom severity and ER difficulties reported large effect sizes (e.g., see review Seligowski et al., 2014). Likewise, the relation of SC and PTS symptom severity appears to be large at baseline, though small effect sizes have been reported at 12-month follow-up assessments ($f^2 = 0.08$; Hiraoka et al., 2015). For the current study, a power analysis was computed using G*Power software v3.1.9.2 (Faul et al., 2009) with an expected effect size of $f^2 = 0.08$ (e.g., small). The alpha error rate was set at 0.05 and three predictor variables, ER, SC, and sex, were included. Sex was included as a predictor because research suggests men report greater levels of SC than women (Yarnell et al., 2015). The multiple regression power analysis indicated a sample of $N = 141$ would be needed to provide

power of 80% to detect a significant main effect after controlling for variance accounted for by sex.

Recruitment Strategy

Participants were recruited using the University of South Dakota (USD) SONA Systems and other online recruitment platforms (e.g., www.MyMindfulDays.com, www.berthalab.org, Facebook, etc.). Eligibility criteria for the final analysis included self-reported: being 18 years of age or older; 8th grade or higher English reading ability; a student at USD; and endorsement of exposure to at least one lifetime PTE exposure that met DSM-5 Criterion A PTSD requirements (e.g., direct exposure to sexual violence), as reported on the Life Events Checklist-5 (LEC-5; Weathers et al., 2013a).

Sample

One-hundred and fifty-eight eligible participants were recruited from the USD undergraduate student population. Thirteen participants were excluded from the final analysis. Seven provided incomplete data (see Analytic Approach, below) and three randomly responded to attention check items (see Measures, below). Three participants were excluded due to age being more than 3.29 standard deviations (± 9 years) from the mean. No participants were excluded for completing the survey in an unreasonable amount of time (i.e., no more than 3.29 standard deviations, ± 124 minutes, away from the mean). Participant characteristics of the remaining 145 participants included in the final analysis are presented in Table 1.

In short, participants were predominately White (94.5%), female (82.8%), single (69.0%) U.S. citizens (96.6%) who attended school full-time (99.3%) and were employed part-time (55.2%).

Table 1.

Participant Characteristics

Variable	*M*(*SD*)	Range
Age (in years)	19.68(2.77)	18–23 years
	n	%
Sex		
Female	121	82.8
Male	24	16.6
Gender		
Man	24	16.6
Woman	121	82.8
Nonbinary	1	0.7
Ethnicity (could select >1)		
White	137	94.5
Black	2	1.4
Asian	4	2.8
Hispanic/Latino	4	2.8
American Indian	1	0.7
Sexuality		
Heterosexual	119	82.1
Lesbian	2	1.4
Gay	2	1.4
Bisexual	17	11.7
Pansexual	3	2.1
Questioning or unsure	2	1.4
Relationship		
Single	100	69.0
Living with partner	5	3.4
Committed relationship	40	27.6
Student		
Part-time	1	0.7
Full-time	144	99.3
Employment		
Unemployed	61	42.1
Part-time	80	55.2
Full-time	4	2.8
Born in United States		
Yes	140	96.6
No	5	3.4
English second language		
Yes	4	2.8
No	141	97.2

Note. N = 145.

Measures

Self-report measures, described below, were administered to assess eligibility criteria and trait-level behavioral constructs.

Eligibility Assessment Surveys

Eligibility Questionnaire. A self-report questionnaire designed for the current study (see Appendix A) was used to assess inclusion criteria of participant age, English language proficiency, and lifetime PTE exposure.

Life Events Checklist (LEC-5; Weathers et al., 2013a). The LEC-5 (see Appendix B) is a two-part self-report measure of lifetime PTE exposure, used in the present study to determine eligibility, as described in Recruitment Strategy, above. Part 1 includes 17 items: 16 items specify specific PTE classes (e.g., natural disaster, physical assault, accidents) and one item provides opportunity for participants to report other stressful events and experiences not previously assessed. Participants indicate level of exposure to each event using a 6-point nominal scale (1 = *happened to me*; 2 = *witnessed it*; 3 = *learned about it*; 4 = *not sure*; 5 = *part of my job*; 6 = *does not apply*). Sample items include: "Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)" and "Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)". Part 2 is composed of eight items of various response types (e.g., open-ended; yes-no) that participants use to identify and describe their worst experienced PTE. Sample items include: "How long ago did it happen?" and "Did it involve sexual violence?" Research indicates the LEC-5 has adequate test-retest reliability ($r = 0.58$), as well as good convergent validity with other measures of PTE exposure ($rs = .61–.71$; Hall et al., 2019).

Experimental Survey Battery

Demographics Questionnaire. A questionnaire standardized for use in research (see Appendix C) was used to assess participant age, sex, race, ethnicity, socioeconomic status, relationship status, current employment status, and education level.

PTSD Checklist (PCL-5; Weathers et al., 2013c). The PCL-5 (see Appendix D) is a 20-item self-report assessment of DSM-5 PTSD symptom severity (i.e., re-experiencing, avoidance, negative alterations of cognitions and moods, and hyperarousal). Referring to the worst event identified during response to the LEC-5, described above, participants report the extent to which they have been bothered by each symptom in the past month using a 4-point Likert-type scale (0 = *not at all* to 4 = *extremely*). Sample items include: "Feeling very upset when something reminded you of a stressful experience" and "Trouble remembering important parts of a stressful experience." Total PTS severity score (Range = 0–80) is calculated as the item-total sum. A cut-point score of 33 is suggestive of probable presence of PTSD (Blevins et al., 2015). Research indicates the PCL-5 has adequate internal consistency (αs = .94–.95) and test-retest reliability ($r = 0.82$), as well as adequate convergent validity (rs = .74–.85; Blevins et al., 2015) with other measures of PTSD symptom severity (e.g., Detailed Assessment of Posttraumatic Symptoms–Posttraumatic Stress Scale and Posttraumatic Distress Scale). The PCL-5 also appears to have good discriminant validity with several constructs, including mania, depression, and antisocial personality features (rs = .31–.60; Weathers et al., 2013c). Internal consistency in the present sample was adequate, $\alpha = 0.95$.

Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). The DERS (see Appendix E) is a 36-item self-report questionnaire used to assess trait-level perceived ER ability. The scale includes six subscales (i.e., AWARENESS, CLARITY, NONACCEPT,

GOALS, IMPULSE, STRATEGIES), which encompass the four ER skills described above in Gratz and Roemer's (2004) functional model of ER. Participants indicate how often each statement applies to them using a 5-point Likert-type scale (1 = *almost never [0–10%]* to 5 = *almost always [91–100%]*). Sample items include, "I experience my emotions as overwhelming and out of control" (IMPULSE) and "When I'm upset, I believe that my feelings are valid and important." (AWARENESS). Total ER difficulty score is calculated as the sum of all items, following appropriate reverse scoring. High scores indicate high ER difficulties. Research suggests adequate DERS internal consistency, $\alpha s = .93–.94$ (Gratz & Roemer, 2004; Hallion et al., 2018). The DERS appears to have adequate test-retest reliability ($\alpha = .88$; Gratz & Roemer, 2004) and construct validity (Medrano & Trogolo, 2016) with other measures of ER. Lastly, the DERS demonstrates predictive validity, particularly in the context of trauma related symptoms. For example, difficulties accepting emotional responses significantly predict avoidance and hyperarousal symptomology (O'Bryan et al., 2015). Internal consistency in the present sample was adequate, $\alpha = .95$.

Self-Compassion Scale (SCS; Neff, 2003a). The SCS (see Appendix F) is a 26-item self-report survey used to assess trait-level SC. The scale includes six subscales that capture positive and negative attitudes towards the self: self-kindness, common humanity, and mindfulness (i.e., three positive SC attitudes towards the self); and self-judgement, isolation, and over-identification (i.e., three negative SC attitudes towards the self, each reverse scored). Participants specify the frequency they engage in each behavior using a 5-point Likert-type scale (1 = *almost never* to 5 = *almost always*). Example items for positive subscales include: "When I am going through a very hard time, I give myself the caring and tenderness I need" (Self-Kindness) and "When something upsets me, I try to keep my emotions in balance"

(Mindfulness). Examples of negative subscale items include, "I'm disapproving and judgmental about my own flaws and inadequacies" (Self-Judgement) and "When I'm feeling down, I tend to obsess and fixate on everything that's wrong" (Over-Identification). Total SC score may be calculated as the grand mean or sum of all items, following appropriate reverse scoring. The present study implemented the item mean scoring method such that high scores indicate high SC. Research indicates adequate SCS internal consistency, αs = .86–.89 (Neff, 2003a; Neff et al., 2008). Additionally, the SCS has adequate construct and divergent validity. For example, total SCS scores are positively associated with intrinsic motivation and emotion focused coping strategies, and inversely related to depression symptoms and self-criticism (Neff, 2003b; Neff et al., 2005). Internal consistency in the present sample was adequate, $\alpha = .92$.

Attention Check Items. Three attention check items (see Appendix G; Abbey & Meloy, 2017) were used to assess for participant inattention and random responding. Attention check items included one honesty check, "Did you expend effort and attention sufficient to warrant using your responses for this research study?", one directed query, "For this query, mark NO and move on", both with "Yes" or "No" response items, and one logical statement, "I would rather eat a piece of fruit than a piece of paper" with "I agree" and "I disagree" response items. Approximately 2% ($n = 3$) of the present sample responded inappropriately to one of these items.

Procedure

All procedures were approved by the local Institutional Review Board. Interested individuals provided electronic informed consent and completed the eligibility survey, as described above. Participants who did not report lifetime PTE exposure, as indicated by responses to the LEC-5 (see Recruitment Strategy, above), were excluded from the final analysis. Eligible participants were redirected to the experimental online survey battery. Following survey

completion, participants were virtually debriefed and thanked for their time, marking the end of participation. Three course credits were awarded to participants who completed the survey.

Analytic Approach

All statistical analyses were conducted using IBM SPSS Statistics software (version 27). As noted above, a missing value analysis was conducted in which seven of 158 participants were identified as having missing data across study variables. Three participants provided missing data on the entire DERS, and four participants provided missing data on the entire SCS. However, less than 5% of data were missing, leading to the use of listwise deletion for data provided by these seven participants (Tabachnick & Fidell, 2013). Three participants responded inappropriately to one of three attention check items presented randomly throughout the survey battery. Additionally, data provided by three participants were removed due to participant ages being more than 3.29 standard deviations away from the mean, thus indicating they did not represent the typical college student, which was the focus of the present study. Data from the remaining 145 participants are discussed below.

All variables were normally distributed based upon normality statistics (see Table 2) and visual examination of frequency histograms and Q-Q plots. In addition, no univariate (i.e., ±3.29 *SD* from the mean; Tabachnick & Fidell, 2013) nor multivariate outliers (based on Mahalanobis distance statistics) were identified. Analytic procedures for inferential statistics are reported below, structured by study aims.

Aim 1 of the present study was to identify the relation of PTS symptom severity, ER difficulties, and SCS in a sample of individuals previously exposed to a PTE. Three Pearson product-moment correlations were conducted to identify the relation of PTS symptom severity and ER difficulty scores, ER difficulty and SC scores, and SC scores and PTS symptom severity.

Aim 2 of the present study was to identify the variance in PTS symptom severity accounted for by SC above and beyond that accounted for by ER difficulties. A 3-step hierarchical regression was conducted. PTS symptom severity was entered in the analysis as the consequent variable. Participant sex (Male = 0 and Female = 1) was entered in the analysis as an antecedent in Step 1. ER difficulties was entered in the analysis as an antecedent in Step 2. SC was entered in the analysis as an antecedent in Step 3. Change in R^2 between Step 2 and Step 3 was evaluated for significance.

Results

Descriptive statistics for PTS symptom severity, ER, and SC are presented in Table 2. Average PTS symptom severity scores in the present sample were within one standard deviation of other college samples exposed to PTEs (Blevins et al., 2015) and below the provisional PTSD diagnosis cut off score of 33, which is also consistent with similar samples of college students (Blevins et al., 2015). Thirty-five participants (24.1%) reported PCL-5 scores of 33 or higher, which is suggestive of presence of a probable PTSD diagnosis and approximately double the prevalence reported in other college samples (Boyraz et al., 2016). Most participants reported experiencing their most distressing PTE via direct exposure ($n = 73$; 50.3%), followed by learning about ($n = 37$; 25.5%), witnessing ($n = 30$; 20.7%), and job-related ($n = 2$; 1.4%) PTEs. Consistent with other student samples (Elhai & Simons, 2007), individuals' most distressing PTE was most often sudden/accidental death ($n = 35$; 23.6%), followed by life-threatening illness (n = 26; 17.6%), accidents ($n = 25$; 16.9%), sexual abuse ($n = 25$; 16.9%), physical abuse ($n = 17$; 11.5%), other ($n = 9$; 6.2%), natural disaster ($n = 6$; 4.1%), and fire related ($n = 2$; 1.4%).

