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Does Self-Compassion Buffer Against the Potential Effects of Perfectionism and Psychopathology on Non-Suicidal Self-Injury?

Natasha Bourgoin
East Tennessee State University

Does Self-Compassion Buffer Against the Potential Effects of Perfectionism and Psychopathology on Non-Suicidal Self-Injury?

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by

Natasha Memorial Bourgoin

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Meredith K. Ginley, Ph.D., Chair

Jameson K. Hirsch, Ph.D.

Ginette Blackhart, Ph.D.

Aubrey R. Dueweke, Ph.D.

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ABSTRACT

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University students with increased rates of reported perfectionism, anxiety, and depression, are vulnerable to non-suicidal self-injury (NSSI). However, not all students with psychological distress engage in NSSI, suggesting protective factors may help to mitigate this risk. The present study examined the relation between perfectionism and NSSI, via the mediating effects of anxiety and depression, and the moderating role of self-compassion. Participants were 338 university students (67% female; 87% White) who completed several self-report measures. Students with greater perfectionism reported higher levels of anxiety and depressive symptoms and, in turn, more NSSI engagement. Self-compassion and several self-compassionate domains attenuated connections between perfectionism and psychopathology and between depression and NSSI; conversely, non-self-compassionate domains strengthened associations between perfectionism and psychopathology. Addressing NSSI risk factors (e.g., perfectionism and psychopathology) and fostering self-compassion may reduce the risk of heightened anxiety and depression among perfectionists, consequently reducing their likelihood of NSSI engagement.

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Chapter 1. Introduction

Non-suicidal self-injury (NSSI) is the act of purposefully causing harm to one's body without suicidal intent (Nock & Prinstein, 2004) and may include behaviors such as cutting, scratching, burning, head banging, and self-hitting (Klonsky & Muehlenkamp, 2007). NSSI occurs more frequently in adolescents (12%-47%) and university students (17%-38.9%) than in adults (4%-23%; Cipriano et al., 2017). The most common age of onset is between the ages of 12-14 years (Muehlenkamp & Gutierrez, 2007; Nock et al., 2006), although, among university students who engage in NSSI, about 39% began self-harming between the ages of 17 and 24 years, particularly during their incoming year of college (Taliaferro & Muehlenkamp, 2015). Common experiential risk factors for NSSI include, but are not limited to, a history of child maltreatment, abuse, or family dysfunction, academic and life stress, interpersonal problems and social isolation, and bereavement (Cipriano et al., 2017; Fox et al., 2015; Lauw et al., 2015). Cognitive, emotional, and behavioral contributors to NSSI include poor self-esteem and distress tolerance, impulsivity, internalizing symptoms (e.g., depression, anxiety), substance abuse, emotion regulation difficulties, and perfectionistic personality traits (Lauw et al., 2015).

In previous research, perfectionism confers risk for increased vulnerability to NSSI (Chester et al., 2015; Gyori & Balazs, 2021; Hoff & Muehlenkamp, 2009). Further, associations exist between perfectionism, anxiety, and depression (Einstein et al., 2000; Kawamura et al., 2001) and between these forms of psychopathology and NSSI (Chartrand et al., 2012; Kang et al., 2021; Kokaliari et al., 2017; Robinson et al., 2017; Trainor et al., 2017). However, not all individuals who experience perfectionism or psychopathology engage in NSSI, possibly due to the presence of protective factors, such as self-compassion.

Self-compassion is comprised of six components, including self-kindness versus self-judgement, common humanity versus isolation, and mindfulness versus overidentification, and is associated with reduced psychopathology and NSSI (Boyne & Hamza, 2021; Cleare et al., 2019; Muris & Petrocchi, 2017; Neff et al., 2019; Per et al., 2022; Suh & Jeong, 2021). Further, self-compassion serves as a moderator of the linkages between perfectionism and depression and anxiety, suggesting its potential therapeutic role in reducing risk for psychopathology in the context of perfectionism (Abdollahi et al., 2020; Ferrari et al., 2018; Tobin & Dunkley, 2021). In a study of college students, self-compassion also moderated the relation between depression and anxiety, and NSSI (Kaniuka et al., 2020). However, no previous studies have examined the potential moderating effects of self-compassion on the association between perfectionism and NSSI, nor has self-compassion been investigated in the context of an integrative model linking perfectionism and psychopathology to NSSI.

Of note, perfectionism is directly associated with NSSI, and may be indirectly associated via rumination and negative affect, symptoms often present in depression and anxiety (Tonta et al., 2022). However, it remains crucial to understand the mechanisms of action for this association and the role of adaptive characteristics, such as self-compassion, that might buffer the link between perfectionism and psychopathology. As such, we will examine the association between perfectionism and NSSI, and the potential mediating role of depression and anxiety, in a collegiate sample. In addition, we will examine self-compassion, and each of its sub-components, as potential moderators of these associations. In the following sections, we discuss the epidemiology and etiology of non-suicidal self-injury, including risk (i.e., perfectionism, anxiety, depression) and protective factors (i.e., self-compassion) that might contribute to, or buffer against, engagement in NSSI.

Nonsuicidal Self-Injury

Nonsuicidal self-injury is conceptualized as the purposeful infliction of pain or injury to oneself in ways that are not culturally or socially approved, without the intent to die (Muehlenkamp et al., 2012). NSSI is distinguishable from deliberate self-harm, which is a more comprehensive term that includes self-harming behaviors performed both with and without the intent to die (Muehlenkamp et al., 2012). According to Nock (2010), NSSI can manifest as mild, moderate, and severe forms of self-injury, self-injurious thoughts, or suicide threats and gestures occurring in the absence of suicide intent. Intrapersonal reasons for engaging in NSSI are most common, including regulating distressing emotions, ending prolonged feelings of numbness, and avoiding or escaping negative internal states (Bresin & Gordon, 2013; Taylor et al., 2018). Some individuals may engage in NSSI for interpersonal reasons, such as to punish or communicate their distress to others, although these reasons may be less common (Taylor et al., 2018).

NSSI is a significant public health concern, especially among adolescents and young adults (Klonsky et al., 2014). International lifetime prevalence estimates for NSSI are approximately 17.2% for adolescents [aged 10-17 years], 13.4% for young adults [aged 18-24 years], and 5.5% for adults [aged 25 years or older] (Swannell et al., 2014; Xiao et al., 2022). In the United States, the lifetime prevalence rate for NSSI among adults is approximately 6% (Klonsky, 2011). The most common age of onset is around 12 years of age (Cipriano et al., 2017), with prevalence rates typically peaking during middle adolescence (ages 15-16 years) and declining with age (Monto et al., 2018; Plener et al., 2015). The highest prevalence rates among adults are seen in university students, particularly among incoming cohorts (Cipriano et al., 2017; Kiekens et al., 2019), and rates of NSSI have more than doubled among university students between 2007 and 2018 (Duffy et al., 2019). University students may be at elevated risk

for NSSI given the increase in life stressors they typically face during this transitional period, such as leaving home and family, navigating new relationships, and increased academic and financial stress (Kiekens et al., 2019; Liu et al., 2016).

Other sociodemographic factors, such as gender, may also impact the risk for and prevalence of NSSI. Although much of the literature on gender differences has shown that females appear to engage in NSSI more frequently than males (Giletta et al., 2012; Valencia-Agudo et al., 2018), some studies have found comparable rates of NSSI between genders (Swannell et al., 2014). Such inconsistencies may be due to changes in engagement in NSSI across the lifespan; for example, self-harm is more common in females between the ages of 16 and 19, but no identifiable gender differences exist between younger and older individuals (Wilkinson et al., 2022). Female college students are more likely to report using NSSI to regulate emotions, punish themselves, or communicate distress to others, and to experience an uncontrollable urge to self-harm, whereas male students more often identify sensation seeking as the main function of NSSI, and more commonly self-harm when angry or under the influence of substances (Whitlock et al., 2011).

Trends of racial and ethnic differences in NSSI have been documented in previous research, including among adolescents and college students, such that multiracial and Native American individuals tend to have the highest NSSI prevalence rates, followed by White and Hispanic groups, with Black individuals typically having the lowest rates (Eisenberg et al., 2013; Kuentzel et al., 2012; Lipson et al., 2022; Monto et al., 2018). There is evidence to suggest that intersectionality between race/ethnicity and other factors like gender and/or socioeconomic status, play an important role in predicting NSSI prevalence (Gholamrezaei et al., 2017), which may help to explain inconsistent findings (Cipriano et al., 2017; Rojas-Velasquez et al., 2021).

Heritability of NSSI is estimated to be between 40 and 60% (Kaess et al., 2021), with interactions between genes and the environment leading to increased risk for NSSI (Gao et al., 2021; Hankin et al., 2015). Environmental factors, including stress, can also impact neurobiological processes, such as neurotransmission and hormone release, increasing risk for NSSI behaviors (Groschwitz & Plener, 2012; Kaess et al., 2021). For example, the hypothalamic-pituitary-adrenal (HPA) system produces the stress hormone, cortisol, to help regulate the body's response to stress (Heaney, 2020). However, in those who engage in NSSI, the HPA axis may be hyporesponsive, resulting in maladaptive stress responses and reduced recovery (Kaess et al., 2012; Klimes-Dougan et al., 2019). Relatedly, because of the role endogenous opioids play in counteracting stress responses, it has been hypothesized that deficiencies in the opioidergic system's response to stress may increase NSSI risk (Bresin & Gordon, 2013; Stanley et al., 2010; Valentino & Van Bockstaele, 2015). This hypothesis is based on the belief that NSSI triggers the release of endogenous opioids, leading to the restoration of opioid-homeostasis and, thus, a lowered stress response that serves as an NSSI reinforcer (Bresin & Gordon, 2013).

The opioidergic system also helps to regulate pain and affect (Ribeiro et al., 2005), and endogenous opioids released to regulate pain experienced during NSSI may reduce negative affect (Bresin & Gordon, 2013; Kirtley et al., 2016). Similarly, the serotonergic system plays a role in affect regulation, such that lower serotonin levels are associated with impulsivity and impaired emotion regulation abilities (Fikke et al., 2013). Individuals with low serotonin tend to be reactionary to affective triggers, contributing to engagement in impulsive actions, including NSSI (Carver et al., 2008; Fikke et al., 2013).

Psychosocial factors also contribute to NSSI risk, and psychodynamic models were among the earliest theories used to explain NSSI (Jacobson & Batejan, 2014), including the anti-suicide model of NSSI, proposed by Karl Menninger (1938) and predicated on Freud's theorized conflict between life and death drives (Jacobson & Batejan, 2014; Kamen, 2009; Suyemoto, 1998), which posits engagement in NSSI as a compromising act to reduce suicide risk. Across numerous studies, NSSI is conceptualized as a short-term coping mechanism and suicide replacement behavior, although the use of NSSI for this purpose is often related to the highest likelihood of suicidal ideation, behaviors, and attempts (Kraus et al., 2020; Paul et al., 2015; Robinson et al., 2021). Alternatively, according to the defective-self model of NSSI, some individuals engage in NSSI to self-punish or as a means of subduing intrusive self-criticism or negative emotions about themselves (Burke et al., 2021; Glassman et al., 2007; Hooley et al., 2010). This linkage has been supported using ecological momentary assessment with college students (Burke et al., 2021; Muehlenkamp & Brausch, 2016), and more than half of individuals who engage in NSSI report doing so as a form of self-punishment (Klonsky et al., 2014; Taylor et al., 2018).

Relatedly, the experiential avoidance (EA) model of NSSI proposes that when a triggering event produces an aversive emotional response, an individual who wishes to avoid the resulting intrusive thoughts and feelings may engage in NSSI as a means of escape (Anderson et al., 2018; Chapman et al., 2006). If engaging in NSSI reduces or eliminates distress, it may become negatively reinforced and, thus, maintained over time, becoming an automatic conditioned response to negative emotional arousal (Chapman et al., 2006). Indeed, in a study of adolescents, greater emotional avoidance was associated with greater frequency of NSSI (Howe et al., 2012). The cognitive-emotional model of NSSI similarly suggests that, in the context of

emotionally volatile situations, individuals with poor emotion regulation skills and who are emotionally reactive may engage in NSSI as a form of avoidance or to alter emotional responses (Hasking et al., 2017). For instance, in a study of college students with poor emotion regulation and weak self-efficacy to resist NSSI, emotional reactivity was linked to NSSI (Dawkins et al., 2019).

During such times of distress, according to the theory of mind, which is the ability to explain and predict behavior by accurately attributing thoughts, feelings, and intent to the self and others (Premack & Woodruff, 1978), stress may hinder emotional awareness and mentalization (Bateman & Fonagy, 2010), perhaps resulting in vulnerability to NSSI. As an example, in a study of inpatient adolescents, compromised theory of mind was related to increased frequency and severity of NSSI (Laghi et al., 2016). Similarly, dysfunction of interpersonal regulatory mechanisms, including difficulty accurately encoding or interpreting social cues, contributes to NSSI risk (Prinstein et al., 2009). This inability to generate, select, or enact adaptive behaviors during interpersonal interactions (i.e., social problem-solving skills), which may be a consequence of previous exposure to stress or trauma, is robustly associated with NSSI (Ammerman et al., 2021; Nock & Mendes, 2008; Prinstein et al., 2009). Further, according to the cognitive-emotional model of NSSI (Hasking et al., 2017), the risk for NSSI may be affected by the expected outcomes of engaging in NSSI and perceived ability to engage in, or resist, NSSI behaviors (Hasking & Rose, 2016). For example, in a longitudinal study of college students, the association between NSSI outcome expectancies (e.g., pain vs emotion regulation expectancy) and NSSI engagement was moderated by self-efficacy to resist NSSI (Dawkins et al., 2021).

Bandura's social learning theory (SLT), which gave rise to the cognitive-emotional model of NSSI, suggests that individuals can learn by observing and imitating others (Bandura & Walters, 1977). Regarding NSSI, SLT has primarily been utilized to investigate the phenomenon of social contagion or the influence of social modeling on NSSI (Muehlenkamp et al., 2008; Whitlock et al., 2006). In studies of inpatient and outpatient groups, for instance, exposure to NSSI among peers and in the media is associated with increased NSSI engagement among those who are exposed (Conigliaro & Ward-Ciesielski, 2021; Muehlenkamp et al., 2008; Zelkowitz et al., 2017; Zhu et al., 2016). Relatedly, Nock's (2010) social learning hypothesis of NSSI states that when an individual with underlying psychological vulnerabilities (e.g., emotion regulation difficulties) experiences social exposure to NSSI, they are at increased risk for NSSI engagement. In previous research with university students, for instance, interpersonal exposure to NSSI and poor emotion regulation were associated with frequency and lifetime history of NSSI (Zelkowitz et al., 2017).

Self-determination theory (SDT) integrates external (e.g., social environment) and internal factors (e.g., psychological need satisfaction) to explain personality and human motivation (Deci & Ryan, 2012), including engaging in NSSI. SDT suggests that there are three universal psychological needs necessary for optimal human development and functioning: (1) competence (i.e., effective at achieving goals), (2) autonomy (i.e., having input and freedom of choice), and (3) relatedness (i.e., feeling loved and cared for by significant others), which can be undermined or enhanced by one's social environment and, when satisfied, contribute to autonomous motivation (Deci & Ryan, 2012; Deci & Ryan, 2015). In previous research with adolescents, individuals with a history of NSSI reported lower levels of need satisfaction than individuals without a history of NSSI (Emery et al., 2017). Similarly, in college students, lower

need satisfaction was an independent predictor of NSSI engagement (Emery et al., 2016). From a developmental perspective, when basic psychological needs are thwarted (e.g., lack of parental autonomy support), emotional regulation capabilities may be disrupted, resulting in a greater risk for NSSI (Emery et al., 2017).

Overall, previous research suggests that NSSI is commonly motivated by interpersonal functions, which appear to correspond to the initiation of NSSI, and intrapersonal functions, which appear to be associated with repeated acts of NSSI (Klonsky et al., 2015; Muehlenkamp et al., 2013; Yearwood & Bosnick, 2021). There is an interplay between these functions, such that social stressors tend to trigger aversive internal reactions that individuals may attempt to alleviate through NSSI engagement (Santangelo et al., 2017; Turner et al., 2016). This entanglement of intra- and inter-personal contributors to NSSI is conceptualized by the four-function model of NSSI (Hepp et al., 2020; Nock & Prinstein, 2004; Prinstein et al., 2009), which posits that the onset, maintenance, frequency, and cessation of NSSI behavior are dependent on either automatic (i.e., intrapersonal) or social (i.e., interpersonal) contingencies that can be positively or negatively reinforced. The automatic-negative reinforcement function of NSSI serves to reduce negative affect (i.e., stop bad feelings), whereas automatic-positive reinforcement is a process utilized to create internal emotional states (i.e., to feel something; Lloyd-Richardson et al., 2007; Nock & Prinstein, 2004; Prinstein et al., 2009). Although automatic-negative reinforcement is the most endorsed function of NSSI (Hepp et al., 2020), there is also support for the role of social reinforcement function, whereby desirable environmental changes result from NSSI (i.e., positive reinforcement), such as generating a desired response from someone else, (e.g., elicit attention), or escaping or avoiding an

undesirable social demand (i.e., negative reinforcement; Nock & Prinstein, 2004; Prinstein et al., 2009).

