

Mixed-methods analysis of the predictive effects of personality on stress-related eating behaviour: An exploratory study of perfectionism, impulsivity, and emotional control

by

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Abstract

Most individuals alter overall caloric intake and food choice while experiencing stress and have a relatively consistent pattern of stress-related eating over time. There are many important and contextually dependant factors that should be considered when examining the effects of stress on eating behaviour changes including the recent investigation of the predominant role of personality; however, there is limited research examining the predictive role of personality to determine whether an individual will engage in stress over-eating or under-eating behaviours. The present mixed-methods study investigated if personality traits of perfectionism, impulsivity, and emotional control were correlated with stress-over or under-eating. Quantitative data was obtained among 169 participants who provided self-reports of individual levels of stress, stress-related eating, perfectionism, impulsivity, and emotional control to explore if there was a correlation between the investigated variables. The findings revealed significant direct predictive effects of emotional control on stress-related eating, however no significant effects were found between stress eating and traits of perfectionism or impulsivity. Qualitative data was obtained among 14 stress-over and under-eaters who were interviewed regarding their stress-eating styles and perceptions of the effect of personality on their stress-related eating changes to further explore how individuals perceived their personality traits to drive their stress-over or under-eating behaviour. The findings revealed that stress over-eaters may respond by eating to seek control and positive emotions where under-eaters may not respond by eating as it is not a priority and they lack hunger. Future research should continue to investigate the included personality traits using more specific psychometric measures to analyze the variables more thoroughly before validating any conclusions.

Keywords: Stress Eating, Perfectionism, Impulsivity, Emotional Control, Mixed Methods

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Introduction

Current eating behaviour research notes that approximately 80% of individuals alter overall caloric intake and food choice while experiencing stress (Scott & Johnstone, 2012). There is a wide range of important and contextually dependant factors that should be considered when exploring the effects of stress on eating behaviour changes (Torres & Nowson, 2007). Factors that play a role in determining how stress will affect eating behaviours include different stress types, the intensity of the stressor, the exposure time of the stressor, if the person is dieting, as well as more recent examination of the predominant role of personality including facets of perfectionism, impulsivity, and emotional control (Scott & Johnstone, 2012; Van Blyderveen et al., 2016). Despite the important role personality-type plays when it comes to stress-related eating behaviour changes, there are few studies exploring the role of personality on stress-eating entirely and no existing questionnaires in the field that extensively examine personality types in regard to predicting individual stress-related eating behaviour changes. Thus, the present study utilized a mixed methods design to further progress current understandings regarding the effects of stress on eating behaviour changes, specifically considering how personality traits of perfectionism, impulsivity, and emotional control might predict whether one may be a stress over-eater or stress under-eater.

Stress

Stress is a state that occurs when an individual perceives that their environmental demands tax their adaptive capabilities (Torres & Nowson, 2007). Operationally, Lazarus and Folkman (1984) describe the relationship between an individual and psychological stress as bidirectional, as stress can typically be explored either as a stimulus or a response (Greeno & Wing, 1994). Stress alone does not create negative consequences for an individual; rather, the

individual's inability to adapt or cope to the stress does (Laitinen et al., 2001). A stressful stimulus can be defined as a factor that exceeds one's perceived coping abilities such as a stressor or an overwhelming or threatening event to the body's compensatory ability. A stress response is defined as an individual's reaction to the taxing stimulus such as the event's elicited negative affect or physiological arousal. Individual stress responses are determined by one's perception of how threatening or harmful the stressor is in a given situation (Cohen & Janicki-Deverts, 2012).

Stress is additionally identified as acute or chronic based on the length or intensity of the stressor (Cohen et al., 2007). Acute stress is defined as a relatively manageable and isolated incident that occurs over a short period of time and often results from present or future demands or pressures. Chronic stress occurs over a significantly longer period of time and involves more intensive and unrelenting demands which feel unmanageable or never-ending (APA, 2013). Heightened levels of stress are associated with numerous negative health outcomes such as high cortisol levels, immune suppression, infections, heart disease, stroke, and cancer (Cohen & Janicki-Deverts, 2012; Sapolsky, 2004). Stress is also related to various unhealthy behaviours such as eating behaviour changes, increased substance use, as well as decreased sleep and exercise (Cohen et al., 2007). Additionally, prolonged chronic stress is related to mental health disorders such as anxiety, depression, and substance use disorders (Torres & Nowson, 2007). Stress is ever increasingly experienced among individuals in the current environment and the associated negative impacts are presently affecting the health outcomes of many populations. There is a unique and complex relationship between stress and eating behaviour which will be explored in the next section.

Stress and Eating Behaviour

There is a very well-established relationship between psychological stress and eating behaviour changes (Greeno & Wing, 1994). This multi-faceted relationship involves changes in both food choice (i.e., changes in consumption of sugars, fats, and carbohydrates) and food intake (i.e., changes in overall caloric intake amounts) (Adam & Epel, 2007; Barrington et al., 2014). It has been noted that most individuals alter their overall caloric intake and food choice when experiencing mild psychological stress (Oliver et al., 1999). Among such individuals, there is a bidirectional change in caloric intake which is categorized as either stress-eating or stress-noneating or under-eating (Oliver et al., 1999). Stress-eating is often defined as the engagement in a hyperphagic eating style, particularly increasing overall caloric intake and snacking behaviour in highly palatable, snack-type foods dense in fats, sugars, or carbohydrates (Peters & Langemann, 2010). Stress under-eating refers to engaging in a hypophagic eating style of reducing caloric intake during perceived stressful experiences, where stress-noneating refers to a minimal change in caloric intake or food choice while experiencing stress (Scott & Johnstone, 2012). Researchers have found that stress-related eating behaviours remain relatively consistent and dietary responses to stress tend to stay quite stable over time (i.e., a stress-eater will have a stable pattern of eating more while experiencing stress and is unlikely to have inconsistent and unpredictable changes in their eating behaviour over time) (Oliver & Wardle, 1999).

There is some inconsistency among stress eating research on whether most individuals tend to engage in hyperphagic or hypophagic eating styles as some researchers demonstrate that most individuals engage in stress-over eating whereas other researchers demonstrate that most individuals engage in stress-noneating or under-eating (Oliver & Wardle, 1999; Tsenkove et al., 2013). These inconsistencies in reports of over versus under-eating in response to stress may be

related to differences in sample populations or methodological factors such as the type of induced stressor (Emond et al., 2016). Among such research, the majority of researchers find relatively equal amounts of individuals to be stress-eaters compared to stress-under eaters; however, there remains a trend of just over half of individuals who are considered to be stress-eaters compared to stress non-eaters (Tsenkove et al., 2013). Additionally, it has been consistently found that many individuals have a relatively neutral eating style in response to stress as they are neither stress-over nor stress-under eaters (Oliver & Wardle, 1999).

Considering such findings, it is important to understand that the direction of caloric intake change is very much dependent on other associated internal mechanisms including appetite-related regulating hormones (neuropeptide-Y and leptin), eating behaviour profile history (restrained and emotional eaters), and personality phenotype, as well as external environmental factors (food availability and socioeconomic status) (Adam & Epel, 2007; Torres et al., 2007).

As previously noted, although individual stress-related eating responses tend to stay relatively consistent over time, different types of perceived stress may influence within-person variations among typical stress-related eating responses (O'Connor et al., 2008). Specifically, Emond et al. (2016) provided evidence that certain types of induced stressors, including academic and attachment stress, may influence change among individual eating responses as self-identified stress under-eaters were found to eat fewer calories, carbohydrates, and sugars compared to stress over-eaters only when experiencing academic stress. As these findings were unique to only those who experienced academic stress, they may indicate that certain types of stressors influence nutritional intake fluctuations such that stress under-eaters may consume considerably less or stress over-eaters may consume considerably more compared to their typical stress-related eating responses (Emond et al., 2016). Thus, the relationship between stress and

eating remains complex and may be subject to within-person variation depending on specific stressor classifications beyond mild, moderate, or severe stress (Torres et al., 2007).

Eating Behaviour Profile

In regard to eating behaviour profiles, past research has focused on how stress differentially affects eating in restrained eaters versus non-restrained eaters and emotional eaters versus non-emotional eaters. Restrained eaters typically display increased caloric intake while experiencing stress compared to non-restrained eaters, often increasing consumption of foods high in fats and sugars and decreasing consumption of meal-type foods including meat, fish, fruits, and vegetables. In comparison, non-restrained eaters typically eat the same amount or less when experiencing stress; as well, they fail to display any significant changes in food choice type during such stressful experiences (Laugero, 2010; Oliver et al., 1998). Emotional eaters also tend to increase caloric intake in response to stress including the consumption of highly palatable and snack-type foods such as sweet, salty, and high-fat foods (Emond et al., 2016; Torres et al., 2007). The stress-over eating behaviour found among emotional-eaters is attributed to serving as a coping mechanism in response to experiencing negative emotional states and a function of an irregularly regulated hypothalamic-pituitary-adrenal axis (Peters & Langemann, 2010).

There is also a well-established research base on the function of personality on stress-related eating behaviour changes which is what the current research project focuses on. Within this domain, personality traits of conscientiousness, perfectionism, impulsivity, and emotional control have been found to be most associated with stress-over or under-eating (Hewitt et al., 1995; O'Connor & O'Connor, 2004; Van Blyderveen et al., 2016). Particularly, among these traits, current research notes personality factors associated with engagements in stress over-eating to be linked to high impulsivity and perfectionism, and low conscientiousness and

emotional control. The following sections outline these personality types that, potentially, play the biggest role in influencing the bidirectional response to stress we see in stress over-eaters and stress under-eaters.

Conscientiousness

Conscientiousness is one of the Big Five personality traits defined by related facets of diligence, competence, carefulness, discipline, organization, responsibility, and adherence to norms or rules (Costa et al., 1991). Among personality traits, conscientiousness has the strongest support in past research for being associated with stress-related eating behaviour changes. Specifically, low levels of conscientiousness are related to engaging in stress-over eating, whereas high levels are related to stress-noneating or under-eating (O'Connor & O'Connor, 2004). This relationship is often attributed to the role conscientiousness related traits of cautiousness, self-discipline, and self-efficacy play in one's understanding of their own eating behaviour and, in turn, their high vulnerability to engage in emotional and restrained eating (Heaven et al., 2001). Additionally, individuals who are highly conscientious have been found to view themselves as more capable in meeting stressful situational demands directly and are more likely to engage in solution-based, problem-focused behaviours to reduce the cause of the stress rather than avoiding dealing with the stress through emotional eating (O'Connor & O'Connor, 2004; Penley & Tomaka, 2002). Such findings suggest that individuals low in conscientiousness are likely to over-eat in stressful situations due to the combination of being less aware of their eating behaviour in response to stress and failing to respond to demands in a goal-oriented manner, instead engaging in stress-eating behaviours to cope (Heaven et al., 2001). As conscientiousness is the most widely examined and thoroughly researched personality domain

among stress-eating research, it is not included in the present exploratory study which sought to identify new personality factors associated with stress-eating behaviours.

Perfectionism

Perfectionism is a multifaceted personality trait that encompasses a striving for flawlessness or excessive amounts of perfection in all aspects of one's life (Hewitt & Flett, 1991). Individuals can possess different dimensions of perfectionism including positive perfectionism which is considered an adaptive form of the trait including a strive for high standards with the ability to adjust or adapt depending on specific goals (Hamachek, 1978). Individuals who encompass greater positive perfectionism often have higher self-esteem and less self-dissatisfaction (Stoeber & Otto, 2006). Negative perfectionism is considered a maladaptive form of the trait where individuals set unrealistically high standards and continually strive to reach hard to achieve goals that often lead to perceived failure, negative experiences and affect, and greater self-dissatisfaction (Burns et al., 2000; Hamachek, 1978). Sub-dimensions of maladaptive forms of perfectionistic beliefs include: self-prescribed perfectionism (which defines the beliefs set by oneself), other-oriented perfectionism (which defines the perceived beliefs set from others), and socially prescribed perfectionism (which defines the perceived beliefs that have been prescribed socially or through social standards) (Hewitt et al., 1995).

The personality trait of perfectionism has recurrently been linked to stress-related eating behaviour changes among clinical populations (Hewitt et al., 1995). Specifically, the stress attributed to maladaptive perfectionistic motivations and beliefs have been well-documented to drive eating disorder symptoms among individuals in their attempts to meet unrealistic self-oriented standards (Mello, 2016). Further, the perceived stress associated with negative

perfectionism has been found to predict higher eating disorder index scores compared to those with more positive perfectionism (Choo & Chan, 2013).

Research among non-clinical populations is limited, however self-oriented perfectionism has been found, in conjunction with conscientiousness, to have moderative interactive effects on the relationship between food intake and stress (O'Connor & O'Connor, 2014). Specifically, perfectionism has been linked as a function of the diathesis-stress model which suggests that individuals high in perfectionism experience distress when they perceive an experience as imperfect through failing to meet their unrealistically high standards (O'Connor & O'Connor, 2004). Through this experience, individuals high in perfectionism may interpret stressful experiences as highly threatening and face an extreme lack of control and, in turn, increase their overall caloric intake and engage in stress-overeating behaviour as a mechanism of comfort and coping (Ruggiero et al., 2003).

Stress has also been found to have mediating effects on the relationship between the duality of positive and negative perfectionism and emotional eating (Wang & Li, 2017). Positive perfectionism refers to perfectionistic behaviour that is driven by a desire to reach high personal standards and achieve favourable outcomes, whereas negative perfectionism is described as perfectionistic behaviour that is driven by a fear or concern of failing to meet high levels of personal standards (Geranmayepour & Basharat, 2010). Through the mediation of stress, Wang and Li (2017) found positive perfectionism to be inversely correlated with emotional eating and negative perfectionism to be directly correlated with emotional eating. Particularly, these findings suggest that individuals with negative perfectionism endure intensified levels of stress which often result in engagements in emotional eating, whereas those with positive perfectionism endure much lower levels of stress and thus have less of a drive to engage in

emotional eating (Wang and Li, 2017). Therefore, it can be concluded from these findings that the relationship between stress and emotional eating is more likely driven by traits of negative perfectionism compared to positive perfectionism.