Average ER difficulty scores for the present sample suggested moderate levels of ER difficulties and were within one standard deviation of other college samples who reported PTE

exposure (Pickett et al., 2015). Average SC scores for the present sample also were moderate and approximated that reported in similar college samples (Fong & Loi, 2016; Neff, 2003a; Thompson & Waltz, 2008).

Table 2.

Descriptive Statistics of Study Variables

Variable	*n*	*M*	*SD*	Range	Skewness	Kurtosis
PTS symptom severity	145	21.25	18.39	2–76	0.98	0.41
ER difficulties	145	89.60	26.97	42–177	0.57	0.11
SC	145	2.90	0.69	1–4.54	−0.02	−0.03

Note. PTS = posttraumatic stress; ER = emotion regulation; SC = self-compassion.

Bivariate correlations are presented in Table 3. Participant sex was significantly positively correlated with PTS symptom severity, $p = 0.05$, such that females reported higher levels of PTS symptom severity than males. Participant sex was also significantly and positively correlated with ER difficulties total score, $p = 0.01$, such that females reported higher ER difficulties than males. Sex was significantly and negatively correlated with SC total score, $p = 0.05$, such that males reported greater SC than females. The relation of ER difficulties and SC, computed to evaluate Hypothesis 1, was significant and negative, $p < 0.01$. ER difficulties were significantly positively related to PTS symptom severity, $p < 0.01$, which supported Hypothesis 2. Lastly, SC was significantly and inversely correlated with PTS symptom severity, $p < 0.01$, in line with Hypothesis 3. In sum, results indicated support for all Aim 1 associated hypotheses.

Table 3.

Bivariate Correlations for Study Variables

Variable	1	2	3	4
1. Sex	–			
2. PTS symptom severity	0.16*	–		
3. ER difficulties	0.22**	0.63**	–	
4. SC	−0.17*	−0.48**	−0.82**	–

Note. $N = 145$; PTS = posttraumatic stress; ER = emotion regulation; SC = self-compassion;

Male = 0 and Female = 1.

** $p < 0.01$; * $p < 0.05$.

 Examination of correlation coefficients revealed SC and ER difficulties were strongly associated, $r(143) = -0.82$, $p < .01$. Therefore, collinearity statistics (i.e., Tolerance and VIF) were computed to distinguish whether ER difficulties and SC may independently predict PTS symptom severity. Results indicated all values were within accepted limits, Tolerance = .32 and VIF = 3.11 (Hair et al., 2010), suggesting collinearity was not problematic.

 A three-step hierarchical multiple regression analysis was conducted to identify the variance in PTS symptom severity accounted for by SC above and beyond that accounted for by ER difficulties (see Table 4). Results regarding Step 1 indicated that the inclusion of participant sex significantly contributed to the model beyond that of the null model, $F(1, 143) = 3.80$, $p = 0.05$, and accounted for 2.6% of the variance in PTS symptom severity. In Step 2, total R^2 increased to .37, which suggested inclusion of ER difficulties accounted for an additional 34.4% of the variance in PTS symptom severity above that accounted for by participant sex. This change was a significant improvement to the model, $F(1, 141) = 47.09$, $p < 0.01$. Finally, entry of SC to the model led to a non-significant change in model fit and accounted for just 0.3% of

the variance in PTS symptom severity after accounting for participant sex and ER difficulties, $F(1, 141) = 88.06$, $p < 0.01$. After accounting for all steps in the model, a non-significant amount of variance was accounted for, $F(3, 141) = 31.57$, $p = 0.40$.

Table 4.

Hierarchical Regression Analysis for Variables Predicting Posttraumatic Stress Symptoms

Variable	β	t	p	R	R^2	ΔR^2
Step 1				.16	.02	.02
Sex	0.16	1.95	0.05			
Step 2				.62	.39	.37**
Sex	0.02	0.32				
ER	0.62	9.38	0.00			
Step 3						
Sex	0.02	0.30		.63	.40	.00
ER	0.70	6.08				
SC	0.09	0.84	0.00			

Note. $N = 145$; ER = emotion regulation difficulties; SC = self-compassion; 0 = Male and 1 = Female.

$^{**}p < 0.01$.

Discussion

Individuals exposed to PTEs often experience a variety of negative outcomes at both the individual and societal level, including high ER difficulties, elevated healthcare costs, and development of PTSD (Kilpatrick et al., 2013; Peterson et al., 2017; Tull et al., 2007a). Extant research suggests ER difficulties are associated with PTS symptom severity relative to use of effective ER strategies (Bardeen et al., 2013b). Yet, considerable variance in PTS symptom severity is unexplained after accounting for ER difficulties. High levels of SC are related to

effective deployment of ER strategies and low PTS symptom severity (Berking & Whitley, 2014; Thompson & Waltz, 2008). Accordingly, SC may be one variable that accounts for variance in PTS symptom severity after accounting for ER difficulties. The present study was the first to evaluate such relations using a cross-sectional design. Specifically, the present study aimed to 1) identify the relation of PTS symptom severity, ER difficulties, and SC in a sample of individuals previously exposed to a PTE, and 2) identify the variance in PTS symptom severity accounted for by SC above and beyond that accounted for by ER difficulties. Overall, hypotheses proposed for Aim 1 were supported. However, results did not align with the Aim 2 hypothesis.

Summary of Present Outcomes

Consistent with Hypothesis 1, high ER difficulty was significantly correlated with low SC. This finding is consistent with extant research, which indicates ER difficulties are associated with low SC among individuals who experience a range of psychiatric problems and symptoms, including depression, anxiety, OCD, and PTSD (Barlow et al., 2017; Diedrich et al., 2014; Eichholz et al., 2020; Kuyken et al., 2010; Neff et al., 2005; Roemer et al., 2009; Scoglio et al., 2015; Thompson & Waltz, 2008). Thus, results suggest individuals who experience difficulties regulating their emotions broadly may also struggle regulating emotion that is directed toward the self. Alternatively, this relation may have been the product of response bias. For example, participants may have selected responses on the extreme ends of each Likert scale due to fatigue or carelessness. However, attention check items were presented randomly throughout the survey battery, which afforded a means of identifying and removing data provided by participants who may have been affected by these factors. The likelihood that fatigue or carelessness exerted a considerable effect on the present results seems low.

It is also possible that variance shared by ER and SC, or that a third, non-assessed variable that strengthened the relation of these two variables, may have influenced the significant result. Though research suggests the ER difficulty-SC relation is higher among individuals with PTS symptoms relative to individuals with other psychiatric difficulties (e.g., major depressive disorder; OCD; generalized anxiety symptoms; Barlow et al., 2017; Diedrich et al., 2017; Eichholz et al., 2020; Roemer et al., 2009), associations of SC and ER difficulties typically reported are in the .69–.70 range (Barlow et al., 2017; Scoglio et al., 2015; Vettese et al., 2011). This is considerably lower than that observed in the present study (i.e., $r = -.82$). Identification of factors that may impact the ER difficulty-SC relation in the context of PTS symptoms seems warranted.

