The Roles of Daily and Trait Self-Compassion in Mitigating Symptoms of Bulimia Nervosa: Findings From a Two-Week Daily Diary Study

by

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Author's Declaration

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

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Abstract

Background: For individuals with bulimia nervosa (BN), eating pathology is largely affected by daily experiences (Crosby et al., 2009). Yet, little is known about protective factors that can mitigate bulimic symptoms day-to-day within a person. Self-compassion is an efficacious strategy that mitigates eating disorder symptomology (Braun et al., 2016). While generally conceptualized as a stable trait-variable (Neff, 2003a), recent findings suggest that self-compassion levels fluctuate within women with anorexia nervosa, and that these fluctuations mitigate eating pathology (Kelly et al., 2019). Research has yet to explore whether these findings extend to individuals with BN, and whether self-compassion can assuage the behavioural symptoms of eating disorders. **Objectives:** The primary goals of the present study were to investigate 1) the extent to which self-compassion levels fluctuate day-to-day within women with BN; and 2) whether these fluctuations contribute to their eating pathology. Secondarily, we explored whether higher average levels of self-compassion were associated with reduced eating pathology over the study period. **Method:** For two weeks, 124 women who met the DSM-5 criteria for BN completed nightly measures of their daily eating pathology and self-compassion. **Results:** The intraclass correlation for self-compassion was .56, demonstrating that self-compassion levels varied almost as much within a person from day-to-day as from one person to the next. Multilevel modeling revealed that while higher daily and trait self-compassion were associated with lower levels of negative affect, dietary restraint, clinical impairment and bodily shame, only daily self-compassion was related to the reduced probability of binge eating and use of inappropriate compensatory behaviours. **Discussion:** Findings suggest that, for women with BN, responding to daily distress with more self-compassion than usual may be associated with marked reductions in both the psychosocial and behavioural symptoms of their eating disorder.

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Literature Review and Introduction

An Overview of Bulimia Nervosa

Diagnostic Features

Bulimia nervosa (BN) is a severe and potentially life-threatening psychiatric disorder that is characterized by recurrent episodes of binge eating and compensatory behaviours that function to prevent weight gain (American Psychiatric Association [APA], 2013). According to the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5), an episode of "binge eating" is operationalized as a distinct period of time (i.e., less than two hours) in which an individual consumes an objectively large amount of food. During these periods of food consumption, the individual feels that they are no longer in control of their eating, such that they are unable to discontinue eating (APA, 2013). In an attempt to counteract the effects of binge eating, individuals with BN engage in inappropriate compensatory behaviours (e.g., self-induced vomiting, misuse of laxatives and diuretics, excessive exercising and fasting; APA, 2013; Mehler & Rylander, 2015). While compensatory behaviours are often used to directly counteract the effects of overeating, individuals with BN also tend to restrict their caloric intake between binge eating episodes in an effort to mitigate weight gain (Vögele et al., 2009). In the recent edition of the DSM-5 (APA, 2013), the frequency criterion for both binge eating and inappropriate compensatory behaviours is an average of once per week, for at least the past three months. Individuals with BN also endorse a pathological preoccupation with their body shape and weight, such that their overall self-evaluation is disproportionately influenced by their perceptions of these physical features (Fairburn et al., 2003).

Severity, Prevalence and Course

Severity. BN can result in significant functional impairment (Mond & Hay, 2007) and medical complications (Gibson et al., 2019). Individuals who engage in self-induced vomiting to prevent weight gain are at increased risk for dental erosion (Gibson et al., 2019), swelling of the salivary glands (Vavrina, 1994), cardiac arrhythmias due to electrolyte imbalances and esophageal complications due to the regurgitation of gastric fluid (Mehler, 2011). Other compensatory behaviours, such as laxative abuse, may increase the likelihood of developing cathartic colon syndrome, whereby the colon is rendered incapable of proper functioning (Westmoreland et al., 2016). In a sample of 906 individuals with BN, the mortality rate was estimated to be approximately 3.9% ($N = 35$), with 2.2% ($N = 20$) of these deaths being attributed to the medical complications of the disorder (Crow et al., 2009).

Aside from the medical complications associated with the disorder, individuals with BN are at a considerably elevated risk for suicidality. In fact, research purports that compared to other eating disorder subtypes, a diagnosis of BN is most strongly associated with suicidal ideation and a history of attempted suicide (Fedorowicz et al., 2007; Goldstein & Gvion, 2019; Ruuska et al., 2005). Research conducted in a large sample of individuals with BN ($N = 566$) estimates that the lifetime prevalence of attempted suicide in individuals with BN is 26.9% ($n = 152$). This finding is supported by an evolving research base which suggests that approximately one-third of women with BN will attempt to commit suicide at least once within their lifetime (e.g., Corcos et al., 2002; Franko & Keel, 2006). A longitudinal study conducted in a sample of 258 individuals with BN revealed that approximately 2.32 % ($n = 6$) of individuals died by suicided over the study period (mean duration of follow-up assessments was 10.5 years; Huas et al., 2012). The researchers noted that a history of attempted suicide was positively predictive of

future death by suicide (Huas et al., 2012), thus underscoring the need to consider suicidal ideation and previous suicide attempts when evaluating the risk and severity of BN.

Prevalence. The lifetime prevalence of BN is notably higher for adult women than for adult men. Specifically, epidemiological research conducted in New Zealand, the United States, and Canada suggests that the lifetime prevalence of BN is between 1.1%-2.8% for women, and 0.1%-0.5% for men (Bushnell et al., 1990; Garfinkel et al., 1995; Kendler et al., 1991). The average age of onset for BN is estimated to be approximately 18.0 years of age (Hudson et al., 2007; Volpe et al., 2016); with data from a study of 427 individuals with BN suggesting that most (i.e., 83.3%) individuals experience early onset of the disorder (M = 16.7 years, SD = 2.7; Volpe et al., 2016). However, researchers note that the identification of BN is often delayed as symptoms of the disorder are easier to mask when compared to other eating disorders, such as anorexia nervosa (Lewis & Nicholls, 2016).

Course. Findings regarding the natural course of BN have been mixed; discrepancies in these findings are proposed to be a product of diverse methods of assessment (e.g., self-report versus clinical interviews), sample demographics and the length of time between follow-up assessments (Keel & Brown, 2010; Nagl et al., 2016). Results from a 10-year longitudinal study in adolescents and young adults (i.e., aged 14 to 24) suggest that approximately 42% of individuals with an initial diagnosis of BN continue to display symptoms of an eating disorder at any one of the follow-up assessments (Nagl et al., 2016). Rates of remission from BN appear to increase as a function of the time to follow-up; specifically, remission rates are lowest for individuals at one-year follow-up (i.e., 27-28%), and highest by a 10-year follow-up (i.e., up to 70%; Keel & Brown, 2010). Keel and Brown (2010) note that remission rates of 70% or more are observed at follow-up assessments that occur between 5 and 20 years from baseline; thus,

individuals who are unable to achieve remission by 5 years following intake may experience prolonged eating disorder symptoms.

The Role of Daily Experiences for Individuals with BN

In light of the chronicity and severity of BN, considerable research has aimed to elucidate potential antecedents and maintenance factors of bulimic behaviours. Converging evidence suggests that, in individuals with BN, bulimic behaviours are largely predicted and maintained by an individual's daily experiences; namely, negative affect (e.g., Goldschmidt et al., 2014), dietary restraint (e.g., Zunker et al., 2011) and body dissatisfaction (e.g., Srivastava et al., 2020). These findings are primarily derived from research conducted using daily diary and ecological momentary assessment (EMA) paradigms. These self-report paradigms enable researchers to investigate the relationship between daily experiences and eating behaviours in one's natural environment in 'real-time' (Bolger et al., 2003).

Negative Affect

The affect-regulatory role of binge eating appears to be a central tenet across the theoretical models of BN. Although theories differ in the proposed mechanisms by which binge eating mitigates negative affect, theorists converge on the belief that instances of elevated negative affect trigger binge eating episodes, and that these episodes function to temporarily lessen negative affective states (Heatherton & Baumeister, 1991; Kenardy et al., 1996). An abundance of evidence drawn from research employing different methodologies (e.g., cross-sectional, experimental, qualitative, etc.) supports the notion that negative affect reliably precedes binge eating behaviours in both clinical (e.g., Agras & Telch, 1998; Crosby et al., 2009; Engelberg et al., 2007; Haedt-Matt & Keel, 2011; Mason et al., 2017; Meule, 2019) and non-

clinical populations (e.g., Berg et al., 2015; Deaver et al., 2003; Schultz & Laessle, 2013; Van Strien T, 2013).

In recent years, researchers have ascertained the temporal relationship between negative affect and binge eating in individuals with BN using EMA paradigms. For instance, Crosby et al. (2009) investigated the relationship between daily negative affect and bulimic behaviours in a sample of 133 women with BN. In this two-week study, participants were asked to report on their mood and eating behaviours at six semi-random timepoints throughout each day (i.e., signal contingent recordings), as well as their binge eating or purging behaviours (i.e., vomited or used laxatives) whenever they occurred (i.e., event contingent recordings). Findings demonstrated that binge eating and purging behaviours were significantly predicted by one's pattern of mood throughout the day (Crosby et al., 2009). Specifically, participants reported the greatest rates of binge eating and purging on days marked by increasing levels of negative affect as the day went on, stable moderate-to-high levels of negative affect throughout the day, and fluctuating levels of negative affect across various time points in the day (i.e. bingeing only; Crosby et al., 2009). Goldschmidt and colleagues (2014) extended this research in the same sample by exploring the temporal relationship between eating behaviours and negative affect, as well as the role of stress as an antecedent to bulimic behaviour. Results from within-persons analyses revealed that higher levels of stress (i.e., operationalized as both the number of stressors and perceived stress) at Time 1 were associated with increased odds of binge eating and purging at Time 2. Further, increases in negative affect from Time 1 to Time 2 were found to mediate this relationship (Goldschmidt et al., 2014).

Taken together, these findings provide evidence for the close relationship between negative affect and binge eating behaviours in the daily lives of individuals with BN. It is

important to note that while binge eating episodes may momentarily attenuate negative mood states, this relief is often temporary and quickly supplanted by feelings of shame, guilt and anxiety (Corstophine et al., 2006). These subsequent mood states are believed to facilitate the use of compensatory strategies to alleviate these negative emotions (Corstophine et al., 2006; Kay et al., 1986). However, these compensatory behaviours may increase the probability of further binge eating episodes, and thus, perpetuate the cycle (Lavender et al., 2016).

Dietary Restraint

The extant literature has established that dietary restraint is a reliable predictor of binge eating behaviour. Dietary restraint is defined as the *intention* to restrict or reduce one's food intake in an attempt to control body weight (Herman & Mack, 1975). Despite often being used in exchange with one another within the literature, it is important to differentiate the highly related constructs of dietary restraint and dietary restriction. Whereas dietary restraint pertains to an individual's *cognitive* attempt or intention to limit their caloric intake, dietary restriction relates to an individual's *actual* reduction in caloric consumption (Racine, 2018). Polivy and Herman's (1985) Restraint Model postulates several pathways through which dietary restraint leads to binge eating, inappropriate compensatory behaviours, or both. Specifically, the authors posit that binge eating occurs in response to the increased hunger, appetite and responsiveness to food cues that stems from dietary restraint; therefore, binge eating can be viewed, in part, as the body's attempt to adjust to conditions of perceived scarcity (Klajner et al., 1981; Polivy & Herman, 1985). In addition to this physiological pathway, it is also proposed that restrained eaters who inevitably violate their dietary rules engage in binge eating; this is often referred to as the disinhibition effect (Polivy & Herman, 1976; Polivy & Herman, 1985). Specifically, these dietary violations, regardless of how small they are, are perceived by restrained eaters as being a

complete failure in dietary control (e.g., Grilo & Shiffman, 1994; Stein et al., 2007). This all-or-nothing thinking is often coupled with negative affect and self-criticism, which undermines individuals' attempts to restrict their eating, and thus, leads to bingeing (e.g., "I am a failure – I already ruined my diet, so I may as well binge eat"; Grilo & Shiffman, 1994; Stein et al., 2007).

There has been a burgeoning body of cross-sectional literature demonstrating that dietary restraint is positively associated with binge eating behaviours (e.g., Linardon, 2018; Sherry & Hall, 2009; Stice et al., 1996; Woods et al., 2010). Less is known, however, about the effects of dietary restraint on bulimic behaviour at the within-persons (e.g., daily) level (Mason et al., 2016). To our knowledge, Zunker and colleagues (2011) conducted the only study to date that explores the role of daily restrictive eating practices on binge eating using an EMA protocol. For 14 consecutive days, women with BN (N = 133) reported nightly on the extent to which they restricted their caloric intake, as well as their binge eating behaviours. Logistic regression analyses revealed that higher levels of caloric restriction were associated with an increased probability of binge eating on the same day (Odds Ratio [OR] = 1.18) and the next day (OR = 1.30). Taken together, these findings provide support for the notion that daily fluctuations in restrictive eating behaviours can have downstream consequences on bulimic symptoms.