A possible explanation for the effects of perfectionism on stress-eating is that those high in perfectionism engage in restrained eating styles when not stressed to fulfill their need to eat perfectly; however, when these perfectionistic individuals become stressed, they may exhaust the cognitive resources required to continue with a restrained eating style and begin to engage in emotional eating behaviour instead. Although individuals with disordered eating high in perfectionism have been found to be more likely to engage in stress-over eating compared to those low in perfectionism, research among non-clinical populations have only investigated the moderating role of perfectionism in the engagements in stress-related eating and calls for further investigation (O'Connor & O'Connor, 2004).

Impulsivity

Impulsivity is another domain of personality that is associated with engagements in stress-related eating behaviour changes. Impulsivity is often defined as the premature engagement in a behaviour without considering the situation and the potential outcomes including risky or ill-conceived behaviours (Gratz & Roemer, 2004). Although this definition of impulsivity captures the multifaceted nature of the trait, it is often approached from three perspectives including characterological, cognitive, and behavioural (Arce & Santisteban, 2006). Among these overlapping approaches, impulsivity captures the failure of inhibiting motor actions, the acceptance and choice of immediate smaller rewards compared to delayed larger rewards, sensation seeking, and risky decision-making behaviour (Evenden, 1999). Inhibitory control is another component of impulsivity that involves the ability to suppress immediate and

motivationally driven responses such as practicing delayed gratification and cognitive inhibition or flexibility (Bari & Robbins, 2013). Although related, it is important to note these two constructs differs slightly as inhibitory control refers to ability to inhibit behaviour where impulsivity refers to the co-occurrence of an urge to initiate the behaviour (Dalley et al., 2011). Importantly, there are both maladaptive and advantageous characteristics of impulsivity as responding rapidly may not always be maladaptive (Durana & Barnes, 1993, as cited in Dalley et al., 2011).

Impulsivity is linked to stress-related eating behaviour changes through its moderating effects on the relationship between experimentally induced stress and nutritional intake. Specifically, Van Blyderveen et al. (2016) found that impulsivity significantly moderated the relationship between experiences of stress and nutritional intake among non-clinical populations such that those with greater impulsivity were more likely to consume larger amounts of food while experiencing stress. Additionally, impulsivity also moderated the relationship between negative affect and nutritional intake as those with greater impulsivity were likely to consume more food when experiencing greater negative affect. These findings suggest individuals high in impulsivity may be more vulnerable to consuming increased amounts of food when experiencing stress compared to those low in impulsivity who are found to have little change in their eating behaviour style when experiencing a stressful state compared to non-stressful states (Van Blyderveen et al., 2016).

Considering non-clinical research is limited, research among clinical stress-eating populations indicates a pattern of individuals with greater impulsivity to be more likely to be vulnerable to engaging in clinical symptoms of over-eating including binge eating tendencies (Schag et al., 2013). Impulsivity is well-documented as a feature of disordered eating symptoms

such as episodes of bingeing and purging, lack of control eating, and inability or difficulty to control urges or cope with thoughts or decisions (Claes et al., 2002; Dawe & Loxton 2004). Further, a systematic review of impulsivity related traits among clinical symptoms of eating disorders indicated inhibitory control to be associated with binge eating among individuals who engaged in restrained eating styles such as dietary restraint (Bartholody et al., 2016).

Such patterns of findings are conceptualized by the following: when individuals who are high in impulsivity perceive an inability or lack in control of behaviours related to restrictive eating during encounters of psychological stress, binge or over-eating tendencies result as a compensatory mechanism to experience immediate reward and comfort (Bartholody et al., 2016). Similar to the domain of perfectionism in stress-related research, the personality trait of impulsivity has only been investigated as a moderator and the role of impulsivity in the prediction of stress-over or under-eating requires further investigation.

Emotional Control

Past researchers have also established that low emotional control plays a significant role in instances of stress-over eating. Emotional control is a facet of emotional regulation defined as the way in which an individual utilizes strategies of cognitive reappraisal and expressive suppression when experiencing difficult emotions to inhibit their immediate emotional response (Roger & Neshoever, 1987). Cognitive reappraisal is a cognitive-based strategy that refers to challenging or reframing the way in which one may think about an event that elicits difficult emotions. Expressive suppression is a behaviour-based strategy that refers to the way in which one may alter their behavioural response in response to an event that elicits difficult emotions (Cutuli, 2014).

Emotional control has been found to have moderating effects on the relationship between stress and eating among non-clinical populations. Through experimental methodology, Van Blyderveen et al. (2016) found the dimension of emotional suppression to have significant inverse moderating effects on the relationship between the degree of experienced negative affect and nutritional intake of calories, fat, and protein for participants experiencing induced stress. Specifically, those in the stress condition who had greater emotional suppression consumed less calories, fat, and protein when experiencing greater negative affect. These findings suggest that when endorsing greater negative affect, individuals with greater emotional suppression may be more likely to engage in stress under-eating whereas individuals with decreased emotional suppression may be more likely to engage in stress over-eating (Van Blyderveen et al., 2016). Additionally, research investigating the relationship between emotional control and stress-related eating among clinical populations by Polivy and Herman (2002) suggests that individuals with eating disorders who are high in emotional control may cope with difficult emotions and negative affect through engaging in under-eating. Thus, the pattern of results indicates that individuals high in emotional control may be more likely to engage in under-eating behaviour while experiencing stress compared to individuals with less emotional control who may be more likely to engage in stress over-eating behaviour.

The susceptibility of individuals low in emotional control to engage in stress-over eating is related to their inability to inhibit their emotional response to a stressful situation and instead engage in emotional eating styles to cope (Polivy & Herman, 2002; Van Blyderveen et al., 2016). In comparison, individuals high in emotional control are often found to overly inhibit emotional responses to stress as they continuously suppress or avoid difficult emotional states to cope which is found to encourage engagements in restrained eating (Polivy & Herman, 2002).

The multifaceted trait of emotional control has received considerable amounts of investigation among clinical stress-eating populations; however, the present study is the first to examine it as an individual predictor in engagements in stress-eating behaviour.

Measuring Stress and Eating Behaviour

Eating behaviour changes in response to stress are examined through various research means including both quantitative and qualitative methods. Some qualitative measures of stress-related eating include the use of daily food diaries, often via mobile food tracking apps, where participants are asked to document their food intake amounts and choices over a prolonged period of time along with their corresponding mood or experiences of stress. Specific examples include O'Connor et al. (2008) who used mixed-methods to measure the effects of daily hassles on eating style among 422 participants through completing a week of daily between-meal food diary reports of all meals, snacking, fruit and vegetable consumption, perceptions of food intake variations, and experiences of daily hassles. In addition, initial and final questionnaires measuring eating style and disinhibition were administered including the Dutch Eating Behaviour Questionnaire and Three Factor Eating Questionnaire respectively.

Scott and Johnstone (2012) followed similar mixed-methodology as O'Connor et al. (2008) to measure the effects of workplace on stress eating among 450 participants through the completion of a week of daily diary reports of stressors, hassles, and weighed food intake in combination with pre and post waist-hip ratio, Body Mass Index (BMI), and fat percentage measures. Self-report questionnaires were also administered to examine eating style including the Three Factor Eating Inventory, Dutch Eating Behaviour Questionnaire, and Food Frequency Questionnaire as well as the Depression, Anxiety, and Stress Scales, International Personality

Item Pool, Multi Perfectionism Scale, and Emotion Regulation Questionnaire to measure personality.

Another qualitative method of measuring stress-related eating includes semi-structured interviews where participants are asked to reflect on different experiences of stress, related food intake and choices, and inferences on the nature or influence of specific factors on stress-induced eating. One example includes Leow et al. (2021) who utilized semi-structured interviews to derive insight on the effects of stress on eating through interviewing 41 participants about their recent eating behaviour changes in response to stress and their reflections and elaborations on various factors that they perceived as contributing to such change. Qualitative methodologies, particularly including the use semi-structured interviews, are a useful tool to illustrate complex within-person variations in stress-related eating behaviour that have been associated with different stressor exposures (Emond et al., 2016; Greeno & Wing, 1994; O'Connor et al., 2008).

Quantitative methodologies examining stress-related eating occasionally consist of laboratory-based research which involves inducing experimental stress to participants to assess eating behaviour changes (e.g., providing the participant with a table of various food types and measuring individual consumption amounts after engaging in a controlled stressor). Specific examples include Van Blyderveen et al. (2016) who examined the effects of emotional control and impulsivity on stress-eating through randomly assigning 86 female participants to a control or stress condition where they watched a neutral or stress-inducing short film respectively. The room in which they watched the film included a pre-weighed table of various food options that they were informed was left over from a previous meeting and could help themselves to. Once the film was complete, questionnaires were administered to examine whether participants guessed the true study nature and the food table was removed and weighed to measure caloric

intake of each individual food option. Once the true study purpose was revealed, participants completed various self-report questionnaires measuring eating attitudes and preferences, as well as various facets of personality including the State-Trait Anxiety Inventory, the Positive and Negative Affect Scale, The Emotion Regulation Questionnaire, and the Difficulties in Emotion Regulation Scale. Van Blyderveen et al. (2016) followed similar quantitative laboratory-based methodology as Emond et al. (2016) who examined the effects of academic and attachment stress on eating among 167 female stress-over or under-eaters who were randomly assigned to watch either a neutral, attachment-stress inducing, or academic-stress inducing short film. The study room included a pre-weighed table of various food options which was later removed and individually weighed to measure food consumption. Additionally, questionnaires were administered once the table was removed to measure stress and anxiety through the State Trait Anxiety Inventory as well as self-identification of being a stress-over or under-eater.

The majority of stress-related eating quantitative research is conducted using self-report measures of perceived stress in addition to various self-report questionnaires and assessments of eating behaviour style and changes while experiencing stress (Scott & Johnstone, 2012). As the aim of the current study was to investigate whether certain personality traits are related to and predictive of stress over-eating and under-eating, the most appropriate methodology to effectively examine the research question is the use of self-report measures in addition to semi-structured qualitative interviews. Self-report measures allow for the examination of a magnitude of factors including individual personality facets of perfectionism, impulsivity, and emotional control, as well as stress-related eating behaviours. Semi-structured interviews allow for greater insight and detail regarding the nature of influence of personality on stress-related eating. Additionally, semi-structured interviews provide complimentary data to build on the limited

existing literature regarding the predictive relationship of personality on stress-related eating behaviours. The purpose of this research is to answer the following research question: can we predict whether an individual will be a stress-eater or a stress-non or under-eater based on the personality traits of perfectionism, impulsivity, and emotional control?

Research Gaps

Although a significantly large research base exists on the various interactions of stress on eating behaviour changes, there are few studies that focus on exploring the role personality traits play in this interaction and no existing questionnaires in the field that extensively include the predominant factor of personality in regard to predicting individual eating behaviour changes due to stress (Elfhag & Morey, 2008). The current research is particularly important to advance knowledge in the field of stress and eating to more specifically and thoroughly understand the important role of personality domains of perfectionism, impulsivity, and emotional control.

The Present Study

The present study aimed to fill the existing void in stress-related eating literature by exploring the research question of if we can predict whether an individual will be a stress over-eater or a stress under-eater based on the personality traits of perfectionism, impulsivity, and emotional control. Although there is considerable research demonstrating that personality is related to whether one may engage in stress-over or under-eating, the literature benefits from extended quantitative and qualitative research of such traits aside from conscientiousness which has previously been more thoroughly explored. The remaining traits of perfectionism, impulsivity, and emotional control are lacking research and require further investigation to better understand their predictive role in stress-related eating changes.

The present study involved two stages. The first stage involved a mixed-methods investigation of the relationships among personality facets of perfectionism, impulsivity, and emotional control on stress-related eating behaviour. The second stage, which is not included in the present thesis, will move forward collating the preliminary data from stage one with the aim of creating a concise questionnaire that will predict individual stress-related eating changes based on any predictive effects of personality traits of perfectionism, impulsivity, and emotional control.

Variables

The predictor variable in this exploratory study design is personality. There are three conditions of personality including impulsivity, perfectionism, and emotional control. First, impulsivity was measured using the 6-item Impulse Subscale of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) which is the most widely used tool in assessing individual emotion regulation strategies. Perfectionism was measured using a condensed version of the highly validated and widely used Multidimensional Perfectionism Scale (MPS; Hewitt & Flett, 1991) consisting of a brief 15-items used to assess self-oriented, other oriented, and socially prescribed perfectionism (MPS-15; Hewitt et al., 2018). Emotional control was measured using the Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) which is comprised of 10-items to assess emotion regulation strategies of cognitive reappraisal and expressive suppression. The outcome variable was stress-eating behaviour, which included two conditions of stress-eating versus stress-undereating or stress-noneating. Stress-eating behaviour was measured using the Salzburg Stress Eating Scale (SSES; Meule et al., 2018) which is a 10-item scale used to assess eating behaviour changes in response to the experience of psychological stress. Stress was measured in addition to the SSES through the Perceived Stress

Scale (PSS; Cohen & Williamson, 1988) which is a well-validated brief 10-item scale assessing experiences of perceived stress over the past month.

Confounding Variables

Gender was considered as a confounding variable which was hypothesized to have an effect on the primary variables as past research has shown that stress-eating effects men and women differently. Women have been found to be more likely than men to engage in stress-related eating and to increase caloric intake while under various types of stress (Scott & Johnstone, 2012; Van Blyderveen et al., 2016). Gender information was obtained via a demographic questionnaire which received an analysis after the fact to investigate any significant effects on the primary variables. There was one question that involved gender in the demographic questionnaire: "What is your gender?" with possible answers: "Male; Female; Prefer not to answer; Other (please specify)".

Additionally, substance use was investigated as a confounding variable to examine if it had significant effects on the primary variables. Although there is no available literature on potential links between substance use and stress-related eating, substance use has recurrently been linked to the included personality traits, among many others, and thus possible confounds of substance use remain important to investigate among the primary variables (Walton & Roberts, 2004). There were two questions examining substance use in the demographic questionnaire: "In the past year, how often have you had 4 or more alcoholic drinks in a day?" and "In the past year, how often have you used drugs other than those required for medical reasons?", with possible answers: "Never; Once or Twice; Monthly; Weekly; Daily or Almost Daily".

