EXPLORING WOMEN'S EXPERIENCES OF TREATMENT FOR BINGE EATING DISORDER: METHYLPHENIDATE VS. COGNITIVE BEHAVIOURAL THERAPY

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A DISSERTATION SUBMITTED TO THE FACULTY OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

GRADUATE PROGRAM IN KINESIOLOGY & HEALTH SCIENCES
YORK UNIVERSITY,
TORONTO, ONTARIO

FEBRUARY 2021

Abstract

A previous randomized controlled trial (RCT) investigated methylphenidate (MP) and cognitive behavioural therapy (CBT) treatments in women with BED and a BMI ≥ 25. The following qualitative study enrolled 15 treatment completers (8 MP, 7 CBT) and four clinicians (3 CBT psychologists and 1 MP psychiatrist). The primary objectives were to explore the patients' and clinicians' lived experiences of BED treatment. Informed by a phenomenological methodology, semi-structured interviews captured their narrative accounts. Key themes were then identified from transcribed audio recordings, using thematic analysis methods. The patients in both groups described the importance of mindfulness and self-awareness in helping them regain control over their food intake. In addition, a positive patient-clinician relationship was reported to be integral to treatment success as it acknowledged the need for safety and comfort in this group. Patients in the MP group described the drug's primary benefit to be appetite reduction, which decreased food preoccupation and binge frequency. Although the beneficial effects were not immediate in the CBT group, the patients appreciated obtaining a "toolbox of skills" to manage their binges. The clinicians corroborated the patients' general experiences of the treatments. They also described the importance of a collaborative clinician-patient relationship and the social determinants of health that affected treatment accessibility. Both clinicians and patients saw stress as a reason to binge or relapse. Therefore, it is proposed that treatments have a stronger focus on adaptive stress-coping skills. Taken together, these qualitative findings add a much-needed perspective on clinical treatments for compulsive overeating. The study is especially important considering that a psychomotor stimulant similar to MP is the only approved pharmacotherapy for BED – and to date, little is known about the patient's subjective experiences.

Acknowledgements

I start by extending my sincerest gratitude to my supervisor Dr. Caroline Davis to whom I have great admiration for. Your wisdom, meticulousness, and mentorship were integral in further developing my research abilities. Thank you for giving me the opportunity to explore a field I am passionate about and enabling me to grow as a researcher.

Thank you to my committee members, Dr. Parissa Safai and Dr. Jennine Rawana, for all your guidance. Thank you Parissa for allowing me to appreciate the importance of critical thinking, the participant voice, and qualitative methods as a whole. I will always be thankful for our conversations and your deep insights throughout this project.

Thank you Dr. Henny Westra and Dr. Kristen Von Ranson for being a part of my examining committee and making my oral exam such a pleasant experience.

Lastly, I would like to thank my lab colleague Revi Bonder, my husband, family, and friends for all their support throughout the years. Mom, my definition of strength and resilience, thank you for everything.

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CHAPTER 1: INTRODUCTION

1.1 Rationale and Purpose

One in four (~6.3 million) adult Canadians are classified as obese (i.e., a body mass index (BMI) > 30) (Navaneelan & Janz, 2014). An inability to control overeating plays an important role in the development and maintenance of obesity and is a defining characteristic of binge eating disorder (BED) (Collins & Bentz, 2009). BED is recognized in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5) as abnormal and excessive eating patterns marked by uncontrolled, recurrent, and persistent binge eating (American Psychiatric Association, 2013), without compensatory weight-loss behaviours (e.g., purging) such as those found in individuals with bulimia nervosa (BN). BED is the most commonly diagnosed eating disorder compared to anorexia (AN) and BN (Udo & Grilo, 2018) and is estimated to have a global pooled prevalence of 0.9%, with prevalence rates higher in women (1.4%), than in men (0.4%) (Erskine & Whiteford, 2018). The disorder also has similar distribution across socioeconomic, racial and ethnical groups and has a broad distribution across the adult lifespan (Grilo, Reas, & Mitchell, 2016; Mulders-Jones, Mitchison, Girosi, & Hay, 2017). Although the disorder can occur across the weight spectrum, more than 75% of those diagnosed with BED have overweight or obesity (Brownley et al., 2016).

BED is of particular research interest for many reasons. These include, the disorder's frequency in primary care, its comorbidity with obesity and other medical and psychiatric disorders, high socioeconomic impact as a result of reduced quality of life, and an increased need for patients to utilize health and medical services (Ágh et al., 2015; Amianto, Lavagnino, Abbate-Daga, & Fassino, 2011; Amianto, Ottone, Abbate Daga, & Fassino, 2015; Wang, McPherson, Marsh, Gortmaker, & Brown, 2011). For instance, individuals with BED have

higher inpatient, hospital-based outpatient, and prescription-medication utilization and expenditure than age- and sex-matched controls, both prior and subsequent, to their BED diagnosis (Watson et al., 2018). Compared to their matched controls, the average healthcare cost of overweight women with BED is 36% higher, six months before diagnosis (Grenon et al., 2010). Furthermore, direct healthcare costs of patients with BED range between $2,372 and $3,731 (Ágh et al., 2015). When comparing electronic health records of veterans with and without BED, one year post-diagnosis (a sample consisting of 75% women), those with BED had higher inpatient and psychotherapy use, longer inpatient stays, more prescriptions, and had doubled their median health care expenditure (Bellows et al., 2015, 2016). Therefore, improved and efficacious treatments must be available for these patients to reduce healthcare costs and provide long-term benefits.

The current "gold standard" evidence-based treatment for BED is cognitive behavioural therapy (CBT). CBT has been shown to reduce binge eating frequency, leading to mild weight reduction (Ricca et al., 2010; Wagner et al., 2016). However, frequent issues with CBT are insignificant weight loss and relapse amongst patients (Grilo, Masheb, Wilson, Gueorguieva, & White, 2011). Recently, lisdexamfetamine dimesylate (LDX; brand name Vyvanse®) was approved as a BED treatment in Canada and the United States (McElroy et al, 2015). Initially used to treat attention deficit hyperactivity disorder (ADHD), the drug has demonstrated efficacy in reducing binge eating and weight in patients with BED (Gasior et al., 2017; McElroy, Hudson, et al., 2015). Similarly, methylphenidate (MP), which is another psychomotor stimulant used to treat ADHD, has also been associated with loss of appetite and reduced food intake in various laboratory food challenges (e.g., Davis, Levitan, Kaplan, Kennedy, & Carter, 2016).

To compare the efficacy of MP and CBT treatments, a randomized control trial (RCT) at the Centre for Addiction and Mental Health (CAMH) was conducted (Quilty et al., 2019; https://clinicaltrials.gov/ct2/show/NCT01921582). The study recruited female BED patients between the ages of 19-51 years and with BMI ≥ 25. Because this RCT offered a timely and unique opportunity to recruit participants who had completed these forms of treatments, the current study aimed to explore patients' lived experiences with, and responses to, the two different treatments and how their perceptions of the treatment impacted their disorder. Furthermore, this RCT offered a timely opportunity to explore clinicians' experiences working with BED patients over the two treatment modes. As such, the central objectives of this study were:

1. To explore women's lived experiences of MP or CBT treatments for BED
2. To explore clinicians' lived experiences treating women with BED

The RCT was the first of its kind to investigate and compare the effects of both MP and CBT in patients with BED. Moreover, the current study was the first to qualitatively explore the efficacy of the treatments from the patient's perspective and the therapist administering it.

Identifying strategies and methods that improve therapeutic outcome and clinician-patient relationships may reduce stigma and enhance recognition and help-seeking (Dimitropoulos et al., 2015). Therefore, the current study provided insight into how the relationship with a therapist and the experience a patient had with the therapeutic process could be predictive of the treatment's efficacy. Typically, it takes several years from clinical onset to detect and accurately diagnose BED, likely because many primary care providers are unaware of or have never diagnosed individuals with this disorder (Mond et al., 2007, 2010). Indeed, it was only in May 2013 that the American Psychiatric Association (APA) officially recognized BED as a distinct

eating disorder and included it as a stand-alone diagnosis in the DSM-5 (American Psychiatric Association, 2013). A failure to acknowledge the emotional and biological consequences of BED diagnoses may result in greater healthcare burden and reduced help-seeking. In line with this, only 38.3% of patients seek treatment for this debilitating mental health condition (Kessler et al., 2013; National Eating Disorders Association, 2013). Instead, obese binge-eaters tend to have a long history of unsuccessful diet attempts, and there is a strong relationship between binge eating and dieting in this population (Chao et al., 2017; De Zwaan et al., 1994). As it stands, there is a lack of knowledge about the effect of the patient, provider, and environmental factors on treatment outcomes (Brownley et al., 2016).

Although MP's physiological and behavioural impacts have been studied, no study has focused on giving patients a direct platform to share their lived experiences of the therapy. Considering the novelty of pharmacological treatments for BED, exploring patients' lived experiences of therapy was important to understanding how these drugs impact patients. Understanding the experiences of patients and clinicians involved in both arms of the study provided important and potentially overlooked context to the outcomes observed in the RCT. In doing so, the intent was for future studies to consider the resulting data and to modify treatments accordingly.

In health psychology research, qualitative methods can provide a comprehensive picture of the need, evaluation and delivery of appropriate healthcare services (Palinkas, 2014). Therefore, it was essential to know how the patient's therapy involvement, possible side effects, and life experiences impacted their treatment efficacy. The current qualitative study has provided a much-needed platform for patients to detail their experiences for researchers to understand their relationship with the therapeutic process better. A comprehensive examination of the

literature surrounding BED and qualitative research will be explored in the next section. The review will focus on the changed food environment and its relationship to the disorder, the epidemiology, etiology, and clinical characteristics of the disorder, and an overview of current treatments. Lastly, the review will discuss the importance of qualitative methods in BED research.

1.2 Review of the literature

1.2.1 The food environment and BED

The human diet changed substantially with developments in cooking tools and methods, food availability, family formation, brain expansion, and increased longevity (Crittenden & Schnorr, 2017). Early humans relied on fruits and plants to obtain their nutritional needs. However, with unpredictable environmental conditions in the African Savannahs, the population diversified their diet to consume nutrients when fruits and plants were unavailable or in low supply (Cerling et al., 2011). For example, our ancestors turned to meat provided by large vertebrate carcasses to overcome the increased seasonal production of plant products (Moleón et al., 2014).

Before the Industrial Revolution, humans survived on nutritious foods that were minimally processed, high in protein, grains, and produce, and relatively low in salt (Eaton, 2006). In nature, calorically dense foods such as animal protein and berries – foods high in sugar and fat – were very limited. As a result, and over time, humans evolved to find these substrates hedonically rewarding because, in small amounts, these foods provided the nutrients necessary to increase the chance of survival (Eaton, 2006). With constant changes in the environment and eating habits, the ancestral human evolved to become more efficient in its food consumption and energy storage. For instance, the emergence of endurance running has been proposed as a means

of better hunting prey (Bramble & Lieberman, 2004), or the presence of specific genetic variants have been theorized to allow the population to efficiently store fat in preparation for times of famine (Speakman, 2013).

Despite these physiological changes, our food environment's most significant changes have only happened within the last 100 years, primarily due to the Industrial Revolution. Food production has become faster, easier, and more available. With the development of new technologies in the modern era, the food environment shifted from limited access to calorie-dense foods to an abundance of ultra-processed, hyperpalatable foods, artificially enhanced with high levels of fat, sugar, salt, caffeine, and flavour enhancers (Gearhardt, Grilo, et al., 2011). Specifically, the post-1980s food environment has seen dramatic changes with advances in food science techniques, which enabled the formulation and production of a plethora of ultra-processed, palatable products produced from relatively cheap ingredients and additives extracted or refined from whole foods. Examples of these foods include, but are not limited to, hydrogenated oils and fats, refined flours and starches, different types of sugar, and inexpensive parts or remains of animals - foods that contain very little to almost no whole foods (Monteiro et al., 2013). These ingredients are then combined to produce many of the hyperpalatable foods found in the global food system, such as burgers, frozen meals, pizzas, chicken nuggets, chips, biscuits, sugary cereals and snack foods, carbonated and other sugar-sweetened beverages (SSBs). However, the consequence is that our physiological composition has not adapted to this rapid change, leaving many individuals with the risk of overeating and associated disorders, such as BED.

With more advanced technologies to further process and enhance their palatability, these products dominate food supplies in high-income countries, with greater relative and sometimes

absolute increases in low-income countries. In the early 2000s, half of all calories consumed in Canada, and over one-quarter of calories in Brazil, came from ultra-processed products (Monteiro et al., 2013). In the past 70 years, Canadians have doubled their consumption of processed and ultra-processed foods, increasing from 30% of the average family's food purchases to 60% (Moubarac, 2017). Overconsumption of these foods has led to a greater prevalence of overweight and obesity (Hall, 2017), costing the Canadian healthcare system approximately 23.5 billion Canadian dollars (Krueger et al., 2017).

It has already been demonstrated in mice that compulsive and binge-like eating behaviours are prompted before any bodyweight changes and soon after exposure to hyperpalatable foods high in fat and simple sugars (Espinosa-Carrasco et al., 2018). Indeed, this changed food environment may be a contributing factor to the increased prevalence of disorders like BED that reflect hedonically driven overeating and compulsive ingestion of hyperpalatable foods (Davis, 2013). The problem lies in that these foods tend to resemble drugs more than they do food, particularly in how they affect the brain reward circuity (Gearhardt, Grilo, et al., 2011).

BED's symptomatology has many parallels with other types of addiction disorders such as substance use disorders - most notably, the diminished control over consumption and the continuation of excessive intake despite negative consequences (Davis et al., 2011; Gearhardt, White, & Potenza, 2011). However, unlike other addiction disorders where the goal is typically to abstain from the specific addictive substance (e.g., alcohol, tobacco, recreational drugs, etc.), individuals with BED do not aim to abstain from hyperpalatable foods completely. Instead, they seek to manage and control their consumption. These efforts are also complicated by the abundance of relatively easy access to these foods (Gearhardt, Grilo, et al., 2011). As described by Davis (2017), BED is considered a *culture-bound* syndrome due to its clinical emergence in

the early 1990s, which corresponded to a period marked by the greatest rise in obesity rates ever recorded.

1.2.2 History of BED

The symptoms of BED were first described by Stunkard (1959), defining a binge eating episode as an orgiastic experience where large quantities of food are consumed at irregular intervals and in a short period, particularly during times of life-stress. Following the binges, feelings of severe discomfort, guilt, distress and self-condemnation occur. As a result, Stunkard believed that binge eating frequently seemed to have a very personal and symbolic meaning, unknown to the patient, which induced these negative feelings after a binge.

It was not until the 1980s and 1990s that Spitzer and his colleagues proposed that BED should be included in the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV; Spitzer et al., 1991). This is because BED's diagnostic criteria provided evidence of a distinct disorder (Spitzer et al., 1992; Spitzer et al., 1993). Data were collected in a multisite field trial consisting of 3769 participants (Spitzer et al., 1992; Spitzer et al., 1993) enlisted from 12 eating-disorder programs. The report stated that when compared to a control group of obese persons, those with BED exhibited: 1) more severe obesity; 2) earlier overweight onset; 3) earlier onset and more frequent dieting; and 4) greater psychopathology, including depression, substance abuse and emotional problems (Spitzer et al., 1993). The diagnostic criteria established from this study were included in the appendix of the DSM-IV (American Psychiatric Association, 1994; Spitzer et al., 1992). Like Stunkard (1959), Spitzer et al. defined BED as an eating disturbance characterized by recurrent binge eating practices, without the compensatory weight-loss behaviours observed in BN (Spitzer et al., 1993).

BED was initially included as a provisional eating disorder in Appendix B of the DSM-IV (American Psychiatric Association, 1994). It was listed as Eating Disorder not Other Specified (EDNOS), which required future definition. After two decades of further research, BED was recognized as a full diagnostic entity in the DSM-5 (American Psychiatric Association, 2013). Supported by empirical evidence, two main changes in the DSM-IV diagnostic criteria were implemented in the DSM-5. The frequency of binge eating was changed from two days a week for six months to once a week for three or more months, based on the study conducted by Wilson & Sysko (2009). Severity criteria were also applied, related to the frequency of binge eating episodes: mild (1-3 episodes/week), moderate (4-7 episodes/week), severe (8-13 episodes/week) and extreme (14 or more episodes/week) (Grilo, Ivezaj, & White, 2015). Currently, BED is defined as abnormal and excessive eating patterns marked by uncontrolled, recurrent and persistent binge eating without weight-control behaviours such as vomiting, using diuretics and laxatives or excessive exercise to compensate for the increased caloric intake (American Psychiatric Association, 2013).