Despite the above-reviewed evidence demonstrating the relationship between dietary restraint and binge eating, inconsistent findings pertaining to this relationship have emerged in recent years. Contrary to the Restraint Model, some researchers have demonstrated that dietary restraint may attenuate binge eating in individuals with BN. For instance, Elran-Barak and colleagues (2015) found that individuals with BN experienced a reduction in binge eating when eating small, low-calorie meals. Further, evidence from randomized control trials suggest that weight-loss programs that encourage caloric restriction reduce the frequency of binge-eating in

individuals with BN (Burton & Stice, 2006; Lowe et al., 2013). These discrepancies have been attributed to the fact that dietary restraint is a multifaceted construct, and thus, the measures of dietary restraint used in each study are assessing heterogeneous constructs such as calorie counting, preoccupation with dieting, and weight-related restraint (Hagan et al., 2016). Therefore, additional work is needed to ascertain the relationship between restrained eating and bulimic behaviours in individuals with BN.

Although dietary restraint has been frequently conceptualized as an attempt to manage weight (Johnson et al., 2012), a handful of researchers have suggested that attempting to restrict one's food intake may also serve an emotion regulatory function for individuals with eating disorders. Specifically, individuals may attempt to limit their food intake in order to manage aversive emotional states (Sim & Zeman, 2006). Evidence for the emotion regulatory role of restrained eating in populations with BN is presently limited. However, findings from other eating disorder populations suggest that facets of negative affect such as shame and guilt increase prior to periods of restricted eating and decline afterwards (Blythin et al., 2018; Haynos et al., 2017). Findings from non-clinical samples suggest that higher levels of negative affect are associated with higher levels of dietary restraint (Paa & Larson, 1997). As such, equipping individuals with eating disorders with emotion regulatory strategies may mitigate their reliance on maladaptive coping behaviours, such as restrained eating. Preliminary evidence for this proposition comes from the finding that individuals with BN who report improvements in their emotion regulation abilities through psychotherapy also report reductions in dietary restraint (Peterson et al., 2017).

Body Dissatisfaction

Body dissatisfaction is operationalized as a negative subjective appraisal of one's own physical body or body parts (Presnell et al., 2004). Body dissatisfaction is thought to emerge largely from societal pressures to be thin (e.g., Stice & Shaw, 1994; Striegel-Moore et al., 1986), and has been implicated in the development and maintenance of eating disorders (Dakanalis et al., 2017). Body dissatisfaction has been demonstrated to be a distressing experience for individuals within clinical and non-clinical populations. For instance, findings suggest that higher levels of body dissatisfaction are associated with higher levels of psychological distress when controlling for both BMI and eating disorder symptomology (Griffiths et al., 2016). Further, lower levels of state body satisfaction are associated with more disturbances in eating attitudes and a greater reliance on maladaptive coping behaviours to manage situations that threaten body image (Melnyk et al., 2004).

With regard to binge eating, body dissatisfaction is thought to indirectly increase binge eating behaviours by promoting dieting and restrained eating (Garfinkel et al., 1992; Stice & Shaw, 2002). Cross-sectional evidence supports the link between binge eating and body dissatisfaction by demonstrating that individuals with higher levels of body dissatisfaction report a greater likelihood of experiencing binge eating symptoms (Gordon et al., 2012; Ricciardelli & McCabe, 2001; Wardle et al., 2012). Given the fact that body dissatisfaction can vary from moment-to moment (Caloutti et al., 2011, Fuller-Tyszkiewicz et al., 2018; Srivastava et al., 2020) and across contexts (Caloutti et al., 2011), researchers have begun to investigate its contribution to binge eating via EMA paradigms. Fitzsimmons-Craft, Ciao and Accurso (2015) explored the effect of body dissatisfaction on disordered eating thoughts (i.e., thoughts about restriction, vomiting, and exercise) and the urge to binge eat within a person. Using a two-week

EMA protocol, the researchers asked college women (N = 232) to report on their level of body dissatisfaction, eating disorder thoughts, and urge to binge three times per day. Results revealed that body dissatisfaction at Time 1 prospectively predicted increases in eating disorder thoughts and the urge to binge at Time 2 (Fitzsimmons-Craft et al., 2015). More recently, Srivastava and colleagues (2020) investigated whether momentary fluctuations in body dissatisfaction were associated with binge eating behaviours in a small sample (N=12) of women with BN (n = 7) and binge eating disorder (n =5). The researchers concluded that when controlling for negative affect and baseline body dissatisfaction, elevations in body dissatisfaction were associated with subsequent binge eating episodes. Although preliminary given the small sample size, Srivastava and colleagues' novel findings suggest that momentary elevations in body dissatisfaction are important to consider in the conceptualization of bulimic symptoms.

The Importance of Understanding Daily Experiences and Bulimic Behaviours

The above-reviewed literature provides compelling evidence for the relationship between daily experiences (i.e., daily negative affect, dietary restraint, and body dissatisfaction) and bulimic symptoms in individuals with BN. Collectively, the reviewed research suggests that a common factor underlying these daily experiences is the reliance on maladaptive emotion regulatory strategies in moments of distress. For instance, in moments of elevated negative affect or body dissatisfaction, individuals with BN may rely on binge eating or restrictive eating behaviours in an attempt to escape from their adverse emotional states (Heatherton & Baumeister, 1991; Kenardy et al., 1996). Similarly, individuals with BN may attempt to mitigate feelings of shame or guilt following binge eating episodes or in moments of increased body dissatisfaction by employing inappropriate compensatory behaviours (e.g., self-induced vomiting or laxative misuse; Corstophine et al., 2006). As such, bulimic symptoms may serve the function

of temporarily alleviating negative emotional states by allowing the individual to avoid or disengage from these challenging internal experiences (Heatherton & Baumeister, 1991). Reinforcing this proposition is the fact that individuals with BN report higher levels of emotion dysregulation (Harrison et al., 2010; Lavender et al., 2015; Svaldi et al., 2012) coupled with a reliance on maladaptive coping strategies (e.g., rumination, avoidance and binge eating) in instances of adversity (Naumann, et al., 2016). Taken together, the existing literature suggests that individuals with BN would greatly benefit from being able to regulate their emotions more adaptively in moments of distress.

Given the medical and psychological consequences associated with bulimic behaviours, it is essential that researchers identify protective factors that can help individuals with BN cope more adaptively with their daily negative emotional experiences so as to help them rely less on bulimic symptoms during these difficult times. The fact that dietary restraint and body dissatisfaction both maintain bulimic symptoms and elicit considerable distress in affected individuals underscores the need to further explore protective factors that can attenuate these experiences on a day-to-day basis as well (Griffiths et al., 2016; Fairburn, 2008).

Exploring factors that influence the way in which individuals with BN respond to instances of distress may offer a fruitful avenue for further enquiry. One possibility for a protective factor is a skill that facilitates adaptive engagement with distressing emotions, cognitions and experiences, while simultaneously encouraging individuals to respond to their distress in a way that is supportive rather than destructive to their well-being. Identifying a skill that is able to accomplish both of these goals could have potentially ground-breaking theoretical and practical implications for the treatment of BN. More specifically, equipping affected individuals with a skill that they can use in moments of suffering may mitigate their reliance on

binge eating and inappropriate compensatory behaviours as a means of affect regulation. For example, in instances of increased negative affect or body dissatisfaction, an individual with BN could employ such a skill to mindfully engage with and identify ways to adaptively alleviate their suffering; by doing so, the individual would evade the need to escape their distress via bulimic symptoms. Similarly, this skill would enable individuals to more adaptively manage the feelings of shame and guilt that often precede inappropriate compensatory behaviours. Elucidating a skill that facilitates adaptive coping in moments of adversity, such as the one proposed herein, may ultimately result in improved treatment outcomes and sustained recovery for individuals with BN (Grilo et al., 2012).

An Introduction to Self-Compassion

Over the past two decades, there has been a proliferation of research exploring the role of self-compassion as an integral component of adaptive psychological functioning (Neff et al., 2007; Zessin et al., 2015). While relatively new to Western psychology, the concept of self-compassion has existed for centuries in Buddhist philosophy (Neff, 2003a). Self-compassion can be conceptualized as a motivation to attend to one's personal suffering, coupled with a commitment to alleviate and prevent it (Gilbert, 2005). To date, most empirical research on self-compassion applies Neff's conceptualization when discussing the construct. Neff has theorized that there are three components of self-compassion that influence the way in which individuals generally respond to instances of personal distress: mindfulness, self-kindness, and common humanity. Neff notes that while these components are conceptually distinct from each other, they combine in instances of distress to engender and enhance one another.

Mindfulness

The first component of Neff's (2003a) conceptualization of self-compassion is mindfulness. Mindfulness involves viewing one's distressing emotions, perceived inadequacies and failures from a non-judgmental and balanced perspective (Neff, 2003a). Rather than impulsively reacting to thoughts and emotions, mindfulness involves observing and acknowledging them when they arise (Barnard & Curry, 2011; Kabat-Zinn, 2003). Further, practicing mindfulness involves approaching passing thoughts and emotions with a friendly curiosity and openheartedness (Kabat-Zinn, 2003). Opposing alternatives to mindfulness include avoidance and overidentification (Barnard & Curry, 2011; Neff, 2003b). Whereas avoidance involves repressing painful emotions or thoughts (Kabat-Zinn, 2003; Neff, 2003a; Neff, 2003b), overidentification involves dwelling or ruminating on painful emotions or perceived inadequacies (Barnard & Curry, 2011; Neff, 2003a). Avoiding or overidentifying with personal distress can exacerbate negative affect overtime, as well as inhibit one's ability to engage with the present (Barnard & Curry, 2011; Gilbert & Procter, 2006; Neff & Vonk, 2009).

Self-Kindness

Self-kindness involves extending feelings of warmth, sensitivity, and forgiveness towards one's thoughts, emotions, behaviours and urges (Barnard & Curry, 2011; Gilbert & Irons, 2005; Neff, 2003a). Self-kindness entails soothing and reassuring oneself in instances of suffering (Gilbert & Irons, 2005; Neff, 2016). The opposite of self-kindness is self-judgment (Neff, 2003a). Self-judgment involves directing feelings of hostility or harsh criticisms towards oneself (Neff, 2003a). In their review of the literature, Barnard and Curry (2011) highlight that self-judgement and self-criticism can produce emotional pain that is equal to or greater than the initial circumstances evoking distress (Brown, 1998; Whelton & Greenberg, 2005).

Common Humanity

Common humanity involves contextualizing one's experiences, suffering and imperfections as part of the human experience (Neff, 2003a). Embracing common humanity means that one is able to recognize that being imperfect is inherent to being human, and that all humans, at some point or another, will have experiences marked by failure and mistakes (Neff, 2003a; Neff, 2003b). When an individual views their distress or experiences as independent from others, they may feel shameful or alone in their suffering; these feelings may ultimately lead them to withdraw from others (Barnard & Curry, 2011; Neff, 2003a).

Self-Compassion and Eating Pathology

Non-Clinical Samples

A growing body of literature suggests that self-compassion serves a protective function against eating disorder symptoms, as well as promotes adaptive eating behaviours in the general population. For instance, evidence from college samples suggests that higher levels of trait self-compassion are associated with increased intuitive eating (i.e., eating in accordance with one's hunger and satiety cues; Schoenefeld & Webb, 2013), healthier attitudes towards food (Liss & Erchull, 2015), fewer concerns about one's body image (Kelly et al., 2012) and greater body appreciation (Schmidt et al. 2018; Wasylkiw et al., 2012). Interestingly, Schoenefeld and Webb (2013) discovered that the positive relationship between self-compassion and intuitive eating is explained by body image flexibility. In brief, body image flexibility refers to one's capacity to tolerate negative emotions, sensations, and thoughts related to one's body, without allowing them to interfere with one's psychosocial functioning (Sandoz et al., 2013). Thus, Schoenefeld and Webb's (2013) findings may suggest that engaging with body-image related distress from a compassionate perspective may promote adaptive eating behaviour.

College students who report higher levels of self-compassion also report fewer eating disorder symptoms (e.g., de Carvalho Barreto et al., 2018; Taylor et al., 2015). For instance, Taylor, Daiss, and Krietsch (2015) explored the relationship between self-compassion and eating disorder symptoms in a sample of college students ($N = 150$) via online questionnaires. The researchers found that self-compassion was negatively associated with eating disorder symptoms (e.g., diet-related thoughts and behaviours, bulimic symptoms, and controlling food intake; Taylor et al., 2015).

Research conducted by Fresnics, Wang and Borders (2019) built upon these findings by exploring the relationship between self-compassion and eating pathology, both cross-sectionally and longitudinally. Findings revealed that greater levels of trait self-compassion were associated with lower levels of eating pathology at baseline and at a five-month follow-up (Fresnics et al., 2019). Additional findings from correlational research conducted in college populations suggest that higher levels of trait self-compassion are associated with lower levels of body shame (Daye et al., 2014) and body preoccupation (Wasylkiew et al., 2012). Self-compassion has also been associated with lower levels of binge eating severity in a sample of at-risk college students ($N = 195$; Webb & Forman, 2013). In this study, binge eating severity reflected participants' experience with the behavioural manifestations of binge eating (e.g., overeating until nauseated), as well as the cognitive-affective factors (e.g., fear associated with a lack of control) that precede or succeed it. Interestingly, subsequent mediation analyses conducted by Webb and Forman (2013) suggested that self-compassion was operating indirectly to reduce binge eating severity by decreasing emotional intolerance and increasing unconditional self-acceptance.