Hypotheses

Based on the available literature on the role of personality in stress-eating related research, it was hypothesized that those who score high in perfectionism would be identified as stress-over eaters and that those who score low in perfectionism would be identified as stress-non or under-eaters. This hypothesis was based on literature suggesting that individuals high in perfectionism may engage in over-eating as a comfort and coping mechanism in response to stressful experiences that are perceived as threatening and related to a lack of control over perfectionistic expectations or tendencies (Ruggiero et al., 2003; Wang & Li, 2017). It was further hypothesized that those who score high in impulsivity would be identified as stress-over eaters and that those who score low in impulsivity would be identified as stress-non or under-eaters. Specifically, this hypothesis was related to existing research suggesting that when individuals high in impulsivity experience stress, they may engage in over-eating as a compensatory method to regain a sense of control, comfort, or experience immediate reward (Batholody et al., 2016; Claes et al., 2002). In terms of emotional control, it was hypothesized that those who score high in emotional control would be identified as stress-non or under-eaters, where those who score low in emotional control would be identified as stress over-eaters. This hypothesis corresponds to related literature suggesting that when individuals low in emotional control perceive stress, they may feel limited in their ability to inhibit difficult emotional responses and instead engage in emotional over-eating as a coping mechanism compared to individuals high in emotional control who may overly inhibit their emotional response leading to restrained or under-eating behaviour as an avoidant coping mechanism (Polivy & Herman, 2002; Van Blyderveen et al., 2016).

In terms of the semi-structured interview, it was anticipated that the qualitative data would enable a more detailed understanding of stress eating compared to previous research as its interactivity allows for the inclusion of details that existing questionnaires cannot measure. Considering that this is the first examination of the individual predictive roles of perfectionism, impulsivity, and emotional control on stress-related eating, the qualitative interview was designed to provide further context to such relationships. Specifically, participants were asked to share their perceptions on how their personality traits may impact their stress-related eating to provide insight on the potential underlying mechanisms driving such relationships and to better inform later conceptualizations of the quantitative findings. It was expected that the insight provided by participants during the qualitative interviews would correspond with previously stated quantitative hypotheses, particularly associated with the stated conceptualizations from the existing literature. Thus, it was expected that individuals would perceive their high perfectionism as driving their stress over-eating as a function to regain control when unable to meet their high perfectionistic standards. In contrast, it was expected those low in perfectionism would not have such high standards and thus would not perceive a strong drive to eat related to perfectionism.

It was also expected that individuals would perceive their high impulsivity to drive stress over-eating as a function of experiencing immediate reward or to regain control while enduring difficult emotions. In contrast, it was expected those with low impulsivity would instead be able to process eating-related decisions and responses less impulsively and, in turn, respond more appropriately to the situational demands. Finally, it was expected that individuals would perceive their low emotional control to drive stress over-eating through suggesting eating to function as a coping mechanism when overwhelmed with difficult emotions where, in contrast, stress under-

eaters would perceive their high emotional control to lead to stress under-eating as a function of overly inhibiting emotional responses and, in turn, engaging in avoidant coping processes.

The present study is particularly important to advance current knowledge in the field of stress-related eating to thoroughly understand the predictive role that perfectionism, impulsivity, and emotional control play in the engagement of stress-eating. Investigating such traits as independent facets (rather than moderators) allows advancements in current research findings, fulfills requests for extended research, and allows for better prediction of individual stress-related eating behaviours changes. Additionally, the preliminary data provided by the present study provides insight to inform the future creation of a comprehensive questionnaire to better predict individual stress-related eating changes that may serve as a valuable tool to educate and assist individuals in how to better approach their diet when experiencing psychological stress.

Methods

Participants

The present study included a convenience sample of 180 individuals, 130 of which were university students from Laurentian University in Sudbury, Ontario. Among the sample, 11 participants, including 10 females and 1 male who self-identified having as an eating disorder, were removed from the study as disordered eating has been found to have a significant impact on stress-related eating behaviour and may impact the validity of the current research (Bodell et al., 2012). The final sample included 142 females, 24 males, and 3 individuals who chose to not disclose their gender identity. The ages of participants include the following: 98 were between the ages of 17-23; 39 were between the ages of 24-30; and 32 were over the age of 30.

Participants were recruited through an online recruitment website called SONA, as well as through the social media outlet Facebook where the recruitment poster for the study was posted on both individual and Laurentian-based pages. Students who completed the study through SONA were compensated for their participation in the 20-minute online questionnaire as well as the optional follow-up qualitative interview for partial course bonus marks provided the course instructor's consent. Inclusion criteria required participants to be 17 years of age or older and fluent in reading and writing in English.

Instruments

Perceived Stress Scale, Version 10 (PSS)

The Perceived Stress Scale (PSS) is the most widely used and strongly validated self-report measure of individual perceptions of psychological stress and was used in the current study to measure the participants' level of stress. The PSS consists of 10 items which are used to concisely measure the degree to which participants perceive their lives to be "unpredictable,

uncontrollable, and overloaded” over the past month (Cohen & Williamson, 1988). Respondents were asked to indicate how often they felt or thought a certain way using a 5-point Likert-type scale (Never; Almost Never; Sometimes; Fairly Often; Very Often) based on frequency over the past month (e.g., “In the last month, how often have you felt things were going your way?”). The PSS is scored by calculating the sum of all 10 items using reverse scoring for items 4, 5, 7, and 8, with a higher overall score indicating higher levels of psychological stress. The PSS has sound internal reliability (alpha coefficient $\alpha= 0.78$) (Cohen & Williamson, 1988).

Salzburg Stress Eating Scale (SSES)

The Salzburg Stress Eating Scale (SSES) measures eating behaviour changes in response to stressful situations and was used in the current study to measure participants’ stress-eating and stress-noneating behaviour. The scale demonstrates strong internal consistency as it specifically excludes the assessment of potential eating behaviour changes unrelated to stress, for example, emotional eating in response to states such as sadness, anger, or boredom. The SSES’s exclusion of emotional eating and related concepts allows the scale to solely measure eating behaviour changes related to stressful situations (Meule et al., 2018). The SSES is comprised of 10 items in total, 4 of which are items of the PSS and 6 of which are stress-related items from the Mood Eating Scale (MES; Jackson & Hawkins, 1980). It is important to note that the SSES differs from the PSS as respondents were asked to indicate how much they eat in regard to various situations compared to usual (e.g., “When I feel things are out of control”) using a 5-point Likert-type scale (“I eat... Much Less; Less; Just as Much; More; Much More... than usual”); thus, the current study also utilize the PSS to measure levels of stress alone. The SSES is scored by calculating the sum of all items in which higher scores indicate eating more when experiencing psychological stress and lower scores indicate eating less when experiencing psychological

stress. The SSES displays suitable psychometric properties with strong internal consistency (alpha coefficient $\alpha= 0.89$) (Meule et al., 2018).

Multidimensional Perfectionism Scale-15 (MPS-15)

The Multidimensional Perfectionism Scale-15 (MPS-15; Hewitt et al., 2008) is a condensed version of the original and is a widely used Multidimensional Perfectionism Scale that was used to measure levels of perfectionism among participants in the current study (MPS; Hewitt & Flett, 1991). The MPS consists of 45-items which assess three subscale dimensions of perfectionism including 15-items of self-oriented perfectionism (SOP), 15-items of other-oriented perfectionism (OOP), and 15-items of socially prescribed perfectionism (SPP). SOP assesses perfectionistic beliefs and behaviours which are self-directed including setting rigid standards for oneself and evaluating one's behaviours intensely critically. OOP assesses other-oriented perfectionistic beliefs and behaviours such as setting stringent standards on others, critically evaluating others, and expecting unrealistic perfectionism from others, as well as experiencing hostility, lack of trust, and blame towards others. SPP assesses perfectionistic beliefs and behaviours which are socially prescribed such as the beliefs that others have set in the participant's life which have created unattainable standards to which one may evaluate at a hypercritical standard driving them to maintain perfectionistic behaviours.

MPS-15 consists of 15-items including SOP items 6, 14, 15, 20, and 32, OOP items 7, 16, 22, 26, and 27, and SPP items 11, 25, 35, 39, and 41 (Hewitt et al., 2008). Respondents were asked to indicate the degree to which they agree with a statement pertaining to personal characteristics and traits (e.g., "Everything that others do must be of top-notch quality") using a 7-point Likert scale ranging from 'Disagree' to 'Agree'. The MPS-15 is scored by calculating the sum of all items in which higher scores indicate greater perfectionism. The MPS displays strong

reliability and validity in several studies among numerous samples, specifically with internal consistency coefficient alphas for SOP, OOP, and SPP of 0.82, 0.82, and 0.87 respectively (Hewitt & Flett, 1991; Stoeber, 2018).

Emotion Regulation Questionnaire (ERQ)

The Emotion Regulation Questionnaire (ERQ; Gross & John, 2003) measures emotion regulation strategies including the respondent's tendency to use cognitive reappraisal or expressive suppression in response to experiencing strenuous emotions. The ERQ was used in the current research to measure emotion regulation strategies of cognitive reappraisal and expressive suppression among participants. The ERQ consists of 10-items where respondents were asked to indicate the degree to which they agree or disagree with various statements regarding how they use emotion regulation strategies (e.g., "When I am feeling positive emotions, I am careful not to express them") using a 7-point Likert scale ranging from 'Strongly Disagree' to 'Strongly Agree'. Cognitive reappraisal was assessed using items 1, 3, 5, 7, 8, and 10, and expressive suppression was assessed using items 2, 4, 6, and 9.

The ERQ is scored by calculating the mean scores with higher scores indicating greater use of emotional control (scores closer to 7) and lower scores indicating less emotional control (scores closer to 1). The average score for male undergraduate students is 4.60 for cognitive reappraisal and 3.64 for emotional suppression (Gross & John, 2003). The average score for female undergraduate students is 4.61 for cognitive reappraisal and 3.14 for expressive suppression (Gross & John, 2003). The ERQ is a well validated tool in measuring emotion regulation strategies with sound internal consistency reliability for cognitive reappraisal (alpha coefficient $\alpha= 0.79$) and emotional suppression (alpha coefficient $\alpha= 0.73$).

Difficulties in Emotion Regulation Scale-Impulse (DERS-I)

The current study measured levels of impulsivity among participants using the Impulse subscale from the Difficulties in Emotional Regulation Scale (DERS; Gratz & Roemer, 2004), which is the most widely used assessment of emotion regulation measuring a respondent's ability to accept difficult emotional experiences and affect regulation abilities. The DERS consists of 36-items from six subscales including: (1) Nonacceptance Subscale, which measures nonacceptance of emotional responses; (2) Goals Subscale, which measures difficulty in engaging in goal-directed behaviour; (3) Impulse Subscale, which measures difficulty in controlling impulsive behaviour when experiencing strenuous emotions; (4) Awareness Subscale, which measures lack of emotional awareness; (5) Strategies Subscale, which measures inability to cope with negative emotions and the level of access to emotion regulation strategies; and (6) Clarity Subscale, which measures the lack of emotional clarity. The DERS-I includes the 6-items from the Impulse Subscale (Q. 3, 14, 19, 24, 27, 32) to which respondents indicate the frequency in the way to which they respond in various difficult situations (e.g., "When I'm upset, I become out of control") using a 5-point Likert scale ranging from 'Almost Never (0-10%)' to 'Almost Always (91-100%)'. The DERS Impulse Subscale is scored by calculating the sum of all 6 items using reverse scoring for item-24 with a higher overall score indicating higher levels of difficulty in controlling impulsive behaviours. The DERS Impulse Subscale shows strong psychometric properties of internal consistency reliability (alpha coefficient $\alpha = 0.86$) (Gratz & Roemer, 2004).

Demographics Questionnaire

The brief demographic questionnaire (see Appendix A) inquired about gender, age, substance use, and eating disorder status. The demographic questionnaire provided information

for the confounding variables of gender and substance use to be monitored, and served as a screener to exclude participants who self-disclosed having an eating disorder. Gender and substance use received an analysis to examine if they had a significant impact on the primary variables of personality and stress-eating behaviour, which is discussed further in the Results section.

Qualitative Interview

Thirteen females and one male were interviewed including seven stress over-eaters and seven stress under-eaters based on SSES scores. Eight participants were between the ages of 17-23, five between 24-30, and one over the age of 30. The mean SSES score was 20.57 ± 3.1 for stress under-eaters with a range of 8 and 36.4 ± 4.5 for stress over-eaters with a range of 14.

The qualitative interview involved first asking general questions to build rapport with the participant (e.g., “What program are you in?” or “How is your semester going?”). Participants were then asked about a recent stressful experience and their general eating behaviour changes in response to the situation. They were then asked questions about general definitions of personality facets of impulsivity, perfectionism, and emotional control and how these facets impacted their eating behaviour in response to their disclosed stressful experience (e.g., “Do you think being high in perfectionism makes you a stress-over eater?” or “Do you think your impulsive tendencies made you more likely to engage in over eating during your stressful situation?”). Additionally, participants were often asked follow-up questions and were provided prompts to ensure they had a general understanding of each personality trait.

The interview was conducted following a semi-structured interview guide created by the researcher (see Appendix C) to ensure that all participants were asked similar questions and provided consistent definitions of stressful situations, stress, and personality traits when required.

The qualitative interview provided a thorough understanding of stress-related eating changes that quantitative data alone cannot, particularly through contextualizing participants' previous responses from self-report data to better understand how participants' responses may or may not have aligned with both methods of data collection. Additionally, the qualitative interview provided further insight about potential within-person fluctuations among stress-related eating responses depending on different types of stressors. We understand the limitation of this phase of the study means we are relying on their perceptions which may or may not be accurate.

Procedure

Participants who were interested in the study were directed to a secure Google Forms website where the online study was administered. The first page of questionnaire instructed participants to read over and sign the consent form which was followed by a very brief computer-administered demographic questionnaire (see Appendix A) and the five quantitative questionnaires (see Appendix B). Participants were prompted with clear instructions throughout the completion of the questionnaires and had to click 'Next' to move forward to the following page to complete each new scale. Participants were required to answer all questions in order to move forward to a new page and did not have an enforced time limit. The demographic questionnaire consisted of 5-items regarding gender, age, alcohol use, drug use, and eating disorder status. See Appendix A for specific questions. The function of the demographic questionnaire was to measure the confounding variables of gender and substance use, as well to act as a second screener for participants with eating disorders who may have failed to understand exclusion criteria in the recruitment poster.