It has been argued that BED has many parallels with conventional addiction disorders, notably diminished control over consumption and continuation of overconsumption despite negative consequences (Gearhardt, White, & Potenza, 2011). In the DSM-5, binge eating is defined by two properties, a) eating in a short period of time (e.g., within two hours; average episodes in BED patients last one hour (Schreiber-Gregory et al., 2013)) an amount of food that is considerably greater than what most people would eat in a similar time period and under similar conditions; and b) a perceived lack of control over eating during the episode (American Psychiatric Association, 2013). In addition, binge eating consists of at least three of the following symptoms: a) abnormally rapid eating; b) eating despite lack of physical hunger; c)

eating until uncomfortably full; d) eating alone due to shame; and e) feelings of disgust, depression or guilt with oneself after overeating (American Psychiatric Association, 2013). Early afternoon and evening hours are when most binge eating episodes seem to occur (Schreiber-Gregory et al., 2013).

Fairburn and colleagues proposed that binge eating consists of both subjective and objective elements (Fairburn, Cooper, & Connor, 2008). The subjective elements comprise a lack of control, whereas the objective element reflects the amount of food consumed (Fairburn et al., 2008). Although the subjective nature of a binge-eating episode is well established, there is much uncertainty regarding the objective nature. This is reflected by the vague size-definition of "an amount of food that is larger than what most people would eat" (American Psychiatric Association, 2013). It is important to note that compared to their obese, non-BED counterparts, those diagnosed with BED have a significantly higher threshold for what comprises a "large amount of food" (Chao, Wadden, et al., 2019). Furthermore, laboratory-based studies have also demonstrated that when compared to their non-BED counterparts, participants diagnosed with BED tend to have a significantly higher caloric intake and consume large amounts of food even during non-binge-eating episodes (Chao, Wadden, et al., 2019). Calories consumed during a binge range from 743 to 2963 in laboratory settings and 30 to 4931 in self-reported studies (Chao et al., 2019; Crowther, Lingswiler, & Stephens, 1984; Grilo, Shiffman, & Carter-Campbell, 1994; Walsh & Boudreau, 2003; Yanovski et al., 1992).

1.2.3 Diagnosis and assessment of severity

BED diagnosis involves a clinical interview by a licensed health care practitioner (i.e., physician or clinical psychologist) to determine if the patient meets the DSM-5 criteria (Table 1). Moreover, instruments can be used to assess the severity of the disorder. Because of BED's

relatively recent inclusion in the DSM-5, it could be argued that changes need to be made to these instruments and their scoring measures to better reflect the new criteria (Yanovski, Marcus, Wadden, & Walsh, 2015). Such changes will result in novel validity and reliability tests being performed on the instruments (Grilo et al., 2015).

To determine binge eating frequency, a daily binge diary can be recorded by patients. Here, patients write a detailed account of their food intake and indicate which meals they believe constitute a binge. Clinicians can assess the subjective binge episodes (SBE) that appear in the diaries and determine whether they can be classified as objective binge episodes (OBE). To qualify as an OBE, the participant must have consumed, within two hours, an amount of food that most people would consider as being unusually large, and the participant must have experienced feelings of a loss of control during the binge (American Psychiatric Association, 2013). Furthermore, the quantity of foods listed in the SBE's is compared to a standardized list that determines the amount that would be considered a binge quantity (Quilty et al., 2019).

The *Eating Disorder Examination* (EDE; (Cooper & Fairburn, 1987) is a semi-structured interview that is used to diagnose eating disorders like BED (Myers & Wiman, 2013). The EDE also assesses overeating (binging) and the use of extreme methods for weight control (purging) - two key aspects of eating disorders. The EDE uses four subscales to provide a comprehensive profile of psychopathology: restraint (ability to avoid certain foods), eating concern (concern about being seen while eating), shape concern (importance of body shape in self-evaluation), and weight concern (dissatisfaction with bodyweight). Patients are given a global score to assess overall eating psychopathology. Self-reported body mass index (BMI) is also calculated as part of the EDE using the following formula: weight/height^2. A self-report version of the EDE interview is the EDE-Q (Fairburn & Beglin, 1994). The 7-item BED screener (BEDS-7) was

recently developed as a brief, patient-reported screening method to help physicians identify patients who may have BED (Herman et al., 2016). Since in most cases, general practitioners and psychiatrists are the first line of contact with BED patients, the BEDS-7 screening tool could be used to improve public awareness and knowledge of the disorder, with easy incorporation into a healthcare professional's practice.

The *Binge Eating Scale* (BES; Gormally, Black, Daston, & Rardin, 1982) can be used to assess the severity of binge eating episodes. The BES consists of a 16-item questionnaire, with eight questions describing the behavioural manifestations of binge eating and eight questions describing the thoughts and feelings associated with binge eating (Myers & Wiman, 2013).

Table 1. DSM-5 criteria for BED.

A) Recurrent episodes of BE. An episode of BE is characterized by both of the following: 1. Eating, in a discrete period of time (for example, within any 2-hour period), an amount of food that is definitely larger than most people would eat in a similar period of time under similar circumstances; 2. A sense of lack of control over eating during the episode (for example, a feeling that one cannot stop eating or control what or how much one is eating).
B) The BE episodes are associated with three (or more) of the following: 1. Eating much more rapidly than normal; 2. Eating until feeling uncomfortably full; 3. Eating large amounts of food when not feeling physically hungry; 4. Eating alone because of feeling embarrassed by how much one is eating; 5. Feeling disgusted with oneself, depressed, or very guilty afterward.
C) Marked distress regarding BE is present.
D) The BE occurs, on average, at least once a week for 3 months.
E) The BE is not associated with the recurrent use of inappropriate compensatory behaiour (for example, purging) and does not occur exclusively during the course of anorexia nervosa, bulimia nervosa, or avoidant/restrictive food intake disorder.
Mild: 1-3 BE episodes per week
Moderate: 4-7 BE episodes per week
Severe: 8-13 BE episodes per week
Extreme: 14 or more BE episodes per week

Abbreviations: BE, binge eating

1.2.4 Epidemiology and Etiology of BED

BED occurs in both men and women, has similar distribution across socioeconomic, racial and ethnical groups, and has a broad distribution across the adult lifespan (Grilo, Reas, & Mitchell, 2016; Marques et al., 2011; Mulders-Jones, Mitchison, Girosi, & Hay, 2017). BED is estimated to have a global pooled prevalence of 0.9%, with prevalence rates higher in women (1.4%), than in men (0.4%) (Erskine & Whiteford, 2018). The disorder also has a similar distribution across socioeconomic, racial and ethnical groups and has a broad distribution across the adult lifespan (Grilo, Reas, & Mitchell, 2016; Mulders-Jones, Mitchison, Girosi, & Hay, 2017). Although BED can occur across the weight spectrum, more than 75% of those diagnosed have overweight or obesity (Brownley et al., 2016).

With BED's inclusion as a distinct disorder in the DSM-5, a small increase in lifetime prevalence rates has been observed. For example, in a study by Hudson et al, the lifetime prevalence of BED increased by 2.9% in women and 3.0% in men when using the DMS-5 criteria relative to the DMS-4 criteria (Hudson et al., 2012). A key issue raised with these prevalence rates is that the data are mostly taken from Western samples and may not reflect global prevalence rates (Kessler et al., 2013). To address this issue, the authors conducted a study examining the epidemiological data of BED in 14 upper-middle and high-income countries (2013). The results were consistent with the Western population (Kessler et al., 2013).

BED is the most common eating disorder compared to BN and AN and is at least as stable and chronic as either of these disorders (Hudson et al., 2007; Udo & Grilo, 2018). Although BN and AN are more common in Caucasian women, BED is very prevalent amongst minority women (Lee-Winn et al., 2014). Furthermore, there are cultural factors influencing diagnosis and treatment-seeking. For instance, Asian Americans are more likely to report binge eating than non-white Latinos (Lee-Winn et al., 2014). They are also less likely than Caucasians

to endorse BED symptoms that were related to distress or loss of control and less likely to receive assistance for eating problems (Lee-Winn et al., 2014). Furthermore, compared to Black Americans, Caucasians report an earlier onset of binge eating, dieting, and overweight (Udo et al., 2015). However, the two racialized groups did not differ in the features of eating disorders, depressive symptoms, or mental and physical health functioning.

Binge-eating severity has been significantly and positively correlated with BMI (odds ratio = 4.9) (Hudson et al., 2007; Picot & Lilenfeld, 2003). In a global sample of 24, 124 adult patients diagnosed with BED, 36.2% were obese (BMI ≥ 25) and 30.7% were overweight (BMI ≥ 30); Kessler et al., 2013). In the same study, 31.7% of individuals with BED were normal weight, and 1.3% were underweight (Kessler et al., 2013). Non-obese individuals with BED are significantly younger than their obese counterparts and more reluctant to seek help from mental health programs, indicating that non-obese BED individuals may become obese in the future (Dingemans & van Furth, 2012). Indeed, when individuals with BED are left untreated, they tend to gain a substantial amount of weight, and the proportion of individuals with a BMI greater than 30 significantly rises (Dingemans & van Furth, 2012; Fairburn, Cooper, Doll, Norman, & O'Connor, 2000). Typically, obesity results several years after a person meets BED criteria, as binge eating predates dieting and major depressive disorder in many patients (Dingemans & van Furth, 2012; Mussell et al., 1995). The age with the most significant increase in overweight and obesity prevalence is between 18.0 and 29.0 years (Reslan & Saules, 2013).

Despite the association between BED and obesity, BED patients are distinct from obese patients who do not binge. The former tend to report higher-calorie intake in non-binge meals, more concern about shape and weight, more psychiatric problems, and have a lower overall quality of life (Agras, Telch, Arnow, Eldredge, & Marnell, 1997; Grucza et al., 2007; Lammers,

Vroling, Ouwens, Engels, & van Strien, 2015; Wilson, Grilo, & Vitousek, 2007). Although eating disorder pathology (based on the results of the *Eating Disorder Examination Questionnaire; EDE-Q*) and depressive symptoms are similar amongst obese and non-obese individuals with BED, obese individuals exhibit longer binge duration, consume more meals and snacks throughout the day, exercise and skip meals less often, and have less dietary/cognitive restraint despite having more concerns about weight (Montano et al., 2015).

The symptoms of BED typically appear during adolescence, and the majority of patients report being of normal weight during that time (Mustelin et al., 2015). The median age of onset (AOO) is late teens to early 20's (Kessler et al., 2013), and the mean AOO is approximately 19 years (Mustelin et al., 2015). Earlier onset of binging has been associated with poorer recovery outcomes in BED patients undergoing therapy (Robinson & Safer, 2012). However, because binge frequency tends to be consistent across time, BED is considered a reasonably stable disorder (Peterson et al., 2009). Although the exact cause has not been pinpointed, both psychological and physiological factors may contribute to BED's onset. These components may individually or collectively result in the genesis of the disorder.

1.2.4.1 Psychological risk factors. The high prevalence of weight-based attitudes and weight stigmatization (Brochu et al., 2014; Pearl & Puhl, 2014, 2016) can put obese individuals at risk of low self-esteem, overvaluation of shape and weight, negative views of self and unhealthy eating behaviours, including binge eating (Pearl et al., 2014; Puhl & Heuer, 2009). In a study of 1013 women who belonged to a non-profit weight-loss organization (mean BMI of 37.66 kg/m^2), those who believed that weight-based stereotypes were true reported more frequent binge eating and were less likely to diet in response to stigma, compared to those who believed the stereotypes to be false (Puhl et al., 2007). Therefore, it does not come as a surprise that 60%

of BED patients exhibit an overvaluation of shape and weight, a proportion that is significantly greater than found among non-BED obese patients and those with other eating disorders (Grilo et al., 2009; Wang, Jones, Dreier, Elliott, & Grilo, 2019). Overvaluation of shape and weight has emerged as one of BED's core symptoms, and a recent study has proposed its inclusion as a diagnostic specifier (Wang et al., 2019). Concerning sex differences, a longitudinal study of German adolescents found that in females, the only significant risk factor of binge eating was low self-esteem (Sehm & Warschburger, 2018). This risk factor may mediate the effects of other variables, such as body dissatisfaction and perfectionism (Sehm & Warschburger, 2018). However, in male youth, weight and shape concerns emerged as the only significant predictor of binge eating. Though distorted emotional regulation exists in both genders, previous research has indicated that women are more likely to turn to binge eating as a means of escaping negative emotions (Brechan & Kvalem, 2015). In contrast, men focus less on eating compared to women (Brechan & Kvalem, 2015).

In a sample of obese binge eaters, the drive for thinness, feelings of ineffectiveness, perfectionist attitudes and low interoceptive awareness were psychological variables that were positively related to binge eating severity (De Zwaan et al., 1994; Lewer et al., 2017). A transdiagnostic theory proposed by Fairburn, Cooper and Shafran (2003) stated that overall low self-esteem increases the risk for overvaluation of shape and weight, resulting in strict dieting and weight-control patterns. Therefore, eating-related psychopathology, such as binge eating, may be used to alleviate anxiety and negative emotions. It is observed that those who binge eat exhibit higher levels of body image discrepancy and body image dissatisfaction compared to their non-binge eating counterparts (Eisenberg et al., 2011).

Compared to obese, overweight and normal-weight controls, individuals with BED have been found to display greater responses to physiological and psychological stress (Klatzkin et al., 2018) and may use binging as a maladaptive strategy to regulate or change their negative emotions (Gianini et al., 2013). Some studies describe binges as an immediate breakdown of emotion and impulse regulation, resulting from sudden increases of negative affect and tension and a rapid decrease of positive affect (Amianto et al., 2015; Munsch, Meyer, Quartier, & Wilhelm, 2012). This combination of negative and maladaptive emotional regulation methods plays a substantial role in the onset and maintenance of binge eating (Dingemans et al., 2017) and can be compared to what is observed in substance abuse disorders and self-harm. Indeed mood and substance use disorders are highly comorbid with BED (Becker & Grilo, 2015). An addictive personality seems to mediate the relationship between BED status and the use and abuse of a broad range of addictive behaviours (Davis et al., 2017). However, there is no evidence that overweight and obese adults with BED display more addictive behaviours or have a more addictive personality than their weight-matched counterparts (Davis et al., 2017). In the same study, overweight and obese individuals with and without BED had significantly higher scores on these measures than their normal-weight counterparts, indicating a relationship between elevated BMI, personality risk, and addictive behaviours.

The significance of these ED-specific psychological risk factors is that they strengthen the association between binge eating and negative urgency, which is the impulsive behaviour that appears as a response to negative emotions (Whiteside & Lynam, 2001). Specifically, appearance pressures, thin-ideal internalizations, and body dissatisfaction strengthen phenotypic and genetic associations between negative urgency and binge eating (Racine et al., 2017). Negative urgency is thought to be strongly associated with weakened self-control capacities

since, over time, individuals learn to utilize impulsive behaviours when they are distressed or experiencing a negative mood (Pearson et al., 2015). Binge planning is pervasive in patients with BED and is commonly used as a means of distracting themselves from unpleasant experiences (Manasse et al., 2019). Taken together, the combination of these factors may explain why BED patients are at higher risk of personality disorders compared to the general population (Leombruni et al., 2014; Giovanni L. Palmisano et al., 2018).

1.2.4.2 Physiological risk factors

The disinhibited nature of binge eating outlines the association between BED and heightened impulsivity – where individuals engage in reward-seeking behaviours without considering the consequences (Giel, Teufel, Junne, Zipfel, & Schag, 2017; Kessler, Hutson, Herman, & Potenza, 2016). Impulsivity (decision making with limited forethought), compulsivity (repetitive and persistent actions not related to an overall reward or goal), and heightened reward sensitivity are prevalent in BED (Dalley, Everitt, & Robbins, 2011; Kessler et al., 2016). Compared to BMI-matched controls, individuals with BED report significantly more impulsive behaviours (Marek et al., 2014). In addition, there is a strong association between BED and ADHD (Kaplan, Howlett, Yilmaz, & Levitan, 2016a). The attentive and impulsive behaviours displayed in ADHD are believed to parallel with the preoccupations, urges and impulsive behaviours of those who experience binge-eating episodes (Kaplan et al., 2016). Although different neurotransmitters mediate eating and impulsive behaviours, the central player is dopamine (DA), which links addiction to such behaviours (Calvey, 2017).