Evidence from experimental designs and randomized control trials further support the proposed protective function of self-compassion in the eating and body image domain. For

instance, Albertson, Neff and Dill-Shackleford (2014) explored the efficacy of a three-week self-compassion meditation program on attenuating body dissatisfaction in women with body image concerns. Compared to individuals in the waitlist control condition (n = 130), individuals in the self-compassion condition (n = 98) reported significant reductions in body shame and body dissatisfaction after the study period; these intervention-related improvements were maintained at the three-month follow-up assessment (Albertson et al., 2014). Consistent with these findings are those from Moffitt and colleagues (2018), which demonstrated that a brief self-compassion intervention effectively mitigated body dissatisfaction; as well as Seekis, Bradly and Duffy (2014) who found that a self-compassion writing task assuaged body image concerns. Lastly, Adams and Leary (2007) utilized an experimental design to explore the benefits of self-compassion for highly restrictive eaters. The researchers found that responding to diet violations with self-compassion effectively reduced the propensity for restrictive eaters to binge eat as a way to lessen the guilt associated with breaking one's diet (Adams & Leary, 2007).

Clinical Populations

When compared to the research conducted in non-clinical populations, research exploring the benefits of self-compassion in eating disorder samples is seemingly limited. Nevertheless, the existing clinical research suggests that self-compassion can have significant implications for the treatment of eating disorders. There is consensus within the literature that individuals with eating disorders report lower levels of self-compassion than individuals without eating disorders (Ferreira et al., 2013; Kelly et al., 2014), and are more fearful of self-compassion (Kelly et al., 2014). Nonetheless, interventions designed to cultivate self-compassion in individuals with eating disorders appear to be efficacious in lessening eating disorder symptomology (e.g., Gale et al., 2014; Kelly & Carter, 2014; Kelly & Waring, 2018).

A handful of studies demonstrate that increasing self-compassion via Compassion Focused Therapy (CFT; Gilbert 2000, Gilbert, 2009) can subsequently reduce eating pathology in clinical samples (Gale et al., 2014; Kelly et al., 2014). CFT is a relatively novel psychotherapeutic approach that helps individuals cultivate compassion for themselves, while mitigating their reliance on self-directed hostility and criticism (Gilbert, 2009). For instance, research conducted by Gale and colleagues (2014) explored the impact of a 16-week CFT program on eating disorder symptoms in a sample of individuals diagnosed with eating disorder not otherwise specified (EDNOS), anorexia nervosa (AN) and BN. Results revealed that participants across diagnostic groups reported a reduction in eating pathology at the end of treatment when compared to baseline. However, individuals with BN experienced the greatest improvements in eating pathology over the course of treatment when compared to individuals with other diagnoses. In fact, 75% of individuals with BN were considered to be recovered by the end of treatment, compared to 21% of individuals with AN and 30% of individuals with EDNOS (Gale et al., 2014). Taken together, these findings may suggest that interventions designed to ameliorate eating disorder symptoms by cultivating self-compassion may be particularly beneficial for individuals struggling with BN.

In addition to being especially helpful for individuals with BN, Kelly and Carter (2015) provided compelling evidence that CFT-based interventions could aid in the treatment of binge eating disorder (BED); BED is an eating disorder characterized by recurrent episodes of binge eating at least once per week, for a minimum of three months (APA, 2013). The authors compared the effects of a self-compassion intervention (i.e., CFT-based), a behavioural strategies intervention, and a waitlist control condition on the frequency of binge eating and general eating pathology. Results revealed that both the behavioural strategies condition and the self-

compassion condition reduced the frequency of binge eating more than the control condition (Kelly & Carter, 2015). However, findings suggested that the self-compassion condition produced greater reductions in eating pathology, weight concerns, and eating concerns compared to the other two conditions (Kelly & Carter, 2015). This divergence in outcomes between the behavioural condition and the self-compassion condition may suggest that while both strategies are beneficial at attenuating the behavioural symptoms of BED (i.e., binge eating), self-compassion serves a unique ameliorative role when it comes to the cognitive-affective elements of the disorder (Kelly & Carter, 2015).

From a Between-Persons to a Within-Persons Conceptualization of Self-Compassion

To date, researchers have predominately conceptualized self-compassion as a trait variable that is relatively stable over time (Neff, 2003a; Neff, 2003b). The majority of research on self-compassion has relied on Neff's (2003b) Self-Compassion Scale, which prompts individuals to reflect on how they *typically* act towards themselves during difficult times. As a result, research exploring the proposed benefits of self-compassion frequently utilize cross-sectional designs to assess the relationship between self-compassion and other variables of interest at the between-persons level. From these paradigms, researchers typically conclude that individuals who are *generally* more self-compassionate *than others* report lower levels of eating pathology, for example. However, this conceptualization fails to consider the possibility that an individual's level of self-compassion is malleable and may change with time, across contexts, and with intervention. Further, Neff's (2003a) operationalization of self-compassion as a stable construct is contradictory to other conceptualizations, which construe self-compassion or loving-kindness as a *skill* that can be learned and strengthened with time (Gilbert, 2000; Salzberg, 2009). Although this possibility would represent a novel perspective on Neff's (2003a)

conceptualization of self-compassion, social scientists have long contended that personality variables that were also once proposed to be stable can fluctuate within a person over time and across contexts (Fleeson, 2001; Fleeson & Jayawickreme, 2015).

Theorists have argued that dispositionally-oriented research, which focuses on participants' typical or average tendencies, may fail to capture idiosyncratic differences in functioning that occur within a person (Funder, 2008). In fact, it has been suggested that an individual's own behaviour varies more from one time point to another than the average amount that a behaviour differs across a group of people (Fleeson, 2004). For comparison, the within-person variability observed in common personality traits (e.g., extraversion, emotional stability, or agreeableness) is as large as the within-person variability observed in emotions (e.g., distress, happiness or negative affect), which is a construct that is perceived to be so transient that it is primarily conceptualized as a fleeting state (Fleeson, 2001; Fleeson, 2004). Given that individuals display a high degree of behavioural flexibility across contexts, it is argued that researchers should orient their efforts towards investigating the psychological processes that influence such changes in behaviour at a momentary level (Fleeson, 2004).

Intraindividual Fluctuations in Self-Compassion

Evidence from Experimental and Clinical Interventions

Evidence for the flexibility of self-compassion can be drawn from experimental studies which demonstrate that brief self-compassion interventions can effectively influence levels of self-compassion, both in the moment (e.g., Leary et al., 2014; Mantelou & Karakasidou, 2017) and over time (Finlay-Jones et al., 2017; Kelly & Waring, 2018). For individuals with eating disorders, clinical interventions have proven to be an effective method of cultivating and enhancing self-compassion (e.g., Gale et al., 2014; Kelly & Carter, 2014).

A recent series of studies explored the extent to which self-compassion fluctuates over the course of eating disorder treatment, as well as the implications of these fluctuations on treatment outcomes (Kelly & Carter, 2014; Kelly et al., 2014; Kelly & Tasca, 2016). These studies were conducted in a transdiagnostic sample of individuals who were enrolled in a 12-week eating disorder treatment program at a Canadian hospital. Participants were asked to complete a battery of questionnaire measures every three weeks for the duration of the 12 weeks. Kelly and Carter (2014) explored rates at which participants improved in their level of self-compassion over the course of the program. The authors found that the rates of improvement in self-compassion differed as a function of eating disorder subtype; specifically, individuals who were diagnosed with either BN or EDNOS demonstrated the fastest rates of improvement when compared to other eating disorders. Kelly, Carter and Borairi (2014) found that individuals in the treatment program who displayed greater improvements in self-compassion early in treatment also demonstrated quicker reductions in eating pathology and shame, regardless of their diagnosis.

Lastly, Kelly and Tasca (2016) explored the effects of intraindividual fluctuations in self-compassion on shame and eating pathology in this sample. Analyses revealed that approximately 45% of the variance in self-compassion scores was accounted for by within-persons differences; this suggests that participants' levels of self-compassion were fluctuating almost as much within a person from one assessment point to another, as from one person to the next. Further, findings demonstrated that increases in self-compassion from one assessment point to another *within a given participant* were associated with lower levels of shame; however, differences between participants with regard to their average levels of self-compassion were unrelated to levels of shame over the course of treatment.

Evidence from Daily Diary Paradigms

Non-clinical populations. While still in its infancy, a growing literature base suggests that self-compassion levels can *naturally* fluctuate within a person, and that these fluctuations are associated with changes in psychological functioning (e.g., Breines et al., 2014; Dupasquier et al., 2020). Breines, Toole and Chen (2014) were the first to investigate the possibility that self-compassion can vary at both the intra- and interindividual level. The authors utilized a four-day daily diary paradigm in a female undergraduate sample (N= 95) to explore the effects of daily appearance-related self-compassion on disordered eating at times that participants felt poorly about their physical appearance. The authors found that 63% of the variance in self-compassion scores occurred between-persons. This finding suggests that levels of self-compassion differed more from one person to another (i.e., between-persons) than within a person from one day to the next; nonetheless, approximately one-third (i.e., 37%) of the variability in self-compassion scores was accounted for by within-person differences.[1] Interestingly, findings revealed that on days that participants responded to their appearance-related distress with more self-compassion than what is typical for them, they reported lower levels of disordered eating.

Findings from Kelly and Stephen's (2016) daily diary study bolstered the need to explore self-compassion as both a within-persons and between-persons variable. Results from the seven-day study revealed that on days that college women were more self-compassionate than what is typical for them, they experienced higher levels of body appreciation, intuitive eating and better body image, as well as lower levels of dietary restraint and negative affect. Consistent with

[1] The within-persons variability in self-compassion scores was derived from the intraclass correlation (ICC); the ICC is an estimate of the between-persons variability. As the observed within-persons and between-persons variances do not perfectly align with the between and within group variances in the population, the reported estimates of within-persons variability contains a minor degree of sampling error (Snijders & Bosker, 2012, p. 21).

Breines and colleagues (2014), results revealed that approximately 37% of the variance in self-compassion scores occurred within-persons.

Building on these pioneering studies is preliminary evidence suggesting that an individual's daily level of self-compassion can serve a protective function when they are faced with stressors. Particularly, Kelly, Miller and Stephen (2016) explored whether intraindividual fluctuations in self-compassion could moderate the relationship between body image-related stressors (i.e., interactions with body-focused others) and measures of psychological and behavioural functioning (i.e., intuitive eating, body image concerns, body appreciation, and negative affect). Findings revealed that on days of higher-than-usual self-compassion, participants were more likely to respond adaptively (i.e., with greater intuitive eating, a greater appreciation of their body, fewer body image concerns, and attenuated negative affect) to body image-related stressors.

Taken together, these findings suggest that: (1) self-compassion can naturally fluctuate day-to-day within college women; and (2) days of higher-than-usual self-compassion are associated with adaptive psychological functioning, even when faced with stressful events.

Clinical populations. To our knowledge, only one study has examined whether intraindividual fluctuations in self-compassion can mitigate eating pathology in an eating disorder sample. Namely, Kelly and colleagues (2020) explored the extent to which self-compassion fluctuates day-to-day over a two-week period in women with anorexia nervosa (AN; $N = 33$), and whether these fluctuations are associated with changes in eating pathology. Kelly et al. (2020) measured eating pathology via the four subscales from the Eating Disorder Examination Questionnaire (Fairburn & Beglin, 1994); these subscales assessed dietary restraint, fear of gaining weight, desire to have a flat stomach, weight- and shape-based self-esteem, and

fear of losing control over eating. The authors reported that nearly half of the variability in self-compassion scores occurred at the within-person level (Intraclass Correlation [ICC] = .57; Kelly et al., 2020). Findings revealed that on days that women with AN were more self-compassionate than usual, they reported less eating pathology (Kelly et al., 2020). However, divergent findings emerged when looking at the between-persons relationships; specifically, higher average levels of self-compassion were not significantly related to eating pathology. This divergence in the roles of daily and trait self-compassion underscores the need for researchers to consider both when investigating the implications for eating pathology.

The Potential Value of Self-Compassion for Individuals with BN

Collectively, findings from clinical and non-clinical samples suggest that self-compassion may offer individuals with BN a unique way to disrupt the relationship between adverse emotional states (e.g., negative affect or body dissatisfaction) and bulimic symptoms through facilitating adaptive emotion regulation. For instance, rather than avoiding or suppressing feelings of distress via binge eating or engaging in inappropriate compensatory behaviours, self-compassionate individuals would be motivated to engage with and alleviate their distress with feelings of tolerance, encouragement and care (Gilbert, 2009; Neff, 2003a; Trompetter et al., 2017; Webb & Forman, 2013). Further, by adopting a mindful perspective on negative emotional experiences, individuals who are higher in the trait of self-compassion may be able to appraise these experiences as fleeting and controllable rather than everlasting and unmanageable (Neff, 2003a; Trompetter et al., 2017). As bulimic behaviours are sometimes associated with a perceived inability to cope with negative mood states (Fairburn et al., 2003), such cognitive reappraisals may render further maladaptive coping behaviours unnecessary. Importantly, the fact that self-compassion levels fluctuate within a given person suggests that

these proposed emotion regulatory pathways may also occur on days of higher-than-usual self-compassion. In other words, on days that individuals with BN are more self-compassionate than what is typical for them, they may display an increased willingness to engage with and alleviate their distress from an orientation of care and kindness. Therefore, it is on these days of higher-than-usual self-compassion that one would expect a reduction in bulimic symptomology. The proposition that daily and trait self-compassion may attenuate eating disorder symptoms in women with BN is based on a foundation of empirical findings conducted in diverse samples (e.g., Breines et al., 2014; Kelly et al., 2016); however, research has yet to establish these relationships in individuals with BN.