Following the demographic questionnaire, participants completed the following quantitative questionnaires in random order: PSS-10; SSES; MPS-15; ERQ; and DERS-I. Each

questionnaire provided concise completion instructions at the top of the page for added clarity, for example: “The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.” Each questionnaire was relatively short and took participants approximately 15 to 20 minutes to complete entirely. Considering the questionnaire was relatively short and based off numerous trial runs, fatigue effects were not expected; however, to avoid any potential order effects, participants were presented the questionnaires in a random order. See Appendix B for specific examples.

Each questionnaire was scored separately. When participants completed all the questionnaires, the final page asked a final question regarding if they consented to being contacted for a brief follow-up audio-recorded interview regarding their eating behaviour style (‘Yes’ or ‘No’). Participants were informed that if they chose to agree to the follow-up interview, all future information would be kept confidential between the researcher and the participant, and all conversations would remain completely anonymous and deidentified outside of the interview. The participants were debriefed and completed their participation in the study.

As questionnaire data from the SSES came in, the researcher identified participants who scored relatively high or low on the scale indicating that they were stress over-eaters or stress under-eaters. The researcher then emailed participants with definite high or low SSES scores who indicated their consent for follow-up contact regarding participation interest in the semi-structured qualitative interview. Participants who agreed to take part in the follow-up semi-structured interview were informed it would take about 20 to 30 minutes and be conducted via Zoom, which is a secure, online administered program that recorded audio for future transcription. Participants were also sent a second consent form specific to the qualitative phase

of data collection to be reviewed, signed, and returned via email prior to the interview.

Additionally, participants were asked to think about a mild to moderately stressful experience they recently had that they would be asked to reflect upon during the interview.

Interviews began with the researcher highlighting important aspects from the consent form for the interview to re-obtain consent and remind participants what they could expect during the interview. The researcher then began building rapport asking participants general questions including “What program are you in?” or “Tell me about yourself” while actively checking in with the participant throughout the interview to ensure they felt comfortable and able to continue. Participants were then asked questions aimed to better understand how they respond to stress regarding eating style including what they eat and why, why they think they are eating that way, and how they think their personality traits are associated with their style of stress-related eating behaviour. Specifically, participants were first asked if they self-identified as a stress over-eater or under-eater and why, which was followed by the researcher disclosing to the participant which stress-eating style the questionnaire data indicated they had. Participants were then asked to recall and share a time when they felt mild to moderately stressed and to reflect on how they reacted and how it impacted their decision making in terms of eating.

Following the rapport building and situational questions, participants moved forward to answering personality-based questions. Participants were first asked all the perfectionism-based questions, then impulsivity-based questions, and then emotional control-based questions. For each trait, participants were asked to explain to the researcher in their own words what the definition was and were then asked to rate themselves in each trait on a scale from 1 to 10 with 1 being very low and 10 being very high. The researcher would briefly reflect on provided definitions to summarize or add additional information regarding each trait when required to

ensure that participants clearly understood what specific aspects of their personality they were being asked about. Once participants self-rated for each trait, they were asked to reflect on their previously explained stressful experience regarding why they felt being high or low in the trait led them to engage in stress-over or under-eating behaviour. For example, if the participant was a stress over-eater and self-identified high in perfectionism, they may be asked “How do you think being a perfectionist led you to engage in over-eating at the time of your stressful experience?”. In the provided example, participants would be asked direct questions aimed at uncovering what role they believed their high perfectionism might play in their engagements in stress over-eating to better understand potential underlying factors at play in the relationship between perfectionism and stress-eating.

If the participant did not fully understand the question or provided an unclear response, the researcher would refer to the interview guide for follow-up prompts, paraphrasing, and fact-checking responses such as “as the researcher, this is my understanding...”. Although participants were asked about each trait, some participants indicated that they did not believe certain traits played a role in their stress-related eating behaviour changes thus resulting in some skipped questions in the interview. Once participants reflected on each trait, they were asked if they felt any other traits were at play, as well as asked if they wanted to add or discuss anything else in the interview. Participants then concluded their participation and were debriefed and granted course credit via SONA if they were Laurentian University students. See Appendix C for the semi-structured interview guide. Audio recordings from the interviews were deidentified and saved for later transcription.

The purpose of the interview was to provide complimentary qualitative data to the questionnaires collected in the current study to achieve a better understanding of why one may

engage in stress-related eating behaviours and what the influence of personality facets may be among this relationship to produce preliminary data which may be used to bridge existing research gaps. Additionally, the data provided insight to inform future investigation of the relationship of stress-eating and personality to eventually create a comprehensive questionnaire aimed to predict individual stress-over versus under-eating through certain personality traits.

Data Analysis

A 3 (IV=personality: perfectionism, impulsivity, emotional control) x 1 (DV=stress-eating behaviour: stress-eater vs. stress-non eater) multiple correlation analysis was conducted to examine both the individual and combined relationships between stress-eating behaviour and various domains of personality (impulsivity, perfectionism, and emotional control). A content analysis (Bengtsson, 2016) was conducted using the generated transcripts from the qualitative interviews to identify common patterns or themes through coding procedures that occurred for both stress over-eating and stress under-eating groups. Further information about the specifics of the content analysis approach are presented in the Results section. The qualitative data was analyzed as complimentary to the quantitative findings to provide a deeper understanding of the specific predictive mechanisms of personality traits on stress-related eating behaviours changes.

Results

Quantitative Findings

Descriptive Information

Table 1 displays the descriptive statistics of the independent and dependant variables. Stress-eating scores were computed by adding responses to the 10 questions in the SSES with a minimum possible score of 10 and maximum of 50. The mean score of stress-eating was 27.88 with a standard deviation of 7.84 and range of 39 suggesting a wide spread of scores slightly tending toward the stress-under eating range. Perfectionism scores were computed by adding the responses to the 15 questions in the MPS-15 with a minimum possible score of 15 and maximum of 105. The mean perfectionism score was 66.41 with a standard deviation of 15.93 and range of 95 suggesting the widespread scores tend around the mid to high perfectionism range. Emotional regulation scores were computed by adding the responses to the 10 questions in the ERQ with a minimum possible score of 10 and maximum of 70. The mean emotional control score was 42.76 with a standard deviation of 9.27 and range of 49 suggesting most scores tend towards the mid-high emotional control range. Impulsivity scores were computed by adding the responses to the 6 questions in the DERS-I resulting in minimum possible score of 6 and maximum of 30. The mean impulsivity score was 13.57 with a standard deviation of 5.41 and range of 24 suggesting scores tend toward the low range of impulsivity.

Table 1*Descriptive Statistics of Stress Eating and Personality Traits*

Descriptive Statistics							
	N	Range	Minimum	Maximum	Mean	Std. Deviation	Variance
Stress Eating	169	39	10	49	27.88	7.839	61.450
Perfectionism	169	79	16	95	66.41	15.927	253.685
Emotional Control	169	49	16	65	42.76	9.267	85.872
Impulsivity	169	24	6	30	13.57	5.413	29.306

Note. Normality assumptions were met for all variables.

Pearson Correlations

Table 2 displays findings from a Pearson Correlation analysis used to examine the relationship between the primary independent variables of personality including perfectionism, impulsivity, and emotional control, and on the dependant variable of stress-eating behaviour. There was a positive correlation between stress-eating and emotional control [$r(167)=0.153$, $p<0.05$] displaying that individual levels of emotional control had weak yet significant 2.3% explanatory power on stress-eating behaviour ($r^2=.023$). These findings suggest that higher individual levels of emotional control were associated with stress over-eating, and in contrast, lower individual levels of emotional control were associated with stress under-eating. There were non-significant positive and weak correlations found between both stress-eating and perfectionism [$r(167)=.134$, $p=.082$] and stress-eating and impulsivity [$r(167)=.037$, $p=.632$].

Table 2*Correlations of Personality Traits on Stress-Eating Behaviour*

		Correlations			
		Stress-Eating	Perfectionism	Emotional Control	Impulsivity
Stress-Eating	Pearson Correlation	1	.134	.153*	.037
	Sig. (2-tailed)		.082	.047	.632
	N	169	169	169	169
Perfectionism	Pearson Correlation	.134	1	.060	.288**
	Sig. (2-tailed)	.082		.441	<.001
	N	169	169	169	169
Emotional Control	Pearson Correlation	.153*	.060	1	-.211**
	Sig. (2-tailed)	.047	.441		.006
	N	169	169	169	169
Impulsivity	Pearson Correlation	.037	.288**	-.211**	1
	Sig. (2-tailed)	.632	<.001	.006	
	N	169	169	169	169

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Note. There were significant correlations found between stress-eating behaviour and emotional control

[$r(167)=0.153, p<0.05, r^2=.023$].

Confounding Analysis

Table 3 displays a Pearson Correlation analysis used to examine the possible effects of confounding variables of alcohol use, drug use, and gender on stress-eating behaviour.

There were non-significant inverse and weak correlations between stress-eating and alcohol use [$r(167)=-.017, p=.826$] and stress-eating and drug use [$r(167)=-.058, p=.453$]. There were no significant effects of gender on stress-eating behaviour [$r(167)=.467, p=.469$].

Table 3*Correlations of Confounding Variables on Stress-Eating Behaviour*

		Correlations			
		Stress-Eating	Alcohol	Drug	Gender
Stress-Eating	Pearson Correlation	1	-.017	-.058	.056
	Sig. (2-tailed)		.826	.453	.469
	N	169	169	169	169
Alcohol Use	Pearson Correlation	-.017	1	.368**	-.045
	Sig. (2-tailed)	.826		<.001	.557
	N	169	169	169	169
Drug Use	Pearson Correlation	-.058	.368**	1	.135
	Sig. (2-tailed)	.453	<.001		.081
	N	169	169	169	169
Gender	Pearson Correlation	.056	-.045	.135	1
	Sig. (2-tailed)	.469	.557	.081	
	N	169	169	169	169

** . Correlation is significant at the 0.01 level (2-tailed).

Note. There was no significant effect found between confounding variables of alcohol use, drug use, or gender on stress-eating behaviour.

Supplementary Findings

Table 2 displays significant correlations found between the independent variables. Specifically, there was a positive correlation between impulsivity and perfectionism [$r(167)=.288, p<0.01$] displaying a weak yet significant 8.3% overlap in explanatory power between the two variables ($r^2=.083$). These findings suggest that as individual levels of impulsivity increase, individual levels of perfectionism also increase. Additionally, there was a significant inverse correlation between impulsivity and emotional control [$r(167)=-.211, p<0.01$]. These findings suggest that as individual levels of impulsivity increase, individual levels of emotional control decrease with 4.5% explanatory power ($r^2=.045$).

Unrelated to stress-eating behaviour, Table 4 displays significant correlations for all three independent variables when examining stress levels as a dependant variable. Specifically, there was a significant positive correlation between stress levels and impulsivity [$r(167)=.580, p<0.01$] displaying that individual levels of impulsivity have strong 33.6% explanatory power on stress level changes ($r^2=.336$). There was a significant positive correlation between stress levels and perfectionism [$r(167)=.288, p<0.01$] suggesting 8.3% explanatory power of individual levels of perfectionism on changes in stress levels ($r^2=.083$). Finally, there was a significant inverse correlation between stress levels and emotional control [$r(167)=-.275, p<0.01$] suggesting 7.6% explanatory power of individual levels of emotional control on changes in stress levels ($r^2=.076$).

Table 4

Correlations of Stress-Levels on Stress-Eating Behaviour

		Correlations			
		Stress	Perfectionism	Emotional Control	Impulsivity
Stress Levels	Pearson Correlation	1	.288 ^{**}	-.275 ^{**}	.580 ^{**}
	Sig. (2-tailed)		<.001	<.001	<.001
	N	169	169	169	169

Note. There were significant correlations found between stress-levels and all three personality traits.

Qualitative Findings

Descriptive Information

When participants were told that they had been identified as either a stress over-eater or under-eater, all agreed this information was correct. One participant who had a relatively high SSES score of 37 ultimately agreed with their stress over-eater identification; however, they also

identified as a stress under-eater when they believe they have control over the stressful situation or when they are too busy with the situation to pay attention to eating compared to normal.

The findings from the content analysis are presented below in the order followed for data analysis outlined by Bengtsson (2016), first including individual guides for content theme identification for stress over-eaters and stress under-eaters, followed by a tallied theme frequency table organized by each personality trait. These general, quantitatively approached findings are followed by a qualitatively approached explanation of content themes including transcription summaries and direct quotes for each personality trait beginning with the stress over-eaters followed by the stress under-eaters. The findings are further organized based on whether participants self-identified as high or low in the individual trait as follows: findings for stress over-eaters high in perfectionism (none self-identified as low in perfectionism), low in emotional control (limited data for those high in emotional control), and high in impulsivity (limited data for those low in impulsivity). These are followed by findings for stress under-eaters high in perfectionism (none self-identified as low in perfectionism), high in emotional control, low in emotional control, and low in impulsivity (none self-identified as high in impulsivity).

Content Theme Guide

The following guide provides information on each content theme that was generated from the interviews. Responses to the main research questions were coded in which participants were asked if they felt their self-identified high or low levels of each individual personality trait played a role in their stress-over or under-eating behaviour. If participants believed the specific trait played a role, they were further questioned about what they believed that role was and how it led them to stress-over or under-eating.

The first stage of the content analysis, decontextualization, involved reading interview transcripts numerous times and creating condensed meaning units for the main interview questions which is a term referring to summarizing and shortening responses to the intended underlying message of the response. Codes were then attributed to each condensed meaning unit to further summarize the specific meaning of the response. The second stage of the content analysis, recontextualization, involved reanalyzing transcriptions, condensed meaning units, and codes to ensure each code was exhaustive and mutually exclusive and that irrelevant content was excluded. This process resulted in a total of 30 codes, 15 for stress over-eaters and 15 for stress under-eaters. The third stage of analysis, categorization, involved combining alike stress over-eater codes followed by stress under-eater codes into homogenous groups based on their general underlying meaning to create a content theme. Ten themes were created in total including five for the stress over-eater group and five for the stress under-eater group which are detailed below.