DA (4-(2-aminoethyl)benzene-1,2-diol) is a highly conserved cortical monoamine neurotransmitter that has a vital role in survival behaviours - such as eating and procreating - and the physiology of reward-seeking and motivation (Calvey, 2017; Volkow et al., 2008). DA

neurons originate in the midbrain and project to the striatum, the limbic system, and the frontal cortex. Localization of DA neurons is mainly in the substantia nigra pas compacta, the ventral tegmental area, and the hypothalamus. Brain DA function is strongly associated with cognitive processes (i.e. learning, attention, and memory), motivation and reward, emotion, locomotor activity and survival behaviours, including energy intake (Jaber et al., 1996; Michaelides et al., 2012). Feeding begins with a motivation to initiate the behaviour (Volkow, Wise, & Baler, 2017). This motivation is driven by hunger, energy demands, and food cues, including the orosensory and nutritive properties of food (Oginsky et al., 2016; Thanarajah et al., 2019). Food consumption results in striatal DA release, enhancing its rewarding properties and increasing intake (Thanarajah et al., 2019). Taken together, the motivational drive to eat is associated with extrasynaptic DA concentrations in areas of the brain, such as the striatum, which are associated with reward (Volkow, Wise, & Baler, 2017).

Although this system is essential in motivating us to consume nutrients necessary for our survival, the consumption of hyperpalatable foods can result in an amplified reward response (Oginsky et al., 2016). This is because hyperpalatable foods are processed to contain amounts of sugars and fats that are much higher than what is found in nature. When exposed to these types of foods, individuals with obesity or BED experience greater food-cue induced cravings than their non-obese or non-BED counterparts (Meule et al., 2018; Oginsky et al., 2016). Within these populations, hyperpalatable foods are more likely to take on the properties of conventional drugs of abuse, resulting in a vicious cycle of food cravings and reward (Chao et al., 2016). The chronic consumption of these energy-dense foods can then result in changes in the brain's reward system, which are experienced as tolerance, where DA receptor downregulation and

overconsumption occurs to maintain the same level of reward-response – properties that parallel the development and maintenance of drug addiction (Carter et al., 2016)

This is because the repeated administration of the reinforcer (i.e. hyperpalatable food) downregulates the DA response to other incentives and activities, negatively impacting areas of the brain responsible for self-regulation (Volkow, Wise, & Baler, 2017). This leads to habitual, impulsive, and compulsive responses to these foods (Volkow, Wise, & Baler, 2017). There are substantial data that support the idea that in drug addiction - and states of overeating, such as those observed in obesity and BED - there is a dysregulation and imbalance in the DA circuits of the mesolimbic pathway that are important for motivation, reward saliency, executive function, and self-control (Yohn et al., 2019). This can explain why the compulsive and impulsive patterns of food intake commonly seen in BED parallel the drug intake patterns seen in substance use disorders (Lindgren et al., 2018).

In obese individuals with BED, brain-imaging studies indicate that the desire for food due to exposure to palatable food stimuli, even without food consumption, is associated with striatal DA release (Volkow et al., 2002). Following the consumption of one's favourite food, DA release tends to be correlated with meal pleasantness (Small et al., 2003). Therefore, it is suggested that the behavioural phenotype in BED is characterized by high responsiveness to reward.

1.2.5 Psychiatric Comorbidities

BED has significant comorbidity with other psychiatric disorders such as depression and anxiety (Amianto et al., 2011; Carriere et al., 2019). In a study by Grilo et al. (2011), 73.8% of patients had at least one additional lifetime psychiatric disorder and 43.1% suffered from a current psychiatric disorder. Mood (42.2-54.2%), anxiety (37.1-54.1%), and substance use (9.2-

27%) are the most common comorbid psychiatric disorders (Becker & Grilo, 2015; Grilo et al., 2011; Ulfvebrand, Birgegård, Norring, Högdahl, & von Hausswolff-Juhlin, 2015). Furthermore, men are more likely than women to have lifetime rates of substance abuse and higher current rates of obsessive-compulsive disorder (Grilo et al., 2011). Similar to other eating disorders, patients with BED display interpersonal problems (Blomquist et al., 2012), relevant alexithymia (an inability to identify and describe one's own emotions) and deficits in emotional identification and regulation (Carano et al., 2012; Compare et al., 2012).

In a sample of 162 BED patients undergoing a psychotherapy trial, 77% met the criteria for at least one other disorder, with lifetime psychiatric comorbidity being more common in men (93%) than women (73%), as was substance use disorder (57% of men vs. 28% of women) (Wilfley et al., 2000). Hudson et al. (2007) found a 78.9% comorbidity in BED patients with other psychiatric disorders listed in the DSM. Thus, BED is positively related to many mood, anxiety, impulse control, and substance use disorders after controlling for age, gender and ethnicity. Furthermore, patients who report longer (i.e. greater than two hours) average binge eating episode duration are more likely to display greater depression symptoms and lower self-esteem than patients with shorter average binge duration (Schreiber-Gregory et al., 2013). BED patients with greater social anxiety and heightened self-consciousness also exhibit greater eating disorder psychopathology, specifically greater concerns with weight and shape and binge eating frequency (Coffino et al., 2019; Sawaoka et al., 2012).

The parallel cortical pathways involved in ADHD and BED, provide some insight into the high comorbidity of the two disorders (Capusan et al., 2017; Nazar et al., 2016). The proportion of patients with BED who exhibit ADHD symptoms ranges between 9.3-31% (Nazar et al., 2016; Svedlund et al., 2017). ADHD is characterized by a difficulty focusing on, and

attending to, internal and external stimuli, organizing and completing tasks, and managing emotions, impulses and behaviours (American Psychiatric Association, 2013) - behaviours that can also be observed in individuals with BED.

In a sample of college students, although the correlation between ADHD symptoms and BMI was non-significant, binge eating severity was positively correlated with ADHD symptoms and BMI (Hanson et al., 2019). A recent meta-analysis has also demonstrated that individuals with eating disorders (i.e. AN, BN, and BED) are twice as likely to have ADHD (Nazar et al., 2016), and the frequency of ADHD symptoms is higher in BED and BN than in AN (Fernández-Aranda et al., 2013). There is also evidence that in those with ADHD, the impulsive and inattentive components, as well as poor inhibitory control and impaired self-regulation, may lead to the disordered eating patterns observed in BED (Capusan et al., 2017; Hanson et al., 2019; Seymour et al., 2015). There is additional evidence that substance-use disorders are also comorbid with BED, particularly since the two have many clinical parallels, including heightened feelings of loss of control over behaviour (Davis & Carter, 2009). Moreover, there is a higher frequency of substance use in individuals with BED and BN (Fouladi et al., 2015). As with ADHD, BED has features common to substance-use disorders, including impulsivity, loss of control, and a higher frequency of self-destructive behaviours (Harrop & Marlatt, 2010). Therefore, substance use in individuals with BED may be used as a coping mechanism for dysregulated emotions in the absence of adaptive coping skills (Killeen et al., 2015).

These comorbidities reduce the health and perceived quality of life of patients with obesity and BED, with a higher prevalence of negative feelings, disinhibition, and anger in this group than in the non-BED obese population (Compare et al., 2013; Fassino et al., 2007; Folope et al., 2012).

1.2.6 Psychological and Pharmacological Treatments

With the inclusion of BED as a distinct disorder in the DSM-5, in addition to novel therapies, treatment options for BN have been subsequently adapted for BED (Cooper et al., 2019). Both psychological and pharmacological therapies attempt to address the impairments observed in BED. Although there is some evidence to support these treatments, their efficacy and ability to evoke long-term change are still not well-established, and there is still much to understand about their mechanism of action (Grilo, 2017; Kober & Boswell, 2018).

Treatments must address both the symptoms and comorbidities that may exacerbate the disease pathology. In this way, high dropout and relapse rates typical of the disorder can be avoided. The primary goal of BED treatments is to reduce and eliminate binge-eating episodes and achieve adequate weight loss (Grilo, White, Wilson, Gueorguieva, & Masheb, 2012). There are several proposed therapies for BED, with varying degrees of binge-eating reduction. However, the most well-established psychological treatment is cognitive behavioural therapy (CBT). More recently, pharmacological, specifically, psychostimulant drugs such as methylphenidate (MP) have also been utilized.

1.2.6.1 Cognitive Behavioural Therapy (CBT)

Reasonably good empirical evidence supports CBT as the best-established treatment for BED (Grilo, 2017; Wilson, Wilfley, Agras, & Bryson, 2010) with binge-eating remission rates between 30-80% (Hilbert et al., 2012; Södersten, Bergh, Leon, Brodin, & Zandian, 2017). CBT was initially termed "cognitive behavioural modification" and was developed by Donald Meichenbaum in the mid-20th century (Meichenbaum, 1977). With the assistance of a therapist, CBT utilizes psychoeducation to establish a client's awareness of their emotional and behavioural experiences to develop skills to manage their thoughts, feelings and behaviours

(Meichenbaum, 1993; Meichenbaum, 1977). Self-awareness enables the client to change their perspective about themselves and their surroundings to a more conducive one. CBT consists of different procedures, including using skills and strategies to reframe thoughts, cope with stress, solve problems, relax, and others (Meichenbaum, 1977). Therefore, patients attempt to change their thinking patterns and problem-solving skills to deal with difficult situations that may arise in their lives. These procedures allow the client to develop strengths and coping skills that they can use in different aspects of their lives.

For example, in female post-bariatric patients, CBT improved binge eating, emotional eating, and mood by teaching patients how to self-monitor their weight and food intake, plan for challenging eating situations, identify maladaptive thoughts, explore self-care activities, and address body image and checking behaviours (Sockalingam et al., 2019). The therapist's role is to establish a therapeutic relationship that is genuine, empathetic, supportive, safe, and non-judgmental to foster a sense of hope. CBT promotes healthier and structured eating patterns, improves shape and weight concerns, and encourages healthy weight-control methods. Both individual and group CBT have been associated with higher abstinence rates and reduced binge eating episodes than no treatment, antidepressants, supportive therapy and behavioural weight loss therapy (Brownley et al., 2016; Grilo, 2017).

In patients with BED, the purpose of CBT is to reduce binge-eating frequency and severity and body-image dissatisfaction by altering maladaptive behaviours and thinking patterns (Brownley et al., 2007; Grilo, 2017). The CBT model's foundation focuses on restrictive dieting and maladaptive cognitions surrounding an individual's feelings towards their weight, shape, body, and self-worth – behaviours and thoughts that may lead to binge eating (Grilo, 2017). The most commonly used method for the treatment of BED is that devised by Fairburn and Cooper

(Fairburn et al., 1993; Fairburn et al., 2003b), which modifies the patient's tendency to evaluate their self-worth based on their body shape and size.

CBT sessions are delivered as 1-hour sessions, once per week, over 12 to 24 weeks and consist of three treatment phases (Fairburn, 2008). In the first phase, the clinician educates the patient about BED and CBT and helps them establish normal eating and self-monitoring patterns by identifying their problematic and dysregulated binge-eating and eating habits (Fairburn, 2008). In the second phase, the clinician teaches the patient to become aware of and to challenge the negative thoughts that may trigger their binge-eating episodes through a method known as cognitive restructuring. These thoughts surround their weight, body image, interpersonal interactions, or stressful situations (Fairburn, 2008). In the third and last phase, the focus is on maintaining structured eating habits, focusing and practicing their newly acquired problem-solving and cognitive techniques, prevention methods, and preparing to cope and respond to lapses to prevent their occurrence (Fairburn, 2008). In obese and overweight individuals with BED, a secondary goal is to reduce weight (Kober & Boswell, 2018).

Overall, CBT focuses on eating, weight, shape and psychosocial functioning to reduce binge episodes. CBT is considered the most well-established treatment for BED and can lead to a significant and lasting reduction of binge eating and associated psychopathology (Peat et al., 2017). Response to the treatment can be observed early on in the treatment, with more than a 10% reduction in binge eating observed at week one and more than 70% reduction observed at week four (Hilbert et al., 2019). However, how well these results can be sustained in follow-up depends on the baseline levels of binge episodes and how early these changes can be observed. Higher levels of pre-treatment eating disorder pathology are a predictor of more eating disorder pathology post-treatment (Grilo et al., 2012; Masheb & Grilo, 2008). Conversely, lower levels of

initial binge-eating pathology and an early decrease in binge episodes over the first few weeks of treatment are important predictors of better long term eating disorder outcome in CBT for BED (Hilbert et al., 2019).

There are mixed results regarding the degree of efficacy of CBT treatment, and relapse rates range anywhere from 20-60% (Brown & Keel, 2012; Vocks et al., 2010). Within a sample of obese patients that underwent CBT, a remission rate of 51% in binge-eating was observed at the 12-month follow-up (Brownley et al., 2016; Grilo et al., 2011). There are several predictors of CBT outcome in BED patients. Emotional eating, defined as "eating in response to a range of negative emotions," is a predictor of both treatment resistance and full recovery (Ricca et al., 2010). High baseline values on the emotional eating scale have been associated with a higher risk of treatment resistance and an inverse association with lower BMI reduction in the long and short term. Conversely, less severe emotional eating is associated with higher recovery rates in the long term (Ricca et al., 2010).

The most salient predictor and moderator of treatment outcomes is an overvaluation of shape and weight (Grilo, Masheb, et al., 2012). In one study, after administering CBT, 47% of participants, who overvalued their shape and weight, were in remission from binge eating compared to 73% of patients in remission who did not overvalue their shape and weight (Grilo, Masheb, et al., 2012). Although the overvaluation of shape and weight did not significantly moderate binge-eating remission, it significantly moderated dimensional treatment outcomes. Patients with overvaluation of shape and weight exhibited lower eating-disorder psychopathology and depression after receiving CBT. Furthermore, lower educational attainment and older age at BED onset predicted higher remission rates. Treatment presentation at a younger age and BED onset at an older age also predicted improved binge-eating frequency. In a study

observing the correlates of weight-related quality of life in individuals before and after CBT, the therapy was found to improve the weight-related quality of life of BED patients by improving eating disorder psychopathology, self-esteem, and coping mechanisms (Mason et al., 2017).

Depending on the study, abstinence rates range from 17% to 79% of patients at post-treatment, 21% to 59% one year post-treatment, and 36% three years after treatment (Lammers et al., 2015; Linardon, 2018). Thus, a large portion of patients do not attain abstinence from binge eating. Despite the ability to reduce binge-eating episodes, the main issue with CBT, aside from the limited access of patients to BED-focused CBT therapists and limited accessibility to treatment (Brownley et al., 2016; Bulik et al., 2007), is producing significant weight loss in BED patients (Wilson et al., 2007; Wilson, 2011). For BED patients with obesity, treatment preference seems to be associated with the patient's perception of their primary problem (eating disorder vs. obesity) and their primary goals for treatment (lose weight vs. stop binge eating) (Brody et al., 2005).

With the advent of newer therapies (Tsappis et al., 2016), comparing them with CBT can pinpoint mechanisms that need to be addressed to improve the efficacy of existing CBT protocols. For example, compared to internet guided therapist-based self-help, CBT has been observed to be more effective but also more costly (König et al., 2018) - an important factor in why patients do not receive psychological help (Hudson et al., 2007). However, internet-based CBT appears to be efficacious, significantly reducing the number of BE episodes and eating disorder psychopathology in the long term (Wagner et al., 2016). This finding highlights the importance of the treatment as a potentially useful option for patients who may not have access to in-person therapies. Therefore, novel treatments can offer helpful insight into improving current ones. In a one-year, post-treatment comparison of CBT and brief strategic therapy (BST)

- a newer form of therapy which focuses on short-term problem-focused therapy - BST was observed to be statistically and clinically superior to CBT in improving BE frequency, weight, and global functioning (Jackson et al., 2018). Consequently, this study indicated that short-term treatment plans could also be efficacious. Therapist-led CBT treatment is better at reducing BE frequency than behavioural weight loss (BWL). However, BWL is better at reducing weight (Peat et al., 2017), outlining a potential disconnect in the behaviours and mechanisms that modulate binge eating and those that modulate weight.