Summary and Gaps in the Literature

In summary, the current literature provides expansive evidence that self-compassion may offer a protective function against eating pathology in women with and without eating disorders. In recent years, researchers have provided a cogent case for the need to explore self-compassion as an intra- and interindividual construct, particularly in the domain of eating behaviours and body image. Despite evidence showing that intraindividual increases in self-compassion can yield reductions in eating pathology and promote improved treatment outcomes, there still remains a number of unknowns that should be addressed in future research. Specifically, research exploring the benefits of intraindividual fluctuations in self-compassion for individuals with eating disorders is presently underdeveloped, and thus warrants further enquiry.

Based on Kelly and colleagues' (2020) research in women with anorexia nervosa, it appears that levels of self-compassion fluctuate nearly as much day-to-day within a person as they do from one person to the next. However, as emotion regulatory abilities differ as a function of eating disorder diagnosis (Anderson et al., 2018; Danner et al., 2014), further investigation is

required to determine whether a similar amount of variability in self-compassion is observed across other eating disorder subtypes. Similarly, while Kelly et al.'s (2020) findings provide preliminary evidence that daily increases in self-compassion can be beneficial to women with AN, it is unclear whether these findings will generalize to individuals with other eating disorders such as BN, that are marked by high levels of emotion dysregulation (Harrison et al., 2010; Lavender et al., 2015). Lastly, yet more broadly, the existing literature on self-compassion and eating pathology has focused primarily on outcome variables related to the cognitive-affective components of eating disorders, such as dietary restraint, eating concerns, weight concerns and body preoccupation (e.g., Daye et al., 2014; Fresnics et al., 2019; Kelly et al., 2020; Wasylkiw et al., 2012). While these outcome measures reflect concerns shared by both clinical and non-clinical populations, it is unclear whether self-compassion can serve a similar protective function against the behavioural symptoms of eating disorders, such as binge eating and compensatory behaviours (e.g., self-induced vomiting, misuse of laxatives, and excessive exercising) specifically in clinical populations. Pursuing this avenue of research will further our theoretical understanding of the protective function of self-compassion, both as a between-persons variable and a within-persons variable.

In addition to the potential theoretical implications, addressing the present gaps in the literature may have implications for the way in which clinicians treat eating disorders, namely, BN. For instance, evidence that daily increases in self-compassion can mitigate maladaptive psychological functioning and eating pathology may suggest that by cultivating a self-compassionate mindset on a given day, individuals with BN may experience notable reductions in their eating disorder symptoms. These day-to-day improvements in symptomology may also

indirectly enhance treatment compliance as clients' motivation to adhere to self-compassion practice may depend on the immediacy of the experienced benefits following practice.

The Current Study

Study Objectives

The present study aimed to address the existing gaps in the literature by exploring the unique contribution of intraindividual fluctuations in self-compassion to eating pathology and psychological functioning in women with BN. Given that BN is associated with discrete and measurable behavioural markers (i.e., binge eating and inappropriate compensatory behaviours), exploring the role of self-compassion in this population allowed us to investigate whether its protective abilities could extend to the behavioural symptoms of eating disorders. Further, as daily experiences are intimately tied with eating pathology in individuals with BN (Goldschmidt et al., 2014; Smyth et al., 2007), using this population allowed us to examine whether other factors, specifically daily increases in self-compassion, would be associated with reduced eating disorder symptoms.

To explore the effect of inter- and intraindividual variations in self-compassion on eating pathology, we opted to use a two-week daily diary paradigm. This methodological design allowed for the collection of multiple assessments from each participant in the context of the participant's everyday life (Bolger et al., 2003). Each night for two consecutive weeks, participants completed a series of questionnaires asking them to reflect on their experiences on the given day; these questionnaires included measures of eating behaviours (i.e., binge eating and inappropriate compensatory behaviours), self-compassion, negative affect, dietary restraint, clinical impairment, and bodily shame.

Consistent with similar research (i.e., Crosby et al., 2009; Goldschmidt et al., 2014; Smyth et al., 2007), a binge was defined as "an amount of food that you consider excessive or an amount of food that other people would consider excessive, with an associated loss of control or the feeling of being driven or compelled to keep eating." This definition allowed participants' binge eating assessments to reflect periods in which they consumed a subjectively or objectively large amount of food, so long as these periods were associated with a loss of control. The inclusion of subjective binge eating episodes was deliberate, given the finding that both forms of binge eating are comparable in terms of their associations with eating pathology and negative affect (e.g., Brownstone et al., 2012; Goossens et al., 2009; Keel et al., 2001; Mond et al., 2010).

Of particular interest was the influence of daily self-compassion on participants' eating disorder symptomology. To remain consistent with the above-reviewed literature (e.g., Kelly & Stephen, 2016; Kelly et al., 2016; Kelly et al., 2020), the within-persons predictor of 'daily self-compassion' in the present study was represented by the extent to which a participant's self-compassion score on a given day diverged from her personal average self-compassion score over the two-week study period. Given the mounting evidence for the between-persons relationship between self-compassion and eating pathology, we were interested in examining whether both between-persons and within-persons differences in self-compassion contribute to eating pathology, particularly in a sample of individuals with BN. Trait self-compassion in the present study was represented by a participant's mean level of self-compassion over the two-weeks; we refer to this as 'mean' and 'trait' self-compassion, interchangeably. Arguably, assessing an individual's trait self-compassion in this manner (i.e., based on the mean of their state scores) yields a more stable and reliable assessment of their general tendencies than a single administration of a self-report scale would (Fleeson, 2001). Computing trait self-compassion in

this manner also remains consistent with other daily diary studies on self-compassion and eating behaviours (e.g., Kelly & Stephen, 2016; Kelly, et al., 2020).

Hypotheses

Primary hypotheses. First, consistent with the existing literature (Breines et al., 2014; Kelly et al., 2016), we hypothesized that at least one-third of the variability in self-compassion scores would be accounted for by within-person differences. Second, given the negative relationships between self-compassion and eating disorder symptomology at the within-persons (Breines et al., 2014; Kelly et al., 2016; Kelly et al., 2020) and between-persons level (Liss & Erchull, 2015; Schoenefeld & Webb, 2013; Wasylkiw et al., 2012), we hypothesized that both daily and mean levels of self-compassion would be predictive of reduced maladaptive psychological functioning and eating behaviours. More specifically, we hypothesized that eating disorder symptoms (i.e., dietary restraint, binge eating, compensatory behaviours, bodily shame and clinical impairment) and negative affect would be attenuated on days that women with BN reported higher self-compassion levels than is typical for them. Similarly, we hypothesized that women with BN who had higher mean levels of self-compassion than others would display less eating disorder symptoms and negative affect over the study period. We predicted that these relationships would hold when controlling for body mass index (BMI), a variable commonly associated with eating pathology (Burnette et al., 2018).

Secondary hypotheses. Although we hypothesized that the coupling of self-compassion and eating pathology would occur within a given day, a second more exploratory objective was to investigate the relationships between self-compassion and other variables across study days. As findings from experimental studies suggest that increases in self-compassion are associated with subsequent reductions in maladaptive eating behaviours, it might be that an individual's

self-compassion levels on a previous day (i.e., referred to as 'lagged self-compassion') would predict eating pathology and negative affect on the following day. However, it may also be the case that the relationship between self-compassion and our variables of interest (i.e., eating pathology and negative affect) is bidirectional. For instance, perhaps following days that women experience fewer eating disorder symptoms than usual, they also experience higher levels of self-compassion. As such, we also explored whether an individual's levels of eating disorder symptomology and negative affect on a previous day predicted their level of self-compassion on a following day. While yet to be explored in the context of self-compassion, the proposition that positive mental health and psychopathology are bidirectional has been previously supported within the literature (Lamers et al., 2015). Further, evidence demonstrates that factors that predict bulimic symptoms, such as negative affect and dietary restraint, also relate to bulimic symptoms in a reciprocal manner (Lavender et al., 2016; Stice, 1998). Taken together, these empirical findings suggest that there is merit in exploring the possibility of bidirectional relationships between self-compassion and criterion variables within the data.

Method

Overview of the Procedure

Interested participants from the community and from the University of Waterloo's undergraduate participant pool completed an online screening questionnaire, followed by a phone-screen with a trained research assistant to determine whether they met the DSM-5 diagnostic criteria for BN. Eligible participants completed baseline questionnaires followed by two consecutive weeks of nightly measures which assessed their daily eating disorder symptoms, negative affect, and self-compassion.

Participants

Recruitment

Prospective participants were recruited from online and poster advertisements in the community, as well as through the university's undergraduate participant pool. The study was advertised as "A Two-Week Daily Diary Study on Daily Experiences and Eating Behaviours." The advertisement indicated that, to be eligible to participate, individuals must: be female and 18 years of age or older; binge eat on average once per week; compensate for their binges (e.g., vomit, use laxatives, use diuretics to control weight gain) on average once a week; as well as have nightly access to the internet. To avoid inadvertently communicating a diagnosis, the words 'bulimia nervosa' were not used at any point in the study materials or procedures.

First, all prospective participants completed an online version of the DSM-5 Eating Disorder Diagnostic Scale (EDDS; Stice et al., 2000) via Qualtrics. Next, a trained member of the research team telephoned participants who appeared to be eligible based on Stice et al.'s (2004) scoring procedure for the EDDS. During this telephone call, the research assistant verified that the participant met the DSM-5 criteria for BN by reviewing select questions from

the EDDS; this step also aimed to rectify any errors the participant may have made in their original self-report responses to the EDDS (see Figure 1 for a summary of the recruitment process).

Sample Characteristics

Figure 1 illustrates the number of participants excluded at each stage of study participation. Participants were advised that withdrawing from the study at any point throughout their involvement would result in the subsequent removal of all their existing data. As such, a total of 11 participants were removed from the dataset as a result of withdrawing, three of whom withdrew prior to the completion of the baseline survey measure. Of the 145 participants who completed the study requirements, 15 participants were removed prior to data analysis due to a technological error that became apparent in the pre-screen syntax; this error resulted in individuals with significantly low BMIs (i.e., BMI < 18.5 kg/m^2) being flagged as meeting DSM-5 criteria for BN, rather than the more likely diagnosis of anorexia nervosa, binge-purge subtype, due to their low weight (APA, 2013). Furthermore, as recruitment overlapped with the start of the COVID-19 pandemic in Canada, any participant data collected after March 11, 2020 were removed from the dataset. This date was selected as the cut-off point as it corresponded with significant changes in daily functioning for Canadians (i.e., instruction to engage in social distancing, school closures, store closures, etc.). This exclusion criterion resulted in six participants having their full dataset removed, and six participants having partial data removed. Our final sample consisted of 124 women with BN who completed a mean of 12.43 (SD = 2.00) surveys, with 37.10% (n = 46) of participants completing all 14 days. Given that samples of 50 or more at the between-persons level (i.e., level-2) are proposed to yield adequate statistical power in multilevel data structures (Maas & Hox, 2005), the sample of 124 participants in the

present study was considered to be sufficiently powered to explore between-persons hypotheses. In order to optimize statistical power at the within-persons level, while also balancing the practical constraints associated with applied research (e.g., participant burden), a 14-day period of data collection was selected (Bell et al., 2010).

Participants had a mean age of 26.47 (*SD* = 8.31), and 45.16% of the sample was comprised of undergraduate students. The ethnic breakdown was as follows: 46% White, 12.1% Chinese, 12.9% South Asian, 7.3% Latin American, 5.6% Black, 5.6% Southeast Asian, 1.6% Filipino, 1.6% Arab, 1.6% Korean, and 5.6% Other. Self-reported diagnostic histories revealed that 33.06% (*n* = 41) of individuals had previously received an eating disorder diagnosis (primarily anorexia nervosa, binge-purge subtype; bulimia nervosa; or binge eating disorder), with 79% (*n* = 98) of individuals self-identifying as having an eating disorder at the time of participation. Furthermore, 9.7% (*n* = 12) of participants were receiving treatment for their eating disorder at the time of participation. All data were retained from individuals seeking treatment at the time of participation due to the absence of meaningful differences between these individuals and individuals who were not seeking treatment.[2]

Mean BMI in the present sample was 26.75 (*SD* = 5.46), with 46% of the sample falling within the 'average' range (i.e., BMI 18.5-24.9), 29% in the 'overweight' range (i.e., BMI 25-29.9), and 25% in the 'obese' range (i.e., BMI 30 and over; Centers for Disease Control and Prevention, 2020).