Hypothesis 2 was also supported. Specifically, ER difficulty was positively related to PTS symptom severity. Researchers have reported a positive relation of ER difficulties and PTS symptom severity among individuals exposed to PTEs, such as treatment seeking combat veterans, survivors of interpersonal violence, refugees, and survivors of childhood maltreatment (Ehring & Quack, 2010; Smith et al., 2019; Spiller et al., 2019; Sun et al., 2020; Vettese et al., 2011). This suggests individuals who report difficulty regulating their emotions may experience higher PTS symptom severity relative to individuals who report low ER difficulty. The present findings add to existing knowledge in that this was the first study to investigate the relation of ER difficulties and PTS symptom severity among a broad range of PTEs relative to similar samples.

Hypothesis 3, which posited low SC would be significantly related to PTS symptom severity, was also supported. This finding is again consistent with results of past research among various populations (e.g., veterans, treatment seeking PTSD patients, and college students who

reported PTE exposure; Hiraoka et al., 2015; Hoffart et al., 2015; Thompson & Waltz, 2008). It appears that individuals who report high levels of PTS symptoms, which often involve guilt and self-blame (Benfer et al., 2020), may have difficulty engaging in a self-compassionate attitude. Notably, guilt and self-blame were captured by the self-report measures used in the present study, though they were not analyzed due to the aims of the present study. Presence of these symptoms may have influenced the PTS-SC relation, particularly given the strong correlation previously reported between low SC and high guilt (Valdez & Lily, 2019). Identifying the role these variables play in future research could add clarity regarding the applicability and specificity of modifying SC in the treatment of PTSD.

Contrary to Hypothesis 4, SC did not account for significant variance in PTS symptom severity above and beyond ER difficulties. This suggests SC does not add predictive power over that of ER difficulties for those who report PTS symptoms. Alternatively, this could indicate ER is a necessary precursor to SC or that SC is subsumed by ER in this population, both of which are discussed below. Notably, the present study is the first to identify relations of these variables in a single statistical model, which led to identification of higher SC-ER interrelatedness relative to any known studies. However, research indicates other factors not presently assessed may influence the ER difficulty-SC relation. For example, one study that identified the variance in ER difficulties accounted for by SC after controlling for childhood maltreatment, addiction severity, and psychological symptom severity found SC contributed to 14% of the variance (Vettese et al., 2011). Thus, inclusion of historical and concurrent behavioral problems within the current model may have further clarified the interrelations of ER, SC, and PTS symptoms.

And yet, several factors may account for the differential outcome observed presently relative to extant research that identified relations of ER, SC, and PTS symptom severity,

including a potential overlap in constructs, assessment selection, temporal precedence of variables, psychopathology characteristics, trauma types, and potential influence of the coronavirus pandemic, which will be discussed below.

Construct Overlap of ER and SC

Though statistical analyses indicated multicollinearity was not problematic in the present dataset, SC and ER difficulties were strongly negatively associated, as noted above. Inclusion of highly related variables (i.e., $r > .70$) in multivariate analyses can lead to problems of logic (Tabachnick & Fidell, 2013). Specifically, researchers posit SC and ER operate as separate constructs, however no known research has specified the divergent validity between SC and ER among PTE exposed college students. As such, there may be some unidentified overlap in constructs, which may have led to the present unsupported hypothesis regarding the final statistical model. With SC and ER being so highly correlated it would be difficult to manipulate one variable without the other, thereby making the variance accounted for by SC, separate from ER, difficult to delineate. Moreover, it is possible that SC is subsumed within ER. Indeed, a strong theoretical construct overlap between SC and the behavioral skills that define effective ER appears present. Specifically, the mindfulness component of SC and the awareness component of ER appear quite similar. The likelihood that SC is part of ER may have led to the non-supported hypothesis for Aim 2.

Assessment Device Selection

Methodological differences of the present study relative to previous work also may explain why SC did not account for a significant amount of variance in PTS symptom severity above ER difficulties. In contrast with the present study, extant research assessed PTS symptom severity using the Clinician-Administered PTSD Scale (Blake et al., 1995) and the Impact Event

Scale (Horowitz et al., 1979), each developed in line with PTSD criteria as presented in previous versions of the DSM. Considering current diagnostic criteria, the Clinician-Administered PTSD Scale does not assess for negative alterations in cognition and mood and the Impact Event Scale does not assess for hyperarousal nor negative alterations in cognition and mood. As such, these measures may not accurately capture the true interrelatedness of ER difficulties and SC among PTE exposed individuals. The present study assessed PTS symptom severity in accordance with present conceptualization of the disorder. The true interrelatedness of ER difficulties and SC may have been more accurately captured in the present analysis, leading to SC not accounting for significant variance in PTS symptoms beyond ER difficulties.

Temporal Precedence of ER and SC

Research is equivocal on whether SC is a precursor for effective ER strategy deployment, or if ER is a precursor for self-compassionate behavior. The present study was designed based upon the assumption that SC functions as a precursor to effective ER strategy deployment, and several lines of evidence provide converging support for this assumption. In the context of PTE exposed individuals, some evidence suggests SC may be a precursor to effective ER strategy deployment (Barlow et al., 2017; Vettese et al., 2011). For example, an individual exposed to a PTE may become entangled with self-blame (Benfer et al., 2020). Overreliance on such cognition as a guide for behavior (e.g., cognitive fusion; Hayes et al., 1996) is associated with high PTS symptom severity and ER difficulties, as well as low value-guided behavior (Cox et al., 2018). SC appears to moderate the relation of unwanted cognition, fusion with cognitions, and psychiatric symptoms (Gillanders et al., 2015), such that individuals who report high SC also report less entanglement with private experiences. As previously mentioned, this suggests SC may be a process that underlies ineffective behavioral strategies. Accordingly, SC may be a

necessary precursor for one to gain distance from unwanted maladaptive thought processes and, in turn, deploy effective behavioral strategies, such as ER, in times of distress. Moreover, childhood maltreatment is related to high ER difficulties (Barlow et al., 2017; Vettese et al., 2011), and this relation is mediated by low levels of SC, suggesting individuals exposed to a PTE may exhibit ER difficulties because of low self-kindness and care. However, the cross-sectional nature of these findings limits interpretations of causality and may not provide a valid representation of these relations.