Stress Over-Eater Themes. The first stress over-eater theme, eating for control, identifies: eating out of being unable to meet high self-standards or expectations; eating to regain a lacking sense of control or perfectionism over a situation; and/or redirecting a sense of perfectionism or control toward spending time cooking a larger meal leading to over-eating. Eating for positive emotions includes: eating to experience positive emotions; allowing oneself to take a step back from negative experiences associated with stress and seeking out positive emotions through eating; eating to destress or calm down from the stressful experience; eating for comfort, enjoyment, or happiness; and/or eating for a reward or as a treat during the stressful situation. Eating to process identifies: using eating as a mechanism to process and think through the stressful situation; and/or eating as a coping mechanism for stress, negative or difficult emotions, or imperfections. Eating to escape includes: using eating as a method to escape or

withdraw from difficult emotions, distress, or boredom; eating as a distraction mechanism or break to keep occupied from present stressful negative emotions; and/or eating to avoid or in replacement of processing negative emotions associated with stress. It is important to note that this theme differs from eating for positive emotions as it is encompassed by the goal of avoiding difficult emotions, not seeking out positive emotions. Finally, lacking control/processing identifies: eating due to a perceived lack of control over the stressful situation and failing to process it; emotionally driven eating; eating as an overwhelmed response from suppressed or uncontrolled emotions; impulsively eating without thinking about it; habit or routine behaviour to impulsively rely on eating when stressed; and/or having low self-control around eating including being unable to control eating-related behaviours.

Stress Under-Eater Themes. The first stress under-eater theme, eating not priority, identifies one's priority to exceed or maintain high self-expectations in which eating is no longer a focus and becomes irrelevant; task completion is a priority and there is no perceived time to eat or be distracted with eating; and/or not eating to save time to complete the task at hand. Focus on processing is identified by: one's focus to think through and process their experienced stress or difficult emotions rather than eating; not reacting through eating because their sole priority is on processing their emotional and/or physical reaction to the stress; understanding eating is not the solution to solving the stressful situation at hand and instead focusing on an effective solution; and/or having a controlled and thought-out response to the stressful situation and taking time to make food-related decisions later rather than impulsively eating. Lacking hunger identifies having little to no appetite or drive to eat when stressed from the associated difficult emotions or anxious physiological stress response and/or forgetting to eat or having to remind or force oneself to eat. Not eating for control encompasses: not eating during the stressful situation as a

means of regaining a sense of control over the stressful situation; redirecting one's sense of lacking control toward their noneating behaviour; not eating to regain control over or balance overwhelming emotions; and/or consciously ignoring hunger signals or trying to suppress one's appetite to regain control. The final stress under-eater theme, when overeating, identifies the irregular times when stress-under eaters noted to engage in stress over-eating, typically including eating as a reward when the stressful situation has passed or once perfectionistic standards have been met; eating to distract from difficult emotions associated with the stressful situation; and/or over-eating for a sense of comfort or to regain lacking sense of control over the stressful situation or negative emotions.

Frequency Tallies

Table 5 displays the content theme frequencies produced in the fourth and final stage of the content analysis, compilation, which involved counting the number of times each content theme was present throughout the interview transcripts. It is important to note there is no data for those low in perfectionism and limited data for stress over-eaters high in emotional control and low in impulsivity, and for stress under-eaters high in impulsivity. This is related to the number of participants who self-identified as such; thus, qualitative conceptualizations are limited and will not be discussed for specific content themes.

Table 5

Tallies of each content theme during interviews for stress-over and under-eaters

Content Frequency Tallies

		Perf. (High)	Emo. Ctrl. (High)	Emo. Ctrl. (Low)	Imp. (High)	Imp. (Low)
Over-Eater Themes	<i>Eating for Control</i>	20	-	-	-	-
	<i>Eating for Positive Emotions</i>	13	-	7	4	-
	<i>Eating To Process</i>	11	1	5	-	3
	<i>Eating To Escape</i>	7	-	9	2	-
	<i>Lacking Control/Processing</i>	5	1	6	13	-
Under-Eater Themes	<i>Eating Not Priority</i>	21	3	1	-	1
	<i>Lacking Hunger</i>	8	-	8	-	6
	<i>Not Eating for Control</i>	7	1	2	-	-
	<i>When Overeating</i>	3	-	12	-	1
	<i>Focus On Processing</i>	0	14	1	-	8

Note. There is no data for low in perfectionism as no participants self-identified in that category.

High Perfectionism and Stress Over-Eating

All interviewed participants self-identified high in perfectionism. In the stress over-eater group, the most frequently generated theme was *eating for control* in which participants believed that their high levels of perfectionism led them to over-eat as they were unable to meet their high perfectionistic standards or expectations. Participants explained that they were eating to regain a sense of control over the stressful situation where they were lacking in their desired level of perfectionism as they could now control what they ate, how much they ate, and how it made them feel. Participants also described redirecting their sense of perfectionism toward food or cooking a meal as they were unable to maintain perfectionism in the stressful situation but felt they could regain it through cooking a meal. For example, two participants shared their experiences:

“I think that not being able to make a perfect situation come out of this... all my options in my situation were not exactly what I wanted and they were out of my control. Nothing seemed

to be the perfect situation and I think that stressed me out that I couldn't make a decision that I felt one hundred percent comfortable with and that's what led me to the over-eating." (KL). "I think it's a control thing for me... I couldn't control the grade that I got and there wasn't much I could do so I was looking to seek comfort in something that I could control... I could control how much I ate or what I ate and if it made me feel good or not." (JK).

The second most frequently generated theme was *eating for positive emotions* where participants described that their high levels of perfectionism led them to experience intensified stress as they were unable to meet their perfectionistic standards and, in turn, described eating to experience positive emotions including comfort or enjoyment. Participants also described over-eating as a method to take a step back from the negative experience of not meeting perfectionistic standards and seeking out positive experiences through eating. Finally, participants also noted that they over-eat as a reward once they had met their high perfectionistic self-expectations or once the stressful situation had passed. As two participants shared:

"I have high expectations of how a situation is going to play out and when it doesn't play out like that I get super stressed out and then I lean into chocolate or a treat of some sort to almost comfort me because my expectations didn't turn out to be my reality." (RG). "I'm eating because I just want to be comfortable, I just want [a] break! Like really, I want my emotions to just stop for a little bit." (GH).

Eating to process was another common theme where participants believed their high levels of perfectionism required more time to process the stressful situation and the involved imperfections. Participants described using eating as a supportive mechanism to slow down and engage in processing:

“There would be times where I would reach for [food] because I would just need to process things, often when I'm feeling reflective or worried about something... I think when I'm stressed, I tend to find it helpful to just slow down and cook myself a meal. Because just being in the kitchen is a good time to think because I'm doing something with my hands but also I can be in my head a bit. I think I would eat more because of that, because I would just cook a big meal ... I was focused on [food] more than I normally would.” (LY)

Food to escape was another prevalent theme as participants described their over-eating behaviour to be related to using eating as a mechanism to escape or distract from negative emotions associated with failing to meet their perfectionistic standards:

“It was honestly just the distraction [of eating] so that I didn't have to look at [the task] and so I could just keep myself occupied for a little bit.” (KL).

Finally, *lacking control/processing* was another reason participants attributed high perfectionism to lead toward stress over-eating as they felt they were unable to control or maintain perfectionism over the situation leading to an emotionally overwhelmed response to eat. They described their stress levels as increasing to the point that they could no longer attempt to process or approach the situation and instead resorted to eating as an emotional coping mechanism:

“I was beating myself up about it even though it was out of my control and things kept piling up, so I started eating because I was so upset with myself. It was probably a coping thing” (ER).

Low Emotional Control and Stress Over-Eating

All but one participant in the stress over-eater group self-identified low in emotional control. The most common theme among this group was *eating to escape* as participants

described that having low emotional control led them to over-eat as they were unable to emotionally process and approach the stressful situation head on and instead relied on food to escape the associated negative emotions. Additionally, within this theme, over-eating was attributed to low emotional control as participants explained that they were eating as a distraction mechanism instead of allowing themselves to experience the difficult emotions associated with the stress; they ultimately wanted or felt unable to escape their difficult emotions rather than process them. As three different participants described:

“I walked through the door and I was like ‘ugh, I need to go do those dishes and I need to go vacuum but if I just sit down and eat then I’m doing something!’ It’s not something productive but I’m putting my emotions somewhere else, right. It’s a diversion definitely... I’m just trying to put those emotions somewhere and taking a break from feeling them” (GH). “When I look at [the situation], I would cry because I was like ‘I don’t know what to do! I don’t know what to do!’ and then so, you know, pulling myself away from it I would eat... I couldn’t have clear thoughts about my decision and there was just so much going on at once that the eating did help, not helping to control my emotions but it was a point of taking a breather.” (KL). “If I’m just sitting in my room, it’s a lot easier to feel overwhelmed with emotions and less like I have control over them... so if I’m like ‘you know what, I don’t want to just sit here and feel sorry for myself’, and I get on my feet, go to the kitchen, and cook some food. It could be a healthier, like ‘I want to reflect on things, I want things to be better’ but it’s more like ‘I don’t want to think about this right now and so I’m going to do something else’.” (LY).

The second most frequently generated theme was *eating for positive emotions* in which participants described that their low ability to control their emotions during the stressful situation ultimately led them to seek out positive emotional experiences through eating. Participants

explained that they were seeking comfort, enjoyment, happiness, or a reward from eating as they felt unable to process and alter the difficult emotions experienced in the stressful situation and knew eating would provide a reliable positive experience. As two participants shared:

“Especially if I'm arguing with someone or getting really upset... I lean towards food just because it's the comfort at the end. I do usually exert lots of emotions and [eating] is my consistent comfort” (JK). “If I had really high emotional control, then maybe I'd be able to control the stress a little more than I do but because my emotional control is a little bit low I'm unable to cope with the stress and stuff and then end up over-eating.” (IP).

Another prevalent theme was *lacking control/processing* as participants explained that their lacking ability to control their emotions or process their emotions resulted in their engagements in stress over-eating as an emotionally overwhelmed response. Participants explained often knowing that engaging in over-eating was not productive in their emotional processing, but despite knowing that would engage in over-eating anyway. Also, participants noted having suppressed so many of their emotions that eating was perceived as a temporary fix and reliable reaction. As two participants described:

“I'm suppressing [my emotions] because sometimes I feel like my husband is really tired about hearing about it... if I thought about [my emotions] more then maybe I would have more control over my eating because my life would be less emotional inside... And sometimes I know there are healthier ways, definitely, but it's just a very easy way and also very familiar way.” (GH). “I control everything else that when it come to that one aspect of eating when I'm stressed, I feel like I am able to lose control [emotionally] and not feel guilty about it. I'm overindulging and having a moment; but at the same time my mind is saying it's just a treat and it's not like I do this every single day. It's just when I'm really stressed.” (RG).

The final theme that was present for those who self-identified low in emotional control was *eating to process* as participants described over-eating as a mechanism to slow down and process their emotions as they felt they were lacking in their ability to confront them directly. As one participant shared:

“I would eat and be upset and cry as a means to just try and process what I was going to do next.” (KL).

High Impulsivity and Stress Over-Eating

All but one participant self-identified as being high in impulsivity. The most common theme that was generated from the interviews with respect to impulsivity came from when participants were asked about the perceived role played by their high impulsivity in their stress over-eating behaviour which they described as *lacking control/processing*. Specifically, participants explained impulsively eating without thinking about the situation or processing the associated stress. They also described a habit or routine behaviour to impulsively rely on food or justify that behaviour without considering other solutions even when they knew they shouldn't be eating and felt unable to control their impulses toward food. As five participants shared:

“I don't know, it doesn't even taste good to me but I just want to eat it, kind of thing. So less about thinking about the future but more thinking about 'I just want to eat right now, so I'm going to eat right now' because of this upsetting situation.” (JK). “I feel like someone who is impulsive in a high-stress situation (like myself) is definitely more one-track minded and they're not going to maybe take the time to sit there and think as much about the decision they're about to make about what's about to go in their body and how much of it and so on.” (IP). “I think the most impulsive part about that whole situation is the impulsivity to jump into having a treat or a snack... when I'm stressed, I'll reach for chocolate or candy or something of the sort.” (RG).

“There’s been [stressful] moments where I’m like ‘I shouldn’t eat right now’ and then I just do.” (JK). “Because if I just do it quickly without thinking then you know, there’s no- it just happened right!” (GH).

A second theme that was generated from those who self-identified high in impulsivity was *eating for positive emotions* as participants described impulsively reaching for food to achieve a sense of comfort, enjoyment, happiness, or reward during the stressful situation. Participants described that their impulsivity hindered their ability to stop, slow down, and process the situation and that they would instead impulsively seek out a more positive and comforting experience through food without hesitation. For example, two participants noted:

“Especially when I’m really upset, I tend to be impulsive ... even though I could’ve not been hungry, I immediately went to a comfort [with food].” (JK). “You find comfort in [eating] food so it’s kind of your go to in a situation of stress.” (IP).

High Perfectionism and Stress Under-Eating

All interviewed participants self-identified high in perfectionism. The most common theme from the interviews for participants who self-identified as being high in perfectionism was informed by participants’ responses to the questions regarding the role they felt their high perfectionism played in their stress under-eating behaviour, wherein participants described *eating not priority*. Rather, participants explained that their priority was to maintain perfectionistic standards and reach high self-expectations, and thus eating became irrelevant. Participants also explained that their priority was completing the task at hand from which their stress was stemming from to a perfectionistic level and believed that eating in the moment may hinder their ability to achieve and thus held significantly less relevance. For example, three participants described this phenomenon:

“I want to make sure everything that I'm doing in the situation is going exactly how I want it to go... I feel like I don't put eating first because I want the work aspect of my life perfect, and I don't want to take that twenty minutes out of my day to go and eat.” (NC). “I was so driven trying to make everything perfect that I forgot to eat” (TY). “The feeling that the more time you spend [on the task] the better... especially when you're not making any headway you feel like you need to spend more time on it to get some headway going... I just don't prioritize food.” (GB).