[2] T-tests revealed that individuals who were seeking treatment (*M* = 2.54, *SD* = 0.48) and those who were not (*M* = 2.60, *SD* = 0.61) did not differ significantly on their self-compassion scores over the study period, *t*(122) = 0.37, *SE* = 0.18, *p* = .709. There were also no significant differences in the number of binge eating episodes over the study period between treatment (*M* = 5.25, *SD* = 3.08) and non-treatment seekers (*M* = 5.31, *SD* = 2.47), *t*(122) = 0.81, *SE* = 0.77, *p* = .935. Similarly, there were no significant differences in the number of compensatory behaviours reported between treatment (*M* = 10.25, *SD* = 2.49) and non-treatment seekers (*M* = 9.22, *SD* = 3.73), *t*(122) = -0.93, *SE* = 1.10, *p* = .354.

Measures

Eating Disorder Symptoms

Eating disorder symptomology was assessed using the DSM-5 version of the Eating Disorder Diagnostic Scale (EDDS; Stice et al., 2000). The EDDS for DSM-5 is comprised of 23 items which assess the DSM-5 diagnostic criteria for all eating disorders (Bohon & Stice, 2015). This measure has been shown to be a reliable, sensitive, and specific measure for the identification of eating disorders, and demonstrates a high level of agreement with structured clinical interviews (Krabbenborg, et al., 2012; Stice et al., 2004, Stice et al., 2000; Sysko et al. 2015). A composite score was generated to identify individuals who meet the diagnostic criteria for BN (see the adapted DSM-5 measure and scoring procedures at http://www.ori.org/sticemeasures/; Stice et al., 2014).

Body Mass Index (BMI)

Participants' self-reported height and weight at the start of their participation in the study was used to compute their BMI (kg/m^2).

Daily Measures

Participants were asked to complete the following measures on a nightly basis. All measures were adapted for daily use, such that they asked participants to respond to each item based upon their experiences "today," and items were converted from present-tense to past-tense when necessary. This adaptation was considered acceptable given the proposition that states can be assessed and described with the same content and measures as traits (Fleeson, 2001). As well, similar modifications to trait-based measures have been conducted in other daily diary paradigms and have been demonstrated to maintain an adequate degree of internal consistency (e.g., Kelly et al., 2016; Merz & Roesch, 2011). In order to estimate the reliability of each of the scales used

in the nightly questionnaires, a between-persons and within-persons omega (ω) value was computed for each scale (Geldof et al. 2014).[3] Omegas are the preferable reliability estimate when working with nested or hierarchical data structures as they account for the presence of multilevel variability (Geldoff et al., 2014).

Self-Compassion. Daily self-compassion was measured using the Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011). The SCS-SF is a widely used 12-item scale that asks participants to indicate the extent to which they respond to personal distress with self-compassion (e.g., "When something upset me I tried to keep my emotions in balance."). Items are rated on a five-point scale ranging from 1 (*almost never*) to 5 (*almost always*). The SCS-SF has been demonstrated to have a high degree of validity and internal consistency across samples, with Cronbach's alpha values of .86 and higher (Raes et al., 2011). A similar degree of internal consistency is achieved with repeated administrations; for instance, in Kelly et al.'s (2016) daily diary study, Cronbach's alpha values for the SCS-SF across study days were .87 to .91. In the present study, the within-person and between-person omegas were .76 and .92 respectively, indicating acceptable internal consistency.

Negative affect. Daily negative affect (NA) was measured using the NA scale from the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). This 10-item scale asked participants to rate the extent to which they experienced each specific emotion (e.g., upset, angry, guilty) "today." Each adjective was rated on a five-point scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The NA scale of the PANAS has been shown to have adequate psychometric properties when administered at a single time point (e.g., Cronbach's alpha = .88; Watson et al., 1988), and at multiple time points in daily diary studies (e.g., aggregated

[3] Within-person and between-person omega values were computed in M*plus* version 7 (Muthén & Muthén, 1998-2012).

Cronbach's alpha across study days = .88; Merz & Roesch, 2011). The within-person and between-person omegas were .86 and .95 respectively, indicating adequate internal consistency.

Eating behaviours. Daily binge eating and use of inappropriate compensatory behaviours were assessed via a series of checklist items. Each night, participants were reminded of the definition of a binge eating episode. Participants were then asked to indicate whether or not they engaged in binge eating (i.e., "I binged" or "I did not binge") on the given day; the dichotomous nature of this question is consistent with other momentary research designs (e.g., Goldschmidt et al., 2014; Engelberg et al., 2007). Binary dummy codes were assigned to participant responses each day (i.e., I binged = 1; I did not binge = 0). To assess compensatory behaviours, participants were presented with a list of five compensatory strategies and asked to indicate which, if any, of the strategies they used on the given day (e.g., "I vomited" and "I used laxatives for weight control"). Participants who reported engaging in any of the compensatory behaviours on a given day were assigned a score of 1, and those who did not were assigned a score of 0.

Dietary restraint. Daily restrained eating was assessed using a modified seven-item version of the Dutch Restrained Eating Scale (DRES; Van Strien et al., 1986). Three of the original ten items were removed due to an inability to adapt them for daily use (e.g., "when you have eaten too much, do you eat less than usual the following day?"). This measure asked participants to use a five-point scale, ranging from 1 (*Never*) to 5 (*Very Often*), to rate how often they engaged in each of the stated behaviours (e.g., "Did you try to eat less at meal times than you would like to eat?"). Despite removing three items, the modified measure demonstrated adequate internal consistency with within-person and between-person omegas of .87 and .94, respectively.

Clinical impairment. Daily psychosocial impairment due to eating disorder symptoms was assessed using the Clinical Impairment Assessment Questionnaire version 3.0 (CIA; Bohn et al., 2008). The CIA is a 16-item measure that assesses the severity of global impairment due to eating disorder symptoms in the following domains: mood and self-perception, cognitive functioning, interpersonal functioning, and work performance. While the CIA instructs participants to reflect on these domains during the past 28 days, the instructions were modified in the present study for daily use (e.g., "Throughout TODAY, to what extent have your eating habits, exercising, or feelings about your eating, shape, or weight…interfered with your relationships with others?"). Participants were asked to respond to items with a four-point scale, ranging from 0 (*not at* all) to 3 (*a lot*). The CIA has been demonstrated to be a valid and reliable measure of clinical impairment in eating disorder samples, with a Cronbach's alpha value of .91 across studies (e.g., Jenkins, 2013; Reas et al., 2016). The within-person and between-person omegas were .91 and .99 respectively, demonstrating a high degree of internal consistency.

Body shame. Daily body shame was measured using the four-item bodily shame subscale from the Experience of Shame Scale (ESS; Andrews et al., 2002). This subscale asked participants to indicate the extent to which they felt ashamed or embarrassed of their body on the given day using a four-point scale, ranging from 1 (*not at all*) to 4 (*very much*; e.g., "Did you feel ashamed of your body or any part of it TODAY"). This scale has demonstrated adequate reliability in past research (Cronbach's alpha = .86; Andrews et al., 2002), and in the present study (within-person omega =.79, between-person omega = .97).

Procedure

Prior to their study participation, the study requirements and informed consent documents were reviewed with all eligible participants in the initial telephone call.

The day before participants' two-week daily diary began, they completed a baseline survey which consisted of a demographic questionnaire, as well as a battery of measures assessing participants' attitudes towards themselves and others, eating behaviours, and body image.[4] Next, for 14 consecutive nights, participants were asked to complete a survey about their eating behaviours and experiences on that given day. A link to complete this online survey was emailed to the participants via Qualtrics at 8:00 p.m. each night. Participants were instructed to complete the survey before bed and were advised that the survey link would expire at 3:00 a.m. the following morning. The 8:00 p.m.–3:00 a.m. time frame was selected to ensure that individuals with varying schedules would have the chance to provide their daily reports before going to bed.

Participants were compensated on a prorated basis for their participation in the study. Specifically, participants from the community received CAD $5.00 for the completion of the baseline survey and CAD $2.50 for each completed nightly survey. All payment was made in the form of an Amazon.ca gift card. Participants from the undergraduate participant pool were provided with the option to complete the study on the same prorated basis as community members, or for a combination of an Amazon.ca gift card and course credit. All participants (i.e., from the community and the participant pool) who completed the baseline survey and at least 12 of 14 nightly surveys received an additional CAD $10.00 towards Amazon.ca.

[4] As the data collected via the baseline questionnaires are not central to the current study, they are not discussed in detail in present paper.

Results

Prior to conducting analyses, all data were examined for outliers. Using Kline's (1998) criterion for the identification of univariate outliers, it was determined that none of the criterion variables violated the assumptions of normality (i.e., $|\text{skew}| \leq 3$; $|\text{kurtosis}| \leq 10$). This was further supported by the fact that all scores fell within 3.29 standard deviations above or below the mean (Tabachnik & Fidell, 2007).

Analytic Approach

Data were analyzed using multilevel models through PROC MIXED (i.e., for multilevel models with continuous criterion variables) and PROC GLIMMIX (i.e., for multilevel logistic models with dichotomous criterion variables) in SAS 9.3. Given the hierarchical structure of the data, whereby study days (level-1) were nested within participants (level-2), multilevel modeling was considered the appropriate analytic approach (Snijders & Bosker, 2012). As missing data are frequent in research with multiple assessment points, multilevel modelling with maximum likelihood estimates was used for all analyses in order to retain all participant data. The maximum likelihood estimation method allows for the retention of all participant data by using all participant data (both at the within-person and between-persons levels) to estimate the model parameters (Snijders & Bosker, 2012).

The criterion variables used in the primary multilevel models were participants' raw scores across all available days on negative affect, binge eating (i.e., yes or no), use of inappropriate compensatory behaviours (i.e., yes or no), dietary restraint, clinical impairment, and body shame. To probe the directionality of the relationships between self-compassion and these variables, exploratory models were conducted in which raw scores on self-compassion across study days served as the criterion variable. A random intercept was included in all

models; the inclusion of a random intercept assumes that there is variability in participants' mean scores on the dependent variable between- and within-persons (Snijders & Bosker, 2012). In both the central and exploratory analyses, predictor variables at level-1 (within-persons) and level-2 (between-persons) were entered as fixed effects.

Snijders and Bosker's (2012) aggregation and disaggregation procedures of predictors for two-level data guided our analytic approach. Between-persons (i.e., level-2) scores were first computed by taking the average of participants' daily self-compassion scores across all study days. Thus, our "mean self-compassion" variable reflects participants' mean level of self-compassion over the course of the study period. Next, we derived our within-persons (i.e., level-1) variable by disaggregating our level-2 variable (i.e., we subtracted a participant's mean self-compassion score from their raw self-compassion score on a particular day). This disaggregation procedure is also referred to as group-mean or person-mean centering (Enders & Tofighi, 2007; Snijders & Bosker, 2012). Therefore, our "daily self-compassion" variable reflected how much a participant's level of self-compassion on a particular study day deviated from her average level of self-compassion over the two weeks. When conducting our exploratory analyses to examine whether our hypothesized criterion variables may actually predict self-compassion, all continuous level-1 and level-2 predictor variables were computed using the above-mentioned procedures. However, as the binary level-1 predictor variables (i.e., binge eating and use of compensatory behaviours) had meaningful zero points (i.e., 0 = did not binge and 0 = did not use compensatory behaviours, respectively), no centering procedures were applied to these predictors (Enders & Tofighi, 2007).

For all multilevel models, the degrees of freedom for the fixed effects were estimated using the 'between-within' option (i.e., betwithin; bw) in SAS 9.3. This estimation procedure

separates the residual degrees of freedom into both within-persons and between-persons components (SAS Institute Inc., 2016, p. 6179) and has been deemed suitable for analyses involving longitudinal data (Der & Everitt, 2005, p. 303). Further, the effect sizes for the fixed effect components in all models were estimated using semi-partial R^2 (Edwards et al., 2008).

Preliminary Analyses

Descriptive Analyses

Table 1 presents means and standard deviations for all study variables. On average, participants' personal self-compassion means across the two weeks was 2.59 (*SD* = 0.59; range = 1.14 - 3.97), and their average fluctuation in daily self-compassion around their personal mean (i.e., their average *SD*) was 0.45 (range 0.06 – 1.07). Participants reported binge eating an average of 5.31 days (*SD* = 2.52) and engaging in compensatory behaviours an average of 9.32 days (*SD* = 3.63) over the two-week study period.

Zero-order Correlation

Table 2 reflects the zero-order correlations between all study variables at the between- and within-persons level.[5] Bivariate correlations were conducted between all continuous variables. Point-biserial correlations were conducted to explore the associations between continuous variables and binary variables (i.e., binge eating and use of compensatory behaviours). BMI was not associated with any of the variables at the between-persons level. At both the within- and between-persons level, self-compassion showed moderate negative associations with negative affect, clinical impairment, and body-shame. Interestingly, results revealed that self-compassion was negatively associated with binge eating at the within-persons level, but unrelated at the between-persons level. Restraint and compensatory behaviours both

[5] Within-person correlations were computed using the Repeated Measures Correlation (i.e., rmcorr) package (Bakdash & Marusich, 2017) in R.3.6.1 (R Core Team, 2019).

showed a weak negative relationship with self-compassion within-persons. While self-compassion was unrelated to compensatory behaviours at the between-persons level, it showed a negative association with restraint both between-persons and within-persons. Negative affect was positively associated with restraint, clinical impairment, and body shame both at the within-persons level and the between-persons level.