Other research indicates ER may be foundational to the use of SC skills. First, effective ER skills, including the awareness and acceptance of unwanted emotions, may support acceptance-oriented behavior, which appears necessary to engage in self-compassionate activity. For example, common SC exercises (often presented in the form of meditation or imagery activities) typically ask individuals to approach with willingness and curiosity, rather than avoid, negative emotion (Neff, 2003a). As such, the ability to apply acceptance to internal experiences may be a prerequisite for effective SC behavior. For PTE exposed individuals, levels of avoidance are typically quite high, which may inhibit their ability to practice self-compassionate behavior (Neff et al., 2007; Thompson & Waltz, 2008). Second, ER difficulties appear to be an underlying mechanism in the development and maintenance of PTS symptom severity (Marx & Sloan, 2005) and a key aspect in the relation of SC and PTS. Evidence suggests ER mediates the relation of PTS symptom severity and SC among women interpersonal trauma survivors (Scoglio et al., 2015), supporting the notion that ER difficulties (e.g., excessive avoidance behavior) interferes with the application of a self-compassionate perspective towards one's perceived negative experiences. The present results provide support for such a conceptualization, in that SC did not account for a significant amount of variance in PTS symptoms beyond ER difficulties.

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However, the above reviewed literature and present results are cross-sectional in nature. The lack of longitudinal, experimental, and ecological momentary assessments limits our ability to disentangle temporal precedence of SC and ER among PTE exposed individuals.

Applicability of ER and SC Across Type and Level of Psychopathology

SC and ER may differ in applicability for different psychiatric disorders, which could explain the present non-supported hypothesis among PTE exposed individuals. For example, ER appears particularly relevant to borderline personality disorder (Ratcliffe & Bortolan, 2021), which includes symptoms of high impulsive behavior and emotional reactivity (APA, 2013). Individuals with borderline personality disorder report high levels of avoidance, which is often in the service of regulation of emotion broadly (Feldner et al., 2003). ER appears to facilitate goal-directed behavior and present-moment awareness through acceptance and contextually sensitive ER strategy deployment (Gratz & Roemer, 2004) that may, in turn, facilitate effective regulation of both positive and negative emotions. Alternatively, SC may be particularly useful in the context of major depressive disorder (Diedrich et al., 2017), wherein individuals experience high negative emotion (Macbeth & Gumley, 2012) such as shame (Van Dam et al., 2011; Zhang et al., 2018), which is related to low SC (Neff, 2003a). For an individual with depression, low mood may manifest as symptoms of low self-esteem and high self-criticism (Neff & Germer, 2012), potentially occasioning a pattern of high guilt and shame. SC appears to mediate the relation of shame and depression symptoms (Zhang et al., 2018), suggesting SC may be an intervening process between secondary and primary emotional responses, particularly in the context of low mood. However, research is cross-sectional and thus causality cannot be determined.

As previously noted, both ER and SC appear useful concepts to apply to sequalae of PTE exposure (Barlow et al., 2017; Scoglio et al., 2015; Vettese et al., 2011), such that high PTS

symptom severity is related to high ER difficulties and low SC (Thompson & Waltz, 2008; Tull et al., 2007a). However, evidence also suggests PTS symptom severity may be a useful indicator as to the applicability of ER or SC to presenting problems. Presence of a PTSD diagnosis is associated with high avoidance behaviors, which could disrupt SC due to the previously described need within SC exercises for willingness and accepting stances towards private experiences. Thus, the establishment of effective ER strategies, such as awareness and acceptance of unwanted emotions, may foster effective self-compassionate behavior (Scoglio et al., 2015; Thompson & Waltz, 2008). Indeed, among individuals diagnosed with PTSD, ER mediates the PTS symptom severity-SC relation (Scoglio et al., 2015), such that PTS symptom severity is related to low SC through high ER difficulties. This suggests a focus on enhancing ER abilities may be most useful for individuals experiencing high versus low levels of PTS symptom severity. In the context of low PTS symptom severity, however, SC may be more directly applicable due to lower tendencies towards avoidance-oriented coping strategies (Vettese et al., 2011). Overall, SC and ER may be differentially useful among individuals with varying levels of PTS symptom severity. The present results, which posits SC may not be a precursor to effective ER, may have been different if the sample had reported lower PTS symptom severity.

Trauma Type Categorization on PTS symptom severity, ER, and SC

The present results may also reflect the decision to include all individuals who reported any lifetime PTE exposure rather than selecting based upon a singular type. Extant research suggests both timing and type of PTE exposure impacts severity of PTS symptom severity and associated difficulties, including low ER ability and SC. For example, individuals who are exposed to direct (versus indirect) or chronic (versus single event) PTEs report higher PTS symptom severity, and those who experience early childhood trauma report higher ER

difficulties relative to those who experience adulthood PTEs (Ehring & Quack, 2010; May & Wisco, 2016). Additionally, individuals who are sexually assaulted report higher negative post-trauma emotions (e.g., anger, guilt, irritability), re-experiencing, avoidance, and arousal symptoms, and experience greater disruption in SC than those exposed to other trauma types (Amstadter & Vernon, 2008; Kelley et al., 2009; Williamson, 2019). Unfortunately, ambiguity in self-reported timing (e.g., failure to specify specific time frames or units [e.g., days versus hours] of exposure) and type (e.g., multiple index events listed) of PTE limited our ability to meaningfully categorize participants along these dimensions.

Impact of COVID-19 on PTS Symptom Severity

Results may also have been impacted by data collection occurring amidst the coronavirus pandemic, which has been termed a biological disaster (Dzigbede et al., 2020). The long-term effects of COVID-19 on PTS symptom severity, ER, and SC are unknown, though researchers have recently begun studying the effects of COVID-19 related stress on behavioral health. Evidence suggests COVID-19 may add more stress to participants (Johnson et al., 2020), causing increased PTS symptom severity that, as noted above, is associated with disrupted ER. Research also suggests self-isolation and other COVID-19 related stress is related to high anxiety, depression, substance abuse, and self-harm behavior (World Health Organization, 2020). Perhaps the starkest example of COVID-19 impacts on mental health to date is among healthcare workers, of whom almost 29% report PTS symptoms (Johnson et al., 2020). This suggests the COVID-19 pandemic may function as a chronic, complex-type PTE, particularly for individuals who know, or are in contact with, others exposed to the virus. Though average PTS symptom severity reported by the present participants was similar to past samples, more participants met or exceeded the cutoff for probable PTSD diagnoses (24.3%) than would be typically expected.

The influence of the pandemic on these participants, as well as on levels of ER and SC and the interrelations of each, is presently unknown.