Given that the most common reason offered for NSSI engagement is to reduce negative affect (Hepp et al., 2020), researchers have worked to better understand the associations between emotion regulation difficulties and NSSI (Emery et al., 2016; Heath et al., 2008; Muehlenkamp et al., 2010; Kranzler et al., 2016; Tatnell et al., 2017). Affect regulation is a complex process that relies on awareness, understanding, and acceptance of emotions, and the ability to control impulsive behaviors, act in alignment with goals during emotional experiences, and apply appropriate and effective emotion regulation strategies to modify emotions (Gratz & Roemer, 2004). For example, as applied to psychopathology (Larsen et al., 2013; Rogier & Velotti, 2018; Werner et al., 2011), Gross' process model of emotion regulation indicates that there are five points in the emotion generative process, including: (1) situation selection, or choosing to approach or avoid specific stimuli; (2) situation modification, or using problem-focused coping to modify emotional impact; (3) attentional deployment, or attending to specific aspects of the experience; (4) cognitive change, or altering interpretations of, and meaning assigned to, emotional situations; and (5) experiential, behavioral, and physiological response modulation, which involves attempts to influence an emotional reaction once triggered (Gross, 1998a, 1998b, 2002). The first four points are antecedent-focused and occur before an emotional response tendency is activated, thus impacting behavior and physiological responses, and the fifth point is response-focused, occurring after an emotion has been triggered (Gross, 2002).

A conceptual framework of NSSI as an emotion regulation strategy, based on Gross' process model of emotion regulation, indicates that NSSI may be used during situation selection to avoid situations that might increase distress; during situation modification to evoke care from

others, project strength, or modify the demands of others; during attentional deployment to distract oneself by shifting focus to self-harming behavior, interrupt unwanted thoughts, or reduce rumination; during cognitive change to punish oneself or to shift one's view of self to low-order awareness; and, during response modulation to increase endogenous opioid release or decrease parasympathetic nervous system activation (Mckenzie & Gross, 2014).

When individuals struggle to regulate emotions, healthy coping strategies may be insufficient to distract from or regulate negative emotions, which may lead to engagement in increasingly intense, even maladaptive, coping behaviors, including NSSI (Selby & Joiner, 2009). This concept is illustrated by Linehan's biosocial theory (1993), which posits that NSSI serves as an emotion regulation strategy in the context of psychopathology, particularly borderline personality disorder (BPD). Per this theory, individuals with BPD lack adaptive emotion and behavior regulation skills, which may lead to NSSI engagement as an attempt to modify intense emotional reactions (In-Albon et al., 2013; Linehan, 1993; Wolff et al., 2019).

To better explain the connection between emotion dysregulation and dysregulated behaviors seen in individuals with BPD, Selby and Joiner (2009) proposed the emotional cascade model (ECM), which suggests that ruminative processes link emotional and behavioral dysregulation through emotional cascades. During an "emotional cascade," individuals may experience positive feedback loops, where rumination on negative emotions or thoughts increases negative affect, thus cyclically increasing attention given to emotional stimuli, with consequent exacerbation of negative affect and rumination (Selby & Joiner, 2009). Due to the intensity of the ruminative process, typically effective emotion regulation strategies (e.g., cognitive reappraisal, healthy distractions) may fail to disrupt the emotional cascade, leading to engagement in behaviors that, although maladaptive, may be intense enough to shift attention

away from ruminative thoughts to, for example, physical sensations (e.g., pain, sight of blood, effects of drugs), providing temporary relief from negative emotions (Selby & Joiner, 2009). Ruminative processes and intense negative emotions, when coupled with poor distress tolerance, are predictive of NSSI engagement (Selby et al., 2013; Slabbert et al., 2018) and serve as mechanisms of action between some psychopathological factors (e.g., perfectionism, stress, anxiety, depression) and NSSI (Richmond et al., 2017; Tonta et al., 2022).

Perfectionism

Perfectionism, which is conceptualized as having excessively high standards for one's performance and being exceedingly self-critical (Frost et al., 1990; Gyori & Balazs, 2021), is a multidimensional construct consisting of an array of intra- and inter-personal components (Hewitt & Flett, 1991). Frost (1990), in his classic model, identified six dimensions of perfectionism, including concerns over mistakes (i.e., negative reaction to mistakes or feeling like a failure), doubts about actions (i.e., doubting performance ability), parental criticism (i.e., parents are perceived as overly critical), parental expectations (i.e., parents perceived to hold high, unrealistic performance standards), personal standards (i.e., having unreasonably high performance standards for self), and organization (i.e., over-valuing order, precision, or neatness). Later, Hewitt and Flett (1991) proposed a model identifying three dimensions of perfectionism, including self-oriented perfectionism (SOP; i.e., having excessively high standards for oneself and being overly self-critical), socially prescribed perfectionism (SPP; i.e., one's perception that others expect perfection from them and will be overly critical), and other-oriented perfectionism (OOP; i.e., having excessively high standards for others and being overly critical). SOP and SPP focus on self-criticism, whereas other-oriented perfectionists focus on criticizing others that do not meet the high standards prescribed to them (Xie et al., 2019). Of the

two self-critical dimensions of perfectionism, SOP has been associated with both adaptive (e.g., achievement motivation, self-efficacy, positive affect) and maladaptive (e.g., symptoms of depression) outcomes, whereas SPP is only associated with negative outcomes (e.g., symptoms of depression, trait anger, increased suicide risk, procrastination; Xie et al., 2019). Findings from a longitudinal collegiate study indicate that perfectionism has increased over time, and recent generations believe others have higher expectations of them (i.e., SPP), and they have higher expectations of themselves (i.e., SOP) and others (i.e., OOP; Curran & Hill, 2019).

Factor analysis of these two main models of perfectionism yields two primary factors, including maladaptive perfectionism or perfectionistic concerns (i.e., fear of failing or making a mistake and being negatively evaluated) and adaptive perfectionism or perfectionistic strivings (i.e., having high performance standards for oneself; Frost et al., 1993). According to meta-analytic findings, perfectionistic concerns are related to more maladaptive outcomes (e.g., depression, anxiety, obsessive-compulsive disorder, suicidal ideation, negative affect, stress, burnout, and procrastination), whereas perfectionistic strivings are related to more adaptive outcomes (e.g., positive affect, academic achievement, better sports performance; Limburg et al., 2017; Madigan, 2019). However, meta-analytic findings have also shown that both perfectionistic concerns and strivings are positively associated with psychological distress (e.g., worry, rumination, distress; Xie et al., 2019) and psychopathology, including depression, anxiety disorders, OCD, and bulimia nervosa (Limburg et al., 2017). Indeed, the adaptive and maladaptive dimensions of perfectionism are positively associated, have significant overlap, and exert a bidirectional reinforcing effect on one another (Limburg et al., 2017).

Multiple theories have been developed to conceptualize perfectionism, and related traits and behaviors, including use of the Big Five, or five-factor model (FFM) of personality (Hill et

al., 1997). The FFM of personality organizes personality traits into five broad domains, including neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (McCrae & Costa, 1987). In a meta-analysis, neuroticism and conscientiousness had the most robust linkage with perfectionism, such that perfectionistic concerns are predominantly characterized by neuroticism and perfectionistic strivings by conscientiousness (Smith et al., 2019). Individuals with elevated perfectionistic concerns are more likely to be worrisome, emotional, insecure, jealous, and engage in dysfunctional thinking and maladaptive coping, like those with anxiety and depression, whereas individuals with perfectionistic strivings are typically responsible, thorough, efficient, and self-disciplined (Smith et al., 2019).

According to social learning theory, perfectionism may be predicated on early childhood experiences and parental behaviors (Flett et al., 2002) and may arise from observing and imitating others (Bandura & Walters, 1977). In this manner, perfectionistic traits may develop through interactions between a child's personality and their family and school environment (Bandura, 1986). Specifically, if a child's social environment has expectations of perfection and is critical of failure, the child may develop high self-expectations and become increasingly self-critical, resulting in internalized perfectionistic expectations that are reinforced when excellence is achieved (Cole et al., 2001). Children also often imitate and adopt evaluative standards modeled to them, including self-evaluative behaviors modeled by adults (Flett et al., 2002). In previous research of parent-child dyads, parental and child SOP and SPP were associated, providing support for the social learning perspective of perfectionism development (Curran et al., 2020).

Given the associations between SOP and SPP, and worry and rumination, the perfectionism cognitive theory (PCT) implicates the repetitive cognitive process of rumination,

about mistakes made, past events, and social comparisons, and frequent negative automatic thoughts about the need to be perfect, as catalysts of perfectionism, and suggests that such patterns of thinking may stem from self-doubt and need for self-acceptance (Flett et al., 2016; Xie et al., 2019). Over time these negative thought patterns can exacerbate stress-related responses in perfectionists, resulting in an increased risk for developing mental (e.g., depression and anxiety) and physical health problems (e.g., cardiovascular disease, weakened immune system, poorer sleep; Flett et al., 2016; Xie et al., 2019). Meta-analytic mediation analyses have found support for this contributing role of worry and rumination in the relationship between perfectionism and distress in clinical and non-clinical populations (i.e., university students; Abdollahi, 2019; De Rosa et al., 2021; Xie et al., 2019).

More recently, researchers have begun examining perfectionism through a motivational lens, including self-determination theory (SDT) which, as previously mentioned, is a theory of motivation which posits that motivation (e.g., autonomous vs controlled) is based on social settings and individual characteristics (Deci & Ryan, 2015; Ryan & Deci, 2000). Autonomous motivation is the desire to engage in a self-determined behavior as it relates to one's goals or values, whereas controlled motivation is the pressure to engage in a behavior to gain reward/approval or avoid punishment (Deci & Ryan, 2015). According to SDT, all individuals have three basic psychological needs (i.e., competency, autonomy, relatedness) that, when satisfied, increase autonomous motivation, which can improve wellbeing, including psychological health (Deci & Ryan, 2015; Liu et al., 2022). Regarding perfectionism, perfectionistic strivings tend to be associated with autonomous motivation, whereas perfectionistic concerns are associated with controlled motivation (Harvey et al., 2015; Stoeber et al., 2018). Further, in undergraduates, controlled motivation often predicts avoidant behaviors

associated with perfectionism, whereas autonomous motivation predicts more reward-focused behaviors (Moore et al., 2018). Such patterns of effects help expand our understanding of the association between perfectionism and psychopathology, including NSSI (Duncan-Plummer et al., 2023).

In previous research, perfectionistic individuals report reluctance to ask for assistance, and increased social disconnection, rumination, and emotional dysregulation, which contribute to their vulnerability for the development of psychopathology (Donahue et al., 2018; Flett & Hewitt, 2013; Hewitt et al., 2017; Rudolph et al., 2007). For example, across studies and meta-analyses, perfectionistic concerns are associated with social anxiety, body dissatisfaction and disordered eating, bulimia nervosa, anxiety, depression, suicidal ideation, and self-harm (Limburg et al., 2017). Important for our study, there has been a growing interest in the association between perfectionism and NSSI, given that both are predicated on cognitive processes, such as rumination and worry, associated with emotion dysregulation (Duncan-Plummer et al., 2023; Malivoire et al., 2019), and linked to an array of internalizing and externalizing psychopathologies (Gyori & Balazs, 2021). Maladaptive perfectionism is associated with engagement in NSSI behaviors, with concern over mistakes made and perceived parental criticism as the strongest predictors (Gyori & Balazs, 2021). Similar results have been found in samples of adolescents (Luyckx et al., 2015), adults (Claes et al., 2012), and college students (Hoff & Muehlenkamp, 2009).

Of note, in a study of Chinese adolescents, psychological distress, including depression, anxiety, and stress, mediated the association between maladaptive perfectionism and NSSI and, further, maladaptive perfectionists often utilized NSSI as a coping strategy to reduce negative affect (Gu et al., 2022). This may be because maladaptive perfectionists experience negative

affect in the context of critical feedback and goal failure, as seen among college students, and may believe that self-harm will alleviate affective distress (Chester et al., 2015). Indeed, when maladaptive perfectionists, who often have poor emotional awareness, encounter perceived failure-based emotional experiences, they may manifest elevated and prolonged negative affect, contributing to dysfunctional emotion regulation and consequent distress (Malivoire et al., 2019). Given that rumination is also implicated in the association between perfectionism and affective distress (Flett et al., 2016; Xie et al., 2019), and since rumination and affective distress play key roles in the emotional cascade model of NSSI (Selby & Joiner, 2009), it may be that perfectionism is a catalyst for the emotional cascades that lead to NSSI engagement which, itself, may serve as an emotion regulation strategy to divert attention from distress (Tonta et al., 2022).

Depression

In addition to NSSI, perfectionism is strongly associated with various psychopathologies, including depression (Smith et al., 2016), one of the most common mental health disorders worldwide, impacting 3.8% of the population (WHO, 2021). In the United States, 8.4% of adults experience at least one major depressive episode each year (U.S. DHHS, 2020). A variety of symptoms comprise major depressive disorder (MDD), the broadest depression diagnosis, including low mood, loss of interest or pleasure in most activities, significant changes in weight or appetite, problems with sleep, agitated or retarded psychomotor activity, low energy, feelings of worthlessness or inappropriate guilt, diminished ability to concentrate, and recurrent thoughts of death or suicide (American Psychiatric Association, 2013).

Sociodemographic differences in the epidemiology of major depressive disorder exist, with a higher annual prevalence among females (10.5%) than males (6.2%) and with the highest prevalence rate manifesting in young adults ages 18 to 25 (17.0%) (U.S. DHHS, 2020). Some

populations may be at greater risk for depression than others, including college students, for whom rates have increased about 34% in less than a decade (i.e., 2011-2018; Duffy et al., 2019). In an annual survey of U.S. college students from 2021-2022, 44% of students reported symptoms of depression, the highest rates recorded in the study's 15-year history (Healthy Minds Network, 2023). Regarding race/ethnicity, lower rates of depression have been found in Black, Asian/Pacific Islander, and Hispanic adults, than in White adults (Hasin et al., 2018). Socioeconomic status (SES) also plays a role, with a higher prevalence of depression in those with low incomes (Hasin et al., 2018).

Several prominent theories have been developed to explain the etiology, maintenance, and recurrence of depression, including theories emphasizing biological (Ferrari & Villa, 2016), behavioral (Leventhal, 2008; Lewinsohn & Gotlib, 1995), and cognitive factors (LeMoult & Gotlib, 2019). To begin, an increasing body of research indicates a genetic and familial basis for depression, with estimates of heritability for MDD ranging from 35-40% (Otte et al., 2016; Pomohaibo et al., 2019), although genetic and familial risk decline with increased age of first diagnosed depressive episode (Wium et al., 2020). In addition, several pathophysiological factors are believed to contribute to depression (Brigitta, 2022). For example, the monoamine hypothesis, also known as the chemical imbalance theory, suggests that deficient levels of specific neurotransmitters, including serotonin (5HT), norepinephrine (NE), and dopamine (DA) are, in part, responsible for the development of an array of depressive symptoms, including depressed mood, hyperarousal, amotivation, low energy, and psychomotor abnormalities (Jesulola et al., 2018) and, as previously noted, serotonin and dopamine are also implicated in NSSI engagement (Bissonette & Roesch, 2016; Fikke et al., 2013).

In previous research, depression is also linked to reduced hippocampal gray matter volume and reduced neural activity in the cognitive control (i.e., appraisal of negative stimuli) and affective-salience (i.e., control of behavior related to emotional and cognitive stimuli) networks (Otte et al., 2016). It is important to note, however, that expression of biological and genetic vulnerabilities to depression often occurs in the context of stressful life events and may be complicated by environmental and inter- and intra-personal risk factors (Brigitta, 2022; Lopizzo et al., 2015), all of which can contribute to HPA axis hyperactivity, leading to functional and structural changes in the prefrontal cortex, hippocampus and amygdala, and consequent emergence of depressive symptoms (Jesulola et al., 2018).

Given the role that life experiences and environment play in the development of depression, behaviorists tend to focus on the role of operant conditioning (Carvalho & Hopko, 2011), which is the process by which reward and punishment are used to modify behaviors (Skinner, 1938). The behavioral theory of depression posits that depression develops, is maintained, or worsened by environmental factors and engagement in avoidance behaviors (e.g., attempts to prevent, escape, or reduce unwanted or non-rewarding internal or external stimuli) that prevent the experience of reward and reinforcement (Carvalho & Hopko, 2011; Lewinsohn, 1974). Additionally, depression contributes to social isolation, further decreasing opportunities to receive positive reinforcement (Carvalho & Hopko, 2011; Lewinsohn, 1974).

The link between depression and avoidance, including the role of reduced positive reinforcement, is well-documented, particularly in the context of avoidant coping (Carvalho & Hopko, 2011). Avoidant coping refers to cognitive and behavioral processes utilized to shift focus away from certain internal or external stimuli to regulate, mitigate, or eliminate distress (Cronkite & Moos, 1995). Increased engagement in cognitive and behavioral avoidance is

associated with more severe depressive symptoms (Carvalho & Hopko, 2011) and, when co-occurring with worry and rumination, is predictive of the development and trajectory of depressive disorders (Spinhoven et al., 2016). Decreasing avoidant coping through engagement in goal-oriented behaviors not only results in positive reinforcement but also decreases levels of distress, including depressive symptoms (Carvalho & Hopko, 2011).