Binge eating and compensatory behaviours showed divergent correlations at the two levels. Specifically, at the within-persons level, binge eating was negatively associated with restraint, and positively associated with negative affect, clinical impairment and body shame. However, aside from a weak negative association with restraint, binge eating was unrelated to these variables at the between-persons level. At the between-persons and within-persons level, compensatory behaviours showed a weak positive relationship with restraint, clinical impairment and body shame. The probability of binge eating and using compensatory behaviours were not associated with one another at the within-persons level nor the between-persons level.

Intraclass Correlations (ICCs)

Table 2 reflects the intraclass correlations (ICC) and the corresponding confidence intervals for each variable.[6] ICCs reflect the amount of variance that is attributable to between-persons differences. ICCs for negative affect, restraint, clinical impairment and body shame ranged from .49 (restraint) to .61 (clinical impairment); this suggests that scores on these variables varied almost as much from day-to-day within a given person as they did from one person to the next. The ICC for global self-compassion was .56 which suggests that approximately 45% of the variability in self-compassion scores was at the within-persons level. The ICCs for the probability of binge eating and use of compensatory behaviours were .07 and

[6] Confidence intervals for the ICCs of the continuous variables were computed using %ICC9 macro in SAS 9.3 (Hertzmark & Spiegelman, 2010).

.25, respectively; this suggests that most of the variance in these behaviours occurs at the within-persons level.[7] This finding demonstrates that the probability of binge eating and engaging in compensatory behaviours varied more from one day to the next within a given person, than from person to person.

Central Analyses

Two multilevel models were conducted for each of the criterion variables (see Table 3). In the first multilevel model (i.e., Model 1), daily (within-person) self-compassion and mean (between-persons) self-compassion were entered as level-1 and level-2 predictors. BMI was entered as a level-2 covariate in all initial models; however, it was omitted from the present analyses as it did not emerge as a significant predictor in any of the initial models. In the second model (i.e., Model 2), lagged self-compassion was added to the original model as a level-1 predictor to examine whether self-compassion on a previous day contributed to scores on criterion variables. In the present analyses, lagged self-compassion refers to a participant's self-compassion score on the previous day (i.e. at time t-1). To examine alternate directionalities, an additional series of multilevel models was then conducted in which raw self-compassion scores served as the dependent variable, and scores on our previously conceptualized criterion variables were entered as level-1 and level-2 predictors. Separate models were conducted for each predictor variable, namely negative affect, binge eating, use of inappropriate compensatory behaviours, dietary restraint, clinical impairment and body shame (see Table 4). For level-1 binary predictors (i.e., binge eating and use of compensatory behaviours), no binge eating

[7] The ICCs for the binary predictor variables (i.e., binge eating and use of compensatory behaviours) and the corresponding confidence intervals were computed using Fleiss and Cuzick's (1979) approach via the Intracluster Correlation Coefficient for Binary Data (ICCbin) package in R.3.6.1 (R Core Team, 2019). This method of estimating ICC's and their respective confidence intervals is proposed to be optimally suited for multilevel data with binary outcomes (e.g., McMahon et al., 2006).

(always coded as 0) and no engagement in compensatory behaviours (always coded as 0) were set as the reference group in the respective analyses.

Negative Affect

In Model 1, both mean (between-persons) and daily (within-persons) self-compassion emerged as negative predictors of negative affect (see Table 3, Model 1). Therefore, participants who reported higher average levels of self-compassion over the two weeks reported lower levels of negative affect. Furthermore, within a given participant, negative affect was lower on days that participant were more self-compassionate than their typical level. When lagged (i.e., t-1) self-compassion was added to the original model as a predictor, daily self-compassion remained a significant predictor of negative affect and lagged self-compassion was not a significant predictor (see Table 3, Model 2). In summary, these findings demonstrate that negative affect was lower on days of higher-than-usual self-compassion, but was not affected by levels of self-compassion on the previous day. Negative affect was also lower among participants who had higher average levels of self-compassion over the study period.

When exploring the possibility that negative affect might also predict self-compassion, our first exploratory model revealed that both daily and mean negative affect emerged as negative predictors of self-compassion (see Table 4, Model 1). When lagged negative affect was added as a predictor, daily negative affect remained a significant predictor of self-compassion and lagged negative affect was negatively associated with self-compassion at a trend level (i.e., $p < .10$; see Table 4, Model 2). These findings reveal that a participant's level of self-compassion was lower on days of higher-than-usual negative affect, as well as following days of higher-than-usual negative affect (at a trend level), even controlling for same-day negative affect.

Probability of Binge Eating

In the first multilevel model, daily self-compassion emerged as a significant negative predictor of the probability of binge eating (see Table 3, Model 1). That is, the probability of binge eating was lower on days that participants were more self-compassionate than usual. Odds ratio calculations revealed that a one-unit increment in daily self-compassion from an individual's personal mean corresponded to a 43% decrease in the odds of binge eating, *OR* = 0.57, 95% CI [0.46, 0.72]. Mean self-compassion was not significantly related to the probability of binge eating in the first multilevel model. That is, the probability of binge eating did not differ among women based on their mean self-compassion levels. When lagged self-compassion was added to the original model, daily self-compassion remained a significant predictor of the probability of binge eating but lagged self-compassion was not a significant predictor (see Table 4). Taken together, these findings reveal that the probability of binge eating was lower on days of higher-than-usual self-compassion but was not affected by the previous day's level of self-compassion. Furthermore, participants' average levels of self-compassion over the study period was unrelated to their probability of binge eating.

When probing the directionality of the relationship between self-compassion and binge eating, daily but not mean binge eating was negatively associated with self-compassion (see Table 4, Model 1). That is, relative to days that a participant did not binge eat, days that she did binge eat were associated with lower levels of self-compassion. While the lagged binge eating variable was not associated with self-compassion in Model 2, the negative association between daily binge eating and self-compassion remained significant. Collectively, these findings suggest that a participant's level of self-compassion was lower on days that she reported binge eating (relative to days that she did not), but was not affected by the preceding day's binge eating.

Probability of Engaging in Inappropriate Compensatory Behaviours

Daily self-compassion emerged as a significant negative predictor of the probability of engaging in inappropriate compensatory behaviours in our first multilevel model, whereas mean self-compassion did not (see Table 3, Model 1). In other words, on days that women with BN were more self-compassionate than what was typical for them, they reported a lower probability of engaging in compensatory behaviours. Odds ratio calculations revealed that a one-unit increment in daily self-compassion from an individual's personal mean corresponded to a 38% decrease in the odds of engaging in compensatory behaviour, $OR = 0.62$, 95% CI [0.45, 0.84]. However, the probability of engaging in compensatory behaviours did not differ across women as a function of their mean self-compassion level over the two weeks. When lagged self-compassion was added in Model 2, daily self-compassion continued to predict the probability of engaging in compensatory behaviours; however, lagged self-compassion did not emerge as significant predictor. In summary, these findings demonstrate that the probability of engaging in inappropriate compensatory behaviours was lower on days of higher-than-usual self-compassion but was not related to levels of self-compassion on the previous day. Moreover, participants' average level of self-compassion over the study period was not predictive of their probability of engaging in compensatory behaviours.

When we probed directionality, a negative association emerged between the daily use of compensatory behaviours and self-compassion, whereas the mean use of compensatory behaviours was not significantly related to self-compassion (see Table 4, Model 1). This finding suggests that, relative to days that a participant did not use any compensatory behaviours, days that she did were associated with lower levels of self-compassion. When the lagged compensatory behaviours variable was added to the model, daily use of compensatory

behaviours remained a negative predictor of self-compassion; however, the lagged compensatory behaviours variable was not significantly related to self-compassion (see Table 4, Model 2). Therefore, these findings suggest that a participant's level of self-compassion was lower on days that she used compensatory behaviours (relative to days that she did not); however, a participant's level of self-compassion on a given day was not related to their use of compensatory behaviours on the previous day. Furthermore, participants' average use of compensatory behaviours over the study period did not contribute to their levels of self-compassion.

Dietary Restraint

Both daily and mean self-compassion emerged as significant negative predictors of dietary restraint (see Table 3, Model 1). That is, dietary restraint was lower on days that women were more self-compassionate than what is typical for them. Further, participants who reported higher average levels of self-compassion over the two weeks reported lower levels of dietary restraint. When lagged self-compassion was added to the original model as a predictor, both daily self-compassion and lagged self-compassion emerged as significant negative predictors of dietary restraint (see Table 3, Model 2). This suggests that, within a given participant, a day of higher-than-usual self-compassion was associated with less dietary restraint on the same *and* subsequent day. Taken together, these results reveal that a participant's level of dietary restraint was lower on days of higher-than-usual self-compassion, and following days of higher-than-usual self-compassion, even when controlling for same-day self-compassion. Further, levels of dietary restraint were lower for participants who reported higher average levels of self-compassion over the study period.

Parallel findings emerged when probing directionality. Specifically, both daily and mean dietary restraint were negatively associated with self-compassion in Model 1, and all variables, including lagged dietary restraint, were negatively associated with self-compassion in Model 2 (see Table 4). Thus, findings demonstrate that a participant's level of self-compassion was lower on days of higher-than-usual dietary restraint, and following days of higher-than-usual dietary restraint, even when controlling for same-day dietary restraint. Further, participants who reported higher average levels of dietary restraint over the two-week study period reported lower levels of self-compassion.

Clinical Impairment

In the first multilevel model, both daily and mean self-compassion were significant negative predictors of clinical impairment (see Table 3, Model 1). In other words, levels of clinical impairment were lower on days of higher-than-usual self-compassion. Furthermore, higher average levels of self-compassion were associated with lower levels of clinical impairment. When lagged self-compassion was added as a predictor to this model, daily self-compassion continued to negatively predict clinical impairment and lagged self-compassion was negatively associated with clinical impairment at a trend level (i.e., $p < .10$; see Table 3, Model 2). In summary, these findings suggest that clinical impairment was lower on days of higher-than-usual self-compassion, as well as following days of higher-than-usual self-compassion (at a trend level), even controlling for same-day self-compassion. Further, clinical impairment was lower among participants who had higher average levels of self-compassion over the study period.

Similar findings emerged when probing whether clinical impairment predicts self-compassion. Specifically, both daily and mean clinical impairment were negatively associated

with self-compassion. When lagged clinical impairment was added to the model, daily self-compassion remained a significant negative predictor; however, the lagged variable was not significantly associated with self-compassion (see Table 4, Model 2). Therefore, these findings reveal that a participant's level of self-compassion was lower on days of higher-than-usual clinical impairment, but was not affected by the previous day's level of clinical impairment. Moreover, participants who reported higher levels of clinical impairment over the two-week study period reported lower levels of self-compassion.

Body Shame

In Model 1, both daily and mean self-compassion were significant negative predictors of body shame (see Table 3, Model 1). Therefore, body shame was lower on days that participants were more self-compassionate than what is typical for them. Moreover, participants who reported higher average levels of self-compassion reported lower levels of body shame. Daily self-compassion remained a significant negative predictor of body shame when lagged self-compassion was added to the model. While not statistically significant, lagged self-compassion appeared to be negatively related to body shame at a trend-level (i.e., $p < .10$; see Table 3, Model 2). Taken together, these findings suggest that body shame was lower on days of higher-than-usual self-compassion, as well as following days of higher-than-usual self-compassion (at a trend level), even controlling for same-day self-compassion. Additionally, participants who reported higher average levels of self-compassion over the study period reported lower levels of self-compassion.

In the models exploring alternate directionalities of the relationship between body shame and self-compassion, both daily and mean body shame emerged as negative predictors of self-compassion (see Table 4, Model 1). When lagged body shame was added to the model, daily

body shame remained a significant negative predictor and lagged body shame was also a significant negative predictor (see Table 4, Model 2). Collectively, these findings reveal that self-compassion was lower on days that a participant experienced more body shame than usual, as well as following days of higher-than-usual body shame, even when controlling for same-day body shame. Further, participants who reported higher average levels of body shame over the study period also reported lower levels of self-compassion.

Discussion

The present study was the first to examine the effects of intra- and interindividual fluctuations in self-compassion on maladaptive eating pathology and psychological functioning in women with BN. Findings support the growing body of literature underscoring the need to consider within-persons differences in self-compassion when assessing its protective abilities (e.g., Breines et al, 2014; Kelly & Stephen, 2016). The fact that approximately 44% of the variance in self-compassion scores occurred within-persons suggests that self-compassion levels fluctuated within a person from one day to the next almost as much as they did from one person to the next. This proportion of within-person variability in self-compassion scores is consistent with the estimates reported in the existing literature and bolsters the claim that self-compassion should not be measured exclusively as a fixed-construct (Breines et al., 2014; Dupasquier et al., 2020; Kelly et al., 2020).

As hypothesized, daily upward fluctuations in self-compassion were predictive of less maladaptive psychological functioning and eating behaviours in women with BN. Specifically, results revealed that on days that these women were more self-compassionate than usual, they experienced lower levels of negative affect, dietary restraint, and body shame. Parallel findings emerged when looking at mean levels of self-compassion, such that women who reported higher levels of self-compassion on average also reported lower scores on these criterion variables over the study period. These findings complement those of Kelly and Stephen (2016), whose results suggested that both daily and mean, or dispositional, self-compassion can attenuate maladaptive eating behaviour and negative body image. However, unlike Kelly et al. (2020) who found that mean self-compassion was unrelated to eating pathology in a sample of women with anorexia nervosa over two weeks, mean levels of self-compassion were related to a number of measures

of eating pathology in the present sample of women with BN (i.e., dietary restraint, body shame, and clinical impairment). This discrepancy may be the product of a number of differences between the two studies. For instance, incongruent findings may be related to the use of two conceptually distinct measures of eating pathology; whereas Kelly and colleagues used subscales from the EDE-Q to capture eating pathology, the present study used several independent measures which did not precisely converge with content reflected in EDE-Q subscales (e.g., the present study did not contain a measure of fear of gaining weight). The differences in findings may also reflect inherent disparities in the two eating disorder populations or could be the result of vastly different sample sizes between the present study (i.e., $N = 124$) and Kelly et al.'s research ($N = 33$).