Combining CBT with other forms of therapy has yielded mixed results. When comparing fluoxetine (a selective serotonin reuptake inhibitors (SSRI) antidepressant) and CBT to placebo and CBT, in addition to reducing binge frequency, eating and shape concern and disinhibition, remission rates were relatively high in both groups. At the 12-month, post-treatment follow-up, remission rates were 3.7% for fluoxetine only, 26.9% for CBT and fluoxetine, and 35.7% for CBT and placebo (Grilo, Crosby, Wilson, & Masheb, 2012). However, weight loss did not differ across groups. Combining CBT with weight-loss therapy (WLT) was superior to WLT alone in reducing binge frequency and weight after three months (Agras et al., 1994). However, by the end of the nine-month study, there was no significant difference in weight loss and binge frequency between the group that combined CBT and WLT, WLT only and the combination of CBT, WLT and the tricyclic antidepressant (TCA), desipramine.

1.2.6.2 Pharmacological Therapy

There are mounting preclinical and neuroimaging evidence suggesting genetic contributions and neurobiological factors that lead to BED's genesis (Berner et al., 2011; Mathes et al., 2009). It has been proposed that pharmacological therapy may therefore be appropriate for some individuals, since not all patients respond to psychological interventions (Davis et al.,

2012; Mathes, Brownley, Mo, & Bulik, 2009; Michaelides et al., 2012; Wang et al., 2011). Evidence has supported the efficacy of some forms of pharmacotherapy for BED (Brownley, Peat, La Via, & Bulik, 2015; Davis et al., 2012; Reas & Grilo, 2015; Vocks et al., 2009). For example, some drugs reduce eating impulsiveness, binge eating, and negative feelings and ameliorate some comorbidities and complications of eating symptoms, such as weight gain (Amianto et al., 2015). Although significant weight-loss has been observed in the short-term, this trend does not seem to continue in the long term (Vocks et al., 2009)

Pharmacological therapies for the treatment of BED include SSRIs, TCAs and anticonvulsants. When compared to placebo, the SSRI fluoxetine and second-generation antidepressants, sertraline and citalopram, reduced food intake, psychiatric symptoms such as impulsivity, binge frequency, BMI, and weight (2.7 kg lost weight in sertraline users) (Mcelroy et al., 2015; McElroy, Guerdjikova, Mori, & O'Melia, 2012). However, patients prescribed the drugs had high dropout rates of 28%, 19% and 21%, respectively (Arnold et al., 2002; Brownley et al., 2007; McElroy et al., 2000; McElroy et al., 2003) and remission rates of sertraline users were not significantly different from placebo. Attrition may be due to the severity of side effects such as sedation, dry mouth, headache, nausea, insomnia, diarrhea, fatigue, increased urinary frequency and sexual dysfunction. In a meta-analysis by Brownley et al. (2007), it was concluded that TCAs reduce body weight (mainly because the placebo group gained weight) and had low dropout (between 6-7%). However, abstinence rates were not reported. When using anticonvulsants such as topiramate and sibutramine, no significant weight loss or change in illness severity was observed. However, dropout rates were high (47% and 39%, respectively), likely because of the severe side effects (i.e. sympathetic CNS arousal). It is also noted that in

most pharmacological therapies, the weight-loss effects of the medication cease when it is discontinued.

To address a lack of weight loss in current BED treatments, methylphenidate (MP), a stimulant drug, was proposed as a potential treatment option (Mcelroy et al., 2015). Studies have suggested that binge eating may be the result of a dysfunction in the DA systems, which is a critical agent in regulating eating behaviour and food reward (Kessler, Hutson, Herman, & Potenza, 2016; Majuri et al., 2017; Vickers, Hackett, Murray, Hutson, & Heal, 2015). There is a strong association between altered dopaminergic systems and addictive behaviours, such as binge eating (Volkow, Wang, Tomasi, & Baler, 2013). The overconsumption of hyperpalatable foods can result in compensatory neural plastic changes that impact DA signalling, leading to adaptation and behavioural change (DiFeliceantonio & Small, 2019). The first study to show this was by Johnson and Kenny (2010). The study demonstrated that a diet high in fat and sugar not only tends to foster obesity but can also change the dopaminergic system in ways that promote addiction-like reward deficits and compulsive food-seeking. Specifically, their findings demonstrated that prolonged consumption of energy-dense hyperpalatable foods high in fat and sugar could lead to a downregulation of D2 receptors in the striatum, an area of the brain responsible for reward computation and food-cue reactivity (Hermann et al., 2019). This repeated exposure to hyperpalatable foods over time can not only downregulate striatal D2R but can lead to an increase in binge-eating behaviours (Volkow, Wise, & Baler, 2017). Furthermore, the relationship between reward sensitivity and BMI is non-linear. A moderately positive relationship exists between reward sensitivity and a BMI of 18-30 (normal and overweight), whereas, in obese individuals, reward sensitivity is inversely associated with BMI (Davis & Fox, 2008).

A blunted striatal response to food in obese individuals is correlated with greater impulsivity (Babbs et al., 2013). Furthermore, hypofunction of the brain's dopaminergic systems is a key risk factor in the development of addiction disorders (Davis et al., 2009). Therefore, hyperpalatable foods with high addiction potential can be a paradoxical form of self-medication to increase the dopaminergic system's hypofunction and increase one's hedonic capacity (Moore, Panciera, Sabino, & Cottone, 2018). The DA systems within obese individuals with BED may be in line with the "reward-deficiency model" of overeating, whereby the lower hedonic value in food results in compensatory overconsumption that is compulsive (Ziauddeen et al., 2012). Indeed, individuals with BED have reduced DA levels in the brain (Bello & Hajnal, 2010), enhanced reactivity to the hedonic properties of food and a stronger reinforcement response to food rewards in the form of binge eating (Davis et al., 2009; Halpern et al., 2013; Kelley, 2004; Volkow et al., 2008; Wang et al., 2011).

Because high stimulation of DA pathways suppresses appetite (Davis et al., 2012), psychomotor stimulants like MP can target this system to reduce binging. The drug can do this by modulating neurotransmitters involved in regulating appetite, hunger and eating behaviours. Specifically, the drug addresses physiological dopamine abnormalities in BED by binding to DA transporters to inhibit reuptake into the cell. In this way, DA availability in the synapse increases, directly impacting perceived food reward, intake, and cravings (Calipari, Ferris, Salahpour, Caron, & Jones, 2013; Davis et al., 2012). Oral MP treatment has also been observed to increase D2R availability in rodents, though this depends on the developmental stage at which the treatment is given (Thanos et al., 2007). In addition, the administration of stimulants to obese patients diagnosed with ADHD has led to weight loss and a reduction in BED symptoms (Kaplan et al., 2016; Levy et al., 2009). Therefore, the drug's purpose is to address the compulsive

components of overeating and food-reward perception in BED that result in binges. The drug is not prescribed for weight loss, specifically since the psychological factors that the drug addresses do not necessarily exist in all individuals who are looking to lose weight.

In January 2015, l-lysine-dextroamphetamine (LDX; brand name Vyvanse®) became the first and only drug approved by the U.S. Food and Drug Administration to treat moderate to severe BED in adults (McElroy, Guerdjikova, Mori, Munoz, & Keck, 2015). LDX is a pharmacologically inactive stimulant that is broken down into the active d-amphetamine through an enzymatic process associated with red blood cells. There is much history behind the use of d-amphetamine - most notable is its use in World War II as a "go pill" to enhance alertness and focus in Air Force pilots (Rasmussen, 2008). LDX was initially developed in the late 1990s as a longer-lasting formulation of d-amphetamine with lower abuse potential in patients with ADHD (Guerdjikova et al., 2016). Currently, the drug's benefits have been shown to persist for 13-14 h (Wigal, Kollins, Childress, & Squires, 2009; Wigal et al., 2010). Although LDX and MP are both psychomotor stimulants with similar pharmacodynamics and clinical, behavioural, and subjective effects, the neurochemical effects of the two are distinct (Little, 1993; Stuhec et al., 2015). Both MP and d-amphetamine inhibit the reuptake of DA and norepinephrine (NE) from the synaptic cleft, enhancing the effect of these neurotransmitters. In addition, d-amphetamine, but not MP, also inhibits 5-hydroxytryptamine (5-HT) and may inhibit the metabolism of monoamines (Heal et al., 2008).

Furthermore, because MP enters the body in its active form, it works immediately. In contrast, LDX enters the body in its inactive form, and it takes approximately 1-2 hours for the effects to appear. Currently, no study has compared the efficacy of MP and LDX for the treatment of BED. However, a comparison of the drugs for the treatment of ADHD in

adolescents demonstrated that there was not a single drug that was more efficacious than the other at a population level - that is, some studies demonstrated the superiority of MP over LDX, and vice versa (Ermer et al., 2010; Newcorn et al., 2017).

Studies have demonstrated that the drug reduces obsessions, impulsivity, inattention and hyperactivity, compulsions, and weight (Hilbert et al., 2017). For instance, a randomized, double-blind study of BED patients, using 50 and 70 mg/d LDX found a reduction in binge-eating days and body weight than placebo (McElroy et al., 2015). In the two phase III and one phase II RCT studies, LDX significantly reduced binge-eating days, obsessive-compulsive binge-eating symptoms, and body weight, and induced 40-week binge-eating cessation rates (Mcelroy et al., 2015; McElroy et al., 2016; McElroy, Guerdjikova, et al., 2015; U.S. Food and Drug Administration, 2015). In the phase II study, administration of 50 and 70 mg/d LDX was shown to reduce binge-eating days, binge-eating cessation, body weight and global improvement compared to placebo (Mcelroy et al., 2015). The phase III studies found that LDX, titrated to 50 mg/day or 70 mg/day, effectively reduced binge eating days (Gasior et al., 2017).

A common limitation of pharmacological therapy is side effects, which can significantly reduce adherence (DiBonaventura et al., 2012) and negatively impact treatment progress. Despite having side effects that are manageable and well-tolerated (Hilbert et al., 2017), typical side effects of LDX include gastrointestinal upset, headache, insomnia and sympathetic nervous system arousal, including anxiety and nervousness, dizziness and dry mouth. It is important to note that product labelling for LDX includes a "Limitation of Use," stating that it is not indicated for weight loss and its effects on obesity are unknown (McElroy et al., 2016). This highlights the drug's purpose, which is to address the psychological disorder resulting in binge eating. Other sympathomimetic medications, which have been used for weight loss, have been associated with

severe cardiovascular problems - a warning that is also noted in LDX's "Limitation of Use" (McElroy, Hudson, et al., 2015). LDX is also a DEA-controlled schedule II drug and thus comes with a warning label as a CNS stimulant with high potential for abuse/dependence (McElroy et al., 2016). Therefore, individuals with a history of stimulant or other substance-use disorders, suicide attempt, mania, and cardiac disease abnormality are excluded from trials, questioning whether results are generalizable to the typical BED population (Hilbert et al., 2017).

Overall, it is evident that no one method is superior on all outcomes, which include binge eating abstinence, binge eating frequency, BMI and depressive symptoms (Peat et al., 2017). There is currently a lack of existing data regarding the longer-term effects of drug therapy for BED (Reas & Grilo, 2014). Peat et al. (2017) demonstrated that LDX is better at increasing binge abstinence than second-generation antidepressants; therapist-led CBT is better at reducing binge eating frequency than behavioural weight loss; and behavioural weight loss is better at reducing weight compared to CBT. To better understand the trends observed, qualitative research may provide insight into why or why not the current treatments work from the perspective of those experiencing BED.

1.2.7 Qualitative Research

Qualitative research is a form of social inquiry used to understand the *how's* and *why's* of a particular phenomenon (Miller, 2010). This includes methods in which individuals analyze, interpret and understand their experiences and environment (Tesch, 2009). Historically, this form of research stemmed from a combination of anthropology, philosophy, and sociology and was used long before the establishment of psychology as an independent science (Wertz, 2014). It utilizes analytical categories to explain and describe social phenomena and sheds light on the perceived reality of individuals, groups and cultures (Pope et al., 2000; Tesch, 2009). In

qualitative research, the context in which people's experiences occur must be acknowledged, alluding to the fact that they cannot be free from time, location, or the person's mind. Realities are socially constructed and are influenced by people's values and interests. Thus, a completely objective and neutral stance cannot be achieved, and the researcher and participants' values are integral in the research process (Smith, 1983). Qualitative methodologies allow researchers to understand a particular phenomenon such as people's core behaviours, perspectives, feelings, experiences and overall social reality, from those experiencing it (Aldiabat & Le Navenec, 2011). In the past 30 years, the foundational rationale and framework of theories and ideas used in this research method have expanded, allowing researchers to use many theories, approaches, and strategies in their research (Tesch, 2009).

In psychological, and specifically BED research, different qualitative methodologies can be used, each with unique assumptions and purpose. The selection of an appropriate methodology is based on how well it can answer the research question at hand. Commonly used methodologies include *ethnography*, which focuses on culture and customs; *grounded theory*, which analyzes social processes and interaction to develop theories; *narrative*, which explores and analyzes people's stories; *case study*, which looks at episodic events in a particular framework bounded by time and setting; and *phenomenology*, which investigates the meaning behind subjective experiences and describes the life world (Al-Busaidi, 2008; Becker, Geer, Hughes, & Strauss, 1961; Creswell, 2013; Glaser & Strauss, 1967; Holloway & Wheeler, 2010; Tesch, 2009). Taken together, qualitative studies provide a better understanding of how individuals define and experience their recoveries and assist in improving existing and developing better treatments, since the patient's perspective helps guide clinical practice (Lord et al., 2018).

To collect data, verbatim notes, transcribed recordings from interviews or focus groups, jotted notes, field notes, diaries, chronological accounts, and reflective notes written by the researcher are utilized (Pope et al., 2000). The most common strategies to collect data in health research are interviews, focus groups, and mixed methods that combine qualitative and quantitative methods (Palinkas, 2014). When trying to understand a participant's experience, opinion, and perception of a mental health service, interviews are most frequently used. Though interviews can occur via telecommunications application software, face-to-face, or telephone, face-to-face is preferred as it better develops rapport and facilitates a "natural" encounter (Irvine et al., 2013). Interview questions are flexible and open-ended, and participants respond to them in their own words such that the researcher understands the person's life as it is lived (Berg, 2009; Doody & Noonan, 2013; Hermanowicz, 2002). Questions can surround behaviour, experience, opinion or value, feelings, knowledge, demographic, or background details (Patton, 2002).

The most common form of interview in qualitative research, and the one that was used in this study, is the semi-structured format (Holloway & Wheeler, 2010). Here, the researcher has a set of pre-determined guide questions but can freely probe and ask questions to seek depth, clarification and an overall better understanding of the participant's experience. Semi-structured interviews are very conversational. The interview's uniqueness stems from its ability to engage participants directly in a conversation to develop deeply contextual, nuanced, and authentic accounts of how they experience and interpret their inner and outer worlds (Schultze & Avital, 2011). The flexibility of this form of interviewing results in the exploration of new paths and data during the interview that may not have been considered initially (Doody & Noonan, 2013). Ultimately, the goal of these forms of data collection is for the participant to provide a detailed

account of the experience to answer the research question (Smith, Flowers, & Larkin, 2009). Concerning healthcare, qualitative research offers unique, rich, and compelling insights into the experiences, real worlds, and perspectives of patients and healthcare professionals that complement quantitative data (Braun & Clarke, 2014).

1.2.8 BED and Qualitative Research

Research surrounding recovery and treatment approaches for BED is inconsistent and limited for several reasons. Firstly, qualitative methods in health psychology research are relatively new and only started to gain traction in the late 1990s (Murray & Chamberlain, 1998). Secondly, combined with the novelty of the disorder (American Psychiatric Association, 2013) and the tendency for BED patients to keep their illness a secret (Lord et al., 2018), qualitative data surrounding this phenomenon is relatively sparse.