Strengths

The current study has multiple strengths. First, the current study was the first to specify the relation of PTS symptom severity, ER difficulties, and SC in a single statistical model among college students. Specifically, we sought to identify the variance of PTS symptom severity accounted for by SC after controlling for ER difficulties. In so doing, the relation of ER difficulties and SC among PTE exposed individuals with resultant PTS symptoms has been clarified. Second, the present study collected data during a global pandemic. Research indicates existing psychopathology may be exacerbated following biological disasters. By studying the role of PTS symptom severity, ER, and SC during the pandemic, this study established a baseline for these relations in the context of a biological disaster, though it is unclear if the relations reported herein hold up in the context of other types of disasters (e.g., natural). Third, the current sample reported a broader range of PTS symptom severity and higher ratio of probable PTSD relative to extant research studying college samples, which allowed us to investigate the relation reported in the present study among a unique sample. Collectively, these strengths improved upon past research efforts and may help inform the use of SC based interventions for individuals exposed to PTEs.

Limitations and Future Directions

Sample Limitations and Future Directions

Recruitment for the present study was limited to undergraduate college students. Though this approach allows for generalization to other college student populations by limiting heterogeneity, results may not generalize to broader populations. For example, participants were

predominately Female (83.1%), White (94.6%), and relatively young (M_{age} = 19.68), which is not consistent with the general U.S. population (U.S. Census Bureau, 2020). As such, it is unclear whether the results reported herein would apply to individuals with different demographics. Additionally, the current study did not specifically recruit individuals with diagnosed PTSD, nor did we assess diagnostic criteria for PTSD or history of treatment for traumatic stress, so it is unclear if the present results are applicable to these populations. Future research should broaden participant recruitment to community-based samples, including those diagnosed with PTSD.

Theoretical Limitations and Future Directions

As previously discussed, SC and ER may be subject to strong construct overlap that warrants future research. Research is mixed regarding which variable (SC or ER) comes first in the context of psychopathology broadly and PTSD specifically, thus it is unclear the role SC may play in the relation of ER and PTS symptom severity. Moreover, the assessment of third variables may contribute to our understanding of how SC functions among PTE exposed individuals. As such, future research should aim to identify the temporal precedence of SC and ER among other disorders broadly like borderline personality disorder and bipolar disorder, in which high ER difficulties are often reported (Gruber et al., 2012; Ratcliffe & Bortolan, 2021). To do this, researchers may implement strategies to first increase ER among individuals, and then identify whether SC is useful above and beyond ER skills or vice versa. For example, researchers may increase ER through evidenced-based interventions like the ER module of dialectical behavior therapy (Linehan, 2013), which aims to help individuals better manage their emotions by learning when to deploy ER strategies. Researchers may increase SC using evidence-based interventions such as compassion focused therapy (Gilbert, 2010), which

encourages individuals to see themselves separate from their suffering. To assess whether ER and SC change independently, self-report measures like the DERS and SCS that measure trait-level ER and SC could be administered periodically. The results of the aforementioned studies may then inform how SC and ER operate specifically among PTE exposed individuals who report PTS symptoms. In the context of PTS symptoms, third variables like shame and guilt, which are reportedly high among individuals exposed to PTEs (Neff & Germer, 2012; Van Dam et al., 2011), should be assessed to identify their potential influence on the modification of SC in the treatment of PTSD.

Methodological Limitations and Future Directions

All variables were assessed through cross-sectional self-report data, which limits the ability to analyze PTS symptom severity and behavior across time. Specifically, the present methodology does not allow for the assessment of causative relations because each variable is assessed at a singular time point. Additionally, the present methodology does not allow for the identification of important details about reported PTEs and, in turn, investigation of the influence of trauma types on outcomes. For example, some participants in the present study provided too little specificity in their self-reported index trauma to allow for categorization of traumas or if an event would qualify as a Criterion A event. Moreover, participants were asked to reflect on past experiences, which may elicit recall or retrospective bias. As such, it is unclear whether the participants' report of SC is reflective of how they feel during the times they experience PTS symptoms. Thus, future research should include the use of clinical interviews in tandem with experimental and longitudinal research designs to delineate the applicability of SC and ER in PTS symptom severity more effectively.

The inclusion of clinical interviews would allow for proper collection of details related to index traumas. For example, the Clinician Administered PTSD Scale for DSM-5 (Weathers et al., 2013b) is a diagnostic interview that includes a detailed description of an individual's self-reported index trauma. The interviewer asks follow-up questions to obtain clarity about the reported index trauma that is useful in concluding whether someone meets a Criterion A event requirement. Additionally, implementing a clinical interview in future research would make the individual specify only *one* most distressing PTE, so that PTE's can be separated into trauma types, which may be useful for delineating how relevant other variables like SC and ER are in particular groups. For example, individuals exposed to sexual assault PTE's appear to report higher negative post-trauma emotions, and experience greater disruption in SC relative to individuals exposed to other trauma types (Amstadter & Vernon, 2008; Kelley et al., 2009; Williamson, 2019). Thus, future research may investigate the role of SC and ER among various trauma types.

Additionally, future research should include experimental and longitudinal research designs to address the limitations of causation and retrospective bias. For example, experimental study designs could include the assessment of ER among PTE exposed individuals via psychophysiological devices. Research suggests subjective and objective indicators of ER are often contradictory (Connelly & Denney, 2007; Shepherd & Wild, 2014). Specifically, self-reports of ER may be dependent on high self-awareness and meta-cognitive abilities (Cole et al., 2008; Robinson & Clore, 2002), whereas heart rate measurements (e.g., heart rate variability) provides a noninvasive objective measure of an individual's ability to regulate their emotions (Appelhans & Luecken, 2006). In addition to psychophysiological assessments, the use of behavioral tasks that measure ER and SC through a lab-based study is warranted. Specifically, it

would be important to identify whether people who are high in SC are inherently responding 'correctly' to ER questions because they are practicing self-kindness and strategies to not beat themselves up. The Emotion Regulation Task (Goldin et al., 2008) is a behavioral measure of ER whereby positive and negative emotions are elicited by viewing a set of images. Participants demonstrate their ability to increase positive emotions and down regulate negative emotions. Their ability to regulate their emotions in real time to the image sets is determined by a combination of self-report and neurobiological assessments (i.e., fMRI). However, this task appears to be adopted from a control-oriented conceptualization of ER (Gross, 1998); research has yet to determine the usefulness of the Emotion Regulation Task within a functional and contextually sensitive conceptualization of ER as outlined by Gratz and Roemer (2004). Future research should aim to develop and validate a behavioral task that measures ER from a more functional perspective. In the context of SC, there are currently no known SC based behavioral tasks, which opens an additional avenue for future research.