The learned helplessness model, proposed by Martin Seligman (1972), is also a well-documented behavioral theory of depression and is based on principles of classical conditioning (Maier & Seligman, 2016). Classical conditioning posits that when an unconditioned stimulus is repeatedly paired with a conditioned stimulus, evoking an unconditioned response, then a conditioned response results (Pavlov, 1927). The learned helplessness model of depression suggests that repeated exposure to uncontrollable aversive events (e.g., extreme stressors) can lead to the belief that the aversive events are inescapable, promoting feelings of helplessness and consequent depression (Maier & Seligman, 1976; Seligman, 1972).

Because Seligman's learned helplessness model failed to account for cognitive aspects of depression, Abramson, Seligman, and Teasdale (1978) reformulated the theory to account for the role of thoughts, renaming it the hopelessness theory of depression. Building upon the learned helplessness model, the hopelessness theory of depression asserts that individuals form causal attributions in response to negative life experiences, along three dimensions including internal to external, stable to unstable, and global to specific (Abramson et al., 1989; Abramson et al., 1978; Liu et al., 2015). According to this theory, individuals who attribute negative life experiences to internal, stable, and global causes are more likely to develop depression because they believe they are unable to make positive changes (Liu et al., 2015).

Such maladaptive and irrational thoughts are well-established contributors to the onset and treatment of depression (LeMoult & Gotlib, 2019). For instance, Albert Ellis proposed a cognitive-behavioral model of depression, the ABC three stage model, which suggests that an (A) internal or external activating event triggers (B) rational/functional or irrational/dysfunctional beliefs or thoughts, which then leads to (C) adaptive or maladaptive emotional or behavioral consequences (Ellis, 1962). Therapeutically, the ABC model of depression suggests that modifying irrational/dysfunctional thoughts can lead to a positive change in related feelings and behaviors (Ellis, 1979) and, when enacted, knowledge and application of this approach can improve symptoms of depression and anxiety, and increase hope and self-esteem, among adolescents (Sælid & Nordahl, 2017).

Similarly, Aaron Beck (1967) developed a cognitive theory of depression comprising three mechanisms, including faulty information processing biases, negative self-schemas, and the cognitive triad. According to Beck, depressed individuals hold negatively themed mood-related schemas (e.g., loss, failure, worthlessness, rejection), which perhaps develop from adverse childhood experiences, that lead to faulty information processing biases and the development of negative beliefs about themselves, the world, and the future (the cognitive triad; LeMoult & Gotlib, 2019). These negative thoughts about the self, others, and the world are typically automatic, repetitive, and ruminative, and contribute to the development, maintenance, and exacerbation of depressive symptoms (Piraman et al., 2016; Whisman et al., 2020). Ruminative individuals tend to recall more negative past events, interpret current situations more negatively, and experience greater negative affect and hopelessness (Nolen-Hoeksema, 2001). Rumination also disrupts cognitive control processes (Beckwé et al., 2014; Zareian et al., 2021), including the ability to engage in adaptive behaviors and effective problem-solving while avoiding

distraction by undesirable thoughts (Alderman et al., 2015), perhaps contributing to engagement in NSSI behaviors (Selby et al., 2013; Selby & Joiner, 2009).

The significant overlap between cognitive models of depression and perfectionism, including the reciprocal association between negative thoughts and irrational beliefs, has led many researchers to examine the linkage between these two constructs. For example, in a review by Say (2020), several maladaptive cognitive mechanisms are identified, including that perfectionists: 1) struggle to create supportive social connections because they do not believe they deserve support from others, leading to social isolation, 2) tend to avoid experiences that could lead to distress due to self-criticism or perceived criticism from others, and 3) often have negative beliefs about emotions, promoting emotion suppression, all of which increase the risk for depression among adults (Moroz & Dunkley, 2015) and university students (Gnilka & Broda, 2019; Tran & Rimes, 2017).

Anxiety

Maladaptive perfectionism is also strongly related to anxiety (Bardone-Cone et al., 2017; Limburg et al., 2017), the most common mental health disorder, impacting 1 in 13 people worldwide (WHO, 2021). In the United States, 19% of adults are diagnosed with an anxiety disorder annually and 31% in their lifetime (U.S. DHHS, 2020). There are many types of anxiety disorders, including social anxiety disorder, panic disorder, phobias, and general anxiety disorder (GAD), which is the most common form of anxiety disorder and is characterized by persistent, excessive, and uncontrollable fear or worry about non-life-threatening situations, restlessness or feeling on edge, being easily fatigued, difficulty concentrating or mind going blank, irritability, muscle tension, and sleep disturbance (American Psychiatric Association, 2013).

Sociodemographic differences in the epidemiology of anxiety exist, with greater prevalence among females (23.4%) than males (14.3%) but similar prevalence rates across age groups (U.S. DHHS, 2020). The prevalence of GAD peaks in middle-aged adults and typically declines in older adulthood (American Psychiatric Association, 2013), and is the most common mental health concern among college students, with nearly 40% of students reporting anxiety symptoms (Mistler et al., 2012; Beiter et al., 2015). Regarding race/ethnicity, White individuals are more likely to experience GAD than Black, Asian, Native American, and Pacific Islander individuals, in the United States (American Psychiatric Association, 2013).

Like depression, the most prominent etiological theories of anxiety focus on biological (Kim & Gorman, 2005; Steimer, 2022), behavioral (Freeman & Freeman, 2012), and cognitive factors (Clark & Beck, 2010). To begin, biological theories of anxiety have primarily focused on neuro-receptor systems in the brain and related neurotransmitters, including gamma-amino butyric acid (GABA), serotonin, norepinephrine, and glutamate (Kim & Gorman, 2005). For example, GABA is an inhibitory neurotransmitter that regulates symptoms of anxiety by counterbalancing the excitatory effects of glutamate, meaning that when GABA levels decrease, glutamate levels increase, contributing to anxiety symptoms (Kaur & Singh, 2017). Similarly, increased levels of serotonin, or 5-HT, which can be activated by fear or stress, is associated with greater anxiety, and plays a role in depression and NSSI engagement (Fikke et al., 2013; Jesulola et al., 2018). Norepinephrine (NE), which is released under chronic stress conditions, also plays a role in anxiety, such that elevated levels of NE are associated with symptoms of anxiety (Goddard et al., 2010). Relatedly, NE deficiencies are implicated in the development of depression (Jesulola et al., 2018), perhaps helping to explain the comorbidity between the two disorders (Coplan et al., 2015).

Anxiety also has a genetic component, with twin studies indicating moderate heritability, between 30 and 50% (Craske et al., 2017; Meier & Deckert, 2019). First-degree relatives of individuals with a particular anxiety disorder (e.g., generalized anxiety disorder) are at an increased risk for the development of any anxiety disorder (Meier & Deckert, 2019). Genetic risk factors interact with environmental factors to predict the development of anxiety disorders (Craske et al., 2017), such that even when genetic factors are covaried, a parent-child anxiety association remains, suggesting a partial environmental role in the onset of anxiety (Elay et al., 2015).

Given the critical role of environmental factors in the development of anxiety, researchers have utilized behavioral theories to better understand the role of learned behavior in the etiology of anxiety (Freeman & Freeman, 2012). As with depression, classical conditioning is a common behavioral theory used to explain the development of anxiety disorders (De Houwer, 2020), asserting that when a neutral and aversive stimulus are repeatedly paired, the neutral stimulus eventually independently elicits anticipatory anxious responses (Lissek et al., 2014). The application of classical conditioning to the etiology of anxiety posits that individuals learn to fear neutral objects or situations due to their previous pairing with a more frightening scenario (Freeman & Freeman, 2012).

Additionally, anxious responses may be maintained and exacerbated through avoidance behaviors, which inhibit an individual from learning new information that may disconfirm anxiety-provoking beliefs, like the experiential avoidance model (Chapman et al., 2006; Rudaz et al., 2017). Relatedly, the two-factor theory of avoidance suggests that anxiety develops through classical conditioning and is then reinforced by operant conditioning (Krypotos et al., 2015; Mowrer, 1951). For example, phobias and other psychopathologies, such as post-traumatic stress

disorder (Foa et al., 1989), may develop via classical conditioning but are then reinforced and maintained through avoidance behaviors that are considered rewarding and, thus, likely to be repeated (Krypotos et al., 2015). However, in previous research, exposure to feared/avoided stimuli using approach strategies significantly reduces or extinguishes anxiety levels (Craske et al., 2014; Kaczkurkin & Foa, 2015).

From a cognitive perspective, anxiety disorders develop when an individual feels vulnerable to potential physical or psychological threats, and experiences distorted beliefs that overestimate threats to safety or security (Beck & Clark, 1997; Deacon & Abramowitz, 2004). Beck and colleagues (1985) developed a "schema-based information processing" model, which suggests that anxious individuals have a selective bias for threat potential when it comes to attention, interpretation, and memories, contributing to maladaptive emotional states (Beck & Clark, 1997; Clark & Beck, 2010). Early adverse childhood experiences can contribute to the development of dysfunctional schemas which, when triggered by stress, result in cognitive biases that become increasingly difficult to control over time, and may lead to the development of anxiety (Clark & Beck, 2010).

An alternative cognitive theory, the four-factor theory, was proposed by Eysenck (1997), and conceptualizes anxiety as an emotional state that is dependent on cognitive processes, and is predicated on (1) external stimuli, (2) physiological stimuli, (3) one's behavior, and (4) one's cognitions (i.e., worries about the future; Eysenck, 2000). Attentional and interpretive processes are also components of this theory, such that anxious individuals are believed to have a selective attentional bias with a tendency to focus on threat-related, rather than neutral, stimuli, and interpretive bias with a tendency to interpret ambiguous stimuli as threatening, rather than neutral (Eysenck, 2000). Supporting this theory, in previous research, undergraduate students

high in trait anxiety and low in defensiveness showed an attentional bias toward threatening stimuli (Ioannou et al., 2004).

Given the similar mechanisms underlying anxiety and perfectionism, several cognitive models have been developed to explore their association. For example, Ellis (2002) proposed that perfectionists develop anxiety because they hold unattainable ideals about well-being or survival (i.e., accomplishment, self-approval, and security) and, when these are not forthcoming, experience negative appraisals of failure, reduced problem-solving ability, and increased vulnerability to anxiety (Klibert et al., 2015). Flett and colleagues (2016) expanded this conceptualization, via the cognitive theory of perfectionism, which asserts that perfectionists experience negative automatic thoughts about their idealistic standards, excessively ruminate on past mistakes and failures, and engage in social comparison, all of which are cognitive behaviors associated with depression and anxiety (Fernandez & Mairal, 2017; Olatunji et al., 2013; Xie et al., 2019).

Indeed, there is a growing body of support, including in undergraduates, linking perfectionism to anxiety and depression (Kawamura et al., 2001; Limburg et al., 2017; Smith et al., 2017), which are themselves often comorbid; for instance, 45.7% of individuals with diagnosed depression also experience anxiety, and 20-70% of those with an anxiety disorder also experience depression (Kalin, 2020). The linkages between these variables may be due to the presence of shared cognitive and affective constructs, including rumination and negative automatic thoughts, avoidance, distress intolerance, and emotion regulation deficits (Benfer et al., 2017; Berking et al., 2014; Buschmann et al., 2018; Dickson & MacLeod, 2004; Olatunji et al., 2013), which are also independent contributors to risk for NSSI (Andover & Morris, 2014; Coleman et al., 2022; Haywood et al., 2023; Slabbert et al., 2018). For example, in an ecological

momentary assessment study among adolescents and young adults, feelings of anxiety and being overwhelmed were predictive of NSSI behavior, and this association was exacerbated by rumination (Hughes et al., 2019).

The emotional cascade model, proposed by Selby and Joiner (2009), seems best suited for conceptualizing the shared cognitive constructs underlying anxiety, depression, and NSSI and posits that ruminating on negative emotions or thoughts increases negative affect and cyclically promotes additional rumination, creating an "emotional cascade." To avoid experiencing negative affect, individuals will engage in an "intense enough" emotion regulation strategy, such as NSSI, to shift their attention away from ruminative thoughts to a focus on physical sensations (Selby & Joiner, 2009). As previously discussed, this model has been used to examine perfectionism as a mechanism that increases risk for NSSI (Tonta et al., 2022). Perfectionists who ruminate on mistakes made, past failures, and social comparisons may develop symptoms of depression and anxiety, resulting in increased negative affect (Fernandez & Mairal, 2017; Flett et al., 2016; Olatunji et al., 2013; Xie et al., 2019), and further consequent rumination and negative affect (Alderman et al., 2015; Fernandez & Mairal, 2017; Olatunji et al., 2013; Piraman et al., 2016; Whisman et al., 2020). In university students with low distress tolerance, there is a greater likelihood of avoiding negative affect by engaging in an emotion regulation strategy such as NSSI (Slabbert et al., 2018).

Given the association between maladaptive perfectionism, a construct comprising critical self-evaluation, and negative mental health outcomes, including depression and anxiety, it is possible that a regulatory protective characteristic, such as self-compassion, may be capable of enhancing emotion regulation abilities and buffering self-criticism, thereby mitigating the

deleterious linkage between perfectionism and psychopathology (Himmerich & Orcutt, 2021; Kaniuka et al., 2020; Pedro et al., 2019).

Self-Compassion

Self-compassion, a construct derived from Buddhist philosophy, refers to an all-inclusive compassion for oneself during times of distress, including perceived failure, inadequacy, or personal suffering (Neff, 2003a; Neff, 2023). First conceptualized as a multifaceted construct by Kristin Neff (2003a), self-compassion comprises three domains, including (1) how one emotionally reacts to personal suffering (with kindness or criticism), (2) how one cognitively perceives their circumstances (as part of the human experience or as isolating), and (3) how one observes adversity (mindfully or in an overly identified way; Neff, 2003b; Neff, 2016). Each domain ranges from a non-self-compassionate to a self-compassionate response to distressing experiences (Neff, 2022), including self-kindness versus self-judgement, common humanity versus isolation, and mindfulness versus over-identification (Neff, 2003b). Although other conceptualizations of self-compassion have been proposed, such as the social mentality theory (Gilbert, 2005), which states that distress triggers one's care-seeking mentality and results in self-compassion, Neff's multifaceted conceptualization has remained the most widely used by researchers (Cleare et al., 2018).

Modern self-compassion theory is derived from several classic perspectives, including humanistic and emotion regulation theories and our understanding of the process of self-empathy (Neff, 2003a). For example, according to Judith Jordan, self-empathy is a corrective process involving the adoption of a nonjudgmental self-perspective and re-evaluation of previously rejected aspects of the self, using a caring and emotionally grounded approach (Jordan, 1984; Jordan, 1991). Conceptually similar to self-compassion, self-empathy may develop by

internalizing empathy received from others or by internalizing empathy given to others perceived to be self-similar (Sherman, 2014).

Across humanistic theories, concepts related to self-compassion, such as unconditional positive self-regard (Rogers, 1959) and unconditional self-acceptance (Ellis, 1977), are routinely acknowledged (Neff, 2003a). Unconditional positive self-regard is the adoption of a non-discriminatory view of all personal experiences (Rogers, 1959) and is related to greater well-being in adults (Flannagan et al., 2015; Murphy et al., 2015). Similarly, an unconditional acceptance of the self, despite the disapproval of others or failure to adhere to standards (Ellis, 1977), is associated with lower levels of depression and anxiety in adults (Chamberlain & Haaga, 2001a) and university students (Chamberlain & Haaga, 2001b; Flett et al., 2003). Of note, these classic humanistic concepts emphasize an individualistic perspective whereas, in contrast, Neff's conceptualization of self-acceptance, as a component of self-compassion, focuses on shared humanity and encourages connection with others (Neff, 2003a).

Indeed, the developmental origins of self-compassion may be predicated on one's relationships with primary caregivers in early childhood and is impacted by attachment styles (Gilbert, 2009; Neff & McGehee, 2010; Pepping et al., 2015). For instance, sensitive parenting promotes the ability to react self-compassionately and to self-soothe during times of distress, whereas inconsistent or rejecting parenting results in self-criticism and less self-compassion (Neff & McGehee, 2010). This may be important, given that perceived parental criticism is a robust predictor of NSSI engagement (Gyori & Balazs, 2021). Similarly, Gilbert (2009) proposed that individuals develop "social mentalities," whereby individuals relate to themselves as they were originally taught to relate to others. Regarding self-compassion, if a child seeks and then obtains care and compassion from a caretaker, then that social mentality is reinforced,

whereas if they receive a negative response (e.g., rejection, ignoring, humiliation) then the social mentality is weakened (Gilbert, 2009). For example, in previous research, greater maternal support and positive family functioning were related to increased self-compassion in adolescents and young adults (Neff & McGehee, 2010), and greater caregiver rejection and over-protection were related to self-criticism in college students (Irons et al., 2006). Finally, in a study by Pepping and colleagues (2015), higher levels of caregiver rejection and over-protection, and lower levels of caregiver warmth in childhood were predictive of low self-compassion in adulthood.