Although only a limited number of qualitative studies involving BED patients have been carried out, they have provided excellent insight into many gaps in the literature. For example, qualitative analysis has enabled researchers to explore how obese women with and without BED experience overeating as an addictive process (Curtis & Davis, 2014). It was determined that the BED group was more inclined to describe addictive tendencies towards highly palatable foods compared to their non-BED counterparts. Therefore, qualitative studies can shed light on experiences that cannot be conveyed through quantitative analysis, adding a richer perspective on the therapeutic process. Though there are many advantages to employing qualitative studies in BED research, four of these will be discussed in the following sections.

1.2.8.1 Qualitative studies provide a platform for individuals to share their experiences

Giving patients a platform to share their experiences allows researchers to discover new findings that may be overlooked in traditional quantitative studies. For example, barriers to BED

treatment have been ascribed to ineffective communication between physicians and patients (Herman et al., 2014; Kornstein et al., 2015). In a focus group study, individuals who met the DSM-5 criteria for BED perceived health care professionals as being more focused on physical ailments, carried judgements about the patient's weight, had an inadequate understanding of the disorder, and were not able to distinguish BED from obesity (Herman et al., 2014). Studies like the current one, highlight the need for greater BED disease-state awareness and patient sensitivity amongst healthcare professionals. Even within a research setting, a qualitative study has demonstrated methods in which low participation and retention rates in eating disorder studies can be acknowledged (Ortiz et al., 2019). Participants in the study emphasized the broader impact of the research and that institutions and researchers need to be more sensitive to the circumstances of patients with eating disorders by maintaining a professional and non-judgemental attitude (Ortiz et al., 2019). For example, while most researchers may not think much of sending email communications, many participants preferred to be called or left a voicemail – a behaviour that is in line with the need for deeper and more meaningful human connections amongst this cohort (Levine, 2012). To further support this concept, a meta-synthesis of qualitative studies indicated that computer-based self-help interventions would be more efficacious if they take advantage of its ability to facilitate human interactions (Yim & Schmidt, 2019). Despite the benefits of creating a non-judgemental attitude, patients still yearn for human contact (Pretorius et al., 2009) and, in their own words, "knowing that there was someone out in cyberspace listening to me and offering me support" (Leung, Ma, & Russell, 2012, p. 251).

In addition, qualitative studies have displayed the gaps in how psychiatrists view and communicate BED to patients - notably that it is inconsistent, non-systematic, and differs from

how patients consider the core aspects of the disorder (Kornstein et al., 2015). For example, while psychiatrists focused more on weight management and will-power to prevent and stop binges, patients were concerned with exploring factors that drove their binges and their overall experience with the disorder. Here, it was evident that stigma played a strong role in preventing a meaningful and conducive patient-physician relationship from being established. Such a study can provide guides that improve patient-physician communication (Kornstein et al., 2015). The study recommended that for optimal BED diagnosis, evaluation, and treatment conversations, there should be a stronger focus on the patient's emotional coping strategies and binge eating behaviours and less on food and weight issues. Furthermore, educational materials that focus on clearly defining DSM-5 BED diagnostic criteria and the relationship between weight-related issues and the disorder should be provided to physicians. Many psychiatrists indicated that an easy-to-use clinical screener would help with the evaluation and diagnosis of BED.

A narrative review of the perceptions of the medical and non-medical communities explored the stigmatization of the disorder (Reas, 2017). A summary of their community studies indicated that participants viewed BED as a lack of self-discipline or self-control, rather than a medical condition (Ebneter & Latner, 2013; O'Connor et al., 2016). The review also highlighted studies that demonstrated a low public awareness of BED being a discreet eating disorder and the limitations amongst healthcare professionals to correctly diagnose and treat the condition (Mond & Hay, 2008; O'Connor et al., 2016). In one study, 40% of physicians had never screened for BED in their patients (Crow et al., 2004), and only 19% accurately diagnosed the disorder (McNicholas et al., 2016). Amongst the physicians who diagnose BED, 87% recommend CBT as a treatment, and approximately one-third recommend other therapies, including pharmacotherapy (Cain et al., 2017). Overall, the review suggested that BED's public perception is that of a low

severity, easy-to-treat condition, but that there is much stigma attached to the disorder. The study also addressed the limited literature on healthcare professionals' knowledge and attitudes toward BED and the need for increased clinical awareness of BED diagnostic criteria, comorbidities and associated medical complications.

1.2.8.2 Qualitative studies can evaluate treatments

Data from qualitative studies can structure more efficacious therapies that better acknowledge the patient's experience and perspective. For example, a qualitative study of women in group therapy who binge eat, determined four categories that underpin a reduction in binge eating: dietary changes, detachment from food, awareness of eating behaviour, and changes in dichotomous thinking (Seamoore et al., 2006). Thus, by breaking down the components of the group therapy, the study was able to target the aspects that contributed to program efficacy. To understand BED's pathogenesis, a retrospective interview-based study found that BED patients had a higher number of traumatic experiences than those suffering from BN (Degortes et al., 2014). BED patients also reported a more significant number of stressful events related to interpersonal problems such as family conflicts, social problems, and disagreement with partners, indicating the importance of social support and interpersonal functioning in BED's genesis. Such a study implies that personality traits and coping strategies, as well as social support, are factors that should be targeted by either preventative treatment in high-risk individuals or as therapeutic interventions for those already diagnosed with the disease.

Qualitative data are also used to identify specific aspects of a treatment that may be overshadowed or hidden in quantitative data collection. For example, overeaters Anonymous (OA) is a 12-step program that provides an empathetic and supportive environment for sufferers. The program does this by having individuals share experiences with compulsive overeating and

abstinence from eating certain "risky" foods (Overeaters Anonymous, 1990). Despite its popularity, however, very little is known about how or why OA works. Through focus groups, it was found that in addition to the applicable skills taught to attendees to manage the disorder, as well as the spiritual component of the program, the conceptualization of the disorder as an addiction was valuable for OA members; this, in turn, apparently contributed to treatment success (Russell-Mayhew et al., 2010). A subsequent phenomenological study observed that the OA program established a secure attachment experience because of its foundational premises, including the principle of giving and unconditional love (Hertz et al., 2012). Semi-structured interviews focusing on the emotional recovery of BED patients revealed that when safe ground and positive attachment figures are present for the patients, a corrective emotional experience is facilitated in therapy (Hertz et al., 2012).

Qualitative studies can also explore treatment limitations and provide a deeper understanding of the relationship between phenomena. For example, Meyer et al. (2018) used interviews and participant observations to explore processes related to weight and body issues during treatment. It was determined that weight acceptance should not discourage individuals with obesity from losing weight. Instead, the acceptance and divorce of weight and identity and a stronger focus on health rather than weight are important precursors for weight loss.

The efficacy of tools used to screen or diagnose BED can also be evaluated through qualitative studies. For example, semi-structured interviews were used to gather patients' feedback on the BEDS-7 screening tool (Herman et al., 2016). These data were then used to create a 13-item pilot version of the BEDS-7, which was subsequently evaluated quantitatively and further refined. Currently, BEDS-7 is provided by Vyvanse® as a tool for clinicians to screen for BED.

1.2.8.3 Qualitative studies can help improve upon and develop better therapies

When conceptualizing a potential phone application for BED treatment, qualitative feedback from both patients and clinicians was used to determine the feasibility, acceptability, and perceived effectiveness, amongst other criteria (Juarascio et al., 2015). Through phone interviews and focus groups, the results of the thematic analysis of the data indicated that the proposed application would be highly feasible and acceptable to the BED community. Specifically, patients reported that the application could improve quality of life by making it easier to self-monitor and reduce binge eating. Clinicians reported that the application could enhance standard treatment by increasing self-monitoring accuracy and integrating the skills and concepts learned in therapy into their everyday lives. Feedback, such as the degree of customizability and personalization, was also collected to improve the application's potential impact on treatment. Therefore, through qualitative data, specific feedback from parties involved can be used to improve treatments.

It has been proposed that one of the limitations of CBT therapy is that it fails to acknowledge important factors such as those associated with energy imbalance, malnutrition, and basic affective regulatory mechanisms like excessive exercise (Pettersen et al., 2018). A novel treatment approach combining physical exercise and dietary therapy (PED-t) was proposed to enable patients' functional coping and self-regulative activities. To evaluate the treatment's efficacy and effectiveness, a qualitative arm was added to the RCT study to understand the therapists' experiences (Bakland et al., 2018). Through semi-structured interviews, therapists indicated that their professional knowledge about physical education and nutrition established a greater relationship and trust between the program and patients (Bakland et al., 2018, 2019). The

therapist also had to exercise confidence in their knowledge to provide patients with transferrable skills that extended beyond the mere purpose of protocol adherence.

An interesting example was the focus on ensuring participants left a treatment session feeling good about themselves rather than always following the protocol. The importance of creating a trusting therapist-patient relationship and exhibiting empathy, interest, and care was also discussed. Therefore, the qualitative component provided insight into a specific situation where complete adherence to the protocol may need to be adjusted to accommodate the patient's needs and for the therapist to have specific skills and characteristics that impact the therapeutic process. Such a finding can be applied to other clinical and non-clinical settings involving BED treatment – for example, when examining how to modify CBT treatments for individual BED patients and managing side effects in pharmacological treatments.

1.2.8.4 Qualitative data provide more context to quantitative data

Qualitative data may be used to provide context to numerical data, particularly as a means to encompass the complexities of this multifaceted disorder. In mixed-methods studies, the combinations of quantitative and qualitative methods, either used simultaneously or sequentially, can validate findings, create more complete data, and the results of one method can enhance the understanding and insight attained from the complementary method (Creswell & Piano Clark, 2007).

Although the current study is not a mixed-methods design, the qualitative component that follows the original RCT was a means to explore and gain a deeper understanding of the phenomenon investigated by quantitative data (Quilty et al., 2019). Here, the qualitative follow-up added value and strengthened evaluative research by further explaining findings and increasing the utility of the evidence generated by the trial (O'Cathain et al., 2014). Overall, the

addition of a qualitative study to an RCT can contribute by highlighting the benefits of the trial and specifically contribute by understanding how an intervention works in practice. Thereby, it can assist in interpreting trial results (O'Cathain et al., 2014).

In BED studies, few mixed-methods studies exist, but those produced have provided significant insight into the disorder's multiple dimensions. For example, a study investigating the impact of adding mindfulness to a CBT program observed reduced binge eating severity, emotional overeating, external overeating, restrictive and restrained eating, dieting and poor body image (Woolhouse et al., 2012). However, through qualitative interviews, the treatment's efficacy was attributed to living in the present moment, reduced self-judgment, and increased self-awareness that led to more control and choice over the destructive behaviours. Another study describing women's experience of a yoga treatment for binge eating highlighted, again, the importance of mixed-methods designs (McIver et al., 2009). The yoga program's development was based on previous studies exploring binge eating phenomenology, which was an escape from disturbing thoughts and feelings and their adverse effects. From this, the researchers developed a complementary therapy (yoga) to target self-awareness and consciousness development. Quantitatively, the results displayed a statistically significant decrease in binge eating, BMI, depression and anxiety. However, a qualitative exploration of the women's experiences revealed that the positive changes were due to a focus on developing health rather than weight-loss, encouraging self-development, growth, and empowerment.

1.2.9 Conclusions and the current study

BED is a multifaceted disorder that has become increasingly prevalent as changes in the food environment have occurred - specifically an increase in the availability of hyperpalatable foods high in salt, sugar, and fat (Hoek & McLean, 2016). Psychologically, BED tends to be

characterized by a combination of low self-esteem, overvaluation of shape and weight, negative views of self, poor impulse control, and high sensitivity to reward (Davis et al., 2017; Pearl & Puhl, 2014) . Currently, the conventional treatment for BED is CBT; a psychological therapy demonstrated to reduce binges and lead to mild weight loss. Recently, pharmacological therapy, specifically the psychostimulant MP, has been introduced as a potential treatment for the disorder. It has been shown to reduce binges and lead to significant weight loss (McElroy et al., 2016). Using qualitative methodologies, the perceptions of patients who have undergone these treatments can be explored. Qualitative data can explain and describe social phenomena and the reality of individuals, groups and cultures (Pope et al., 2000). In BED research, qualitative studies have provided evidence of the importance of patient-physician relationships, weight-based stigma and the limitations and benefits of treatments that may have been overlooked in quantitative analysis.

For this reason, the qualitative component that followed the original RCT study (Quilty et al., 2019) was necessary to explore the comparative effects of MP and CBT treatments in women diagnosed with BED. This was the first study of its kind comparing the effects of the novel pharmacological therapy to the current gold standard psychological therapy to understand the potential impact, similarities and differences of the two treatments on binge eating patterns, disorder severity, and weight.

While studies have focused on the psychological and neurophysiological determinants and processes of BED and its treatments, there is yet to be a study that focuses on the experience of the following BED treatments for patients and clinicians. The current study employed qualitative methods to explore experiences from the patients' and the clinicians' perspectives within the RCT. Our first objective was to focus on these experiences from the perspective of the

patient. Furthermore, with our second objective exploring the clinicians' lived experiences working with BED treatments, a more fulsome picture of the clinical frontline of this health condition was developed. From the resulting data, we narrowed in on the lived experiences of patients and therapists around the two specific treatment options to analyze which treatment approach worked for BED sufferers and why.

CHAPTER 2: METHODS

The following chapter will provide an overview of the methodological framework and analytical methods used in the current study. Participant recruitment, data collection and analysis, ethical considerations, and trustworthiness measures will also be expanded upon in this section. A summary of the original RCT study (Quilty et al., 2019) can be found in Appendix D.

2.1 Design

By exploring MP and CBT treatments qualitatively in patients with BED, the current study was the first of its kind to provide a platform for patients to explain their motives for participating in the treatment research, their experiences of the therapy, and their relationship with the clinicians. To provide a more fulsome picture and a better understanding of the experiences of both the patients and clinicians, a qualitative approach was utilized. Our objective was to understand patients' and clinicians' lived experiences of the therapies – factors that are often overlooked with quantitative data alone.

Before describing the data analysis, it is important to outline the methodology that informed the study. Although the study was not tied to any specific framework or methodology, it was informed by a phenomenological framework – a methodology that is frequently used in psychology, sociology, and health science research (Mills & Birks, 2014). The purpose of phenomenology is to examine and understand, in great detail, how individuals interpret

significant life experiences (Smith & Osborn, 2003). This inductive methodological framework stems from the philosophical writings of Edmund Husserl and Maurice Merleau-Ponty, where the central objectives revolve around the person's perceptions, feelings, and lived experiences (Guest, 2012). Husserl believed that the experience of perception, thought, memory, imagination and emotion involved "intentionality," which is an individual's direct consciousness or awareness of an event or object - in other words, a "lived experience" (Reiners, 2012). Since previous studies successfully implemented a phenomenology framework to explore the physical and psychological experiences associated with binge eating and BED therapies (Davis & Jamieson, 2005; Plateau, Brookes, & Pugh, 2018), this framework was used in the current study to inform the exploration of the women's lived experiences. Specifically, the patients' experiences of the treatment and their impact on BED symptoms (i.e., relationship with food, binge eating and weight gain) were investigated. Phenomenology focuses on an individual's' thoughts and feelings (Smith, Flowers, & Larkin, 2009), collectively known as the human experience. Negative emotions, irrational food beliefs, food thought suppression and desire thinking are important factors in influencing binge eating (Nikčević et al., 2017). Therefore, it was important to explore how these women's therapeutic experiences may have impacted their thoughts and feelings. The open-ended questions and conversational nature of the interview guide allowed participants to communicate their experiences in unconstrained ways.

To analyze qualitative data, several factors determine which analytical approach is ideal. These include: what the research question is, who conducts the research and their level of experience, the target audience of the research, and the study design (Braun & Clarke, 2014). In the current study, the data were analyzed using the thematic analysis methods outlined by Braun and Clarke (2014). According to Braun and Clark (2014), TA is a method that describes data by

identifying, organizing, and analyzing themes or patterns within it. In doing so, the method aims to reflect the reality of those involved in the research by documenting the experiences, meanings and realities of participants or discourses operating within society and how individuals interpret and make meaning of their experiences (Braun & Clarke, 2006). Because of the novelty of the study, an exploratory approach was used to understand the women's experiences. TA produces knowledge that is grounded in human experiences (Sandelowski, 2004), making it the appropriate data analysis method for this study. The use of TA allowed for the exploration, and therefore, description, of the participant's experiences and viewpoints, without justifying them using a pre-existing theory. TA is also commonly used when there are smaller sample sizes, which was the case in the study's therapist group. It is useful when exploring very specific instances of lived experience, such as the therapeutic experience, amongst patients in great detail. Themes are used to outline or capture meaningful elements and patterns in the data related to the overall research question. Here, the researcher becomes the instrument for analysis, being responsible for making judgements regarding the codes, themes, decontextualization, and recontextualization of the data (Nowell et al., 2017).