Interestingly, the benefits of mean (i.e., trait) and daily self-compassion appeared to diverge when comparing the effects of each on the behavioural symptoms of BN. Findings indicated that the probability of binge eating and using compensatory behaviours was lower on days that women with BN were more self-compassionate than what is typical for them. However, average levels of self-compassion were not related to the probability of binge eating or using compensatory behaviours. Taken in the context of prior research, these findings may suggest that daily and trait self-compassion may both be protective against the proposed cognitive-affective maintenance factors of BN, such as negative affect, restraint, and poor body image (e.g., Heatherton & Baumeister, 1991; Stice & Shaw, 2002); however, a higher-than-usual daily level of self-compassion may be particularly relevant to the attenuation of actual bulimic symptoms (i.e., binge eating and compensatory behaviours). It is interesting to speculate about why this may be the case. Given that higher levels of negative affect are associated with increased binge eating and compensatory behaviours on a given day (e.g., Goldschmidt et al.,

2014, Smyth et al., 2007), it may be that on days that individuals are more self-compassionate than usual, they are better able to cope with negative emotions and refrain from engaging in bulimic symptoms. For instance, rather than relying on binge eating or compensatory behaviours to regulate negative affect, on days of higher-than-usual self-compassion, an affected individual may be able to mindfully engage with their distress and identify ways in which they can adaptively alleviate it (e.g., seeking social support). This notion complements findings from experimental paradigms which suggest that momentary increases in self-compassion can effectively mitigate experiences of elevated negative affect (e.g., Leary et al., 2007; Johnson & O'Brien, 2013). Furthermore, it may suggest that interventions and practices designed to increase daily levels of self-compassion (e.g., Kelly & Waring, 2018) could have noticeable effects on the behavioural symptoms of individuals with BN. However, further research is needed to investigate this proposed relationship.

Another finding that emerged was that both daily and mean self-compassion attenuated self-reported psychosocial impairment caused by eating disorder symptoms; this included impairments in cognitive functioning, work performance, and social functioning. One possible explanation for this finding is that disordered eating and weight-related behaviours may engender feelings of anxiety, negative affect, guilt and shame in individuals with eating disorders (e.g., Haedt-Matt & Keel, 2011). Self-compassion is thought to facilitate adaptive coping and promote resilience in instances of elevated negative emotions, including those related to eating behaviours and body image concerns (e.g., Allen & Leary, 2010; Kelly et al., 2016). As such, by encouraging an individual to engage with the distress caused by their eating and compensatory behaviours, and by facilitating the use adaptive coping strategies, self-compassion may act to attenuate the adverse psychosocial consequences associated with eating disorder pathology. For

example, in an individual with BN, self-compassion may thwart the tendency to automatically engage in rumination and self-criticism in response to the feelings of guilt or shame tied to their bulimic symptoms. By practicing self-compassion, the individual may be able to disengage from these automatic processes (Gilbert, 2005), and instead, forgive themselves for engaging in these symptoms and understand the difficulty associated with modifying them. This type of compassionate responding would allow the individual to be present as they proceed with their day, as opposed to experiencing the functional impairment that may have occurred if they became entrenched in the cycle of rumination and self-criticism. As psychosocial impairment due to eating and weight-related behaviours can limit quality of life (Dejong et al., 2013), research should further investigate the benefits of self-compassion in lessening clinical impairment across contexts and populations.

While the existing literature has ascertained that daily increases in self-compassion are associated with reductions in eating pathology, negative body image, and negative affect, the present study extended this investigation by exploring the directionality of these observed relationships. Results from the exploratory analyses suggest that, in women with BN, the relationship between self-compassion, eating pathology, and psychological functioning largely reflect bidirectional same-day processes. For instance, on days of higher-than-usual self-compassion, individuals reported lower levels of negative affect and dietary restraint. Conversely, days of higher-than-usual negative affect and dietary restraint were associated with lower levels of self-compassion. These reciprocal same-day relationships may suggest that women with BN find it easier to treat themselves with compassion on days marked by lower eating pathology, negative affect, and clinical impairment. As self-compassion requires individuals to engage with their personal suffering, days of higher-than-usual eating disorder

symptoms and/or distress may act to discourage emotional engagement. This proposition is consistent with the well-documented notion that individuals with BN engage in means of avoidant coping when faced with distressing emotions (e.g., Duarte et al., 2014; Soukop et al., 1990). That said, future research is needed to replicate and elucidate the mechanisms underlying this reciprocal relationship.

Interestingly, findings also provide some evidence for reciprocal relationships across days. For instance, participants who reported higher-than-usual levels of self-compassion on a previous day subsequently reported lower levels of dietary restraint on the following day. Conversely, participants who reported higher-than-usual levels of dietary restraint on a previous day subsequently reported lower levels of self-compassion on the following day. One's level of body shame on a previous day also appeared to predict one's level of self-compassion on the following day at a trend level. Although these findings may preliminarily suggest that a day-to-day cyclical relationship exists between these variables, small effect sizes highlight the need to replicate these findings in future research.

Contributions and Implications

To date, research has explored the protective function of self-compassion against eating pathology almost exclusively between-persons. While recent research has suggested that daily upward fluctuations in self-compassion can yield auspicious reductions in eating pathology (Kelly et al., 2020), there is a dearth of literature exploring this link within eating disorder populations. As such, the present study addressed this limitation by advancing our understanding of the maintenance factors and symptoms of bulimia nervosa in important theoretical and practical ways. First, findings demonstrated that both daily and trait self-compassion were associated with reductions in the maintenance factors underlying bulimic behaviours; these

include dietary restraint, negative affect, and body shame. However, findings also revealed that daily, but not trait self-compassion was associated with a reduction in actual bulimic symptoms (i.e., binge eating and compensatory behaviours). That is, over a two-week period, an individual's likelihood of bingeing and compensating was tied to how self-compassionately she treated herself on a given day compared to *her usual level of self-compassion* and not to how self-compassionate she was over the two weeks compared to other individuals with BN. Together, these findings suggest that trait and daily self-compassion may serve distinct protective functions against eating disorder pathology. As such, further research designed to disentangle these protective functions may broaden our theoretical understanding of the relationship between self-compassion and eating disorder symptomology in eating disorder populations.

Practically, findings may offer an optimistic message for women attempting to cope with and eventually recover from their eating disorder. Unlike between-persons research which suggests that individuals who are generally higher in trait self-compassion will fare better than those who are not, the present study suggests that if affected individuals are able to be more self-compassionate than usual on a given day, they will experience reductions in their eating disorder symptoms and general improvements in their psychological functioning. As such, current findings lend support to clinical interventions, such as Compassion-Focused Therapy (CFT; Gilbert et al., 2009), that aim to increase one's level of self-compassion overtime. Furthermore, the present findings also highlight the potential utility of brief (i.e., in-the-moment) compassion-based practices which augment state levels of self-compassion as an adjunct to existing psychotherapeutic interventions for BN. For instance, evidence-based self-compassion meditations, letter-writing tasks, or imagery may be a feasible strategy to mitigate daily distress

and eating disorder symptoms in recovering individuals. Although research has yet to explore whether brief self-guided interventions can assuage eating disorder symptomology, evidence for this relationship could have profound implications for the way in which clinicians treat and affected individuals cope with their eating disorders.

Limitations and Directions for Future Research

There were a number of limitations to the present study. The first limitation pertains to the homogeneity of the present sample. The current study relied on a female-only sample to explore the potential benefits of self-compassion on eating disorder symptomology and psychosocial functioning. As women are disproportionally affected by eating disorders, including BN (Hudson et al., 2007), female-only samples tend to be the norm in the eating disorder and body image literature. However, due to the use of a single-gender sample, it remains unclear whether the present findings will generalize to individuals of other gender identities. Given that eating disorders affect individuals of all genders (e.g., Diemer et al., 2015), future research should establish the replicability of the present findings in a gender-heterogenous sample.

Second, we relied on a self-report diagnostic tool to determine whether participants met the diagnostic criteria for bulimia nervosa. Although this diagnostic measure has been demonstrated to be a sensitive and specific screening tool (Stice et al., 2004), previous research has highlighted some discrepancies between this measure and structured clinical interviews. These discrepancies partially stem from a denial of symptom severity, the endorsement of subjective rather than objective binge eating episodes, and an overestimation of symptom frequency (Krabbenborg et al., 2012; Sysko et al., 2015). Although we attempted to address some of these discrepancies by implementing a phone screen to clarify participants' suitability

for the diagnostic criteria, future research should incorporate a structured clinical interview to verify diagnoses.

A third limitation is that we examined the relationships between variables only once a day. As such, we are limited in our ability to draw conclusions about the temporal relationships between variables *within* a day. For example, we are unable to conclude whether within a given day, moments of self-compassion lead to less subsequent dietary restraint, moments of less dietary restraint facilitate greater self-compassion, or both. Although the present study partially explored temporal relationships by incorporating lagged predictor variables, future research should aim to disentangle the momentary relationship between self-compassion, psychological functioning, and eating pathology by incorporating ecological momentary assessment (EMA) paradigms; these methodological designs would allow for the collection of data at multiple timepoints within a given day. Pursuing this avenue of research is particularly important for individuals with bulimia nervosa, given that changes within a given day, such as increases in negative affect, are associated with subsequent binge eating episodes and compensatory behaviours (Crosby et al., 2009; Smyth et al., 2007). Using EMA paradigms would allow us to determine whether, for example, moments of higher self-compassion throughout the day mitigate the probability of binge eating or the urge to binge in that moment.

A final limitation of the present study relates to measurement and the constraints associated with conducing daily diary research. First, all measures were exclusively self-report and were conducted at the end of each day. While this is common practice in daily diary designs (e.g., Bolger et al., 2003), the assessment of self-compassion, affect, and eating pathology may have been subject to retrospective bias. Specifically, responses may have been subject to a mood-congruent recall bias, such that participants' emotional states or experiences surrounding

the time of their survey completion may have biased their self-report data (Bolger et al., 2003; Parkinson et al., 1995). For instance, a participant who completed the nightly survey following a confrontation with a friend may report experiencing higher levels of negative affect throughout the day, despite having an otherwise neutral or positive mood throughout the day. In an attempt to mitigate this possibility, participants were cued on each page of the questionnaire to respond to items based on their experiences "today." Nevertheless, future research involving multiple assessments throughout a given day should be conducted to address this limitation. Second, in order to mitigate attrition due to participant burnout, we aimed to keep the daily questionnaires as concise as possible. As such, we were limited in our ability to ask detailed questions pertaining to participant experiences with their bulimic symptoms on a given day. However, given the role of daily self-compassion in attenuating binge eating and compensatory behaviours, future research should narrow the scope of study to concentrate exclusively on these relationships. For instance, it would be interesting to assess whether participants were able to resist the urge to binge eat or compensate for binge eating throughout a given day, and whether increases in self-compassion were associated with this increased resistance. It would also be interesting to assess whether daily self-compassion is able to attenuate distress associated with binge eating or compensatory behaviours, such as lessening feelings of guilt or shame.

Despite these limitations, findings from the present study revealed that eating pathology and psychological functioning amongst women with BN are affected by both their average (i.e., trait) level of self-compassion, as well as how self-compassionate they are on a given day with respect to their personal mean. Further, findings indicated that an individual's daily level of self-compassion may uniquely contribute to their experience of bulimic symptoms, namely binge eating and compensatory behaviours. Taken together, these findings suggest that further research

exploring the role of daily self-compassion could have meaningful theoretical and practical implications for treatment of BN among women.