Self-compassion may confer benefits by reducing negative automatic thoughts, mitigating emotional avoidance, decreasing over-identification with negative feelings, and improving emotion regulation abilities (Neff, 2023). For example, as an emotion regulation strategy, self-compassion may work by catalyzing a shift from negative thoughts and feelings about the self (i.e., focus on inadequacies, past failures, and mistakes) toward more positive thoughts and emotions about the self (i.e., viewing oneself with kindness and acceptance; Neff & Dahm, 2015). Rather than avoidance, self-compassion promotes embracing negative thoughts and emotions, perhaps via its mindfulness component, which may be particularly useful for perfectionists (Neff & Dahm, 2015; Tobin & Dunkley, 2021). Mindfulness, in the context of self-compassion, decreases over-identification, a construct similar to rumination, and cognitive fusion, in which individuals become fixated or fused to their negative thoughts and emotions, by helping individuals to non-judgmentally notice and accept experiences of suffering without becoming entangled with or absorbed by them (Fresnics & Borders, 2017).

Broadly, self-compassion is associated with greater psychological well-being (e.g., life satisfaction, optimism, wisdom, happiness, self-initiation, emotional intuition, and interpersonal

connection) and reduced psychopathology (e.g., depression, anxiety, NSSI, suicidal ideation, and perceived stress), with moderate to large effect sizes in both cross-sectional and longitudinal studies of adolescent, adult, and collegiate samples (Cleare et al., 2019; Ferrari et al., 2019; Hughes et al., 2021; Marsh et al., 2018; Neff, 2023; Neff et al., 2007; Suh & Jeong, 2021). Further, self-compassion serves as a buffer against the development of anxiety and depression, in the context of psychosocial risk factors, including perfectionism (Abdollahi et al., 2020; Adams et al., 2023; Callow et al., 2021; Carvalho et al., 2019; Egan et al., 2021).

The sub-domains of self-compassion have a similar impact, with self-compassionate responses (i.e., self-kindness, common humanity, mindfulness) buffering against, and non-self-compassionate responses (i.e., self-judgement, isolation, over-identification) exacerbating risk for, psychological distress (Tobin & Dunkley, 2021). For example, in patients with current and remitted major depressive disorder, greater self-judgment was associated with recurrent lifetime depression (Ehret et al., 2015) and, similarly, in a sample of community adults, self-judgement, isolation, and over-identification were stronger predictors of depression than self-compassionate responses (López et al., 2018). Non-self-compassionate responses (i.e., self-judgment, isolation, and over-identification) were also associated with increased risk for NSSI amongst adults, university students (Per et al., 2021) and adolescents (Xavier et al., 2016). Finally, perfectionism is associated with greater self-judgement, isolation, and over-identification, and with lower self-kindness, common humanity, and mindfulness (Barnett & Sharp, 2016), which may indicate a common pathway of risk for NSSI. Yet, when present, self-compassionate responses can mitigate the deleterious associations between perfectionism and depression and anxiety (Adams et al., 2023; Tobin & Dunkley, 2021; Wong & Mak, 2013).

Given the beneficial impacts of self-compassion on well-being and the identified associations between maladaptive perfectionism and adverse psychological outcomes (Limburg et al., 2017), researchers have begun to examine the potential utility of self-compassion in the context of perfectionism and psychological distress (Kawamoto et al., 2023). In previous meta-analytic research, self-compassion is associated with lower levels of psychopathology including anxiety, depression, and stress (MacBeth & Gumley, 2012) and, in a study of university students, weakened the association between perfectionism and psychological distress (e.g., depression, anxiety, and academic distress; Adams et al., 2023; Kawamoto et al., 2023). Self-compassion appears to benefit perfectionists by mitigating rumination and avoidance tendencies, resulting in reductions of anxiety and depression in clinical and non-clinical samples (i.e., university students; Krieger et al., 2013; Raes, 2010).

Present Study

Our review of the literature indicates robust associations between perfectionism, psychopathology, and NSSI (Chester et al., 2015; Hoff & Muehlenkamp, 2009; Lucas et al., 2019; Muehlenkamp & Brausch, 2016; Weintraub et al., 2017). Fewer studies, however, have examined potential moderators of these linkages. For example, minimal previous research has examined the role of self-compassion and its domains as factors that may buffer against or exacerbate the deleterious relations between perfectionism and mental well-being. Given this, we will examine the association between perfectionism and NSSI behavior, including the potential mediating role of psychopathology (i.e., symptoms of anxiety and depression). We will also investigate the potential moderating role of self-compassion, and its facets, on each of the mediated linkages, including between perfectionism and NSSI, between perfectionism and psychopathology, and between psychopathology and NSSI.

Our study will focus on the exploration of these research questions in college students due to the frequent manifestation of psychopathology and non-suicidal self-injury (NSSI) in this population. Within this population, there have been notable and concerning increases in rates of mental health treatment within the past year, lifetime diagnoses of a mental health condition (Lipson et al., 2019); symptoms of anxiety, depression, and NSSI (Cipriano et al., 2017; Duffy et al., 2019; Kiekens et al., 2019), and perfectionism (Curran & Hill, 2019).

Hypothesis 1. At the bivariate level, we hypothesize that perfectionism will be positively associated with depression, anxiety, NSSI, and non-self-compassionate facets (i.e., self-judgement, isolation, over-identification) and negatively associated with self-compassion and its self-compassionate facets (i.e., self-kindness, common humanity, mindfulness). Moreover, we hypothesize that depressive symptoms will be positively related to anxiety, NSSI, and non-self-compassionate facets, while inversely related to self-compassion and its self-compassionate facets. Similarly, we hypothesize that anxiety symptoms will be positively correlated with NSSI and non-self-compassionate facets, and negatively correlated with self-compassion and its self-compassionate facets. Lastly, we hypothesize that NSSI will show a positive association with non-self-compassionate facets and an inverse association with self-compassion and its self-compassionate facets.

Hypothesis 2. At the multivariate level, we hypothesize that perfectionism will be associated with NSSI, and that depression and anxiety will mediate this association, such that greater levels of perfectionism will be associated with greater levels of psychopathology and, in turn, with greater NSSI.

Hypothesis 3. Finally, we hypothesize that self-compassion and its domains will moderate the relations between perfectionism and depression, anxiety, and NSSI on all model

paths (i.e., perfectionism and NSSI; perfectionism and depression/anxiety; depression/anxiety and NSSI), such that these associations would be weakened by the presence of the protective components of self-compassion and strengthened by the risk components of non-self-compassion.

Chapter 2. Methods

Procedures

Data for this study was previously collected as part of a larger IRB-approved project conducted by the Laboratory of Resilience in Psychological and Physical Health, in the Department of Psychology at East Tennessee State University. Participants (N = 338) are undergraduate students who met recruitment eligibility criteria, which included being 18 years of age or older and having the ability to complete self-report surveys in English. An online university research system (SONA) was used for recruitment and administration of surveys, allowing random assignment of computer-generated identification numbers to guarantee participant confidentiality. Participants were able to complete the survey in a location of their choosing, ensuring privacy, and all respondents provided electronic informed consent prior to participation. Students were given course credit or extra credit for their participation in this study and were provided with a list of mental health resources upon completion.

Participants

Our sample of 338 undergraduate students was 67% female (n = 225) and 32.4% male (n = 109), with two students identifying as transgender (0.6%). Participants ranged in age from 17 to 58 years old (M = 21.81, SD = 5.33) and were predominantly White (n = 294; 87%), followed by Black (n = 18; 5.3%), Asian (n = 10; 3%), and Hispanic/Latino (n = 6; 1.8%). Most participants were first year undergraduate students (n = 119; 35.3%), followed by second year undergraduates (n = 74; 22%), third year undergraduates (n = 73; 21.7%), and fourth year undergraduates (n = 59; 17.5%). Not all respondents completed each item, resulting in differences in sample sizes across analyses.

Measures

In addition to completing measures assessing our primary variables of interest, participants completed a comprehensive demographic questionnaire that assessed sample characteristics, including age, gender, and race, which will be utilized for descriptive statistics and covariates.

NSSI

The Self-Harm Inventory (SHI; Sansone et al., 1998) is a 22-item self-report questionnaire that assesses engagement in NSSI behaviors, including intentional interpersonally destructive behaviors and intentional medically self-harming behaviors. Participants are asked to respond with either yes (1) or no (0), regarding their history of purposeful engagement in a variety of self-destructive behaviors, including "cutting yourself," "abused prescription medication," and "engaged in emotionally abusive relationships." Item scores are summed, and total scores range from 0 to 22, with higher scores indicating greater risk for NSSI. For college students, a score of 5 indicates mild NSSI behavior, whereas a score of 11 or greater indicates severe NSSI behavior (Sansone et al., 1998). Internal consistency of the SHI among college students is good (α = .83; Latimer et al., 2009), as it was in our current study (α = .87).

Perfectionism

The Frost Multidimensional Perfectionism Scale (MPS; Frost et al., 1990) is a 35-item self-report questionnaire that originally assessed six components of perfectionism, including concern over mistakes (9 items), personal standards (7 items), parental expectations (5 items), parental criticism (4 items), doubts about actions (4 items), and organization (6 items). However, since the original creation of the Frost MPS, subsequent factor analyses have discovered that four dimensions may be more appropriate than six (Stober, 1998). These four sub-scales include

concern over mistakes and doubts about actions (13 items), parental expectations and criticism (9 items), personal standards (7 items), and organization (6 items). Whether calculating six or four subscales of the FMPS, subscales are calculated by summing items that make up each subscale (Frost et al., 1990; Stober, 1998). Examples of perfectionism items include, "I should be upset if I make a mistake," "I have extremely high goals," and "I never felt like I could meet my parents' expectations." Each item is scored on a five-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A total perfectionism score can also be generated by summing all subscale scores, excluding the organization subscale, with higher scores indicating greater perfectionism (Frost et al., 1990). Internal consistency of the MPS among college students is good (α = .88), and ranges from acceptable to excellent for subscales (concern over mistakes (α = .90); personal standards (α = .87); parental expectations (α = .57); parental criticism (α = .91); doubts about actions (α = .72); organization (α = .95; Parker & Adkins, 1995). In our study, we used the MPS total score, which demonstrated excellent internal consistency (α = .90).

Depression Symptoms

The Beck Depression Inventory-II (BDI-II; Beck et al., 1996) is a 21-item self-report questionnaire that assesses symptoms of depression occurring in the past two weeks, including depressed mood, anhedonia, changes in appetite and sleep patterns, irritability, fatigue, worthlessness, guilt, concentration difficulties, indecisiveness, and suicidal ideation. Each item is scored on a four-point Likert scale ranging from 0 to 3. For example, participants are prompted to rate their feelings of irritability on a scale of 0 ("I am no more irritable than usual") to 3 ("I am irritable all the time"). A total score is derived by summing all items, with higher scores indicating greater severity of depressive symptoms. The standardized cutoff ranges for outpatient individuals, age 13 or older, include 0-13 (minimal depression), 14-19 (mild depression), 20-28

(moderate depression), and 29-57 (severe depression). The BDI-II exhibits excellent reliability in college samples (α = .93) and good convergent validity with the Hamilton Psychiatric Rating Scale for Depression-Revised in a sample of psychiatric outpatients (α = .71; Arbisi, 2001). The BDI-II also demonstrated excellent internal consistency among college students (α = .91; Dozois et al., 1998) and was comparably excellent in our study (α = .95).

Anxiety Symptoms

The Beck Anxiety Inventory (BAI; Beck et al., 1988) is a 21-item self-report questionnaire that assesses symptoms of anxiety occurring in the past month, including restlessness, nervousness, fear of losing control, a pounding/racing heart, trembling hands, and difficulty breathing. Each item is scored on a four-point Likert scale ranging from 0 ("not at all") to 3 ("severely - it bothered me a lot"). The BAI yields a total summed score, with higher scores indicating more severe anxiety symptoms. The standardized cutoff ranges for outpatient individuals, age 17 or older, include: 0-7 (minimal anxiety), 8-15 (mild anxiety), 16-25 (moderate anxiety), and 26-63 (severe anxiety). The BAI exhibits excellent internal consistency among undergraduate students (α = .91; Borden et al., 1991), moderate convergent validity with the revised Hamilton Anxiety Rating Scale (α = .51), and low convergent validity with the Hamilton Depression Rating Scale (α = .25; Beck et al., 1988). In our study, the BAI demonstrated excellent internal consistency (α = .94).

Self-Compassion

The Self-Compassion Scale (SCS; Neff, 2003b) is a 26-item self-report questionnaire that assesses six components of self-compassion, including self-kindness (5 items), common humanity (4 items), mindfulness (4 items), reduced self-judgement (5 items), isolation (4 items), and overidentification (4 items). Examples of self-compassion items include, "I'm kind to myself

when I'm experiencing suffering," "when I'm down and out, I remind myself that there are lots of other people in the world feeling like I am," and "when something upsets me, I try to keep my emotions in balance." Each item is scored on a five-point Likert scale ranging from 1 ("almost never") to 5 ("almost always"). Individual subscale scores are generated by averaging all items, with higher scores indicating a greater level of that factor. Reverse coded subscales include self-judgement, isolation, and overidentification. An overall self-compassion score is computed via an average of subscale mean scores, with higher scores indicating greater self-compassion. Internal consistency of the overall SCS score among college students is excellent (α = .92), and adequate for each subscale including self-kindness (α = .77), common humanity (α = .79), mindfulness (α = .75), self-judgement (α = .77), isolation (α = .79), and over identification (α = .75; Neff, 2003b). In our study, the overall measure demonstrated good internal consistency (α = .80), and internal consistency for each subscale ranged from adequate to good including self-kindness (α = .85), common humanity (α = .78), mindfulness (α = .78), self-judgement (α = .82), isolation (α = .83), and over identification (α = .80).

Statistical Analyses

All analyses were performed using IBM SPSS Statistics Version 28.0.

Missing Data

The overall dataset was examined for missing data. The percent of missing data was evaluated to determine if it exceeded a suggested cutoff of 20% or greater (Downey & King, 1998), which would result in increased bias and *SE*, and to determine if any missing data was missing completely at random (MCAR) using Little's MCAR test (Dong & Peng, 2013). Missing data for continuous values were accounted for using Expectation-Maximization (EM), a repeated sampling technique used to calculate the maximum likelihood estimation in the presence of

latent variables (Dempster et al., 1977). For categorical variables for which EM was not appropriate pairwise deletion was used.

Bivariate Analyses

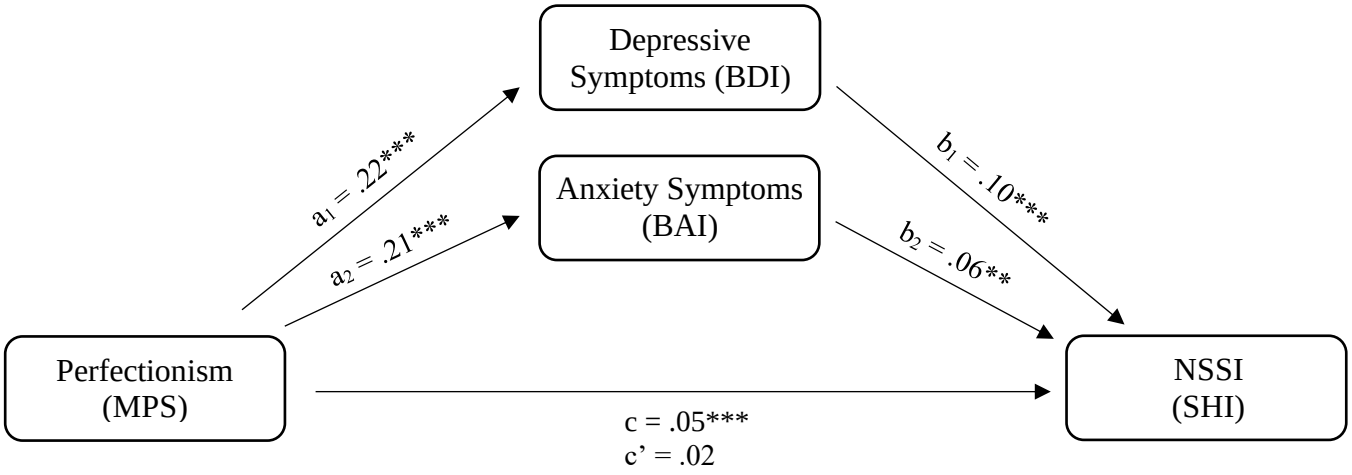
Pearson's product-moment correlation coefficients (*r*) were used to evaluate the associations between, and independence of, study variables. Any items associated with a coefficient of $r \geq .80$, indicating multicollinearity, were excluded from analyses (Field, 2009).

Mediation

Mediation analysis examines the mechanism or process that underlies the relation between an independent (X) and dependent variable (Y). The effect of X on Y is called the total effect (c), and this effect may be further explained, or mediated, by a third variable, known as the mediating variable (M). The mediated effect, or indirect effect, can be observed through the *a* pathway, or the effect of X on M, and the *b* pathway, or the effect of M on Y. The effect of X on Y, accounting for the mediating variable, is called the direct effect (c'). In parallel mediation, two or more variables are simultaneously entered as mediators; these mediators may be correlated but do not influence one another in causality (Hayes, 2013). Given that the number of indirect effects is equal to the number of mediators, indirect effects in a parallel mediation model containing two mediators (M1 and M2) can be observed through the a_1 pathway, or the effect of X on M1 and the b_1 pathway, or the effect of M1 on Y, and also through the a_2 pathway, or the effect of X on M2 and the b_2 pathway, or the effect of M2 on Y (see Figure 1). We conducted a parallel mediation analysis to investigate whether depression (M1) and anxiety (M2) are simultaneous mediators of the relation between perfectionism (X) and NSSI (Y). Any possible significant demographic covariates will be explored and if necessary controlled for within models.