In psychological research, TA is used to explore the unique experiences and viewpoints of specific cohorts of clients and therapists (Hunt, 2014). The significance of this is that healthcare providers can use the data to improve the treatments and quality of care offered. In addition, TA allows similarities and differences amongst narratives to be detected and promotes the exploration of unexpected findings, novel data, and unique responses. Furthermore, the inclusion of verbatim quotes from patients and clinicians offers a more accessible form of knowledge dissemination and makes it easier for critical readers as well as those impacted by BED to identify and understand the research (Braun & Clarke, 2014; Nowell et al., 2017).

There are many benefits to the use of TA. In particular, it is ideal for *applied* research. Researchers conducting robust and sophisticated analysis can focus and present them in terms that are understandable to those who are not part of academic communities (Braun & Clarke, 2014). It is also easy to learn without deep theoretical commitments, making it easy for those who are less qualitatively experienced to use. Furthermore, TA's flexibility makes it easy to use across a wide range of theoretical and epistemological approaches (Braun & Clarke, 2006). TA is a useful method to examine the perspectives of multiple research participants, highlighting both similarities and differences in their experiences in efforts to generate important and significant insights (King, 2004). TA can summarize important features of an extensive data set and organize it into a clear and succinct final report (King, 2004). This method's overarching goal is that it provides a rich and detailed yet complex account of the data.

The TA analysis method used in the study aligns with those specified in the book, *Using thematic analysis in psychology* (Braun & Clarke, 2006), which consists of a series of basic steps (Braun & Clarke, 2006; Guest, 2012): a) organizing and familiarizing one's self with the data/transcripts; b) generating initial codes c) identifying themes; c) reviewing and analyzing themes to identify structures; d) finalizing and defining themes; and e) producing an outline or report. Researchers can also develop a theoretical model and consistently check it against new data, where appropriate (Guest, 2012).

Due to TA's iterative nature, there was a constant comparison of individuals, experiences, incidents and categories. As a result, schematic representations of some of the data were also included.

2.2 Ethical Considerations

Ethical approval for the study was granted by the Research Ethics Boards at CAMH (Protocol Number: 048/2015) and York University (Certificate Number: 2016-015). Informed consent was ensured by providing participants with a consent form (Appendix A), which explained the study, the purpose of the research, what the research involved, and privacy (i.e., data access and storage). Participants were also informed that anonymity was retained. Although quotes from their interview transcripts would be used, identifying information such as names, cities, and clinic names were removed from the transcripts and write-up. Data was only shared with appropriate services if the participant was at risk of harm. Before the interview, the consent form was provided, and the start of the interview was contingent on signing the form. Participants were also informed that they were not obliged to complete the interview and that they could leave at any time. Full disclosure of what the study would entail was done to eliminate the risk of participant distress. Individuals that did not give informed consent were excluded from the study (n=0).

2.3 Recruitment and Participant Profile

2.3.1 Patients

After the RCT's completion, patients who gave consent to be contacted for future research were contacted by a member of the research team via telephone and asked if they would like to participate in the qualitative study (n=24). They were informed of the research protocol, asked if they would like to have further information, and would like to go through the consent form and be interviewed. Criterion sampling was used, the criteria being BED patients who had completed the RCT and had given consent to be contacted for future research. Fluency in English was an inclusion criterion due to the importance of language in qualitative research. Nine individuals did not participate in the study due to distance, scheduling conflicts, change of mind,

or they could not be reached. The final sample comprised 15 patients who had undergone 12 sessions of CBT (50 minutes per session, n = 7) or 12 weeks of MP treatment (dosage 18-72 mg/d, n = 8). The majority of the patients identified as White (n=10; CBT = 6, MP = 4), followed by Black (MP = 1) and Other (i.e., South Asian, Aboriginal, or Visible Minority Not Included Elsewhere; n=4; CBT = 1, MP = 3). At the time of the interview, the ages ranged from 19-51 years (M= 34.4 y, SD = 8.59), and the average BMI of the sample was 38.8 (SD = 6.46), with a range of 25.2 to 48.9 at baseline. A summary table of the patient demographics can be found in Appendix E. The number of patients recruited for this study was in accordance with Braun and Clarke's guidelines for interviews in TA (Braun & Clarke, 2013). The sample size was determined to be large enough to demonstrate distinct patterns, themes and shed light on the phenomenon being investigated (Fugard & Potts, 2015; Glaser & Strauss, 1967; Guest et al., 2006). By the end of the patient interviews, data saturation was reached where the data became saturated, redundant, and did not contribute novel insight (Guest et al., 2006).

2.3.2 Clinicians

At the completion of the RCT, clinicians were contacted by a member of the research team via email and asked if they would like to voluntarily participate in the qualitative study (n=4). A purposeful sample was used to recruit all the clinicians involved in the original RCT study (CBT=3, MP=1). Clinicians in the CBT group consisted of females (n=2) and male (n=1), who were all doctoral-level licensed clinical psychologists that practiced in Canada and were employed at the Centre for Addiction and Mental Health (CAMH). All the clinicians were trained in administering CBT. They had approximately 5-9 years of experience using it to treat substance-use disorders such as alcohol and tobacco dependence, depression, and anxiety. Before the study, the clinicians had minimal to no experience working with BED patients. The RCT

study's principal investigator served as the "gatekeeper" clinician who recruited and trained the two research fellows to administer CBT in BED patients. The female psychiatrist who administered MP was a clinical fellow at CAMH with a strong research background in qualitative research. The RCT was her first exposure to BED patients (though she previously worked with patients diagnosed with AN) and experience prescribing a stimulant drug to adults.

2.4 Semi-structured interviews

All of the interviews were conducted by me and my female academic supervisor. In each interview, one researcher was assigned to lead the interview by going through the interview guide. The other was open to interjecting and probing when they felt it was necessary. Of the 19 interviews, nine were led by me and ten were led by my supervisor. My supervisor was an investigator in the original RCT study but did not have direct contact with participants prior to the qualitative study. All in-person interviews were conducted in a private, sound-attenuated room within CAMH. In exceptional cases where participants were unable to meet in person (n=3), interviews were conducted via video-chat or phone, depending on what was preferred by the participant.

Semi-structured interviews consisting of open-ended questions were used to allow participants to reflect on their experience and impressions of the treatment through their narrative account (Irvine et al., 2013). A set of open-ended questions and probes that helped facilitate a deeper understanding of the research question was developed, revised, and pilot tested by the team to ensure they were relevant and appropriate for the study (Appendix B). The questions were created using a combination of discussions with qualitative researchers and supervisors, research, insight from previous qualitative studies in this field, and experience gained from partaking in counselling and qualitative methodology courses. At all times, it was important to be

mindful of the original research objectives and to develop the questions in a manner that had succinct flow, was sensitive to the personal experiences of the participants, and did not diverge from the primary intent of the study: an in-depth understanding of the lived experiences of participants during therapy. All of the interviews were recorded with a digital recorder.

For the BED patient group, the following participant-centric topics were covered: background information, history of their binge eating and weight gain prior to the treatment, experience with their specific treatment, perception of the treatment (including how the treatment may or may not have affected the symptoms of their disorders), and their food and weight-related experiences after the treatment intervention. Once the interview was completed, all patients were paid a small stipend to cover their time and transportation costs.

For the clinicians, the purpose was to explore narrative accounts of their experiences in the RCT. An interview guide was developed, which consisted of a set of open-ended guide questions that helped facilitate a deeper understanding of the clinicians' accounts working with patients and their impressions of the treatment (Appendix B). Questions pertaining to the clinicians' level of experience and expertise in the field, perception of the treatment and its efficacy, the relationships they established with their patients, and opinions of treatment progress were explored. Open dialogue was facilitated, and an in-depth exploration of the clinicians' experiences was recorded with a digital recorder.

The audiotaped interviews were 45-90 minutes in length and were transcribed verbatim by a member of the research team.

2.5 Data analysis

Data analysis was conducted using the six phases of thematic analysis procedures described by Braun and Clarke (Table 2; Braun & Clarke, 2013; Braun & Clarke, 2006).

Descriptions, explanations, and relationships provided by the participants were categorized into themes, which were subsequently explored and applied to other participants, cases and contexts. The themes captured both implicit and explicit ideas within the data. The objective was to utilize the emerging themes to develop a narrative explanation that could accurately describe the phenomena at hand (Braun & Clarke, 2006; Braun & Clarke, 2008a; Chapman, Hadfield, & Chapman, 2015). To do this, the recordings from each of the participant interviews were listened to at least once, and the transcripts read several times. Here, I became immersed in the data, working inductively to avoid introducing my viewpoints, bias and judgements on the views expressed by the participants (Guest, 2012). The transcripts were then cross-referenced, and recurring statements, thoughts or patterns were noted and organized into a series of codes, which were short statements that encapsulated the meaning of the phrase. The phrases ranged from a sentence to a large paragraph in length. Emerging themes were generated by combining and contrasting codes and divided into main themes that grouped similar codes. This created a network of associations, whereby similar statements from different individuals converged to create a theme (Braun & Clarke, 2008; Chapman et al., 2015; Guest, 2012). The process was inductive, meaning that a pre-existing coding frame was not developed. Instead, the themes were developed based on the categorization and relevance of the codes. Before finalization, the themes were consistently combined, refined, separated and discarded until they best represented the data. Due to the study's novelty, data coding was done mainly at the semantic level, whereby the codes were an explicit representation of the data. This was done by staying close to the text, using the participants' words and verbiage, and ensuring that participant accounts visibly supported the code (Bengtsson, 2016). From the themes developed, and in cases where there was an indication

of underlying meaning or where the language reflected an implicit process, latent analysis was utilized while being mindful that the themes were reflective of the text and supported by the data.

The themes were then reviewed and compared to one another to ensure that they were complete – that is, that they encompassed all the codes that were developed from the data. From there, a detailed analysis of what the theme represents was written, and important passages and phrases that encapsulated the theme at hand were included. The same process was utilized for the MP therapist group; however, data were not cross-referenced as only one interview took place in this group. To reduce researcher bias, discussions were conducted between members of the research team until there was agreement on the major themes.

Once the major themes were finalized, they were compared and contrasted between the MP and CBT groups to determine differences and similarities between the treatment types, particularly in terms of their efficacy, side effects, long term benefits and the therapeutic process as a whole. Theme maps and other diagrams were also generated from the data. It is noted that a series of three dots (ellipses) in the included quotations are indicative of phrases and sentences that were removed from the original transcript. This was done in cases where participants expanded on ideas that were not relevant to the theme or topic at hand.

Table 2. Braun and Clarke's (2006) six phase, 15-point checklist of criteria for good thematic analysis.

Process	No.	Criteria
Transcription	1	The data have been transcribed to an appropriate level of detail, and the transcripts have been checked against the tapes for 'accuracy'.
Coding	2	Each data item has been given equal attention in the coding process.
	3	Themes have not been generated from a few vivid examples (an anecdotal approach), but instead the coding process has been thorough, inclusive and comprehensive.
	4	All relevant extracts for all each theme have been collated.
	5	Themes have been checked against each other and back to the original data set.
	6	Themes are internally coherent, consistent, and distinctive.
Analysis	7	Data have been analysed – interpreted, made sense of – rather than just paraphrased or described.
	8	Analysis and data match each other – the extracts illustrate the analytic claims.
	9	Analysis tells a convincing and well-organized story about the data and topic.
	10	A good balance between analytic narrative and illustrative extracts is provided.
Overall	11	Enough time has been allocated to complete all phases of the analysis adequately, without rushing a phase or giving it a once-over-lightly.
Written report	12	The assumptions about, and specific approach to, thematic analysis are clearly explicated.
	13	There is a good fit between what you claim you do, and what you show you have done – ie, described method and reported analysis are consistent.
	14	The language and concepts used in the report are consistent with the epistemological position of the analysis.
	15	The researcher is positioned as *active* in the research process; themes do not just 'emerge'.

2.6 Trustworthiness

The criterium in qualitative methods that parallels rigour, validity, and reliability in quantitative methods is known as trustworthiness. As described by Lincoln and Guba (1985), trustworthiness includes the criteria of credibility, transferability, dependability, and confirmability. In the following study, there are several ways that the trustworthiness of the data was addressed. The purpose of credibility, which is akin to internal reliability in quantitative research, is to ensure that both co-researchers and readers can recognize the experience when confronted with it and that the researcher's interpretations are derived from the data (Lincoln & Guba, 1985). To ensure credibility, several different techniques were utilized. Firstly, notes that justified the theoretical, methodological, and analytical choices were included in the study so that readers had a better understanding of how and why particular decisions were made (Korstjens & Moser, 2018). In addition, the data was consistently read and re-read several times, and any codes or emergent themes were revised, where appropriate. Due to limited access to the

participants post-interview, member checking occurred with one of the principal clinicians to discuss the emergent themes within both the therapist and participant groups.

Furthermore, because of the sequential linkage between the RCT and qualitative study, a quasi-member check was used to compare the qualitative findings to individual RCT data. Investigator triangulation, which aims to enhance qualitative research by utilizing more than one approach (Korstjens & Moser, 2018), was applied to some degree by having the two members of the research team who conducted the interviews (myself and my supervisor) to discuss the data and emergent themes. This would not render full investigator triangulation since the coding, data analysis, and theme development was conducted by me. However, the purpose of the meetings with my supervisor throughout the research process was to ensure that any difference of opinion regarding the emergent themes and interpretations were discussed until the interpretation that best represented the data was found. The themes were finalized when we agreed that they best represented the data as a whole. Subsequently, internal validation of the patient data was addressed by creating an appendix of quotations that supported each of the themes (Appendix C). This was done by going through the transcripts again and selecting quotes that contained the key terms or phrases found in the themes.

The transferability, which refers to how generalizable the results are (Lincoln & Guba, 1985), was met by providing a thorough account of the descriptive data that pertained to the research. This included setting, sample size, recruitment, demographics, inclusion and exclusion criteria, interview procedure and questions. The dependability, which ensured that the analysis process followed the accepted standards of TA, was met by confirming that the research process was logical, traceable and well documented (Tobin & Begley, 2004). I consistently examined the data to ensure that the measures of trustworthiness were met. To enhance the audit trail, all

records of the raw data were archived. Furthermore, a summary sheet of the emergent codes and themes for each group was created to ensure that any future data analysis and interpretations could be tested for adequacy (Lincoln & Guba, 1985).

2.7 Researcher position and reflexivity

Because data collection and analysis were spread over five years (2015 – 2020), I kept a reflexive journal pre-, mid- and post-analysis to document my thoughts, biases, and personal insights that may have impacted the research (Lincoln & Guba, 1985). Since my academic and personal experiences shape who I am as a person, I needed to explore their potential impact on my research.

I am a 30-year-old female, first-generation Iranian-Canadian, born and raised in Toronto, Canada. Before the current project, I did not work with individuals diagnosed with BED. As I am not a clinician, my understanding of these phenomena was limited to the literature. Although I have worked with the overweight and obese population in a health coach and fitness setting, I have no clinical experience working with individuals diagnosed with compulsive overeating.

Experiences with my health led me to enhance my knowledge of food and nutrition. Much of my diet consists of nutrient-dense and whole foods because deviations from this can aggravate my symptoms. As a result, I place substantial value on health and have never experienced overweight or obesity. My weight and the amount of food I consume have never been a focus in my life nor a sensitivity. Prior to the study, I had a preconceived view that health was a personal choice that depended heavily on eating well and exercising. I became aware of this personal bias early in the interviews when participants would explain their binges and associated feelings. Immediately after, I would ask them if they understood the nutritional values (or lack thereof) of the foods they consumed and how it would impact their bodies.