Researchers may also employ the use of longitudinal research designs that include daily diary or other intensive momentary assessment, which may reduce retrospective bias. Several measures exist, or could be developed from existing self-report surveys, to assess momentary levels of SC, ER, and PTS symptom severity. For example, the six-item state SCS-short form (Neff et al., 2021) may be used to capture momentary or daily levels of SC among study participants. In the context of a daily ER questionnaire, future research could include the use of the 21-item state-based version of the DERS (Lavender et al., 2017) to assess past day ER difficulties, though this measure may prove too long for use in intensive assessment designs. Similarly, a modified version of the PCL-5 could be used to assess daily PTS symptoms (e.g.,

Gaher et al., 2014), thus allowing for the measurement of current PTS symptom severity and eliminating the potential effect of retrospective bias.

Conclusion

In summary, the present study is the first to a) identify the relation of PTS symptom severity, ER difficulties, and SC in a sample of PTE exposed college students and b) identify the variance in PTS symptom severity accounted for by SC above and beyond that accounted for by ER difficulties. Consistent with previous research, ER difficulty scores were inversely correlated with SC scores and positively correlated with PTS symptoms severity scores. SC scores were positively correlated with PTS symptom severity scores. Contrary to our hypothesis, SC did not account for a significant amount of variance in PTS symptom severity after accounting for ER difficulties, which suggests there may be other variables that account for a significant amount of variance in the relation reported herein. Regardless, the present study adds to extant literature aimed at delineating the relation of ER and SC.

Overall, the present results support the notion that ER and SC have overlapping components, which makes it challenging to delineate which variable is more important in the treatment of PTSD. Future research is warranted to identify the role of each variable in the recovery from PTS symptoms. Despite several limitations in the sample, theory, and method, it appears lack of ability to effectively deploy ER skills is associated with high PTS symptom severity and, when this relation is accounted for, SC does not add predictive power. Future research should include the assessment of extraneous variables that may influence PTS symptom severity development, maintenance, and remittance. Specifically, the use of lab-based behavioral inductions and longitudinal designs that include the use of clinical interviews should be

considered. Research that considers the limitations reported herein may identify beneficial

treatment targets for individuals who report PTS symptoms.

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Appendix A

Eligibility Questionnaire

Please indicate your answer to each question.

Are you 18 years of age or older?

     N = No
     Y = Yes

Are you proficient in the English language at the 8th grade level or higher?

     N = No
     Y = Yes

Appendix B

Life Events Checklist - 5

Listed below are a number of difficult or stressful things that sometimes happen to people. For each event select one or more of the boxes to the right to indicate that: (a) it happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); (e) you're not sure if it fits; or it doesn't apply to you.

Be sure to consider your lifetime as you go through the list of events.

Event	Happened to me	Witnessed it	Learned about it	Part of my job	Not sure	Doesn't apply
1. Natural disaster (for example, flood, hurricane, tornado, earthquake)						
2. Fire or explosion						
3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash)						
4. Serious accident at work, home, or during recreational activity						
5. Exposure to toxic substance (for example, dangerous chemicals, radiation)						
6. Physical assault (for example, being attacked, hit, slapped, kicked, beaten up)						
7. Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb)						
8. Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm)						
9. Other unwanted or uncomfortable sexual experience						

10. Combat or exposure to a war-zone (in the military or as a civilian)						
11. Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war)						
12. Life-threatening illness or injury						
13. Severe human suffering						
14. Sudden violent death (for example, homicide, suicide)						
15. Sudden accidental death						
16. Serious injury, harm, or death you caused to someone else						
17. Any other very stressful event or experience						

A. If you have experienced more than one of the events in PART 1, think about the event you consider the worst event, which for this questionnaire means the event that currently bothers you the most. If you have experienced only one of the events in PART 1, use that one as the worst event. Please answer the following questions about the worst event (check all options that apply):

1. Briefly describe the worst event (for example, what happened, who was involved, etc.).
_____
_____

2. How long ago did it happen? _____ (please estimate if you are not sure)

3. How did you experience it?
    _____ It happened to me directly
    _____ I witnessed it
    _____ I learned about it happening to a close family member or close friend
    _____ I was repeatedly exposed to details about it as part of my job (for example, paramedic,   police, military, or other first responder)
    _____ Other, please describe:

4. Was someone's life in danger?
    _____Yes, my life
    _____Yes, someone else's life
    _____No

5. Was someone seriously injured or killed?

         ____ Yes, I was seriously injured

         ____ Yes, someone else was seriously injured or killed

         ____ No

6. Did it involve sexual violence?

         ____Yes ____No

7. If the event involved the death of a close family member or close friend, was it due to some kind of accident or violence, or was it due to natural causes?

         ____ Accident or violence

         ____ Natural causes

         ____ Not applicable (the event did not involve the death of a close family member or

close   friend)

8. How many times altogether have you experienced a similar event as stressful or nearly as stressful as the worst event?

         ____ Just once

         ____ More than once (please specify or estimate the total # of times you have had this

experience   _____

Appendix C

Demographics Questionnaire

What was your sex at birth?

0 = Male
1 = Female
2 = Intersex
3 = Other

What is your current gender identity? (Check all that apply)

1 = Man
2 = Woman
3 = Trans man
4 = Trans woman
5 = Genderqueer
6 = Gender fluid
7 = Agender
8 = Questioning or unsure
9 = Other

What is your date of birth? Please enter in the format mm/dd/yyyy.
_____

What is your age (in years)?
_____

Is English a second language for you?

N = No
Y = Yes

Were you born in the United States?

N = No
Y= Yes
If NO:
How long have you been living here? _____
Where were you born? _____

What is your ethnic background?

1 = White
2 = American Indian/Alaska Native

3 = Black/African American
4 = Asian/Asian American
5 = Hispanic/Latino
6 = Native Hawaiian or Other Pacific Islander
7 = Middle Eastern/Northern African
8 = Other (including multi-ethnic, please specify): _____

How do you self-identify?

1 = Straight (Heterosexual)
2 = Gay
3 = Lesbian
4 = Bisexual
5 = Queer
6 = Questioning or unsure
7 = Asexual
8 = Same-Gender-Loving
9 = Pansexual
10 = Other

What is your current relationship status?

1 = Single, never married
2 = Widowed
3 = Married
4 = Separated
5 = Divorced
6 = Living with partner (but not legally married)
7 = Long-term committed relationship

What is the highest grade or degree you have completed?