Another common theme came from participants' explanation that the role their high perfectionism played in stress under-eating was *lacking hunger*. Specifically, participants explained that their high levels of perfectionism and lacking ability to reach their high-standards intensified their experiences of stress and essentially would lead to a reduced or non-existent appetite or food-drive. Some participants also noted experiencing a highly anxious physiological stress response and others noted that they often forget to eat entirely:

“When you're so consumed by anything else, [eating] just seems so unappealing.” (FG). “I would forget to eat and when my stomach would tell me it was hungry I would just kind of brush it off and then I would become not hungry because I just forgot about it.” (TY). “I'm definitely self-critical... I feel like if I have the certain mark I want to get on a quiz or something and I don't get that, then it makes me really upset... I'll have to have this whole other goal in mind and it just makes me even more stressed out and not hungry.” (AG).

Not eating for control was another theme participants attributed to their stress under-eating as when they felt unable to have perfectionism or control over their stressful situation, they diverted that control through not eating as a means of seeking balance. Specifically, during a stressful situation in which one perceives a lack in control, purposely not eating allowed

participants to feel a sense of regaining control as they now have control over whether or not they will choose to eat, how much they will eat, and how it feels. As one participant described:

“As a perfectionist when I’m working towards these larger goals, I know I don’t want to eat more than I should because I need to be really disciplined so I avoid it, but I really think that if I was not a perfectionist, I would just eat what I want instead.” (VN).

High Emotional Control and Stress Under-Eating

Almost all participants in the stress under-eating group originally self-identified high in emotional control in general; however, when discussing emotional control with respect to eating, just over half suggested that they felt they had particularly low emotional control. For the few who described themselves high in emotional control with respect to eating, the most common theme was *focus on processing* which encompassed using high emotional control to process the situation and involved difficult emotions instead of eating. Specifically, participants described having an ability to prioritize recognizing their emotions and figuring out an emotional response without reacting by eating as they felt emotionally preoccupied:

“I think that being in high emotional control helps me because I just try to take it easy and do not eat everything I see just because I'm stressed. When I'm stressed, I really try to know the reason and I try to find a solution. I know that food is not the solution so I just forget about it and I just eat normally.” (VN). “I think it’s just that I'm so aware of everything all the time that when I'm stressed out and I know I'm feeling sick or feeling sad or frustrated that I'm just like ‘you don’t need food right now’ and ‘eating is the least of your worries right now’.... I like figuring out how to make the situation better because I know eating isn’t going to help me.” (FG).

Low Emotional Control and Stress Under-Eating

As previously discussed, just over half of the participants in the stress under-eating group self-identified as being low in emotional control in terms of eating. When interviewed about why they felt being low in emotional control led them to engage in stress under-eating, the most common theme was *when over-eating*. Specifically, participants suggested that the odd times they did engage in over-eating was during stressful situations with a particularly strong emotional element as they felt unable to process intense or difficult emotions and turned to food for comfort, reward, or distraction. Unlike typical stressful experiences, these highly emotional stressful experiences often led to an emotionally overwhelmed response of over-eating, or eating as a means of regaining control over the situation rather than a response of emotional processing:

“I find when I'm going through not a stressful situation but an emotional time or a sad time, comfort food is the go-to feeling like load up on carbs, make yourself feel good, even though you feel awful later but at the time it's like a temporary fix.” (NC). “When I start to feel hangry or a little bit like ... things are really bothering me, that's when I will go and get up and eat. It has to get to that point where I'm like ‘I'm not coping very well with my surroundings, I need food’.” (GB).

Another theme among those low in emotional control was that they commonly attributed their stress under-eating behaviour to *lacking hunger*. Specifically, participants described having little to no appetite when experiencing difficult emotions, as well as a perceived inability to effectively alter their emotions due to low emotional control:

“If my emotional control was perfect, maybe then I would be able to slow my heart rate sooner and have time to eat; I think it definitely has something to do with not eating rather than eating more than I need to.” (NC). “I feel like I do have a really hard time controlling my

emotions when I'm stressed... I think having low emotional control and reacting the way I do to things, I'm kind of out of control in my situation and I think that leads more toward under-eating... I feel like by having low emotional control and having those emotions like anger, and sadness, I feel like that just kind of leads to a spiral of under-eating.” (AG).

Low Impulsivity and Stress Under-Eating

All participants in the stress under-eating group self-identified as low in impulsivity, although only a few felt that it played a role in their stress-under eating behaviour. When participants were asked about such role, the most common theme was *focus on processing* where participants explained that their low impulsivity allowed them to take time to stop and process the stressful situation and formulate a proactive response. They explained that eating was not of importance during this decision-making process as their focus was on choosing an effective reaction. As three participants described:

“I’m a very calculated person. I’m not into wasting energy, [my reaction] has a reason and is well thought out... I’m very focused on the stress factor on what’s causing the stress and needing that calculated time spent on it to move forward to get things done.” (GB). “I think from my perspective, people who may be more impulsive may have more impulsive eating tendencies. I’m more calculated in what I’m doing as opposed to just doing it and grabbing food.” (CB). “I find I’m patient when it comes to high-stress situations... I find maybe my patience has helped me get through certain situations without relying on food.” (NC).

Another theme frequently described by participants was *lacking hunger* as participants noted because they had little to no appetite in the situation due to their highly active stress response, they did not feel driven or have the impulsivity to eat while experiencing those difficult emotions:

“I suppose because I don’t really feel hungry there’s not this impulsiveness to go and get food.” (GB). “There’s been times [of stress] where I’m like ‘you know what, I’m going to just order a pizza’ and then it shows up and I don’t want to eat it anymore cause I’m so anxious.” (FG). “I’d say if I was more impulsive, I would maybe eat more because I would just be wanting to eat whatever and I feel the opposite.” (AG).

Summary

The results from this qualitative phase demonstrate that stress over-eaters in this sample found that their high perfectionism led them to respond by eating to seek or gain control, experience positive emotions, or to aid in processing stressful situations. They also reported that their low emotional control led them to respond by eating to experience positive emotions or to escape stressful situations. Lastly, participants described that their high impulsivity led them to respond by impulsively eating without thinking about it or eating instead of processing stressful situations. In contrast, stress under-eaters found that their high perfectionism led them to respond without eating, as eating was not perceived as a priority during stressful experiences. They also reported that their high emotional control led them to respond without eating as they were primarily focused on processing the situation, whereas others reported that their low emotional control led them to respond by eating when they felt unable to emotionally process stressful situations and use food for comfort, reward, or distraction. Finally, they reported that their low impulsivity led them to respond without eating as they were focused on emotional processing during stressful situations. These qualitative results are summarized in further detail in the discussion and are considered alongside the primary quantitative results.

Discussion

The present study investigated if we could predict whether an individual will engage in stress over-eating or stress under-eating behaviour based on individual personality traits of perfectionism, impulsivity, and emotional control. It was hypothesized that stress over-eating would be directly correlated with individual levels of perfectionism and impulsivity and inversely correlated with emotional control where, in contrast, stress under-eating would be directly correlated with emotional control and inversely correlated with perfectionism and impulsivity.

The data indicate that emotional control has a significant direct correlation to stress-eating behaviour suggesting that individuals high in emotional control may be more likely to engage in stress over-eating and individuals low in emotional control may be more likely to engage in stress under-eating. This significant finding directionally contradicts the hypothesis that emotional control would be inversely correlated with stress-eating behaviour. Although past research is limited to examining moderating effects of emotional control on stress-eating, as well as limited to clinical populations with eating disorders, existing related findings are also directionally contradicted by the data. Specifically, Van Blyderveen et al. (2016) found that emotional suppression had inverse moderating effects on the relationship between experienced negative affect and nutritional intake. Such inverse moderating effects are consistent with research among clinical stress-eaters as findings by Polivy and Herman (2002) suggest that individuals with eating disorders who are high in emotional control may cope with difficult emotions and negative affect through engaging in under-eating behaviours.

However, as previously noted, existing stress-eating literature on non-clinical populations remains limited and the present study is the first to examine the predictive role of emotional

control on stress-eating behaviour. Additionally, literature on clinical populations should be compared to the present study with caution as meta-analysis data indicates emotion regulation strategies to be positively associated to disordered eating; however, stress has been found to have significantly different impacts on eating behaviour among clinical versus non-clinical populations (Aldao et al., 2010; Bodell et al., 2012). Thus, the present findings are difficult to compare to existing literature considering significant variations in methodologies, populations, and research aims, and may explain why the current findings directionally contradict previous research.

These findings contribute primary data to the current field of stress-eating research that there may be a predictive relationship between individual levels of emotional control and stress-eating behaviour among non-clinical populations. Particularly, these findings suggest that individuals low in emotional control are more likely to engage in stress under-eating behaviour. An explanation for this relationship is that the response of those low in emotional control do not eat when experiencing stress as they may feel limited in their ability to emotionally cope. Rather than using emotion regulation strategies to effectively approach and respond to the situation, these individuals may be more prone to become emotionally overwhelmed by the stress or difficult emotions and instead respond through restrictive or restrained eating styles (Polivy & Herman, 2002). Contrastingly, individuals with high emotional control may be able to apply emotion regulation strategies to stressful situations to a greater extent, essentially allowing them to experience emotional control over difficult emotions. Engaging in over-eating as an emotional control strategy during stressful situations may function as a coping mechanism to ease or gain control over experiences of difficult emotions (Polivy & Herman, 2002; Van Blyderveen et al., 2016).

The qualitative data from the stress under-eater group provided insight in two ways: (1) it provided support to the proposed conceptualization of the quantitative findings and (2) it provided further insight into why the quantitative data may contradict previous research other than what has been previously explained. First, the conceptualization of those low in emotional control to respond to stress by under-eating as they are limited in emotional coping ability is supported by the presented qualitative data, as stress under-eaters attributed their low emotional control to influence a lack of hunger during stressful experiences. More distinctively, as these individuals felt unable to effectively use emotional control strategies during stressful situations, they became increasingly limited in their ability to process and control their difficult emotions which decreased their appetite and essentially led to an emotionally overwhelmed response of not eating.

Contrastingly, although the qualitative data indicates stress over-eaters mostly self-identified as low in emotional control, it can be argued that such self-identification may be inaccurate as they often described traits relating to high emotional control. Specifically, participants frequently explained over-eating as a method of escaping difficult emotions, eating to experience positive emotions, eating to regain control over the situation, as well as eating to process, which are all characteristics of emotional control practices. These findings support the presented data conceptualization as stress over-eaters utilized emotional control strategies to a greater extent during experiences of stress allowing them to have more control and processing over their difficult emotions. Through the experience of practicing emotional control by processing difficult emotions, individuals engaged in eating as a coping mechanism which the qualitative data indicates to include eating to temporarily escape difficult emotions associated with emotional processing, eating for experiences of comfort or related positive emotions, eating

to gain a sense of control over difficult emotions, or eating to assist in difficult emotional processing.

Second, the qualitative findings indicated that stressful experiences involving a strong emotional element led those who typically under-eat to have an irregular overwhelmed response of over-eating, and thus may also provide insight into why the current findings directionally contradict previous research. Specifically, such within-person variations of over-eating when lacking emotional control support the experimental findings from Van Blyderveen et al. (2016) of emotional suppression inversely moderating the relationship between negative affect and nutritional intake in the stress condition. These findings from Van Blyderveen et al. (2016) relate to the presented qualitative findings as both stress-over and under-eaters described feeling unable to process difficult emotions and instead used food for comfort, distraction, or as a reward, increasing their nutritional intake during emotionally driven stressful experiences. In conclusion, over-eating functions as support in the process of utilizing emotional control strategies for those high in emotional control, where under-eaters are unable to utilize emotional control strategies which leads to an emotionally overwhelmed response of lacking hunger or restrained under-eating behaviour.

The data indicate that there is no significant correlation between perfectionism and stress-eating behaviour. This non-significant finding contradicts existing research as, although there have not been any studies examining the predictive role of perfectionism in stress-eating among non-clinical populations, previous research indicates that perfectionism plays a significant role in stress-related eating changes (Choo & Chan, 2013; Hewitt et al., 1995). Specifically, clinical research has well-documented this association as when individuals who are high in perfectionism experience or perceive stress, their perfectionistic beliefs drive symptoms of disordered eating in

their attempts to meet unrealistic self-oriented standards (Hewitt et al., 1995; Mello, 2016). Although literature on the role of perfectionism in stress-related eating is limited among non-clinical populations, existing research suggests that self-oriented perfectionism, in conjunction with conscientiousness, has moderating interactive effects on the relationship between perceived food intake and stressful experiences (O'Connor & O'Connor, 2004). Additionally, positive perfectionism has been found to be inversely correlated with emotional eating, as well as negative perfectionism which is directly and inversely correlated with emotional eating through the mediation of stress (Wang & Li, 2017).

Considering the well-documented role of perfectionism in stress-related eating, the current non-significant data is inconsistent and may be conceptualized in two ways. First, considering the current study was the first to examine the individual predictive role of perfectionism on stress-related eating changes, the findings may indicate that there are no direct, predictive effects of perfectionism on stress-eating among non-clinical populations. Although previous research indicates that perfectionism has moderating effects, the data suggest that perfectionism alone does not have enough power to predict whether an individual will be a stress over-eater or stress under-eater (O'Connor & O'Connor, 2004).

Second, the data may provide insight that multi-faceted and dimensional personality traits such as perfectionism could be related to stress-eating among non-clinical populations, however they require a more thorough and specific method of analysis. The present study examined perfectionism through a condensed version of the MPS that provided a single perfectionism score which, although was highly valid and reliable, should be compared to the original 45-item MPS which provides individual scores for self-oriented, other-oriented, and social oriented perfectionism. The significant moderating role of the self-oriented dimension of perfectionism

found by O'Connor and O'Connor (2004) requires consideration or future analyzing as results might suggest there are different underlying predictive or moderating effects of each perfectionism dimension encompassed in the original MPS on stress-related eating. This conceptualization may indicate that a future examination of the predictive role of personality should be completed through more dynamic models of perfectionism such as the original 45-item MPS prior to concluding that perfectionism has no predictive effects on stress-related eating.