Furthermore, the current project was my first exposure to qualitative research, which led to my acceptance of essential criteria. These included embracing the researcher's role in understanding participants' worldview and being aware of the importance of a constructivist paradigm. During the interviews, I embraced the openness of the participants. I shifted my focus on understanding how their experiences are explored on their own terms rather than trying to reduce them to predefined or abstract categories. My exposure to therapeutic interventions and counselling courses enabled me to appreciate the importance of a non-judgmental, inclusive, and secure environment for participants to share their stories. Creating this environment was especially important because of my worry that my weight or appearance might be a reason for participants to close themselves off to me. Fortunately, I did not find this to be the case during the interviews. I also believe that co-leading the interviews with my supervisor inadvertently created a diversity that provided more opportunities for the participants to connect with us.

Despite the liberation in acknowledging that the qualitative researcher does not have a neutral, objective and detached position, my positivist background influenced my role as a researcher. Specifically, it kept me as a "neutral" observer and discouraged me from providing too much of my own research insights. It is mostly this reason that I chose to incorporate a more exploratory and descriptive method of analysis, rather than those that resulted in abstract theories. The research project's novelty - being the first to explore psychological and pharmacological treatments in BED - was another contributing factor. My goal was to frame the analysis such that it created a clear and concise description of the phenomenon and one that was "as close" to the data as possible.

Over these few years, the events and knowledge that I obtained in my life gave me a deeper understanding of the women I interviewed. The themes were developed as I grew as a

researcher, and I am glad that I spent the number of years I did to understand the women's experiences. A notable example of this was having a family member go through the mental healthcare system, which allowed me to appreciate the women's descriptions of the difficulties in getting help. I started to identify with their statements regarding the expense, time, and arduous process of obtaining healthcare and the long road needed for improvement.

I came to understand that there are many healthcare barriers, and that health is more than just eating healthy and exercising. While I entered the interviews believing health to be largely in the individual's hands, I end my project with a solid understanding that social, political, personal, familial, genetic, and many more factors can foster or thwart a person from experiencing health. I also came to understand that the term "health" has many different meanings for many different people. This further instilled the importance of acknowledging and reducing judgements and biases when trying to understand the lived experiences of others.

Lastly, the most important concept I took away from this project was my deep appreciation of qualitative methodology. Extending from the theme of human connection, I realized how necessary it is to give each individual a voice to provide a deeper context to the numerical evidence gathered from research studies. Many concepts would have been left uncovered had this project not included the much-needed qualitative component.

CHAPTER 3: RESULTS

Interviews were conducted with nineteen participants. Of those, seven patients were in the CBT group, eight patients were in the MP group, three psychologists administered CBT, and one psychiatrist administered the MP treatment. To respect and retain the participants' complete privacy, any identifying information was removed and instead, random numbers were used to indicate distinct quotes included in this document (e.g., P1, P2, P3). Although it may be argued that this can be dehumanizing (Saunders et al., 2015), it was important to respect the need for anonymity, particularly in this cohort. In addition, the use of random names may have taken away from appropriate cultural and ethnical representations and, conversely, it may have been incorrectly used by a researcher or revealed too much about an individual.

The results will start by describing the four themes listed as cross-cutting themes – that is, they appeared in both groups and were related to the disorder itself. Six additional themes that emerged from the CBT group and CBT therapist group, respectively, will also be discussed. Lastly, the four themes that emerged from the MP group and four from the interview with the physician administering MP will be described. A list of the themes and subthemes is presented in Table 3 and a summary of the key similarities and differences is provided in Figure 1.

Table 3. Themes and subthemes from the study, categorized by group

Group	*Themes and Subthemes*
CROSS-CUTTING THEMES	1. Use of addiction-related terminology 1.1 Subtheme: Cravings 1.2 Subtheme: Overeating vs. binge eating 1.3 Subtheme: Food as a drug and food addiction 1.4 Subtheme: Perceived stress 2. The need to be in control 2.1 Subtheme: First-year university 2.2 Subtheme: Conventional diet programs 3. The need for safety and comfort 4. Physical and psychological sensitivities
CBT	1. Therapy addressed the patients' need to feel in control of their food intake 2. Therapy enhanced self-awareness and mindfulness 3. The psychoeducation component of therapy motivated patients to reduce binges 4. Therapy acknowledged the need for patients to feel safe and comfortable 5. Therapy reduced psychological sensitivities 6. Therapy had some tools to reduce stress, but there needs to be a stronger emphasis on stress-coping skills
CBT PSYCHOLOGISTS	1. The psychologist as a coach 2. CBT encouraged patients to regain control over their food intake without being restrictive 3. Stressful life events may reduce help-seeking and therapeutic progress 4. Motivation was important to adherence and therapeutic success 5. Mindfulness and self-awareness were important in addressing the behavioural and cognitive components of BED 6. There are social determinants of health that impact the ability of patients with BED to access help
MP	1. The drug changed eating behaviour by reducing appetite and impulsivity 2. Components of the therapy reduced stress-induced binges 3. The drug helped enhance mindfulness and self-awareness, but not on its own 4. The psychiatrist addressed the need for safety and comfort in patients
MP PSYCHIATRIST	1. There are social and pharmacological barriers to drug therapy 2. MP reduced binges by addressing the impulsive component of the disorder 3. Patient-psychiatrist relationship was important to the therapeutic process, but the main beneficial effects were attributed to the drug 4. Diagnosis was a motivating factor in therapy

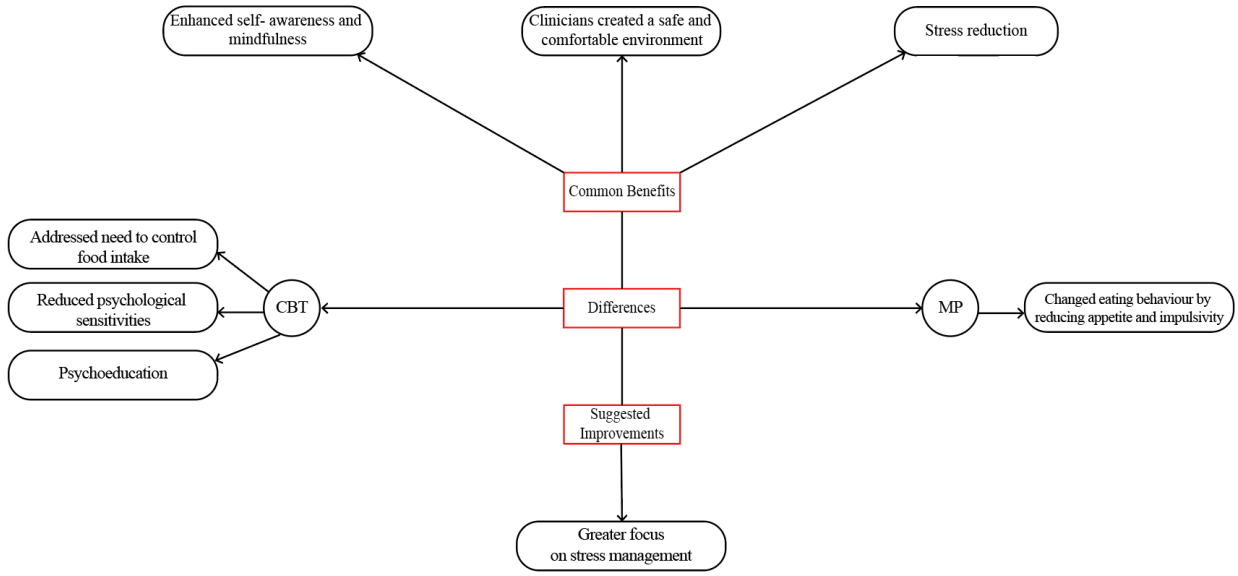

Figure 1. Thematic map, displaying a comparison of the main themes related to MP and CBT treatment experiences of patients.

3.1 Cross-cutting themes

To better understand the treatment amongst the patients, it was initially important to explore the women's experiences with BED. In so doing, a more fulsome picture of the sample and the role therapy played in their lives was developed. The themes pertaining to BED behaviours and cognitions emerged in both groups and have been listed as cross-cutting themes.

1. Use of addiction-related terminology

1.1 Subtheme: Cravings

Language was an important tool in understanding the thought processing of BED patients. There was a conflation of cravings and a need to eliminate repetitive thoughts that promoted binge eating behaviour. The word "craving" was important because it was not used by participants in the conventional sense as a desire for something. Rather, in addition to the desire, it was described as a feeling that led to the impulsive and compulsive nature of binges: "It's a craving, it's also like an obsessive thought that won't go away" (*P8 MP)*. Overall, the term "craving" seemed to have a negative connotation in this cohort and was an important term when

participants were describing elements of their disorder: "Cravings is a huge aspect. Once I get a craving, it's in my mind, and it doesn't leave until I do something about it…I would never really associate cravings with hunger, I associate it more with the emotion, tension and stress" (*P12 CBT).* In one case, a participant described her binges as:

> I don't have exact cravings, I would say. The impulse I get, to just eat and usually I aim for items, it could be ice cream, it could be chocolate, it could be the rice or stuff at home, or it could be a Tim Horton's bagel or sandwich. You know it could be anything as long as I have it, and I'm just craving something like that, some item I like. *(P3 MP)*

The interesting point about this passage is that although she initially stated that she does not get cravings, she used that exact term to emphasize her point at the end of her statement. This again outlined the definition of the word "craving" as a compulsion, rather than the general definition of a desire for something.

1.2 Subtheme: Overeating vs. binge eating

Patients were very articulate in describing how binge eating differed from overeating. Binges were planned, and the individuals were clear that it would happen. It was a decision on the patient's part to eat a lot in a short period, and they looked forward to it. Binges were also described as overeating to an extreme and a response to certain emotional triggers and cravings. Cravings stayed in the mind until they were acted upon, again outlining the compulsive nature of binges. There were two instances where cravings were not seen as compulsions or what lead participants to binge. Here, the patients disclosed that binging was seen as a solution to their problems and that: "If I'm extremely frustrated, if I'm really disappointed with something, if there's something coming up, and you know, it's like emotional, I think that's where the binge comes" *(P7 MP).* Binges were seen as comforting and a need to release anxiety, space out, and numb the brain. They were also a way of expelling negative feelings or bringing relief, and it

was typically engaged in when the participant was not feeling good. Without them, the patients had difficulty calming down:

> I can have a bowl [of popcorn] and be completely fine with it, and sometimes I just sort of eat it a little bit mindlessly and be like holy shit, I just finished the whole bag, and I'll feel really disappointed and be like, 'I didn't need that.' A binge for me is almost like a different kind of compulsion and a bit more feeling of a lack of control, but in a weird way, it's a lack of control but so planned. It'll almost start like a little idea in the back of my head, 'You want this, you want this, you really need this,' and it'll gradually build, and it will just be completely like this is what's happening, and I'll go to the grocery store and go through all of the aisles and get all of the necessary evils that I need, and they include many different food groups, none of them healthy. And then I go home, and I eat them all in order until they're gone, and it happens in a very fast, very short period of time like not even half an hour, and I feel entirely sick afterwards, my stomach hurts, and I feel awful about myself. *(P7 MP)*

Before a binge, patients described starting with their favourites and then moving onto what was available; therefore, binges became impulsive and uncontrolled when they occurred. It was here that the patient would lose control and was unable to stop. Like drugs, there was a high during a binge and then a crash to self-hatred where patients would tell themselves that "they won't do it again." There was also a lot of physical self-harm associated with binges, which had to do with excessive feelings of fullness. However, the binges did not affect the patient's day to day functioning or duties. Feelings associated with binges included a mixture of happiness, pleasure, and euphoria, followed by guilt and awful feelings of self, afterwards. Patients also described becoming tired, overwhelmed and frustrated.

In contrast, overeating was described as a gentler and mindless process, where there is a lot of eating, but the person can stop. It is noteworthy that one patient viewed snacking, which for some, was akin to overeating, as a gateway drug to binging. During overeating, patients described eating more than they intended to, either because they were not paying attention, indulgence, or the food item tasted good, making the behaviour unintentional. Furthermore, there was no guilt, panicky feeling or compulsion associated with overeating. It is not clear whether

the difference between overeating and binges was better understood post-treatment. Only one patient in the CBT and one in the MP group mentioned that they could not tell the difference between the two before joining the RCT.

1.3 Subtheme: Food as a drug and food addiction

For many of the patients, the association between food and drugs became amplified after an adverse event, commonly associated with loss in the person's life. Some examples were the loss of a loved one, physical or emotional injuries, and abuse. The effects did not seem to be immediate, and over time, food started to have a strong association with comfort and safety for these patients. Overconsumption of hyperpalatable foods often started as a habit and then progressed into binging subsequent to these life circumstances.

Increased exposure to these types of foods also contributed to binge-eating behaviours. Examples described by the patients included changes in the food environment such as post-World War II, where according to one patient, "Campbell's and Kraft were all the rage" *(P15 CBT)*; the availability of fast-food restaurants like McDonald's and Tim Horton's; and learning from family members that food could be used as a coping mechanism. In the latter case, some patients had normal eating patterns in their family and household when they were kids, but food was seen as positive and comforting.

A perceived loss of control is a hallmark of BED – a fact which aligns strongly with common "drug language":

> People talk about wanting a cigarette or wanting a drug, and seeing that, I think it all falls in a similar pattern and similar behaviours and similar cravings that won't go away. The feeling, it's almost like a high that you get because my brain is so overactive that when it does stop for that moment, it's almost like a high that I get when I'm eating. So, I think all of those things would be an argument for why food can be an addiction or is an addiction. *(P12 CBT)*

From the patients' language, it was observed that the similarity between food and addictive substances were their impulsive and obsessive properties. One patient compared her sugar intake to a slot machine in Vegas: "You see a chocolate bar, to me, that's Las Vegas slot machines. There's people sex, gambling, whatever that triggers your nucleus accumbens…you know whatever. Mine is sugar *(P15 CBT)."* Another patient, who used to be a smoker, stated that the feelings associated with a binge were very similar to smoking. Food was viewed as a form of self-medication, which allowed one to dissociate from problems and reality. Specifically, binges and their respective consummatory behaviours seemed to be a means of reducing anxiety. It was not the physical act of eating (e.g., chewing gum) that lowered the anxiety and had a numbing effect, but rather the ingestion of food – though, for some patients, the physical act of eating was also pleasurable.

Another notable similarity between food and drugs was the compulsive aspect:

> If you look at [BED] in terms of the compulsive piece, then I would say if you define addiction as being compulsive, then that's one huge element to it, then yeah, for me definitely, cause it does feel compulsive and like I can't stop, and it's a bit overwhelming. *(P10 CBT)*

The drug-like nature of food was frequently demonstrated by the term "compulsion," where one patient stated, "it's more like a compulsion that is hard to stop once you start" *(P5 MP)*. Gaining control over binges was seen as a difficulty since hyperpalatable foods were so readily available. It is important to note that not all foods were viewed as drugs. It was specifically foods consumed during binges that were described as highly pleasurable, rewarding, and created a heightened sense of excitement. In addition, these foods were cheaper and "they're faster and more rewarding when you have problems with food" *(P13 CBT)*. The "drug" of choice was typically sugar, carbs, and sweet foods. There were, however, also mentions of burgers,

chicken wings, meaty foods, chips, foods with cool creamy textures (i.e., ice cream, yogurt, or milk), and salty and greasy foods.

The term "sugar addiction" was also commonly used by the patients and described as an instant means of relieving stress and anxiety and bringing about a calming feeling. Examples of sugary and carb-based foods included sugary pastries, cakey desserts, pasta and rice. As described by one patient, sugar became "a friend and an enemy in that I gained too much weight quickly" *(P15 CBT)*. Another patient stated that she experienced sugar withdrawal when quitting, which included headaches and irritability. Many of the participants used sugar to calm themselves. For another patient, the calming effect of carbs was used to help her sleep.

The genesis of sugar addiction may have stemmed from childhood, where sugary foods were associated with positive feelings and comfort:

> I think it was just a comfort, it just made me feel like a drug, it kind of makes you feel warm, and when I was really little, my mom would give me apple juice, and she liked seeing how happy I would be. So I think that's kind of where the sugar addiction came from. But then it came to that point when I was around 8 or 10, and my doctor started noticing that I should keep watch of my weight. I don't know if I took that as a negative and made me [want] to do it even more as compensation for feeling guilty, but it was never just about hunger. There was always an emotional aspect tied to it. *(P12 CBT)*

The emotional aspect and distorted perception of food in childhood were widespread amongst patients. The pairing of guilt with "addictive-like" eating behaviours seemed to serve as an initiator of the disorder.