1 = Eighth grade or less
2 = Some high school
3 = GED
4 = High school graduate
5 = Business or technical training beyond high school
6 = Some college
7 = College graduate
8 = Some graduate or professional school beyond college
9 = Master's degree
10 = Doctoral degree

Are you a student?
1 = Not a student
2 = Part-time student

3 = Full-time student

What is your employment status?
1 = Unemployed
2 = Employed part-time (working 1-30 hours a week)
3 = Employed full-time (working more than 30 hours a week)
4 = Home-maker
5 = Retired

What is your total household/family income?

1 = Less than $9,999
2 = $10,000 – 19,999
3 = $20,000 – 29,999
4 = $30,000 – 39,999
5 = $40,000 – 49,999
6 = $50,000 – 59,999
7 = $60,000 – 69,000
8 = $70,000 – 79,000
9 = $80,000 – 89,000
10 = $90,000 – 99,999
11 = $100,000 or more

Appendix D

PTSD Checklist - 5

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then select one of the numbers to the right to indicate how much you have been bothered by that problem in the <u>past month.</u>

In the past month, how much were you bothered by:	*Not at all*	*A little bit*	*Moderately*	*Quite a bit*	*Extremely*
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (*as if you were actually back there reliving it*)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (*for example, heart pounding, trouble breathing, sweating*)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience.	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (*for example, people, places, conversations, activities, objects, or situations*)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (*for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous*)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that your used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4

14. Trouble experiencing positive feelings (*for example, being unable to feel happiness or have loving feelings for people close to you*)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "super alert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Appendix E

Difficulties in Emotion Regulation Scale

Please indicate how often the following statements apply to you by writing the appropriate number from the scale below on the line beside each item.

1	2	3	4	5
Almost never	Sometimes	About half the time	Most of the time	Almost always
(0-10%)	(11-35%)	(36-65%)	(66-90%)	(91-100%)

_____ 1) I am clear about my feelings.
_____ 2) I pay attention to how I feel.
_____ 3) I experience my emotions as overwhelming and out of control.
_____ 4) I have no idea how I am feeling.
_____ 5) I have difficulty making sense out of my feelings.
_____ 6) I am attentive to my feelings.
_____ 7) I know exactly how I am feeling.
_____ 8) I care about what I am feeling.
_____ 9) I am confused about how I feel.
_____ 10) When I'm upset, I acknowledge my emotions.
_____ 11) When I'm upset, I become angry with myself for feeling that way.
_____ 12) When I'm upset, I become embarrassed for feeling that way.
_____ 13) When I'm upset, I have difficulty getting work done.
_____ 14) When I'm upset, I become out of control.
_____ 15) When I'm upset, I believe that I will remain that way for a long time.
_____ 16) When I'm upset, I believe that I will end up feeling very depressed.
_____ 17) When I'm upset, I believe that my feelings are valid and important.
_____ 18) When I'm upset, I have difficulty focusing on other things.
_____ 19) When I'm upset, I feel out of control.
_____ 20) When I'm upset, I can still get things done.
_____ 21) When I'm upset, I feel ashamed at myself for feeling that way.
_____ 22) When I'm upset, I know that I can find a way to eventually feel better.
_____ 23) When I'm upset, I feel like I am weak.
_____ 24) When I'm upset, I feel like I can remain in control of my behaviors.
_____ 25) When I'm upset, I feel guilty for feeling that way.
_____ 26) When I'm upset, I have difficulty concentrating.
_____ 27) When I'm upset, I have difficulty controlling my behaviors.
_____ 28) When I'm upset, I believe there is nothing I can do to make myself feel better.
_____ 29) When I'm upset, I become irritated at myself for feeling that way.
_____ 30) When I'm upset, I start to feel very bad about myself.
_____ 31) When I'm upset, I believe that wallowing in it is all I can do.
_____ 32) When I'm upset, I lose control over my behavior.
_____ 33) When I'm upset, I have difficulty thinking about anything else.
_____ 34) When I'm upset I take time to figure out what I'm really feeling.

_____ 35) When I'm upset, it takes me a long time to feel better.
_____ 36) When I'm upset, my emotions feel overwhelming.

Appendix F

Self-Compassion Scale

Please read each statement carefully before answering. Indicate how often you behave in the stated manner, using the following scale:

Almost never   Almost always

  1   2   3   4   5

_____ 1. I'm disapproving and judgmental about my own flaws and inadequacies.
___＿_ 2. When I'm feeling down I tend to obsess and fixate on everything that's wrong.
_____ 3. When things are going badly for me, I see the difficulties as part of life that everyone
         goes through.
_____ 4. When I think about my inadequacies, it tends to make me feel more separate and cut off
         from the rest of the world.
_____ 5. I try to be loving towards myself when I'm feeling emotional pain.
_____ 6. When I fail at something important to me I become consumed by feelings of
         inadequacy.
_____ 7. When I'm down and out, I remind myself that there are lots of other people in the world
         feeling like I am.
_____ 8. When times are really difficult, I tend to be tough on myself.
_____ 9. When something upsets me I try to keep my emotions in balance.
_____ 10. When I feel inadequate in some way, I try to remind myself that feelings of
          inadequacy are shared by most people.
_____ 11. I'm intolerant and impatient towards those aspects of my personality I don't like.
_____ 12. When I'm going through a very hard time, I give myself the caring and tenderness I
          need.
_____ 13. When I'm feeling down, I tend to feel like most other people are probably happier
          than I am.
_____ 14. When something painful happens I try to take a balanced view of the situation.
_____ 15. I try to see my failings as part of the human condition.
_____ 16. When I see aspects of myself that I don't like, I get down on myself.
_____ 17. When I fail at something important to me I try to keep things in perspective.
_____ 18. When I'm really struggling, I tend to feel like other people must be having an easier
          time of it.
_____ 19. I'm kind to myself when I'm experiencing suffering.
_____ 20. When something upsets me I get carried away with my feelings.
_____ 21. I can be a bit cold-hearted towards myself when I'm experiencing suffering.
_____ 22. When I'm feeling down I try to approach my feelings with curiosity and openness.
_____ 23. I'm tolerant of my own flaws and inadequacies.
_____ 24. When something painful happens I tend to blow the incident out of proportion.
_____ 25. When I fail at something that's important to me, I tend to feel alone in my failure.
_____ 26. I try to be understanding and patient towards those aspects of my personality I don't
          like

Appendix G

Attention Check Items

Did you expend effort and attention sufficient to warrant using your responses for this research study?

     Y = YES
     N = NO

For this query, mark NO and move on.

     Y = YES
     N = NO

I would rather eat a piece of fruit than a piece of paper

     I agree
     Not sure
     I disagree