Figure 1

Parallel Mediation Model: Perfectionism and NSSI: Conditional Indirect Effects of Depressive and Anxiety Symptoms



Note. c = total effect (perfectionism related to NSSI), a_1b_1/a_2b_2 = total indirect effect (perfectionism related to NSSI through depressive/anxiety symptoms), c' = indirect effect (perfectionism related to NSSI accounting for depressive and anxiety symptoms). $^{**}p < .01$, $^{***}p < .001$.

Parallel mediation analysis was conducted using Model 4 of the statistical module PROCESS (Hayes, 2013), within SPSS Version 28.0. Hayes' mediation model does not require the assumption of normal distribution for indirect effects given its utilization of bootstrapping, a technique of repeated sampling with replacement (e.g., 10,000 bootstrapped samples) via a random sampling process that estimates sample distribution (i.e., sample mean) and provides 95% confidence intervals (CI) of the mediation, or indirect effects.

Moderated Mediation (Conditional Indirect Effects Model)

Moderated parallel mediation analyses, using model 59 of PROCESS, were utilized to assess for potential moderating effects of self-compassion on all paths of the parallel mediation model. That is, we examined moderation effects of self-compassion on the association between perfectionism and depression/anxiety (*a1* & *a2* pathways), between depression/anxiety and NSSI

(*b1* & *b2* pathways), and between perfectionism and NSSI (*c'* pathway), assessing whether indirect effects were conditional based on varying levels of our moderator variable (W). We conducted seven moderated parallel mediation models, including one model to assess the moderation effect of overall self-compassion on all pathways and six models to assess the moderation effects of all SC factors (i.e., self-kindness, self-judgement, common humanity, isolation, mindfulness, and over-identification), on all pathways.

Covariates

Potential confounds for our analyses, including age, gender, and race, were used as covariates to control for their effects on our variables of interest. For example, age was included as a covariate given its association with NSSI. In previous research, the highest rates of NSSI occurred among individuals between the ages of 10 and 24 (Swannell et al., 2014; Xiao et al., 2022). Prevalence of NSSI is slightly higher among women than men (Bresin & Schoenleber, 2015) and lowest among Black individuals compared with multiracial, White, and Hispanic individuals (Eisenberg et al., 2013; Lipson et al., 2022; Monto et al., 2018). Regarding psychopathology, prevalence rates of major depression in college students are slightly higher for women than men, and higher for Asian, Black, and Hispanic students than for White students (Eisenberg et al., 2013). Prevalence rates of generalized anxiety in college students are significantly higher for women than men, but are similar across Black, Hispanic, and White students, with lower likelihood among Asian students (Eisenberg et al., 2013).

Chapter 3. Results

Demographics

Our sample of 338 undergraduate students identified most frequently as women (*n* = 225; 67%), with two students identifying as transgender (0.6%), and the remainder identifying as men (*n* = 109; 32.4%). The racial composition of our sample was largely White (*n* = 294; 87%), followed by Black (*n* = 18; 5.3%), Asian (*n* = 10; 3%), Hispanic/Latino (*n* = 6; 1.8%), and 3% (*n* = 10) did not report their race. Participants ranged in age from 17 to 58 years old (*M* = 21.81, *SD* = 5.33). Most participants were first year undergraduate students (*n* = 119; 35.3%), followed by second year undergraduates (*n* = 74; 22%), third year undergraduates (*n* = 73; 21.7%), and fourth year undergraduates (*n* = 59; 17.5%), with 3.6% (*n* = 12) reporting as "other." See Table 1 for descriptive statistics of each variable and scale in the study.

Table 1

Levels of Demographic, Predictor, and Criterion Variables by Total Sample

Variable	Total Sample			
	Minimum	*Maximum*	*M*	*SD*
Perfectionism	37	143	85.97	16.67
Depressive Symptoms	0	52	10.64	11.43
Anxiety Symptoms	0	59	13.77	11.83
Non-Suicidal Self-Injury	0	20	3.27	3.93
Self-Compassion	1	5	2.98	0.59
Self-Kindness	1	5	2.88	0.77
Common Humanity	1	5	3.15	0.81
Mindfulness	1	5	3.17	0.73
Self-Judgement	1	5	3.16	0.80
Isolation	1	5	3.08	0.88
Over Identification	1	5	3.08	0.87

Note. *Minimum* and *Maximum* = range of participant scores. Perfectionism = Frost Multidimensional Perfectionism Scale (n =329); Depressive Symptoms = Beck Depression Inventory- 2nd Edition (n = 335); Anxiety Symptoms = Beck Anxiety Inventory (n = 338); Non-Suicidal Self-Injury = Self-Harm Inventory (n = 337); Self-Compassion = Self-Compassion Scale (n = 334).

Missing Data

No more than 3% of data was found to be missing for any one variable. Data was found to be MCAR, χ^2 (1, N = 33) = 42.38, p = -.13. All missing values on continuous variables were imputed using EM.

Bivariate Correlations among Study Variables

Pearson's product moment correlation analyses were employed to test our first hypothesis, which was mostly supported (see Table 2). All bivariate correlations were in the anticipated directions. Perfectionism was significantly positively related to depressive symptoms

(r = .32, p < .001), anxiety symptoms (r = .30, p < .001), NSSI (r = .23, p < .001), self-judgement (r = .21, p < .001), isolation (r = .27, p < .001), and over-identification (r = .23, p < .001) and negatively related to self-compassion (r = -.24, p < .001) and common humanity (r = -.13, p < .05). Perfectionism was not significantly related to self-kindness (r = -.07, p = .182) or mindfulness (r = -.10, p = .082). Depressive symptoms were significantly positively related to anxiety symptoms (r = .64, p < .001), NSSI (r = .44, p < .001), self-judgment (r = .36, p < .001), isolation (r = .39, p < .001), and over-identification (r = .39, p < .001) and negatively related to self-compassion (r = -.50, p < .001), self-kindness (r = -.34, p < .001), common humanity (r = -.33, p < .001), and mindfulness (r = -.35, p < .001). Similarly, anxiety symptoms were significantly positively related to NSSI (r = .39, p < .001), self-judgment (r = .27, p < .001), isolation (r = .32, p < .001), and over-identification (r = .31, p < .001) and negatively related to self-compassion (r = -.37, p < .001), self-kindness (r = -.23, p < .001), common humanity (r = -.19, p < .001), and mindfulness (r = -.28, p < .001). Finally, NSSI was significantly positively related to self-judgement (r = .30, p < .001), isolation (r = .32, p < .001), and over-identification (r = .30, p < .001) and negatively related to self-compassion (r = -.37, p < .001), self-kindness (r = -.30, p < .001), common humanity (r = -.20, p < .001), and mindfulness (r = -.18, p < .01). No correlations approached or exceeded the suggested multicollinearity cutoff of r > .80 (Katz, 2006).

Table 2

Bivariate Correlations of Study Variables

	MPS	BDI	BAI	SHI	SCS	SK	SJ	CH	I	M
BDI	.32***	--	--	--	--	--	--	--	--	--
BAI	.30***	.64***	--	--	--	--	--	--	--	--
SHI	.23***	.44***	.39***	--	--	--	--	--	--	--
SCS	-.24***	-.50***	-.37***	-.37***	--	--	--	--	--	--
Self-Kindness (SK)	-.07	-.34***	-.23***	-.30***	.77***	--	--	--	--	--
Self-Judgement (SJ)	.21***	.36***	.27***	.30***	-.77***	-.43***	--	--	--	--
Common Humanity (CH)	-.13*	-.33***	-.19***	-.20***	.55***	.55***	-.07	--	--	--
Isolation (I)	.27***	.39***	.32***	.32***	-.80***	-.41***	.77***	-.14*	--	--
Mindfulness (M)	-.10	-.35***	-.28***	-.18**	.68***	.69***	-.25***	.60***	-.28***	--
Over-Identification (OI)	.23***	.39***	.31***	.30***	-.77***	-.34***	.77***	-.10	.78***	-.26***

Note. MPS = Perfectionism – Frost Multidimensional Perfectionism Scale; BDI = Depressive Symptoms – Beck Depression Inventory-II; BAI = Anxiety Symptoms – Beck Anxiety Inventory; SHI = Non-Suicidal Self-Injury – Self-Harm Inventory; SCS = Self-Compassion – Self-Compassion Scale; SK, CH, M = Self-Compassionate Sub-Domains of Self-Compassion Scale; SJ, I, OI = Non-Self-Compassionate Sub-Domains of Self-Compassion Scale. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Parallel Multivariate Mediation Analyses

Hayes (2013) PROCESS Model 4 with 10,000 bootstrapped resamples was used to examine the association between perfectionism and NSSI, and the potential parallel mediating effects of depressive and anxiety symptoms (Preacher & Hayes, 2008).

In support of our second hypothesis, perfectionism has a significant total effect on NSSI behavior (c = .05, SE = .01, p < .001), which was no longer significant (c' = .02, SE = .01, p = .11) after the inclusion of depressive and anxiety symptoms, indicating parallel mediation (see Table 3 and Figure 1). Gender emerged as a significant covariate of the a_2 pathway. There was a total indirect effect of the combined mediators (ab) that was statistically different from zero (IE = .03, lower 95% CI = .02, upper 95% CI = .05). Depressive symptoms (IE = .02, lower 95% CI = .01, upper 95% CI = .04) and anxiety symptoms (IE = .01, lower 95% CI = .002, upper 95% CI = .02) each had a specific indirect effect on suicidal behavior. Overall, perfectionism was related to greater depressive and anxiety symptoms in parallel and, in turn, to greater NSSI behaviors. Our parallel mediation model explained ~5.5% of the total variance in NSSI (R^2 = .055, p = .001).

Table 3

Direct and Indirect Associations between Perfectionism, Depressive Symptoms, Anxiety Symptoms, and NSSI, with Covariates

Path	Estimate (*SE*)	Bias corrected and accelerated 95% Confidence Interval
NSSI		
c (Total Effect)	.05 (.01)***	[.03, .08]
c' (Direct Effect)	.02 (.01)	[-.005, .04]
a_1 (Perfectionism → Depressive Symptoms)	.22 (.04)***	[.15, .29]
a_2 (Perfectionism → Anxiety Symptoms)	.21 (.04)***	[.14, .28]
b_1 (Depressive Symptoms → NSSI)	.10 (.02)***	[.05, .14]
b_2 (Anxiety Symptoms → NSSI)	.06 (.02)**	[.02, .10]
ab (Total Indirect Effect)	.03 (.01)	[.02, .05]
a_1b_1 (Perfectionism → Depressive Symptoms → NSSI)	.02 (.01)	[.01, .04]
a_2b_2 (Perfectionism → Anxiety Symptoms → NSSI)	.01 (.01)	[.002, .02]

Note. NSSI = Perfectionism – Frost Multidimensional Perfectionism Scale; Depressive Symptoms – Beck Depression Inventory-II; Anxiety Symptoms – Beck Anxiety Inventory; Non-Suicidal Self-Injury (NSSI) – Self-Harm Inventory. Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000. $^{**}p < .01$, $^{***}p < .001$.

Conditional Indirect Effect Analyses

In a moderated mediation model examining overall self-compassion as a potential moderator on all paths of the parallel mediation model, hypotheses were partially supported. Race emerged as a significant covariate of the a_2 pathway. Self-compassion significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; $\beta = -.20$, $SE = .05$, $t(320) = -4.00$, $p < .001$) and depressive symptoms and NSSI (b_1 path; $\beta = -.10$, $SE = .04$, $t(316) = -2.63$, $p < .01$). However, self-compassion did not significantly moderate the relation between perfectionism and anxiety symptoms (a_2 path; $\beta = -.09$, $SE = .05$, $t(320) = -1.61$, $p = .11$), anxiety symptoms and NSSI (b_2 path; $\beta = .03$, $SE = .04$, $t(316) = .80$, $p = .42$), or perfectionism and NSSI (c' path; $\beta = .002$, $SE = .02$, $t(316) = .09$, $p = .93$). Self-compassion operates as a protective factor on the "a_1b_1" path of the model, weakening the associations between perfectionism and depressive symptoms, and between depressive symptoms and NSSI, thereby ultimately decreasing risk for depression and, in turn, NSSI among perfectionistic individuals (see Table 4; Figure 2).

Table 4

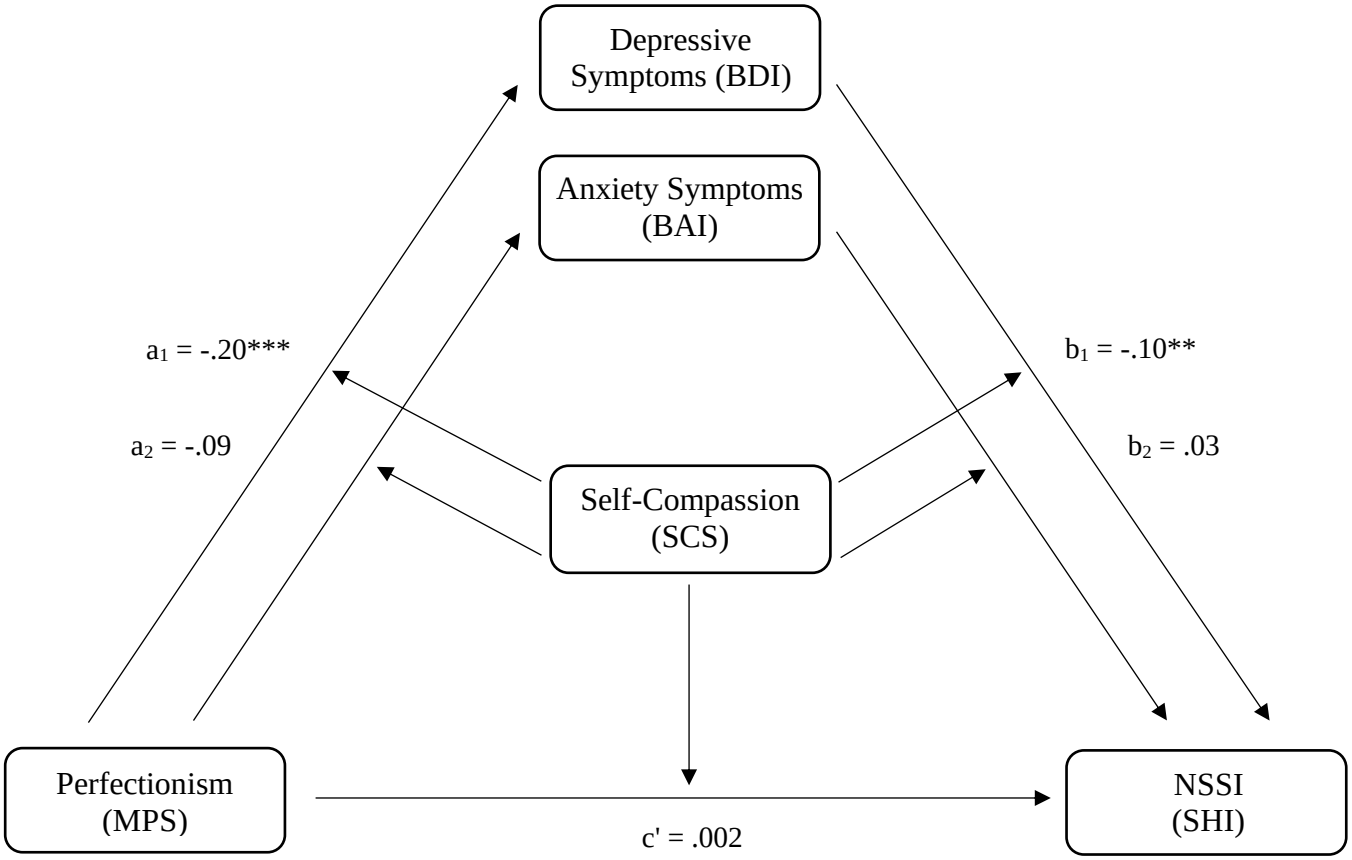
Conditional Indirect Effects of Overall Self-Compassion on All Paths of the Parallel Mediation Model

Path	β (*SE*)	*t*	95% BCa CI
a_1 (Perfectionism x Self-Compassion → Depressive Symptoms)	-.20 (.05)	-4.00***	[-.29, -.10]
a_2 (Perfectionism x Self-Compassion → Anxiety Symptoms)	-.09 (.05)	-1.61	[-.19, .02]
b_1 (Depressive Symptoms x Self-Compassion → NSSI)	-.10 (.04)	-2.63**	[-.17, -.02]
b_2 (Anxiety Symptoms x Self-Compassion → NSSI)	.03 (.04)	.80	[-.05, .12]
c' (Perfectionism x Self-Compassion → NSSI)	.002 (.02)	.09	[-.04, .04]

Note. Perfectionism – Frost Multidimensional Perfectionism Scale; Depressive Symptoms – Beck Depression Inventory-II; Anxiety Symptoms – Beck Anxiety Inventory; Non-Suicidal Self-Injury (NSSI) – Self-Harm Inventory; Self-Compassion – Self-Compassion Scale. Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000. BCa CI = Bias corrected and accelerated confidence interval; CI values not containing 0 are considered significant. $^{**}p < .01$, $^{***}p < .001$.