Despite the non-significant quantitative data, the qualitative data provides additional insight into the relationship between stress-eating and perfectionism among non-clinical populations. Stress over-eaters believed that the maladaptive effects associated with their high self-identified perfectionism led them to over-eat as they wanted to regain a sense of control over the stressful situation. It was recurrently explained that participants that because they felt unable to reach their perfectionistic standards, cooking and eating large meals was used as a strategy to regain a sense of control over their perceived lacking levels of perfectionism. Eating was also used to provide a sense of positive emotions or comfort to their self-dissatisfaction and associated negative affect of not achieving their perfectionistic standards. Contrastingly, stress under-eaters believed that their high self-identified perfectionism led them to under-eat as their focus on achieving their perfectionistic standards was such a high priority that eating became irrelevant. Participants also described that the maladaptive effects of their high perfectionism led them to under-eat as they lost their appetite through perceived intense experiences of negative affect and difficult emotions when they were unable to meet such standards. In conclusion, the qualitative findings are in line with conceptualizations from previous research and provide further support to continue investigating the predictive role of perfectionism on stress-related

eating using more dynamic and thorough models of measuring perfectionism (Mello, 2016; Wang & Li, 2017).

The data also suggest that there is no significant correlation between impulsivity and stress-eating behaviour. This non-significant finding fails to support the hypothesis and related existing research. Like perfectionism, there are currently no studies examining the predictive effects of impulsivity on stress-related eating among non-clinical populations; however, previous research suggests that impulsivity has significant moderating effects between experienced negative affect and stress-eating. Specifically, those in the stress condition with greater levels of impulsivity consumed more food when experiencing negative affect compared to those in control conditions (Van Blyderveen et al., 2016). Research on clinical stress-eating populations and impulsivity found inhibitory control, a construct related to impulsivity, to be significantly associated with binge eating symptoms among disordered eating (Bartholdy et al., 2016). It has been recurrently conceptualized that over-eating is used among such populations as a coping mechanism related to a lack of control among eating behaviour and food-related thoughts and decision making (Claes et al., 2002; Dawe & Loxton 2004).

In consideration of the significant effects of impulsivity on eating among clinical populations, as well as the moderating effects among non-clinical populations, the current non-significant data is discrepant and may be conceptualized by the following: due to the complex and multifaceted nature of impulsivity, it may be possible that the trait requires a more focused or narrow examination in context of stress-related eating. It may be advantageous to examine the trait from a cognitive perspective by analyzing inhibitory control as this particular characteristic has been previously linked to stress over-eating behaviour (Barholody et al., 2016). The present study measured impulsivity using a condensed 6-item impulse subscale of the original 36-item

DERS which encompasses one's level of difficulty in controlling their behaviour during self-perceived experiences of negative emotions (Gratz & Roemer, 2004). Considering the varying definitions and multiple dimensions of impulsivity, the insignificant findings may be representative of administering an overarching, condensed, and general measure such as the impulse subscale of the DERS. This conceptualization may suggest future investigation of the predictive role of impulsivity to utilize a measure that constructively examines related impulsive characteristics such as inhibitory control.

The qualitative data provides further insight and support of the proposed conceptualization behind the contradictory findings. The qualitative findings also support the hypothesis and existing research as most stress over-eaters self-identified as being high in impulsivity whereas all stress under-eaters self-identified as being low in impulsivity. Participants believed that their high self-identified impulsivity led them to engage in stress over-eating as they felt that they were lacking in control and processing during the stressful situation. More specifically, participants believed that they were lacking control over their emotions and had limited ability to process difficult emotions associated with the stressful situation. Through the perception of lacking control and processing, participants believed that having high impulsivity led to an impulsive response of over-eating without considering the situation and any potentially effective responses. The behaviour of over-eating was described by those who self-identified high in impulsivity as an urge, immediate response, or an action without thinking which provided an immediate reward of temporary comfort or soothing of difficult emotions.

In contrast, all the stress under-eaters self-identified low in impulsivity and most often discussed their stress under-eating behaviour in the context of impulsivity as they were focused on processing. Specifically, participants felt that having low impulsivity allowed them to process

the stressful situation and associated difficult emotions in a non-impulsive, patient manner which essentially enhanced their ability to formulate an effective reaction. As participants were better able to practice control and effective processing during the stressful situation, they noted finding a proactive response to be of the utmost importance in the moment, where eating became secondary or irrelevant. Thus, participants did not feel the need to act impulsively toward over-eating behaviour and rather approached the situation with components of impulse control including cognitive flexibility and delayed gratification to achieve a proactive response to the stressful situation. Therefore, the qualitative findings are in line with related previous research and provide insight informing future investigation of the predictive role of impulsivity in stress-related eating in a more specific or focused manner, including the examination of the predictive role of inhibitory control.

Limitations

Factors that may have limited the findings in order of most impactful include psychometric limitations of administering inadequate instruments and methodological limitations of using self-report measures. First, the psychometric measures are considered a limitation in the present study as the tests administered may not have sufficiently measured each variable. Although each test remains well validated and reliable, the versions of the MPS and DERS administered in the present study were quite condensed and limited important data that could have been analyzed and used to build on the very limited available literature regarding personality and stress-related eating. Specifically, through administering the MPS-15, the present study was reduced to a single perfectionism score and limited from potentially important data of individual self-oriented, other-oriented, and socially prescribed perfectionism scores. Such distinct perfectionism scores produced by the complete 45-item MPS may have provided

important insight to different constructs of perfectionism which have previously been found to have a significant moderating effect on stress-eating behaviour (O'Connor & O'Connor, 20014).

Additionally, through administering the DERS-I, the present study was similarly reduced to a single impulse subscale score and limited from the remaining five subscales that provide advantageous information related to impulsivity and emotional control regarding one's nonacceptance of emotional responses, difficulty to engage in goal-directed behaviour, ability to cope with negative emotions and access emotion regulation strategies, and individual levels of emotional awareness and clarity. Administering the complete 36-item DERS to measure aspects of impulsivity, as well as various aspects of emotional control, may have allowed for a more thorough investigation of the many dimensions involved among these traits that have been previously linked to stress-eating such as inhibitory control (Bartholdy et al., 2016; Van Blyderveen et al., 2016). Thus, administering complete versions of psychometric tests may have allowed for a more thorough analysis of these multidimensional traits that could have bridged additional existing research gaps compared to the relatively restricted, generalized examinations in present study.

Second, methodological limitations of the present study include using self-report measures to collect quantitative data which may have impacted the validity of the findings. Specific limitations associated with using a self-report methodology include the possibility that participants did not answer the questionnaires honestly in an attempt of to provide socially desirable responses or through failing to spend sufficient time introspecting on questions resulting in rushed, inaccurate responses. Another confound of using self-report measures includes participants who may have been unable to accurately assess themselves based on restrictive scales. Specifically, the SSES asks about experiences of *perceived* stress; however,

participants may have been restricted in their ability to respond accurately as the qualitative data indicates that different experiences of stress may elicit inconsistent eating responses such as emotional or restrained eating. Thus, considering different methodological approaches in future research, including other mixed methods designs and approaches utilized in other research studies (e.g., food diaries or related measures of emotional or restrained eating; references) may provide beneficial insight on the relationship between stress-eating and personality required to bridge the existing research gap.

Future Directions

Future research might focus on narrowing the research question by examining the included variables with increased specificity. Previous research notes perfectionism, impulsivity, and emotional control to be multidimensional traits involving several working components, some of which may be more impactful with regard to stress-related eating than others. Despite the present study failing to find predictive effects of perfectionism and impulsivity on stress-eating behaviour, there is likely chance they were investigated too broadly using condensed and limiting psychometric measures. Thus, future research should continue to investigate their predictive effects through administering additional psychometric tests with greater specificity before validating any conclusions from the current study. In doing so, if future research were to find strong effects among these traits on stress-related eating, it would be advantageous to adapt the findings to create a multi-faceted questionnaire that collaboratively explores the relation of stress and personality to better predict individual stress-related eating responses.

Similarly, regardless of the present study's indication that emotional control may predict stress-eating behaviour, future research should continue to explore these effects in greater detail using exhaustive psychometric tests before conclusions can be validated and to build upon

remaining research gaps in the current field. Additionally, the qualitative data suggest how complex measuring stress-related eating is as different experiences of stress may elicit inconsistent eating responses among certain individuals. Future research might investigate within-person stress-eating behaviour in addition to measures of food diaries as well as additional psychometric tests that examine different types of stress-eating such as emotional or restrained eating. Considering available related literature among non-clinical populations remains very limited, future research should continue to investigate the predictive effects of perfectionism, impulsivity, and emotional control on stress-eating to provide foundational findings necessary to bridge the existing gap in the current field.

Conclusion

The present study aimed to investigate if we can predict whether an individual will be a stress over-eater or stress under-eater based on personality traits of perfectionism, impulsivity, and emotional control. Quantitative findings revealed that individuals with greater emotional control were more likely to engage in stress over-eating compared to those low in emotional control who were more likely to engage in stress under-eating; however, there were no significant predictive effects of individual levels of perfectionism or impulsivity on stress-eating behaviour. All findings were inconsistent with available related literature; however, this discrepancy might be a function of the lack of existing literature regarding stress-related eating and personality among non-clinical populations. Additionally, the findings may have been a potential function of an overgeneralized, psychometrically limited examination of such multifaceted traits. Qualitative findings revealed that individuals perceived their engagements in stress over-eating as a means of regaining control, to experience positive emotions, and to aid in their processing of difficult emotions. Stress under-eaters perceived their reduction in eating in

response to stress to be related to their lacking prioritization of eating, lack of hunger, and their focus of being highly driven to effectively process the stressful situation rather than eating.

Future research might benefit from measuring included traits using more comprehensive psychometric measures compared to those administered in the present study to produce a more complete, detailed analysis before validating any conclusions. The present study provides contributions to the existing gaps in the literature by producing preliminary mixed methods findings of the predictive effects of perfectionism, impulsivity, and emotional control on stress-related eating among non-clinical populations.

References

- Adam T. C., & Epel, E.S. (2007). Stress, eating and the reward system. *Physiology and Behaviour*, *91*, 449-458. <https://doi.org/10.1016/j.physbeh.2007.04.011>
- Arce, E., & Santisteban, C. (2006). Impulsivity: A review. *Psicothema*, *18*, 213-220.
- Bari, A., & Robbins, T. W. (2013). Inhibition and impulsivity: Behavioral and neural basis of response control. *Progress in Neurobiology*, *108*, 44-79.
<https://doi.org/10.1016/j.pneurobio.2013.06.005>
- Barrington, W. E., Beresford, S. A. A., McGregor, B. A., & White, E. (2014). Perceived stress and eating behaviors by sex, obesity status, and stress vulnerability: Findings from the vitamins and lifestyle (VITAL) study. *Journal of the Academy of Nutrition and Dietetics*, *114*, 1791-1799. <https://doi.org/10.1016/j.jand.2014.03.015>
- Bartholdy, S., Dalton, B., O'Daly, O. G., Campbell, I. C., & Schmidt, U. (2016). A systematic review of the relationship between eating, weight and inhibitory control using the stop signal task. *Neuroscience and Biobehavioral Reviews*, *64*, 35-62.
<https://doi.org/10.1016/j.neubiorev.2016.02.010>
- Bengtsson, M. (2016) How to plan and perform a qualitative study using content analysis. *NursingPlus Open*, *2*, 8-14. <https://doi.org/10.1016/j.npls.2016.01.001>
- Bodell, L. P., Hames, J. L., Holm-Denoma, J. M., Smith, A. R., Gordon, K. H., & Joiner, T. E. (2012). Does the stress generation hypothesis apply to eating disorders? An examination of stress generation in eating, depressive, and anxiety symptoms. *Journal of Affective Disorders*, *142*, 139-142. <https://doi.org/10.1016/j.jad.2012.04.016>

- Burns, L. R., Dittmann, K., Nguyen, N.-L., & Mitchelson, J. K. (2000). Academic procrastination, perfectionism, and control: Associations with vigilant and avoidant coping. *Journal of Social Behavior and Personality, 15*, 35-46.
- Choo, S. Y., & Chan, C. K. Y (2013). Predicting eating problems among Malaysian Chinese: Differential roles of positive and negative perfectionism. *Personality and Individual Differences, 54*, 744–749. <https://doi.org/10.1016/j.paid.2012.11.036>
- Claes, L., Vandereycken, W., & Vertommen, H. (2002). Impulsive and compulsive traits in eating disordered patients compared with controls. *Personality and Individual Differences, 32*, 707–714. [https://doi.org/10.1016/S0191-8869\(01\)00071-X](https://doi.org/10.1016/S0191-8869(01)00071-X)
- Cohen, S. and Williamson, G. *Perceived Stress in a Probability Sample of the United States*. Spacapan, S. and Oskamp, S. (Eds.) *The Social Psychology of Health*. Newbury Park, CA: Sage, 1988.
- Cohen, S., Janicki-Deverts, D., & Miller, G. E. (2007). Psychological stress and disease. *JAMA: The Journal of the American Medical Association, 298*(14), 1685-1687. <https://doi.org/10.1001/jama.298.14.1685>
- Cohen, S., & Janicki-Deverts, D. (2012). Who's stressed? Distributions of psychological stress in the United States in probability samples from 1983, 2006, and 2009. *Journal of Applied Social Psychology, 42*(6), 1320–1334. <https://doi.org/10.1111/j.1559-1816.2012.00900.x>
- Costa, P. T., McCrae, R. R., & Dye, D. A. (1991). Facet scales for agreeableness and conscientiousness: A revision of the NEO personality inventory. *Personality and Individual Differences, 12*(9), 887-898. [https://doi.org/10.1016/0191-8869\(91\)90177-D](https://doi.org/10.1016/0191-8869(91)90177-D)