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Figure 1

Recruitment Diagram

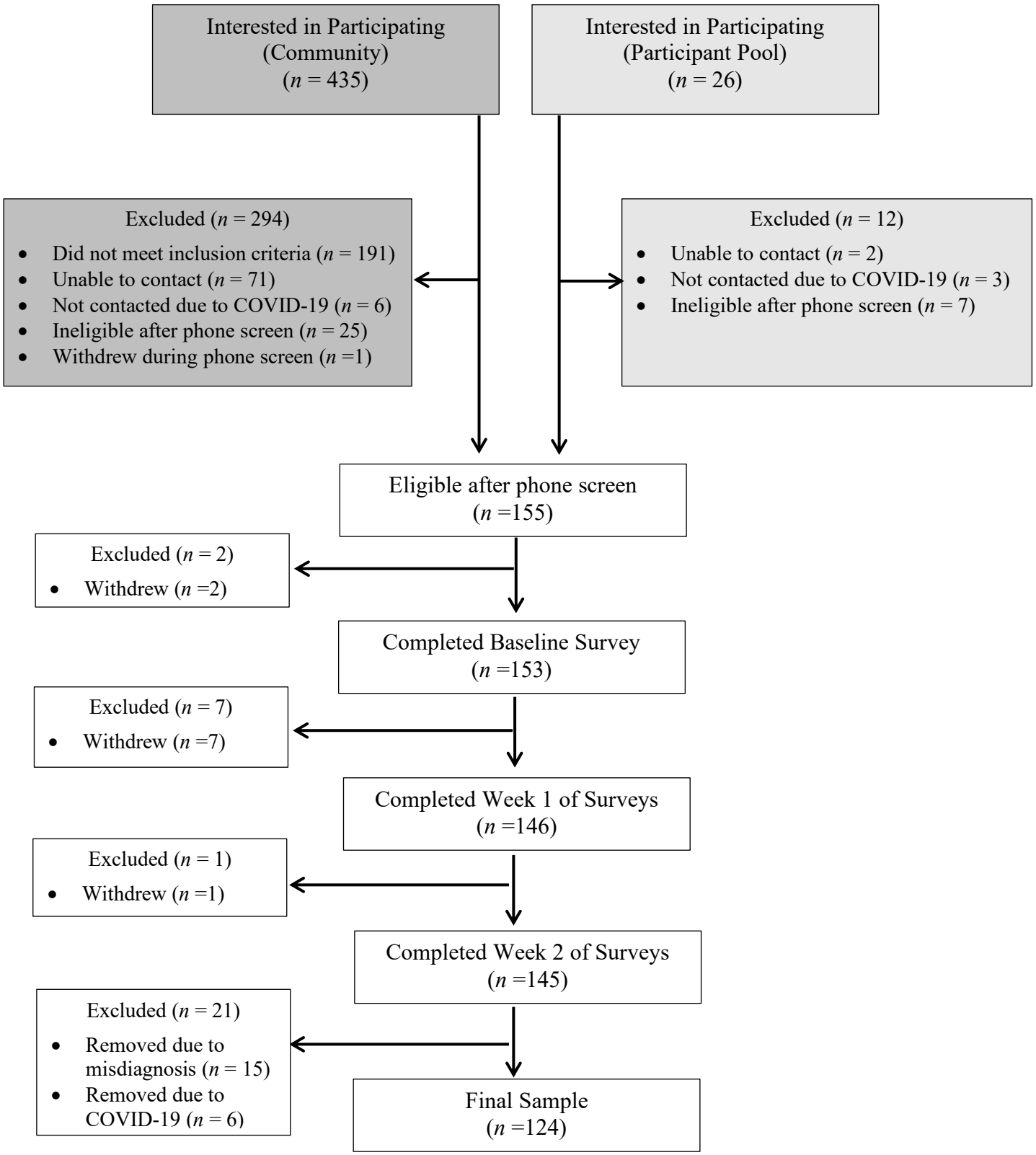

Table 1

Descriptive statistics for all study variables

	N	*M*	*SD*	*Min*	*Max*	*Skew*	*Kurtosis*
Body Mass Index (BMI)	124	26.75	5.46	18.61	41.75	0.91	0.23
Mean Self-compassion	124	2.59	0.59	1.14	3.97	-0.48	-0.50
Mean Negative Affect	124	2.48	0.74	1.14	4.79	0.64	0.33
Mean Days Binged	124	5.31	2.52	0.00	12.00	0.58	0.07
Mean Days Using Compensatory Behaviours	124	9.32	3.63	0.00	14.00	-0.79	-0.01
Mean Dietary Restraint	124	2.96	0.80	1.14	4.81	-0.10	-0.52
Mean Clinical Impairment	124	1.25	0.62	0.02	2.90	0.26	-0.41
Mean Body Shame	124	2.95	0.68	1.27	4.00	-0.41	-0.32

Note. Bingeing and Compensatory Behaviours in Table 1 represent the number of days that participants reported binge eating and using compensatory behaviours, respectively, over the two-week study period. Descriptive statistics for all variables, with the exception of BMI, were based on mean levels reported by participants across the two weeks.

Table 2

Between- and within-persons correlations between study variables and intraclass correlations

	1.	2.	3.	4.	5.	6.	7.	8.	ICC	95% CI
1. BMI	-	-.01	-.01	.09	.02	-.06	.07	.08	-	-
2. Self-compassion	-	-	-.53***	-.09	-.06	-.26**	-.59***	-.64***	.56	[0.49, 0.63]
3. Negative Affect	-	-.46***	-	.08	.16†	.44***	.77***	.46***	.53	[0.46, 0.60]
4. Binge Eating	-	-.13***	.16***	-	.04	-.22*	.13	.10	.07	[0.02, 0.12]
5. Compensatory Behaviours	-	-.08**	.10***	.01	-	.24**	.24**	.18*	.25	[0.16, 0.34]
6. Dietary Restraint	-	-.09***	.11***	-.16***	.18***	-	.49***	.28**	.49	[0.42, 0.56]
7. Clinical Impairment	-	-.36***	.51***	.19***	.12***	.23***	-	.60***	.61	[0.55, 0.68]
8. Body Shame	-	-.36***	.34***	.20***	.08**	.12***	.48***	-	.60	[0.53, 0.66]

Note. BMI = Body mass index; Binge Eating = Daily binge eating (Binged = 1); Compensatory Behaviours = Daily use of compensatory behaviours (Use of compensatory behaviours = 1). Between-persons correlations are above the diagonal and within-persons correlations are below. As BMI is a between-person variable assessed only once, there is no ICC and there are no correlations between BMI and within-person variables. The 95% CIs represent the estimated two-sided confidence intervals for ICCs.

$^{\dagger}p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3

Unstandardized regression coefficients (B), *standard errors, and effect sizes* (R^2_β) *for fixed effects from central multilevel models*

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Criterion Variable: Negative Affect										
Intercept	4.20***	0.25	122	[3.71, 4.70]		4.23***	0.25	122	[3.75, 4.72]	
Daily SC	-0.60***	0.03	1402	[-0.66, - 0.54]	.21	-0.61***	0.03	1252	[-0.68, -0.55]	.21
Mean SC	-0.66***	0.09	122	[-0.85, -0.48]	.29	-0.68***	0.09	122	[-0.86, -0.49]	.30
Lag SC						0.01	0.03	1252	[-0.06, 0.07]	< .01
Criterion Variable: Probability of Binge Eating										
Intercept	-0.09	0.34	122	[-0.75, 0.58]		-0.14	0.36	122	[-0.86, 0.57]	
Daily SC	-0.56***	0.11	1402	[-0.79, -0.33]	.02	-0.62***	0.13	1252	[-0.87, -0.37]	.02
Mean SC	-0.09	0.13	122	[-0.34, 0.16]	<.01	-0.07	0.14	122	[-0.34, 0.20]	< .01
Lag SC						0.16	0.12	1252	[-0.08, 0.41]	< .01

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Criterion Variable: Probability of Using Compensatory Behaviours										
Intercept	2.79**	0.90	122	[1.01, 4.57]		2.88**	0.95	122	[1.00, 4.76]	
Daily SC	-0.48**	0.16	1402	[-0.79, -0.17]	.01	-0.34*	0.17	1252	[-0.68, -0.01]	.01
Mean SC	-0.38	0.33	122	[-1.04, 0.28]	< .01	-0.39	0.35	122	[-1.09, 0.31]	< .01
Lag SC						0.01	0.17	1252	[-0.32, 0.35]	< .01
Criterion Variable: Dietary Restraint										
Intercept	3.86***	0.31	122	[3.24, 4.48]		3.80***	0.32	122	[3.18, 4.43]	
Daily SC	-0.14***	0.04	1402	[-0.22, -0.06]	.01	-0.12**	0.04	1252	[-0.21, -0.03]	.01
Mean SC	-0.35**	0.12	122	[-0.58, -0.12]	.07	-0.33**	0.12	122	[-0.56, -0.09]	.06
Lag SC						-0.13**	0.04	1252	[-0.22, -0.04]	< .01

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Criterion Variable: Clinical Impairment										
Intercept	2.85***	0.20	122	[2.45, 3.25]		2.84***	0.20	122	[2.45, 3.24]	
Daily SC	-0.34***	0.02	1401	[-0.38, -0.29]	.13	-0.33***	0.03	1251	[-0.38, -0.28]	.12
Mean SC	-0.62***	0.08	122	[-0.77, -0.47]	.36	-0.62***	0.07	122	[-0.77, -0.47]	.36
Lag SC						-0.04†	0.03	1251	[-0.09, 0.01]	< .01
Criterion Variable: Body Shame										
Intercept	4.87***	0.21	122	[4.45, 5.29]		4.88***	0.22	122	[4.45, 5.30]	
Daily SC	-0.39***	0.03	1397	[-0.44, -0.33]	.13	-0.38***	0.03	1251	[-0.44, -0.32]	.12
Mean SC	-0.74***	0.08	122	[-0.90, -0.58]	.41	-0.75***	0.08	122	[-0.91, -0.59]	.41
Lag SC						-0.06†	0.03	1251	[-0.11, 0.00]	<.01

Note. Bs represent the unstandardized regression coefficients. Both binge eating and use of compensatory behaviours were dummy coded (i.e., 1= binged and 1= used compensatory behaviours, respectively).

$^\dagger p < .10$. * $p < .05$. ** $p < .01$. ***$p < .001$.

Table 4

Unstandardized regression coefficients (B)*, standard errors, and effect sizes* (R^2_β) *for fixed effects from exploratory multilevel models predicting self-compassion*

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Predictor: Negative Affect										
Intercept	3.66***	0.16	122	[3.35, 3.98]		3.67***	0.16	122	[3.35, 3.98]	
Daily NA	-0.35***	0.02	1402	[-0.38, -0.31]	.19	-0.35***	0.02	1254	[-0.38, -0.31]	.21
Mean NA	-0.43***	0.06	122	[-0.55, -0.31]	.26	-0.43**	0.06	122	[-0.55, -0.31]	.29
Lag NA						-0.03†	0.02	1254	[-0.07, 0.00]	< .01
Predictor: Binge Eating										
Intercept	2.70***	0.13	122	[2.44, 2.96]		2.71 ***	0.13	122	[2.45, 2.97]	
Daily Bingeing (Ref: No Bingeing)	-0.14***	0.03	1402	[-0.19, -0.08]	.02	-0.14***	0.03	1258	[-0.19, -0.08]	.02
Mean Bingeing	-0.11	0.28	122	[-0.66, 0.44]	< .01	-0.15	0.28	122	[-0.71, 0.41]	< .01
Lag Bingeing (Ref: No Bingeing)						0.03	0.03	1258	[-0.03, 0.08]	< .01

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Predictor: Use of Compensatory Behaviours (CB)										
Intercept	2.72***	0.15	122	[2.43, 3.01]		2.72***	0.15	122	[2.43, 3.01]	
Daily use of CB	-0.12**	0.04	1402	[-0.20, -0.05]	.01	-0.12**	0.04	1400	[-0.20, -0.05]	.01
(Ref: No CB)										
Mean use of CB	-0.04	0.21	122	[-0.45, 0.37]	<.01	-0.06	0.21	122	[-0.47, 0.36]	< .01
Lag use of CB						0.02	0.03	1400	[-0.04, 0.08]	< .01
(Ref: No CB)										
Predictor: Dietary Restraint										
Intercept	3.16***	0.20	122	[2.77, 3.55]		3.16***	0.20	122	[2.76, 3.55]	
Daily Restraint	-0.06***	0.02	1402	[-0.09, -0.03]	.01	-0.05**	0.02	1258	[-0.09, -0.02]	.01
Mean Restraint	-0.19**	0.06	122	[-0.32, -0.06]	.07	-0.19**	0.07	122	[-0.32, -0.06]	.06
Lag Restraint						-0.06**	0.02	1258	[-0.09, -0.02]	.01

Fixed Effect	Model 1					Model 2				
	B	*SE*	*df*	95% CI	R^2_β	B	*SE*	*df*	95% CI	R^2_β
Predictor: Clinical Impairment										
Intercept	3.31***	0.10	122	[3.12, 3.50]		3.32***	0.10	122	[3.12, 3.51]	
Daily Clinical Impairment	-0.38***	0.03	1401	[-0.43, -0.33]	.13	-0.37***	0.03	1251	[-0.42, -0.31]	.12
Mean Clinical Impairment	-0.57***	0.07	122	[-0.71, -0.43]	.36	-0.58***	0.07	122	[-0.71, -0.44]	.36
Lag Clinical Impairment						-0.04	0.03	1251	[-0.09, 0.02]	< .01
Predictor: Body Shame										
Intercept	4.22***	0.18	122	[3.87, 4.58]		4.23***	0.18	122	[3.87, 4.59]	
Daily Body Shame	-0.33***	0.02	1397	[-0.37, -0.28]	.13	-0.32***	0.02	1251	[-0.36, -0.27]	.12
Mean Body Shame	-0.55***	0.06	122	[-0.67, -0.43]	.41	-0.55***	0.06	122	[-0.67, -0.44]	.41
Lag Body Shame						-0.06*	0.02	1251	[-0.11, -0.01]	.01

Note. Bs represent the unstandardized regression coefficients. Both binge eating and use of compensatory behaviours were dummy coded (i.e., 1= binged and 1= used compensatory behaviours, respectively).

$^{\dagger}p < .10$. * $p < .05$. ** $p < .01$. ***$p < .001$.