Figure 2

Moderated Parallel Mediation Model: Perfectionism and NSSI with Depressive and Anxiety Symptoms as Parallel Mediators and Conditional Indirect Effects of Self-Compassion



Note. a_1/a_2 = conditional effect (self-compassion on the relation between perfectionism and depressive/anxiety symptoms), b_1/b_2 = conditional effect (self-compassion on the relation between depressive/anxiety symptoms and NSSI), c' = conditional effect (self-compassion on the relation between perfectionism and NSSI). $^{**}p < .01$, $^{***}p < .001$.

When the self-compassionate domains (i.e., self-kindness, common humanity, mindfulness) of self-compassion were examined as independent moderators on all paths of the parallel mediation model, hypotheses were partially supported. Self-kindness significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; β = -.17, *SE* = .04, *t*(320) = -3.99, *p* < .001), perfectionism and anxiety symptoms (a_2 path; β = -.11, *SE* = .04,

t(320) = -2.55, *p* < .05), and depressive symptoms and NSSI (b_1 path; β = -.09, *SE* = .03, *t*(316) = -3.08, *p* < .01), yet did not significantly moderate the relation between anxiety symptoms and NSSI or perfectionism and NSSI. Additionally, common humanity significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; β = -.13, *SE* = .04, *t*(320) = -3.00, *p* < .01), however did not significantly moderate the relation between perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Lastly, mindfulness significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; β = -.11, *SE* = .05, *t*(320) = -2.35, *p* < .05) and perfectionism and anxiety symptoms (a_2 path; β = -.10, *SE* = .05, *t*(320) = -2.16, *p* < .05), but did not significantly moderate the relation between depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI (see Table 5; Figure 3). Gender emerged as a significant covariate of the a_2 pathway when examining self-kindness as a moderator, of the a_1 and b_1 pathways when examining common humanity as a moderator, and of the b_1 pathway when examining mindfulness as a moderator.

Table 5

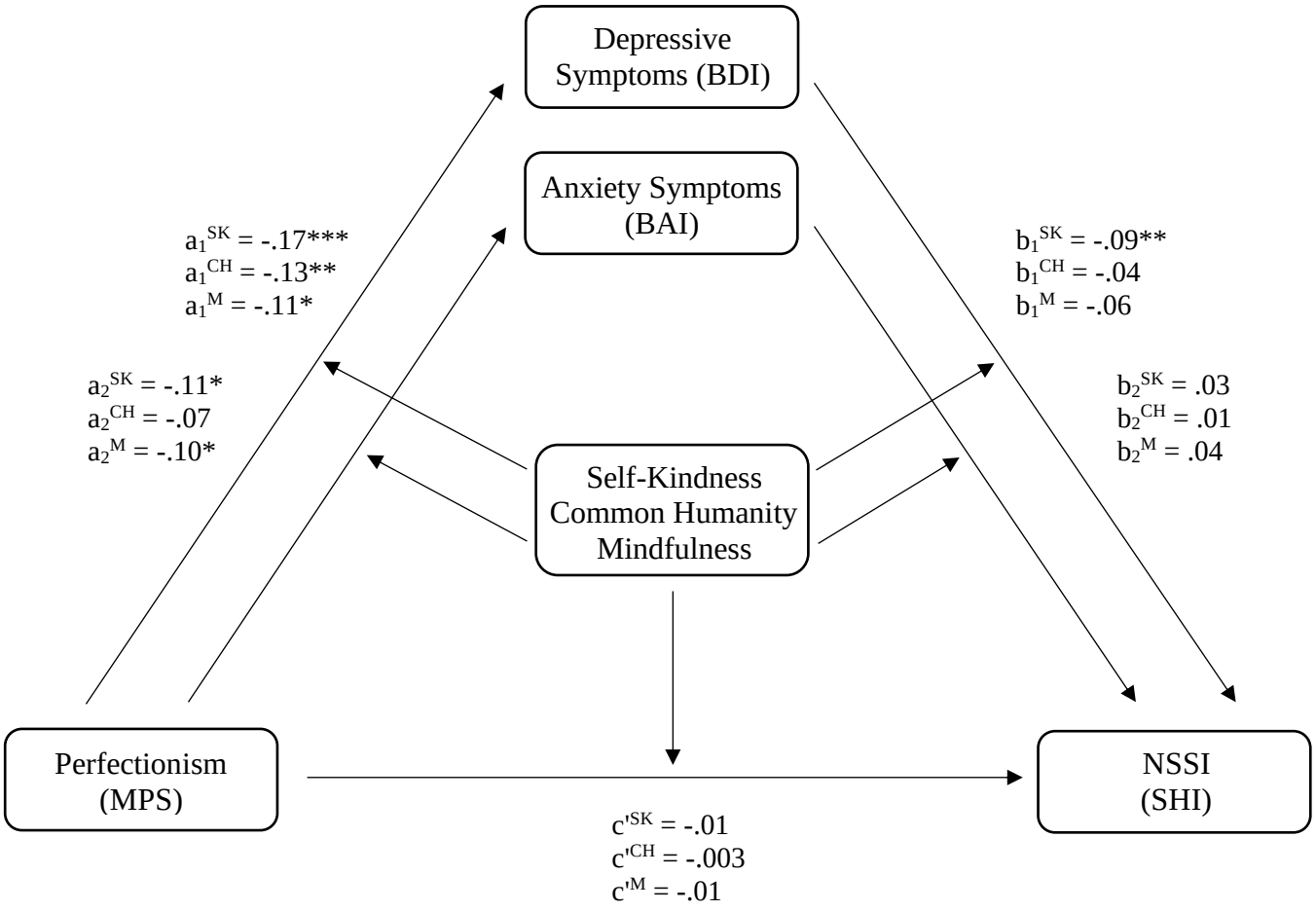
Conditional Indirect Effects of the Protective Components of Self-Compassion on All Paths of the Parallel Mediation Model

Path	β (*SE*)	*t*	95% BCa CI
Self-Kindness			
a_1 (Perfectionism x Self-Kindness → Depressive Symptoms)	-.17 (.04)	-3.99***	[-.25, -.08]
a_2 (Perfectionism x Self-Kindness → Anxiety Symptoms)	-.11 (.04)	-2.55*	[-.20, -.03]
b_1 (Depressive Symptoms x Self-Kindness → NSSI)	-.09 (.03)	-3.08**	[-.15, -.03]
b_2 (Anxiety Symptoms x Self-Kindness → NSSI)	.03 (.03)	.80	[-.04, .09]
c' (Perfectionism x Self-Kindness → NSSI)	-.01 (.02)	-.44	[-.04, .02]
Common Humanity			
a_1 (Perfectionism x Common Humanity → Depressive Symptoms)	-.13 (.04)	-3.00**	[-.21, -.04]
a_2 (Perfectionism x Common Humanity → Anxiety Symptoms)	-.07 (.05)	-1.52	[-.16, .02]
b_1 (Depressive Symptoms x Common Humanity → NSSI)	-.04 (.03)	-1.44	[-.10, .02]
b_2 (Anxiety Symptoms x Common Humanity → NSSI)	.01 (.03)	.20	[-.05, .07]
c' (Perfectionism x Common Humanity → NSSI)	-.003 (.02)	-.22	[-.03, .03]
Mindfulness			
a_1 (Perfectionism x Mindfulness → Depressive Symptoms)	-.11 (.05)	-2.35*	[-.19, -.02]
a_2 (Perfectionism x Mindfulness → Anxiety Symptoms)	-.10 (.05)	-2.16*	[-.19, -.01]
b_1 (Depressive Symptoms x Mindfulness → NSSI)	-.06 (.03)	-1.86	[-.13, .004]
b_2 (Anxiety Symptoms x Mindfulness → NSSI)	.04 (.03)	1.14	[-.03, .10]
c' (Perfectionism x Mindfulness → NSSI)	-.01 (.02)	-.66	[-.04, .02]

Note. Perfectionism – Frost Multidimensional Perfectionism Scale; Depressive Symptoms – Beck Depression Inventory-II; Anxiety Symptoms – Beck Anxiety Inventory; Non-Suicidal Self-Injury (NSSI) – Self-Harm Inventory; Self-Kindness/Common Humanity/Mindfulness – Self-Compassionate Sub-Domain of Self-Compassion Scale. Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000. BCa CI = Bias corrected and accelerated confidence interval; CI values not containing 0 are considered significant. $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

Figure 3

Moderated Parallel Mediation Model: Perfectionism and NSSI with Depressive and Anxiety Symptoms as Parallel Mediators and Conditional Indirect Effects of the Protective Components of Self-Compassion



Note. a_1/a_2 = conditional effect (self-kindness/common humanity/mindfulness on the relation between perfectionism and depressive/anxiety symptoms), b_1/b_2 = conditional effect (self-kindness/common humanity/mindfulness on the relation between depressive/anxiety symptoms and NSSI), c' = conditional effect (self-kindness/common humanity/mindfulness on the relation between perfectionism and NSSI). $^{*}p < .05$, $^{**}p < .01$, $^{***}p < .001$.

When the non-self-compassionate domains (i.e., self-judgement, isolation, over-identification) of self-compassion were examined as independent moderators on all paths of the parallel mediation model, hypotheses were partially supported. Self-judgement significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; β = .18, *SE* =

.04, $t(320) = 4.94$, $p < .001$) and perfectionism and anxiety symptoms (a_2 path; $\beta = .09$, $SE = .04$, $t(320) = 2.18$, $p < .05$), yet did not significantly moderate the relation between depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Additionally, isolation significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; $\beta = .14$, $SE = .04$, $t(320) = 3.94$, $p < .001$), but did not significantly moderate the relation between perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Lastly, over-identification significantly moderated the relation between perfectionism and depressive symptoms (a_1 path; $\beta = .16$, $SE = .04$, $t(320) = 4.53$, $p < .001$), however did not significantly moderate the relation between perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI (see Table 6; Figure 4). Race emerged as a significant covariate of the a_2 pathway when examining self-judgement, isolation, and over-identification as moderators.

Table 6

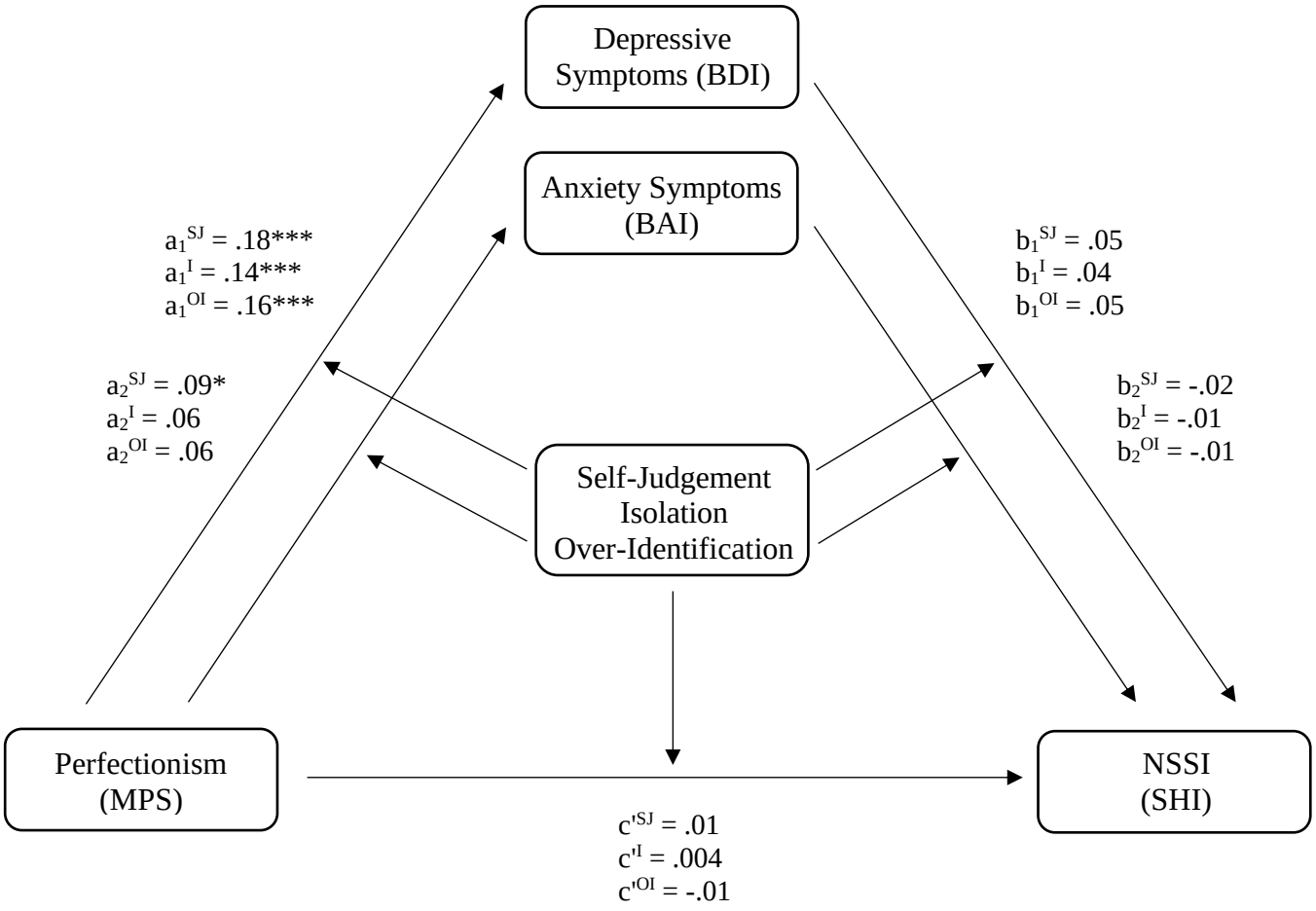
Conditional Indirect Effects of the Risk Components of Self-Compassion on All Paths of the Parallel Mediation Model

Path	β (*SE*)	*t*	95% BCa CI
Self-Judgement			
a_1 (Perfectionism x Self-Judgement → Depressive Symptoms)	.18 (.04)	4.94***	[.11, .26]
a_2 (Perfectionism x Self-Judgement → Anxiety Symptoms)	.09 (.04)	2.18*	[.01, .17]
b_1 (Depressive Symptoms x Self-Judgement → NSSI)	.05 (.03)	1.85	[-.004, .11]
b_2 (Anxiety Symptoms x Self-Judgement → NSSI)	-.02 (.03)	-.73	[-.08, .04]
c' (Perfectionism x Self-Judgement → NSSI)	.01 (.01)	.90	[-.02, .04]
Isolation			
a_1 (Perfectionism x Isolation → Depressive Symptoms)	.14 (.04)	3.94***	[.07, .21]
a_2 (Perfectionism x Isolation → Anxiety Symptoms)	.06 (.04)	1.48	[-.02, .13]
b_1 (Depressive Symptoms x Isolation → NSSI)	.04 (.02)	1.59	[-.01, .09]
b_2 (Anxiety Symptoms x Isolation → NSSI)	-.01 (.03)	-.26	[-.06, .04]
c' (Perfectionism x Isolation → NSSI)	.004 (.01)	.31	[-.02, .03]
Over-Identification			
a_1 (Perfectionism x Over-Identification → Depressive Symptoms)	.16 (.04)	4.53***	[.09, .23]
a_2 (Perfectionism x Over-Identification → Anxiety Symptoms)	.06 (.04)	1.46	[-.02, .13]
b_1 (Depressive Symptoms x Over-Identification → NSSI)	.05 (.03)	1.91	[-.001, .10]
b_2 (Anxiety Symptoms x Over-Identification → NSSI)	-.01 (.03)	-.55	[-.07, .04]
c' (Perfectionism x Over-Identification → NSSI)	-.01 (.01)	-.83	[-.04, .02]

Note. Perfectionism – Frost Multidimensional Perfectionism Scale; Depressive Symptoms – Beck Depression Inventory-II; Anxiety Symptoms – Beck Anxiety Inventory; Non-Suicidal Self-Injury (NSSI) – Self-Harm Inventory; Self-Judgement/Isolation/Over-Identification – Non-Self-Compassionate Sub-Domain of Self-Compassion Scale. Unstandardized regression coefficients are reported. Bootstrap sample size = 10,000. BCa CI = Bias corrected and accelerated confidence interval; CI values not containing 0 are considered significant. $^{*}p < .05$, $^{***}p < .001$.

Figure 4

Moderated Parallel Mediation Model: Perfectionism and NSSI with Depressive and Anxiety Symptoms as Parallel Mediators and Conditional Indirect Effects of the Risk Components of Self-Compassion



Note. a_1/a_2 = conditional effect (self-judgement/isolation/over-identification on the relation between perfectionism and depressive/anxiety symptoms), b_1/b_2 = conditional effect (self-judgement/isolation/over-identification on the relation between depressive/anxiety symptoms and NSSI), c' = conditional effect (self-judgement/isolation/over-identification on the relation between perfectionism and NSSI). $^{*}p < .05$, $^{***}p < .001$.