- Cutuli, D. (2014). Cognitive reappraisal and expressive suppression strategies role in the emotion regulation: An overview on their modulatory effects and neural correlates. *Frontiers in Systems Neuroscience*, 8, 175-175. <https://doi.org/10.3389/fnsys.2014.00175>
- Dalley, J. W., Everitt, B. J., & Robbins, T. W. (2011). Impulsivity, compulsivity, and top-down cognitive control. *Neuron Review*, 69, 680–694. <https://doi.org/10.1016/j.neuron.2011.01.020>
- Dawe, S., & Loxton, N. J. (2004). The role of impulsivity in the development of substance use and eating disorders. *Neuroscience and Biobehavioral Reviews*, 28(3), 343–351.
- Elfhag, K., & Morey, L. C. (2008). Personality traits and eating behavior in the obese: Poor self-control in emotional and external eating but personality assets in restrained eating. *Eating Behaviors: An International Journal*, 9(3), 285-293. <https://doi.org/10.1016/j.eatbeh.2007.10.003>
- Emond, M., Ten Eycke, K., Kosmerly, S., Robinson, A. L., Stillar, A., & Van Blyderveen, S. (2016). The effect of academic stress and attachment stress on stress-eaters and stress-undereaters. *Appetite*, 100, 210-215. <https://doi.org/10.1016/j.appet.2016.01.035>
- Evenden, J. L. (1999) Varieties of impulsivity. *Psychopharmacology (Berl)*, 146, 348-361. <https://doi.org/10.1007/pl00005481>
- Geranmayepour, S., & Besharat, M. A. (2010). Perfectionism and mental health. *Procedia, Social and Behavioural Sciences*, 5, 643-647. <https://doi.org/10.1016/j.sbspro.2010.07.158>

- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54. <https://doi.org/10.1023/B:JOBA.0000007455.08539.94>
- Greeno, C. G., & Wing, R. R. (1994). Stress-induced eating. *Psychological Bulletin*, 115(3), 444-464. <https://doi.org/10.1037//0033-2909.115.3.444>
- Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology*, 85(2), 348–362. <https://doi.org/10.1037/0022-3514.85.2.348>
- Hamachek, D. E. (1978). Psychodynamics of normal and neurotic perfectionism. *Psychology: A Journal of Human Behavior*, 15(1), 27–33.
- Heaven, P. C., Mulligan, K., Merrilees, R., Woods, T., & Fairouz, Y. (2001). Neuroticism and conscientiousness as predictors of emotional, external, and restrained eating behaviors. *The International journal of eating disorders*, 30(2), 161–166. <https://doi.org/10.1002/eat.1068>
- Hewitt, P. L., & Flett, G. L. (1991). Perfectionism in the self and social contexts: Conceptualization, assessment, and association with psychopathology. *Journal of Personality and Social Psychology*, 60(3), 456-470. <https://doi.org/10.1037/0022-3514.60.3.456>
- Hewitt, P. L., Flett, G. L., & Ediger, E. (1995). Perfectionism traits and perfectionistic self-presentation in eating disorder attitudes, characteristics, and symptoms. *The International journal of eating disorders*, 18(4), 317–326. [https://doi.org/10.1002/1098-108x\(199512\)18:4<317::aid-eat2260180404>3.0.co;2-2](https://doi.org/10.1002/1098-108x(199512)18:4<317::aid-eat2260180404>3.0.co;2-2)

- Hewitt, P. L., Habke, A. M., Lee-Baggley, D. L., Sherry, S. B., & Flett, G. L. (2008). The impact of perfectionistic self-presentation on the cognitive, affective, and physiological experience of a clinical interview. *Psychiatry (Washington, D.C.)*, *71*(2), 93-122. <https://doi.org/10.1521/psyc.2008.71.2.93>
- Jackson L. J., Hawkins R. C. (1980). Stress-related overeating among college students: development of a mood eating scale, Paper Presented at the 26th Annual Convention of the Southwestern *Psychological Association* (Oklahoma City, OK). [[Google Scholar](#)]
- Laitinen, J., Ek, E., & Sovio, U. (2002). Stress-related eating and drinking behavior and body mass index and predictors of this behavior. *Preventive Medicine*, *34*(1), 29-39. <https://doi.org/10.1006/pmed.2001.0948>
- Laugero, K. D., Falcon, L. M., & Tucker, K. L. (2011). Relationship between perceived stress and dietary and activity patterns in older adults participating in the Boston Puerto Rican Health Study. *Appetite*, *56*(1), 194–204. <https://doi.org/10.1016/j.appet.2010.11.001>
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal and coping*. New York: Springer.
- Leow, S., Dimmock, J. A., Guelfi, K. J., Alderson, J. A., & Jackson, B. (2021). Understanding the determinants of stress-induced eating: A qualitative study. *Appetite*, *165*, 1-11. <https://doi.org/10.1016/j.appet.2021.105318>
- Mello, S. A. (2016). Perfectionism and eating disordered psychopathology: Examination through a stress generation perspective. *Electronic Theses and Dissertations*, 1425. <https://digitalcommons.georgiasouthern.edu/etd/1425>
- Meule, A., Reichenberger, J., & Blechert, J. (2018). Development and preliminary validation of the salzburg emotional eating scale. *Frontiers in Psychology*, *9*, 88-88. <https://doi.org/10.3389/fpsyg.2018.00088>

- O'Connor, D. B., Jones, F., Conner, M., McMillan, B., & Ferguson, E. (2008). Effects of daily hassles and eating style on eating behavior. *Health Psychology, 27*, 20-31. <https://doi.org/10.1037/0278-6133.27.1.S20>
- O'Connor, D. B., & O'Connor, R. C. (2004). Perceived changes in food intake in response to stress: The role of conscientiousness. *Stress and Health, 16*(20), 279-291. <https://doi.org/10.1002/smi.1028>
- Oliver, G., & Wardle, J. (1999). Perceived effects of stress on food choice. *Physiology & Behavior, 66*(3), 511-515. [https://doi.org/10.1016/s0031-9384\(98\)00322-9](https://doi.org/10.1016/s0031-9384(98)00322-9)
- Penley, J. A., & Tomaka, J. (2002). Associations among the big five, emotional responses, and coping with acute stress. *Personality and Individual Differences, 32*(7), 1215-1228. [https://doi.org/10.1016/S0191-8869\(01\)00087-3](https://doi.org/10.1016/S0191-8869(01)00087-3)
- Peters, A., & Langemann, D. (2010). Stress and eating behavior. *F1000 biology reports, 2*, 13. <https://doi.org/10.3410/B2-13>
- Polivy, J., & Herman, C. P. (2002). Causes of eating disorders. *Annual Review of Psychology, 53*(1), 187-213. <https://doi.org/10.1146/annurev.psych.53.100901.135103>
- Roger, D., & Neshoever, W. (1987). The construction and preliminary validation of a scale for measuring emotional control. *Personality and Individual Differences, 8*(4), 527-534. [https://doi.org/10.1016/0191-8869\(87\)90215-7](https://doi.org/10.1016/0191-8869(87)90215-7)
- Ruggiero, G. M., Levi, D., Ciuna, A., & Sassaroli, S. (2003). Stress situation reveals an association between perfectionism and drive for thinness. *The International journal of eating disorders, 34*(2), 220-226. <https://doi.org/10.1002/eat.10191>

- Schag, K., Schönleber, J., Teufel, M., Zipfel, S., and Giel, K. E. (2013). Food-related impulsivity in obesity and binge eating disorder: A systematic review. *Obesity Reviews*, *14*, 477–495. <https://doi.org/10.1111/obr.1201>
- Scott, C., & Johnstone, A. M. (2012). Stress and eating behaviour: Implications for obesity. *Obesity Facts*, *5*(2), 277-287. <https://doi.org/10.1159/000338340>
- Stoeber, J. & Otto, K. (2006). Positive conceptions of perfectionism: approaches, evidence, challenges. *Personality and Social Psychology Review*, *10*, 295–319. https://doi.org/10.1207/s15327957pspr1004_2
- Stoeber, J. (2018). Comparing two short forms of the Hewitt–Flett multidimensional perfectionism scale. *Assessment (Odessa, Fla.)*, *25*(5), 578–588. <https://doi.org/10.1177/1073191116659740>
- Tsenkova, V., Boylan, J. M., & Ryff, C. (2013). Stress eating and health. findings from MIDUS, a national study of US adults. *Appetite*, *69*, 151-155. <https://doi.org/10.1016/j.appet.2013.05.020>
- Torres, S. J., & Nowson, C. A. (2007). Relationship between stress, eating behavior, and obesity. *Nutrition*, *23*(11), 887-894. <https://doi.org/10.1016/j.nut.2007.08.008>
- Van Blyderveen, S., Lafrance, A., Emond, M., Kosmerly, S., O'Connor, M., & Chang, F. (2016). Personality differences in the susceptibility to stress-eating: The influence of emotional control and impulsivity. *Eating Behaviors: An International Journal*, *23*, 76-81. <https://doi.org/10.1016/j.eatbeh.2016.07.009>
- Walton, K. E., & Roberts, B. W. (2004). On the relationship between substance use and personality traits: Abstainers are not maladjusted. *Journal of Research in Personality*, *38*, 515–535. <https://doi.org/10.1016/j.jrp.2004.01.002>

Wang, H., & Li, J. (2017). Positive perfectionism, negative perfectionism, and emotional eating: The mediating role of stress. *Eating Behaviors: An International Journal*, 26, 45–49.

<https://doi.org/10.1016/j.eatbeh.2016.12.012>

Appendices

Appendix A: Demographic Questionnaire

General Information

What is your gender? *

Male

Female

Prefer not to answer

Other: _____

What is your age? *

16 or younger

17-23

24-30

30 or older

Do you have an eating disorder or have you been diagnosed with an eating disorder in the past year? *

Yes

No

In the past year, how often have you had 4 or more alcoholic drinks in a day? *

Never

Once or Twice

Monthly

Weekly

Daily or Almost Daily

In the past year, how often have you used drugs other than those required for medical reasons? *

Never

Once or Twice

Monthly

Weekly

Daily or Almost Daily

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Appendix B: Quantitative Questionnaire Item Samples

Section 1	Section 2
<p>The questions in this scale ask you about your feelings and thoughts during the last month. In each case, you will be asked to indicate how often you felt or thought a certain way.</p>	<p>The questions in this scale ask you about your eating behaviour in various situations. Please read each statement carefully and indicate how you would most often respond.</p>
<p>1. In the last month, how often have you been upset because of something that happened unexpectedly? *</p> <ul style="list-style-type: none"><input type="radio"/> Never<input type="radio"/> Almost Never<input type="radio"/> Sometimes<input type="radio"/> Fairly Often<input type="radio"/> Very Often	<p>1. When I am overwhelmed with things I have to do, *</p> <ul style="list-style-type: none"><input type="radio"/> I eat much less than usual<input type="radio"/> I eat less than usual<input type="radio"/> I eat just as much as usual<input type="radio"/> I eat more than usual<input type="radio"/> I eat much more than usual
<p>2. In the last month, how often have you felt that you were unable to control the important things in your life? *</p> <ul style="list-style-type: none"><input type="radio"/> Never<input type="radio"/> Almost Never<input type="radio"/> Sometimes<input type="radio"/> Fairly Often<input type="radio"/> Very Often	<p>2. During periods of great stress, *</p> <ul style="list-style-type: none"><input type="radio"/> I eat much less than usual<input type="radio"/> I eat less than usual<input type="radio"/> I eat just as much as usual<input type="radio"/> I eat more than usual<input type="radio"/> I eat much more than usual

Appendix C: Semi-Structured Interview Guide

Rapport & Situational Questions	<p>How do you self-identify; as a stress over-eater or under-eater... Why? -Tell me about your typical day-to-day eating behaviour or style? -What types of foods do you usually eat... what times do you do you usually eat? -Do you usually have the typical breakfast, lunch, dinner, meals and at what time?</p> <p>Tell me about a time when you felt mild to moderately stressed? * -How did you react? -What sort of behaviours did you engage in in response to the stress?</p> <p>How did this impact your decision making in terms of eating? -How did you eat compared to your normal day-to-day? -What types of foods did you eat? -Why did you (or did you not) seek out food?</p>
Prompts	<p>* Reminder that we will come back to this example a couple times throughout the interview so try to keep in mind how you were feeling, and what that experience was like for you.</p> <p>What did you smell? What time of day was it? Be aware of engaging in <i>PI/EC</i> traits for personality questions and ratings</p>
Perfection Questions	<p>Can you tell me in your own words what you think perfectionism is? -If you were to rate your perfectionistic traits on a scale from 1-10 with 1 being very low, and 10 very high, how would you rate yourself? ... Why would you rate yourself as a ___/10?</p> <p>Returning to the stress of when (situation happened), how do you think being/not being a perfectionist led you to engage in over/under eating at that time? -Looking at your stress-eating behaviour in general, why do you think being high/low in perfectionism makes you a stress over/under eater?</p>
Definition and Future Prompts	<p>* Perfectionism is a personality trait that encompasses a strive for flawlessness or excessive amounts of perfectionism in all aspects of one's life and a tendency to set impossibly met standards (ex., being extremely self-critical; fixated on imperfections; highly controlling of situations; etc.) -Now in hearing the definition of perfectionism, how does this resonate with you?</p> <p>Adding questions to the chat feature on zoom for reference or provide reassurance that some questions are more insightful or complex</p>
Impulsive Questions	<p>Can you explain to me in your own words what you think impulsivity is? ** -How would you rate yourself on the same scale? ... Why would you rate yourself as a ___/10?</p> <p>During your stressful situation of ____, what about having/not having impulsive tendencies do you think made you more likely to engage in over/under eating? -What about your stress-eating behaviour in general; why do you think being low/high in impulsivity makes you a stress over/under eater?</p>
Definition	<p>** Impulsivity is a trait encompassed by engaging in behaviours without considering the situation and the potential outcomes including risky or ill-conceived behaviours (ex., blurting something out or interrupting others; being extremely impatient/unable to wait your turn; acting without thinking) -Now in hearing the definition of impulsivity, how does this resonate with you?</p>
Emotional Control Questions	<p>Can you tell me in your own words what emotional control is? *** -How would rate yourself in emotional control? ... Why would you rate yourself as a ___/10?</p> <p>Why do you think having high/low emotional control made you more likely to engage in over/under eating during your stressful situation? -In terms of your stress-related eating behaviour in general, are there any other reasons why you think having higher/lower emotional control makes you a stress over/under eater?</p>
Definition	<p>*** Emotional control is the way individuals utilize their emotion regulation strategies when experiencing difficult emotions to stop/alter their immediate emotional response (ex., low EC often overreact, prone to outbursts, have low tolerance for others vs. high EC can control their interactions; rationally and calmly approach situations; identify and alter own emotions) -Now in hearing the definition of emotional control, how does this resonate with you?</p>
Conclusion	<p>Do you think there were other traits more at play than these three? Tell me about that</p> <p>Is there anything you would like to add or discuss that you think I might've missed in this interview?</p>