Chapter 4. Discussion

Previous research highlights the robust associations between perfectionism, symptoms of depression and anxiety, and NSSI (Hoff & Muehlenkamp, 2009; Limburg et al., 2017; Muehlenkamp & Brausch, 2016; Smith et al., 2016; Weintraub et al., 2017), however our understanding of the potential underlying factors affecting the association between perfectionism and psychopathological outcomes such as NSSI is limited. In a sample of undergraduate students with average prevalence rates of depressive (30.6%) and anxiety (59.6%) symptoms and above-average rates of lifetime mild to severe NSSI engagement (27.4%), we explored the potential parallel mediating impact of anxiety and depressive symptoms on the relation between perfectionism and NSSI, as well as the moderating role of self-compassion, and each of its facets, on this mediated relation. Overall findings suggested that perfectionism and associated anxiety and depressive symptoms might be an important clinical target for NSSI intervention. Furthermore, results supported the potential benefit of enhancing levels of self-compassion to mitigate the risk of subsequent psychopathology and NSSI among perfectionistic individuals.

Hypothesis 1: Bivariate Associations among Study Variables

Positive bivariate associations between depressive symptoms, anxiety symptoms, and NSSI were supported, which is consistent with previous findings (Hughes et al., 2019; Kalin, 2020; Muehlenkamp & Brausch, 2016; Richmond et al., 2017). Associations between depression and anxiety have been extensively documented throughout the literature, which is unsurprising given their high comorbidity rates (63-67%; Lamers et al., 2011). Depressive and anxiety symptoms share several cognitive and affective constructs, such as rumination, negative automatic thoughts, avoidance, distress intolerance, and emotion regulation difficulties (Benfer et al., 2017; Berking et al., 2014; Buschmann et al., 2018; Dickson & MacLeod, 2004; Olatunji

et al., 2013), which may help to explain their high comorbidity rates. These cognitive and affective constructs are also independent risk factors for NSSI engagement (Andover & Morris, 2014; Coleman et al., 2022; Haywood et al., 2023; Slabbert et al., 2018), which may further contextualize our understanding of the associations between anxiety, depression, and NSSI.

Depression and anxiety are commonly referred to as "emotional disorders," characterized by frequent, overwhelming negative emotions, with intense aversive reactions to them, and typically accompanied by attempts to avoid or escape these emotional experiences (Brown & Barlow, 2009). As such, individuals with depression and anxiety may engage in avoidance coping to ameliorate related emotional distress, however research indicates a bi-directional relation between avoidant coping and these psychopathologies suggesting that avoidance coping strategies may also exacerbate anxiety and depressive symptoms (Grant et al., 2013). Relatedly, NSSI has been frequently conceptualized as a maladaptive coping strategy often utilized by individuals with an avoidant coping style (Castro & Kirchner, 2018). The relation between avoidance coping strategies (e.g., rumination, procrastination, affect and thought suppression) and NSSI engagement has been well documented throughout the literature (Bentley et al., 2015b; Borrill et al., 2009; Coleman et al., 2022; Haywood et al., 2023; Najmi et al., 2007; Nolen-Hoeksema et al., 2008; Voon et al., 2014). As such, relations seen between emotional disorders, such as depression and anxiety, and NSSI may be partially explained by their mutual association with avoidant coping (Bentley et al., 2015a).

Our results also show that perfectionism was positively related to anxiety, depression, and NSSI, consistent with past findings among undergraduates and adolescents (Bardone-Cone et al., 2017; Duncan-Plummer et al., 2023; Gu et al., 2022; Kawamura et al., 2001; Limburg et al., 2017; Smith et al., 2017; Smith et al., 2016), and in support of the broader literature linking

perfectionism with cognitive and affective constructs (Tonta et al., 2022; Xie et al., 2019). Perfectionists typically hold excessively high standards for their performance and tend to be exceedingly self-critical (Frost et al., 1990). As such, perfectionistic individuals frequently worry about the future, ruminate on past mistakes and failures, and engage in social comparisons, all of which further negative affect and rumination (Flett et al., 2016; Xie et al., 2019). Perfectionists who experience heightened negative affect and rumination have been shown to also engage in avoidance coping strategies and experience difficulties in adaptive emotion regulation (Malivoire et al., 2019; van der Kaap-Deeder et al., 2016; Zeifman et al., 2020). Understanding the connection between perfectionism and these cognitive/affective constructs may enhance our comprehension of its association with depression, anxiety, and NSSI.

Our findings also indicated that depressive symptoms, anxiety symptoms, and NSSI were positively related to non-self-compassionate domains (i.e., self-judgment, isolation, and over-identification) and negatively related to overall self-compassion and self-compassionate domains (i.e., self-kindness, common humanity, and mindfulness), consistent with previous findings (Callow et al., 2021; Hasking et al., 2019; López et al., 2018; Per et al., 2021; Suh & Jeong, 2021; Wong & Mak, 2013); although, few studies have reported correlations with each of the six self-compassion subscales. Self-compassion refers to a comprehensive compassion for oneself during moments of distress, including perceived failure, inadequacy, or personal suffering (Neff, 2003a; Neff, 2023). Self-compassion, acknowledged as a protective factor against adverse psychological and psychosocial outcomes (Marsh et al., 2018), can mitigate ruminative processes and avoidance tendencies (Krieger et al., 2013; Raes, 2010). Ways in which self-compassionate domains (i.e., self-kindness, common humanity, and mindfulness) may address rumination and avoidance are by increasing positive beliefs and feelings about the self, accepting and embracing

aversive thoughts and emotions, and mitigating over-identification with personal suffering, whereas non-self-compassionate domains (i.e., self-judgment, isolation, and over-identification) are believed to have the opposite effect (Fresnics & Borders, 2017; Neff & Dahm, 2015; Tobin & Dunkley, 2021). Self-compassion's association with ruminative processes and avoidance tendencies may help us to better understand its relation with depression, anxiety, and NSSI.

Surprisingly, although perfectionism was positively related to non-self-compassionate domains (i.e., self-judgment, isolation, and over-identification) and negatively related to overall self-compassion and common humanity as predicted, no significant associations were found with self-kindness or mindfulness. This unexpected finding aligns with a study conducted by Barnett and Sharp (2016), which similarly found no significant associations between perfectionism and self-compassionate domains (i.e., self-kindness, common humanity, and mindfulness). The decision to assess overall perfectionism, without distinguishing between its adaptive and maladaptive forms, may explain the lack of significant associations with self-kindness and mindfulness in our study. Perfectionists' inclination towards self-criticism, which fosters a fear of mistakes and negative responses, contributes to feelings of failure and, therefore, recognizing failures as a natural part of the human experience, through common humanity (Neff, 2003a), may contextualize the observed association between perfectionism and common humanity in our study. However, the frequent association of mulitidimensional factors of perfectionism (i.e., perfectionistic concerns and strivings) with psychological distress may clarify the observed positive correlations between perfectionism and non-self-compassionate domains in our analyses.

Self-compassion's potential to diminish ruminative processes and avoidance tendencies offers a potential pathway to mitigate the adverse effects between these variables (Krieger et al.,

2013; Raes, 2010). However, enhancing our comprehension of the associations among these variables is crucial before we can consider fortifying self-compassion as a protective factor. Therefore, we conducted multivariate analyses to explore relations and possible impacts among these variables.

Hypothesis 2: Parallel Multivariate Mediation Model among Study Variables

Our second hypothesis was also supported. Depressive and anxiety symptoms, in parallel, mediated the association between perfectionism and NSSI. Specifically, higher levels of perfectionism were related to greater depressive and anxiety symptoms and, in turn, to more NSSI behaviors. This finding suggests that the deleterious impact of perfectionism on NSSI engagement may be explained, in part, by elevated depressive and anxiety symptoms. Our findings build upon previous research that documents the direct association between perfectionism and NSSI behavior (Claes et al., 2012; Hoff & Muehlenkamp, 2009; Luyckx et al., 2015; Tonta et al., 2022). We also expand the existing literature that outlines the mediating role of psychological distress in the connection between perfectionism and NSSI (Gu et al., 2022). Specifically, we highlight the distinctive roles of depressive and anxiety symptoms as potential points of linkage between perfectionism and NSSI engagement. Gender surfaced as a noteworthy covariate in the connection between perfectionism and anxiety, which may be explained by the higher prevalence of anxiety observed among college women compared to men (Eisenberg et al., 2013).

As previously discussed, perfectionists frequently ruminate about mistakes made, past events, and social comparisons, experience negative automatic thoughts about their need to be perfect and are exceedingly self-critical of their perceived shortcomings (Flett et al., 2016; Xie et al., 2019). Over time, these experiences further increase negative affect and difficulties

regulating emotions among these individuals, escalating their risk for developing psychopathologies like depression and anxiety (Donahue et al., 2018; Malivoire et al., 2019; Rudolph et al., 2007), and increasing their risk of engaging in maladaptive coping strategies, like NSSI (Gu et al., 2022; Hoff & Muehlenkamp, 2009; Tonta et al., 2022). Ruminative processes, heightened negative affect, and low distress tolerance are predictive of NSSI engagement (Selby et al., 2013; Slabbert et al., 2018). It is possible that perfectionists, experiencing depressive and/or anxiety symptoms, encounter elevated negative affect and, when coupled with impaired cognitive control due to rumination, they may face challenges in selecting adaptive coping strategies. This difficulty may lead perfectionists to resort to maladaptive coping methods like NSSI to alleviate affective distress (Chester et al., 2015).

According to Selby and Joiner's (2009) Emotional Cascade Model, individuals resort to NSSI as a result of ruminative processes triggering a rise in negative affect, which cyclically reinforce one another; referred to as an emotional cascade. Given that rumination hinders cognitive control, which is required for engagement in adaptive behaviors and effective problem-solving (Alderman et al., 2015), individuals may then turn to maladaptive emotional regulation strategies, like NSSI. This shift aims to redirect attention away from ruminative thoughts and negative emotions to a focus on physical sensations. For perfectionistic individuals who frequently ruminate on negative feedback and perceived shortcomings, their experience of emotional cascades may lead to elevated depressive and anxiety symptoms, further increasing affective distress and rumination, and ultimately leading to the use of NSSI behaviors as a means to mitigate aversive thoughts and emotions. Our findings may provide additional support for this conceptual model, such that depressive and anxiety symptoms represent a potential pathway to help us better understand perfectionistic individuals' use of NSSI.

Hypothesis 3: Moderated Mediation Models among Study Variables

Our third hypothesis, which examined the potential moderating effects of overall self-compassion and each of its facets on the perfectionism-NSSI association concurrently mediated by depressive and anxiety symptoms, was partially supported. Overall self-compassion significantly moderated the associations between perfectionism and depressive symptoms and depressive symptoms and NSSI by weakening the strength of these associations. However, contrary to our proposed hypotheses, overall self-compassion failed to significantly moderate the associations between perfectionism and anxiety symptoms, anxiety symptoms and NSSI, and perfectionism and NSSI. Therefore, overall self-compassion serves as a protective factor among perfectionistic individuals by weakening the relations between perfectionism and depressive symptoms, and between depressive symptoms and NSSI, thereby ultimately decreasing their risk for the development of depression and, in turn, NSSI engagement.

Self-compassion functions as an adaptive coping mechanism by enhancing awareness of shared humanity and fostering connection with others (Neff, 2003a). As an emotion regulation strategy, it catalyzes a shift from negative thoughts and feelings about the self, like inadequacies and past failures, towards more positive self-perceptions (Neff & Dahm, 2015). This approach entails embracing rather than avoiding negative thoughts and emotions (Neff & Dahm, 2015; Tobin & Dunkley, 2021). It diminishes over-identification (a construct similar to rumination) and cognitive fusion by encouraging non-judgmental awareness and acceptance of suffering without becoming absorbed by it (Fresnics & Borders, 2017). Indeed, previous research has revealed a negative association between self-compassion and both rumination and cognitive/behavioral avoidance—two constructs with known associations to depression and NSSI (Angelakis & Gooding, 2021; Carvalho & Hopko, 2011; Coleman et al., 2022; Krieger et al., 2013; Spinhoven

et al., 2016). As such, it may be that engaging in self-compassion allows perfectionists to accept and process negative thoughts and emotions about themselves, rather than avoiding and/or ruminating on them, lowering their risk for depressive symptoms. Since NSSI is often used as a coping strategy to divert attention from distressing thoughts and feelings, embracing self-compassion could also serve as an alternative coping mechanism for perfectionistic individuals experiencing depression. This shift may not only offer an alternative to NSSI but also enhance cognitive control by reducing rumination, enabling more effective problem-solving and engagement in adaptive behaviors (Alderman et al., 2015).

Beyond exploring overall self-compassion as a protective factor, we also examined the potential moderating effects of its three self-compassionate and three non-self-compassionate domains to better understand the function of the various components of self-compassion in the context of perfectionism, psychopathology, and NSSI. First, self-kindness significantly moderated the relation between perfectionism and depressive symptoms, perfectionism and anxiety symptoms, and depressive symptoms and NSSI, but did not significantly moderate the relation between anxiety symptoms and NSSI or perfectionism and NSSI. Self-kindness appears to operate as a protective factor among individuals with perfectionism by weakening the associations between perfectionism and depressive symptoms, and between depressive symptoms and NSSI, thereby ultimately decreasing their risk for depression and, in turn, NSSI. It also weakens the relation between perfectionism and anxiety symptoms, therefore decreasing risk for anxiety among perfectionistic individuals.

Self-kindness involves offering support and understanding to oneself when experiencing mistakes or failures, demonstrating concern for personal distress, and maintaining emotional availability during challenging times (Neff, 2023; Neff & Dahm, 2015). Self-criticism and

emotion suppression are associated with certain anxiety disorders (i.e., social anxiety disorder; Iancu et al., 2015; Spokas et al., 2009), depression (Ehret et al., 2015; Tran & Rimes, 2017), and NSSI (Brausch et al., 2022; Xavier et al., 2016). Our findings may suggest that when perfectionists extend kindness and empathy to themselves amid perceived failure or distress, this may lessen their risk of developing psychopathologies like depression or anxiety. Additionally, our results may suggest that when perfectionistic individuals experience elevated levels of depressive symptoms, self-acceptance and kindness may mitigate the negative impact of aversive emotional experiences, reducing the likelihood of engaging in maladaptive coping behaviors like NSSI.

The self-judgement domain significantly moderated the relation between perfectionism and depressive symptoms and perfectionism and anxiety symptoms but did not significantly moderate the relation between depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Self-judgement seems to serve as a risk factor among perfectionistic individuals by strengthening the relation between perfectionism and depressive/anxiety symptoms, therefore increasing their risk for depression and anxiety. In contrast to self-kindness, self-judgment involves using harsh criticism toward oneself (Neff, 2003a). As mentioned earlier, self-criticism is a recognized risk factor for anxiety (Iancu et al., 2015) and depressive (Ehret et al., 2015) symptoms. Therefore, our findings may indicate that perfectionists, due to their frequent experience of self-criticism, could be at an increased risk of developing anxiety and depressive symptoms.

Common humanity significantly moderated the relation between perfectionism and depressive symptoms but failed to moderate the relation between perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and

NSSI. Common humanity appears to serve as a protective factor for those with perfectionism by weakening the relation between perfectionism and depressive symptoms, thereby decreasing their risk for depression. Common humanity refers to the perception that one's experiences, including mistakes and failures, are universal aspects of the human condition, fostering an awareness that vulnerability, challenges, suffering, and imperfection are shared by all people, which results in a sense of connection with others (Neff, 2003a; Neff, 2023; Neff & Dahm, 2015). Perfectionistic individuals frequently feel socially rejected and unable to meet social expectations (Stoeber et al., 2017), potentially increasing feelings of isolation and susceptibility to depression (Sherry et al., 2013). Our findings may suggest that when perfectionistic individuals embrace common humanity as a cognitive framework when reflecting on past mistakes and perceived failures, they may gain a better understanding that imperfection and suffering are shared experiences, thereby reducing feelings of isolation and decreasing the risk for depression.

The isolation domain similarly significantly moderated the relation between perfectionism and depressive symptoms but not the relation between perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Isolation appears to operate as risk factor for those with perfectionism by strengthening the association between perfectionism and depressive symptoms, thereby increasing their risk for depression. Isolation, as opposed to common humanity, involves perceiving one's experiences as uniquely challenging, which contrasts with the understanding that others also face difficulties, fostering a sense of disconnection and loneliness (Neff, 2023). Our findings may indicate that when perfectionistic individuals perceive themselves as the sole ones making mistakes or experiencing failure, they may believe they've failed to meet social expectations and feel socially

rejected. This heightened sense of isolation may subsequently contribute to an increased risk of depression.

Mindfulness significantly moderated the relation between perfectionism and depressive symptoms and perfectionism and anxiety symptoms, but not the relation between depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Mindfulness seems to operate as a protective factor among individuals with greater perfectionism because it weakens the associations between perfectionism and depressive/anxiety symptoms and, as a result, decreases their risk for depression and anxiety. As a facet of self-compassion, mindfulness refers to maintaining a nonjudgmental and balanced perspective on negative thoughts and emotions, while acknowledging personal suffering without avoiding or exaggerating discomfort (Neff, 2003a; Neff, 2023). This approach prevents individuals from becoming absorbed or carried away by aversive reactions and allows for the recognition and simultaneous distancing of negative thoughts and emotions (Neff, 2003a; Neff, 2023). Mindfulness has been shown to be inversely associated with anxiety and depression, operating through mechanisms such as worry and rumination (Desrosiers et al., 2013). Interestingly, research suggests a direct contrast between mindfulness and perfectionism, which may be due to perfectionistic individuals' tendency to focus on future goals and become pre-occupied with past events, including engaging in rumination and worry about depressive feelings, past mistakes, and distressing experiences (Flett et al., 2021). However, it has been suggested that training mindfulness could relieve distress experienced by perfectionistic individuals by mitigating worry and rumination (Flett et al., 2021).

The over-identification domain significantly moderated the relation between perfectionism and depressive symptoms but did not significantly moderate the relation between

perfectionism and anxiety symptoms, depressive symptoms and NSSI, anxiety symptoms and NSSI, or perfectionism and NSSI. Therefore, over-identification appears to serve as risk factor among individuals with greater perfectionism by strengthening the relation between perfectionism and depressive symptoms, and as a result increasing their risk for depression. In contrast to mindfulness, over-identification involves the attempt to fight or resist one's experiences of suffering, thereby intensifying focus on pain and hindering the ability to view oneself objectively (Neff, 2023). This form of rumination often leads individuals to perceive isolated events as conclusive, potentially impacting feelings of self-worth negatively (Neff, 2023). Considering the established connection between rumination and depression, and their bidirectional impact (Whisman et al., 2020), our findings may imply that when perfectionists engage in rumination, fixating on mistakes and distressing experiences, and becoming absorbed by their perceived shortcomings, they face an elevated risk of developing depression.

In terms of covariates, race/ethnicity was a significant factor in the perfectionism-anxiety pathway when exploring overall self-compassion and non-self-compassionate domains (self-judgment, isolation, and over-identification) as moderators. Considering past research demonstrating comparable prevalence rates of anxiety across racial/ethnic groups (Eisenberg et al., 2013), it is essential we refrain from making broad generalizations based on our limited sample. Gender significantly influenced the connections between perfectionism and anxiety/depression, and between depression and NSSI, when self-compassionate domains (i.e., self-kindness, common humanity, and mindfulness) were examined as buffers. These findings align with past research showing higher prevalence rates of anxiety, depression, and NSSI among college women than men (Bresin & Schoenleber, 2015; Eisenberg et al., 2013), along

with women reporting lower levels of self-compassion and higher levels of rumination and negative affect compared to men (Barnett & Sharp, 2016).

Overall, our findings support existing literature that emphasizes the persistent challenges university students face regarding psychopathology and NSSI engagement. The prevalence rates of mild to severe depressive (30.6%) and anxiety (59.9%) symptoms in our sample align with those in other collegiate studies (Fernandes et al., 2018; Ibrahim et al., 2013; Shah & Pol, 2020). However, the lifetime prevalence of mild to severe NSSI engagement (27.4%) in our sample surpasses rates reported in other collegiate samples (Kiekens et al., 2023; Whitlock et al., 2011). These patterns underscore the necessity for enhanced screening efforts for psychopathology and the implementation of evidence-based interventions. Our results also lend credence to the applicability of Selby and Joiner's (2009) Emotional Cascade Model in understanding the frequent associations among perfectionism, psychopathology, and NSSI, highlighting the potential roles of rumination and negative affect. Additionally, we offer initial support for the role of self-compassion, and several of its facets, as potential buffers on the link between perfectionism and psychopathology, and between psychopathology and NSSI engagement among perfectionistic individuals.

Limitations and Future Research

Our findings should be interpretated in the context of study limitations. First, our use of a cross-sectional design limits the ability to infer causality, and the potential for bidirectionality is a noteworthy concern. For instance, we are unable to discern whether perfectionism truly preceded symptoms of depression (e.g., Smith et al., 2021) and anxiety (e.g., Damian et al., 2017; Gautreau et al., 2015) and NSSI, or whether anxiety and depression symptoms were predictive of NSSI. However, the organization of our models is based on the existing theoretical

and empirical literature, instilling confidence in their directionality; for example, perfectionism is recognized as a contributor to the development and maintenance of both depressive and anxiety symptoms (Egan et al., 2011; Hewitt et al., 2022; Levine et al., 2023; Smith et al., 2018). Anxiety and depressive symptoms frequently coincide and exhibit a reciprocal association (Kalin, 2020; Lamers et al., 2011), and both contribute to the risk of NSSI engagement (Hughes et al., 2019; Wilcox et al., 2012). Nonetheless, it is essential to conduct prospective, longitudinal studies to examine the long-term downstream effects of perfectionism on NSSI behavior and identify underlying mechanisms of action to help us better understand their relationship.

Our study employed self-report measures to evaluate our variables of interest, which may limit measurement accuracy due to methodological concerns such as poor external validity, participants' constraints on self-knowledge, the influence of their mood states, and the potential for socially desirable responses, acquiescent responses, or extreme responses (Huprich et al., 2011; Paulhus & Vazire, 2007). While we employed "gold standard" measures with sound psychometric properties to evaluate psychopathological symptoms, future research should incorporate objective measures (e.g., medical records, clinical interviews, DSM-5 criteria), in conjunction with self-report measures, to enhance overall validity. Additionally, we utilized overall perfectionism as a variable throughout analyses, rather than distinguishing between adaptive and maladaptive perfectionism. Given that these two facets of perfectionism have demonstrated distinct associations with varying psychological outcomes (Limburg et al., 2017; Madigan, 2019), it will be important to explore their differential impact on our study variables in future work.

Although our sample is justified, considering the rising rates of anxiety, depression, NSSI, and perfectionism among college students (Curran & Hill, 2019; Duffy et al., 2019;

Kiekens et al., 2019), our respondents were largely White female young adults, thereby restricting the generalizability of our findings. Thus, the use of a more heterogeneous sample is needed, as existing research indicates variations in the prevalence of our variables of interest (e.g., anxiety, depression, and NSSI) among individuals from different age, gender, and ethnic/racial groups. For example, adolescents and young adults are more likely to engage in NSSI (Swannell et al., 2014; Xiao et al., 2022), women exhibit higher prevalence rates of lifetime anxiety and depression (Altemus et al., 2014), and variations in prevalence rates are evident among different ethnic/racial groups for anxiety, depression, and NSSI (Eisenberg et al., 2013; Lipson et al., 2022; Monto et al., 2018); we covaried these variables in our analyses to address this limitation. Future research involving diverse samples is needed to ascertain whether risk and protective factors for NSSI function similarly across various sociodemographic groups.

Implications

Our study outcomes may carry important clinical implications for university students, a population where reports of psychological distress and perfectionism are increasingly prevalent (Curran & Hill, 2019; Duffy et al., 2019; Kiekens et al., 2019). Our findings suggest that perfectionism may be a salient risk factor for psychopathology and, further, that this association may contribute to NSSI engagement, indicating multiple intervention points that could be targeted at individual, campus, and community levels. We propose that clinicians (1) engage in routine screening for anxiety, depression, and NSSI engagement, (2) assess the presence of risk/protective factors, and (3) enhance self-compassion among perfectionistic students, to mitigate their risk for the development and exacerbation of psychopathology and NSSI.

Screening for symptoms of depression, anxiety, and NSSI among students can assist clinicians and college campuses in identifying intervention opportunities for those at risk. For

instance, systematic use of screeners like the Patient Health Questionnaire 9-item (PHQ-9; Kroenke & Spitzer, 2002) and the Generalized Anxiety Disorder 7-Item (GAD-7; Spitzer et al., 2006) in student health and counseling centers can help identify students that may benefit from mental health services. Similarly, integrating routine NSSI screening questions that inquire about the presence and frequency of NSSI within the past year (Prinstein et al., 2008) or employing brief screening measures like the Deliberate Self-Harm Inventory 9-item (DSHI-9; Bjärehed & Lundh, 2008) may also help to detect at-risk students on campus. Moreover, clinicians may find clinical value in assessing for the presence of risk factors, such as maladaptive perfectionism or non-self-compassionate beliefs, and protective factors, such as elevated levels of self-compassion, in students exhibiting symptoms of anxiety, depression, or engaging in NSSI, to provide potential insights for clinical interventions.

Increasing levels of self-compassion in perfectionists may reduce their vulnerability to depression and anxiety symptoms, and possibly NSSI. Our bivariate analyses revealed that self-compassion was beneficially related to perfectionism, depression, anxiety, and NSSI, while our multivariate analyses indicated that self-compassion has positive effects on the perfectionism-psychopathology and depression-NSSI links. Notably, all self-compassionate domains within our study (i.e., self-kindness, common humanity, and mindfulness) demonstrated a mitigating effect on the perfectionism-depression association, however only the self-kindness and mindfulness facets attenuated the perfectionism-anxiety link. Additionally, self-kindness was the only self-compassion domain to alleviate the depression-NSSI relation. Therefore, interventions targeting all facets of self-compassion may prove beneficial in reducing psychopathology risk among perfectionists, while interventions specifically focusing on enhancing self-kindness (e.g., increasing social support, enhancing mindfulness) may be particularly effective in lowering the

risk of NSSI engagement by helping to foster the development of positive coping skills (Adams et al., 2023; Stallman et al., 2020).

Mindful Self-Compassion (MSC) therapy, Compassion-Focused Therapy (CFT), and Acceptance and Commitment Therapy (ACT) offer promising avenues for enhancing self-compassion, including self-kindness, common humanity, and mindfulness, with the aim of mitigating the negative impacts of perfectionism and possibly reducing the risk of psychopathology and NSSI among perfectionistic individuals (Neff & Germer, 2013; Woodfin et al., 2021; Yadavaia et al., 2014). Both MSC therapy and CFT focus on bolstering mindfulness, improving emotion regulation, fostering self-compassion, and promoting a compassionate inner dialogue to enhance overall well-being and foster psychological resilience (Gilbert, 2010; Neff & Germer, 2013). Notably, CFT may be particularly suitable for clinical populations due to its focus on addressing processes like rumination, which is commonly associated with depression and NSSI (Ferrari et al., 2019). Although ACT is recognized as a transdiagnostic psychotherapeutic approach for addressing a range of psychopathologies and symptoms, some evidence suggests that using an ACT framework as a brief intervention to cultivate self-compassion may contribute to decreased levels of depression and anxiety (Yadavaia et al., 2014). To foster self-compassion through ACT, treatment should focus on defusing from self-criticism and self-conceptualizations, enhancing self-perspective-taking and self-as-context, and reinforcing self-kindness as a core value (Yadavaia et al., 2014).

In addressing perfectionism directly, research indicates that applying cognitive-behavioral therapy (CBT) for perfectionism—targeting behaviors like repetitive performance checking, cognitive biases, self-criticism, procrastination, and avoidance—can indirectly lead to a decrease in anxiety and depressive symptoms (Egan et al., 2011; Galloway at al., 2022).

Additionally, evidence-based approaches like CBT, which focuses on identifying and altering maladaptive thoughts, behaviors, and emotional responses, along with Acceptance and Commitment Therapy (ACT), centered on changing one's relationship to unwanted thoughts and emotions and promoting psychological flexibility, may help mitigate levels of depression and anxiety and, consequently, reduce their downstream effects, resulting in a decreased likelihood of NSSI engagement among perfectionists (Carpenter et al., 2018; Driessen & Hollon, 2010; Twohig & Levin, 2017). Effective interventions for directly addressing NSSI include CBT and Dialectical Behavioral Therapy (DBT), which emphasizes acceptance, distress tolerance, emotion regulation improvement, problem-solving abilities, and interpersonal skills as key treatment components (Calvo et al., 2022). The multifaceted approaches of CBT, ACT, and DBT highlight their relevance and effectiveness in transdiagnostically addressing perfectionism, psychopathology, and NSSI.

Conclusion

Despite the established connection between perfectionism and NSSI, there exists a scarcity of studies exploring potential mediators or mechanisms of action through which perfectionism influences engagement in NSSI. Furthermore, previous research has not investigated the potential risk and protective roles of self-compassion, and its domains, in the interplay among perfectionism, psychopathology, and NSSI, within a comprehensive model. In our sample of college students, anxiety and depressive symptoms mediated the relation between perfectionism and NSSI. Overall self-compassion, and its self-compassionate domains, attenuated the perfectionism-psychopathology relation, with overall self-compassion and self-kindness also weakening the psychopathology-NSSI linkage. Conversely, non-self-compassionate domains (i.e., self-judgement/isolation/over-identification) exacerbated the

pathway between perfectionism and psychopathology. Longitudinal studies with diverse samples and objective measures are needed to confirm our findings. Despite limitations, our results support the use of interventions that enhance self-compassion to mitigate the risk of anxiety and depression, and consequent non-suicidal self injury among perfectionistic college students.

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VITA
NATASHA MEMORIAL BOURGOIN

Education:

Ph.D. Psychology, East Tennessee State University, Johnson City, Tennessee, 2020 – 2026
M.S. General Clinical Psychology, Eastern Michigan University, Ypsilanti, Michigan, 2020
B.A. Psychology, University of Maine, Orono, Maine, 2016

Professional Experience:

Behavioral Health Consultant, ETSU Health Family Medicine, Kingsport, Tennessee, 2024 – Present
Neuropsychological Assessment Assistant, James H. Quillen VA Medical Center, Johnson City, Tennessee, 2024 – Present
Graduate Research Assistant, East Tennessee State University, Department of Psychology, Johnson City, Tennessee, 2020 – Present
Behavioral Health Consultant, ETSU Health Internal Medicine, Johnson City, Tennessee, 2023
Behavioral Health Clinician, ETSU University Health Center, Johnson City, Tennessee, 2022 – 2023
Graduate Student Clinician, Behavioral Health and Wellness Clinic, Johnson City, Tennessee, 2021 – 2023
Graduate Teaching Assistant, East Tennessee State University, Department of Psychology, Johnson City, Tennessee, 2020 – 2022
Graduate Student Clinician, Eastern Michigan University Counseling and Psychological Services, Ypsilanti, Michigan, 2019 – 2020
Graduate Research Assistant, Eastern Michigan University, Department of Psychology, Ypsilanti, Michigan, 2018 – 2020
Children's Case Manager, United Cerebral Palsy of Maine, Bangor, Maine, 2018
In-Home Behavioral Health Professional, United Cerebral Palsy of Maine, Bangor, Maine, 2017 – 2018
Research Assistant, University of Maine, Department of Psychology, Orono, Maine, 2014 – 2016

Presentations:

Stiglets, B., Anderson, N., Prior, K., Greenlee, M., Valencia, A., **Bourgoin, N.**, Whelan, J. & Ginley, M. (2024, April). *Scoping Review of Responsible Gambling Strategies.* Poster to be presented at the 12th Annual Collaborative Perspectives on Addiction Conference, Denver, CO, United States.

Bourgoin, N., Altier, H., King, S., Colpo, C., Chang, E., & Hirsch,

J. (2022, August 3-6). *Social Problem-Solving and Suicide Risk in College Students: Do Increased Gratitude and Reduced Suicide Anger Expression Explain the Association?* [Poster presentation]. 20th Annual International Society for Quality-of-Life Studies Conference, Burlington, VT, United States.

Bourgoin, N., Altier, H., King, S., Chang, E., & Hirsch, J. (2022, May 26-29). *Social Problem-Solving and Suicide Risk in College Students: Do Reductions in Perceived Stress and Suicide Anger Expression Explain the Association?* [Poster presentation]. 34th Annual Convention of the Association for Psychological Science, Chicago, IL, United States.

Dwyer, K., **Bourgoin, N.**, Ludkin, T., McNulty, M., Sieja, J., Chacon, A., Dolohanty, K., Smith, R., Staples, A., & Lawler, J. (2020, June 21-24). *Parental mental health, self-efficacy, and the mediating role of stress* [Poster presentation]. 32nd Annual Meeting of the Association for Psychological Science, Chicago, IL, United States.

Buthman, A., **Bourgoin, N.**, Glowina, K., & Janisse, H. (2020, April 23-25). *Changes in school readiness in low-income, African American preschool children* [Poster presentation]. 92nd Annual Meeting of the Midwestern Psychological Association, Chicago, IL, United States.

Bourgoin, N. & Lawler, J. (2019, May 5-7). *Social support moderator effect on the relationship between ACES and depression and its effects on child disruptive behaviors* [Poster presentation]. Michigan Association for Infant Mental Health, Ypsilanti, MI, United States.

Bourgoin, N., Buthman, A., & Janisse, H. (2019, April 11-13). *Stress as a barrier to motivation for health behavior change* [Poster presentation]. 91st Annual Meeting of the Midwestern Psychological Association, Chicago, IL, United States.

Buthman, A., **Bourgoin, N.**, Daugherty, M., & Janisse, H. (2018, November 1). *Parent feeding style and BMI among low-income, African American families* [Invited oral presentation]. 2nd Annual Michigan Health Psychology Symposium, Livonia, MI, United States.

Honors and Awards:

EMU Success Scholarship, Eastern Michigan University, 2018 – 2020

Bertha J. Thompson Scholarship, University of Maine, 2015

Joseph A. & Mary A. Donovan Scholarship, University of Maine, 2014

Harold M. Pierce Fund Award, University of Maine, 2013