Binges were typically done while alone and in secret. However, in a case where others were exhibiting the same behaviour, one patient stated:

> When I'm around friends or family who also tend to either overeat or binge, it's almost like you're creating this dysfunctional circle of safety where you can just eat whatever you want. You have permission to do it. *(P10 CBT)*

In addition to outlining the similarities between binging and addictive behaviours, patients detailed why these foods, instead of conventional drugs of abuse, were their "drug of choice." For example, it was easier to keep it a secret, and there was a preference for a "drug" they could hide, was relatively acceptable, and did not negatively impact their day-to-day functioning:

> When I'm at the point where I don't know whether to cry or scream, and I can't breathe anymore [due to] feeling of stress, that ice cream is just a different kind of numbing than alcohol would be. Because maybe it's two in the afternoon and I have to go pick up my husband at four, and it's really not feasible to have a bottle of wine. *(P14 CBT)*

It may be for this reason that one patient was hoping not to be put into the drug group because she was apprehensive about the medication impacting her work performance, and another patient worried that the drugs would alter her system. For our sample, which mainly comprised well-educated and employed women, food was a means of relieving anxiety and stress. Unlike recreational drugs, prescription medication, or alcohol, food did not harm their daily functioning:

> Food is the good girl's drug… I'm not going to mess up my life. Usually, when I'm stressed, and I'm sort of locked into a spot like a cubicle and worried and have to present a document, I can't go out and drink. And you know people say all these activities, like 'Oh go for a walk, or have a bath,' like that doesn't work when you're [busy]…so [food] is a real instant hit of something that is legal and it's everywhere. *(P9 CBT)*

Having this perception of food as an addictive substance was common amongst BED patients:

> [Food's] legal, and it's acceptable, I could go to the supermarket and buy it, so it's not harmful. But really, it caused me a lot of harm. It is my drug. Like I still struggle with food, I think I'll always struggle with food forever. *(P11 CBT)*

Although the participants expressed that these foods "numb" or "stop" their overactive brains for a moment, equating hyperpalatable foods to drugs was a harder line to draw because, according to one patient, "we all need food" *(P14 CBT)*.

Food was also seen as an anxiolytic and a way to self-medicate. The terms "relax" and "comfort" were frequently associated with the pleasure in binging: "When I binge it's because I

felt anxious, so the comfort is [that] I feel so much better, I don't feel as anxious, I can just numb out, and I don't have to think about whatever is bothering me" *(P10 CBT).* Such a statement outlined the need for mental relief, and like conventional drugs of abuse, food was used as a coping mechanism. The compulsive and impulsive nature of binges were also common, and physical comfort was exchanged for mental relief:

> Like I eat [during a binge], and then I feel really comfortable after, I'm in my comfort zone, I feel safe, I feel relaxed and relieved, and then when I'm eating my mind clears up, that's another thing. I'm just eating, so I'm thinking about food, so my mind clears up with all the stuff that's happened that makes me feel sad…Physically, it's actually uncomfortable, but mentally it's relieving…I give mental relaxation priority over physical. *(P3 MP)*

Physical discomfort stemmed from extreme fullness, and, with some patients, this was a form of self-inflicting pain and punishment. Despite the physical pain, eating would stop only when the patient had "achieved their goal" – which was either mental relief or in conjunction with eating all of their binge foods.

Binges were seen as a secret, despite patients not wanting this association. One patient used to consider BED a "shameful secret" *(P2 MP)* instead of a disorder. Many patients also went to great lengths to keep their binges a secret. For example, one patient would wear her mother's wedding ring to show the grocer she was buying food for a family, despite living alone: "My mom's old wedding ring, I would put it on my finger and pretend I'm buying [food] for a family, just so people wouldn't think badly of me, and then I would go home and eat it all" *(P4 MP).* Another patient would justify at the grocery store that the food she was purchasing was for a party. Even during treatment, one participant would not disclose to her friends why she had lost weight. Much of the time, these statements were followed by the family not being supportive, not talking about these things, or not understanding them: "They're not the kind of people you can really talk about this kind of stuff to" *(P4 MP).*

Cultural norms also exacerbated these events. For example, a patient who previously lived in a country where people did not frequently eat in public stated that she had more secretive binges: "That's when I really noticed it more because people didn't eat out in public, people also took a lot more time to eat, and then if I did want something, that's where I felt I became really sort of sneaky about it" *(P15 CBT).*

Lastly, like drug addiction, the ability to be successful in therapy was largely influenced by a motivation to change:

> I knew I was ready to get help, and because I had opened that window, I know that's why I saw that sign [subway ad]. My expectations were that I was going to go through the program, do everything, and I could be successful in it. Because I was ready, that's the problem. I wasn't ready all these years, I hadn't been ready, and I was finally at a point in my life that I was ready. *(P4 MP)*

Many of the terms used to describe why patients decided to seek treatment aligned with what was commonly observed in addicts seeking treatments. Patients believed: they had nothing to lose; went into the treatment without expectations; they were tired of binging and wanted to talk about the "secret of binging" with a professional; they wanted to connect with others in a safe environment; they wanted to regain control and be successful in the program; and they previously had bad experiences with therapists and programs. In addition, the faith in a program at the reputable Centre for Addiction and Mental Health (CAMH) motivated some to seek help.

1.4 Subtheme: Perceived stress

There was a strong indication that stress was the single most definitive reason for a person to binge or relapse: "I feel like sometimes it depends on the situation, but I can get stressed out pretty easily sometimes" *(P1 MP).* Stressful situations increased the urge to binge, and it became difficult for patients to resist these urges. A recurrent inability to cope with stress and stressful events could trigger binges by impacting the individual's emotions and anxiety.

Various anxiety-inducing emotions that appeared to trigger binges, included anger, sadness, resentfulness, and fatigue. In addition, stressful events included loss of a relationship (i.e., family, friend or loved one), school or work-related stress and hunger induced by restrictive diets. These events made the patient feel like they were losing their freedom or control over their eating, emotions and life.

P4 MP: There were months where I wouldn't binge at all

Interviewer: And that was a conscious effort?

P4 MP: No, it wasn't a conscious effort

Interviewer: So, what made you stop bingeing?

P4 MP: Things were going well. I wasn't overly stressed.

Interviewer: So, it was very much contingent on your stress levels and your mood and so on?

P4 MP: Yeah, yeah.

The environment strongly influenced the patients' emotions and impacted their eating behaviour, even during treatment. For example, for a patient taking antidepressants and going to therapy for anxiety, it helped her cope with binges and limit them. However, when her anxiety increased, the binges also increased, even when she was in treatment.

> I was both on medication and seeing a therapist regularly while I was still bingeing, but it was helping to kind of cope with the binges and the aftermath, and it was helping me to kind of limit them. It wouldn't be as frequent. I definitely noticed a huge correlation between high anxiety times and bingeing. When I was at my worst bingeing, it was when I was at my worst with anxiety, even with medication and therapy. *(P5 MP)*

Binge triggers extended beyond school, work, and relationship-related stress. For example, for several participants, hunger and anxiety felt the same, "I don't know, and I often [wonder]: Is it hunger? Is it anxiety? Because they feel the same…[stomach] growling and sort of like squeezes. You know you feel a little bit lighter, it feels like the anxiety sometimes" *(P7*

MP). To alleviate this, they would binge. For some, when they were feeling low or were very upset, there was no desire to eat. However, when they felt a little better, they realized they were hungry, which led to a binge. For one participant, a small breakfast and lunch left her hungry at the end of the day, which led to bingeing and overeating.

Despite being planned, binges evoked a feeling of both euphoria and guilt. An awareness of the unhealthiness of the foods they consumed and the physical pain that followed may be why binges were viewed as a punishment to the patients. However, the psychological bliss and euphoria were what allowed these binges to occur regardless of their negative elements:

> *P5 MP:* I think for me, it took the focus off, so it was something that I could just kind of numb my brain in. My anxiety attacks were kind of a shortness of breath, and I feel sort just agitated, and while I'm putting all of that energy into just shovelling in food, things that taste good, and they're at first kind of helping me to feel better, and then, as the binge progresses, it starts not to taste like anything. But it was somewhere to kind of put that nervous energy, something to do with that
>
> *Interviewer:* So, you'll get anxiety, and then you'll binge, or do you binge and then get anxiety? Is there a succession?
>
> *P5 MP:* It's hard to say really, I think it kind of almost happens simultaneously. Something like the last few times when you know it was bingeing, I would get very anxious, probably because of the stressors in life, but my immediate reaction, and while I was getting anxious was to plan out, what am I gonna buy, what am I gonna arm myself with, so it would happen almost simultaneously.

Therefore, it seemed that the order of events started with stress as a trigger, which led to feelings of anxiety and binging to control the negative emotions and bring relief from the perceived psychological pain.

Patients would discuss periods in their life with no binging, and then, with the onset of stressful events, they would resort back to binging. Overall, food, and therefore binges, become a coping mechanism and a maladaptive way of managing stressful events in the participant's life:

> I think the majority of my weight gain happened when I was in graduate school, and I had a horrible, horrible break up, and then from that time until probably a year or two ago, I

> just had a string of really rotten things happen in my personal life and food has always been a coping mechanism certainly in my family, you know, surrounding family. And food just became something I used more and more as a crutch. And that's when I think of the bingeing piece. I binge in little bits all along the way, but it just occurred more regularly and became more of a coping mechanism, and then the weight obviously went up from there even more. *(P10 CBT)*

During stressful times, binges seemed to manifest as an aid to relieve the compulsive negative thoughts, similar to how conventional drugs of abuse are used:

> If I'm stressed, my mind doesn't shut up, so if I'm stressed about something, and I'm worried about it, it's on my mind. So, one of the things is when I binge, it completely clears my mind about myself. It like, it empties it, and so that helps me not worry and not have all those paranoias in my head, I guess. *(P12 CBT)*

Therefore, stressful events were made more difficult because of maladaptive cognitive styles, which had the potential to cause a person to "fall off the wagon," relapse, or stop seeking treatment:

> I've attended Weight Watchers three different times, and all three times, it's been successful, but then I'd reach a point where I kind of stopped being with the program, I guess. Like it would be successful, and I'd lose weight and get on track but then once I'm really bad if I get off schedule because I move, let's say, or I go into the summer, and my schedule is altered, and I find it hard to keep up with everything in my life, and it's hard to get back on track. *(P12 CBT)*

Although stress is a subjective experience, it was a common way for individuals to justify their binge behaviours. One of the interesting elements of the disorder was the degree of blame externalization and internalization language used - that is, how much of the disorder's responsibilities and its treatment were perceived to be due to environmental factors and how much was due to the person. In most of the patients, there was strong evidence of blame externalization. For example, one participant created terms to justify their binges:

> *P11 CBT:* It's been several months now [since her last binge], and I remember having one last week. Well, it wasn't really a full out binge, but I remember having what I guess I would recall a mini binge.
>
> *Interviewer:* What's a mini binge?

> *P11 CBT:* A mini binge is like, I was eating out of a container of ice cream, and then I had some chocolates, then I had a little more ice cream, and then I was like 'Oh my god, I have to stop '…"
>
> *Interviewer:* So, there wasn't a particularly stressful event that happened that made you [binge]?
>
> *P11 CBT:* I think, I think it was, and I'm blaming this on my period…I feel like a week before my period, I started to really crave carbohydrates and sugar…so I dunno why, if it's cause the weather is getting colder, and the combination of the period, I don't know what it is, I don't know what my problem is.

For these patients, their surroundings seemed to have a large role in influencing their eating behaviours. Examples of environmental justification described were: binging was because they did not have enough calories, parents cooked heavy foods and pushed them to eat, mom was an enabler but would criticize after weight gain, loss of control where "something has taken over me that's making me do this" *(P11 CBT)*, and something is wrong with their brain and its wiring:

> I have to eat normally to live. Whether it's ten bags of chips or ten bags of apples, I have to eat to live. It's a harder line to draw because we all need food to eat… we need like energy-containing units to live, and if that's in a vegan protein shake like whatever it is, if you take in enough calories, you can keep surviving. *(P14 CBT).*

Even when describing their binge experiences post-treatment, the rationale was typically due to the external events listed above.

Blame externalization language was also evident when it pertained to the medicalization of the disorder. Medicalization of BED was typically seen as beneficial and provided a sense of comfort to patients that there was a label to the behaviours and thoughts they are experiencing:

> Just knowing that bingeing is classified now as an eating disorder just makes you feel like, it's not just all me, it's not because I have no self-control or you know, you wouldn't say that to someone who had anorexia, right? So to me, it was very comforting for sure to know that… *(P11 CBT)*

In addition, it allowed patients to better articulate and use standardized and known terminology to describe their disorders, that they may have not otherwise been aware of prior to diagnosis:

> *P11 CBT:* When I became a teenager, it was a lot of dieting and then bingeing and then dieting and then binging, and then you know, hating myself
>
> *Interviewer:* Did you call it bingeing at the time?
>
> *P11 CBT:* No, I didn't know what it was, you just lose control, like I always feel like you're out of your body, you can't control yourself…

However, in some cases, there was evidence to suggest that labelling the disorder may have led patients to believe that there is no cure, particularly since no known cure has been established for BED. Therefore, the language seemed to shift again towards blame externalization*: "There's* something wrong, not wrong…this must be how my brain is wired… it's wired on sugar" *(P15 CBT).* This is not to say that labelling the disorder created a sense of hopelessness. Rather it seemed that the language suggested that patients must manage or deal with the disorder throughout their lives, rather than believing that they can fully recover from it:

> I don't think it's something that I'll ever beat fully, I think it's something that I'll have to work on and progress throughout my life, and it's something that I just have to accept, and I know that I can work towards, to beating. *(P12 CBT)*

It is evident in this passage that "beating" the disorder did not equate to curing it, but rather it meant managing the disorder, likely so that it does not impact their quality of life or day to day functioning. In the DSM-5, loss of control is *perceived* (American Psychiatric Association, 2013), a key term missing from the patients' language.

2. The need to be in control

Despite the feelings of loss of control during a binge, the act itself was typically planned:

> For me, binging is very much like literally flicking a light switch. I get to a point, and I'm like, 'oh no, that's fine,' then you'll find me in the potato chip or ice cream aisle at Metro [grocery store], and I will be very carefully contemplating exactly how much and what I'm getting. *(P14 CBT)*

The paradoxical association between planning a binge and losing control during a binge may have been due to a need for patients to feel in control of their lives. Specifically, situations where

the patients experienced or associated with a loss of control, had a negative impact on their emotions, thoughts, and stress levels, resulting in a binge. Therefore, the systematic and organized nature of binges seemed to represent a need to control negative and unwanted internal experiences:

> Binge eating is something you set out with a mind, something you have a mindset to do. For me, I would say I'm going to, for example, McDonald's. I'm not feeling very good about myself, and I need to punish myself, and I'm going to go and buy you know, four big macs, six apple pies, 20 nuggets, and I'm going to eat it all and feel ill. And then, when I feel ill, then I know I've accomplished what I've set out to do. *(P4 MP)*

Two main events in the patients' lives provided insight into the use of binges to reduce or remove their negative internal experiences. These life events have been categorized into subthemes.

2.1 Subtheme: First-year university

Despite experiencing independence and control over their eating choices, entering university was also associated with a time when their binges dramatically worsen, there was substantial weight gain, and the disorder to become "full-blown." Notwithstanding the newfound freedom, university was also a high-stress environment that served as a trigger for bingeing. With the higher availability and convenience of hyperpalatable foods in the university environment, access became much easier. For one patients, she stated that it was an insult to her parents to just eat whatever she wanted without worry. This is because they couldn't control her anymore:

> When I was 14 or 15, I lost a little bit of weight, and my parents were delighted to the point where we were like shopping and buying me all these clothes. So, it was always in my mind that being thin was good and being heavier was bad. And then, when I got to the age again when I was in university, I had control over what I ate, and it was almost like an insult to them just for me to eat whatever I wanted and not be concerned cause they couldn't control it anymore. *(P8 MP)*

Because most of the patients reported experiences of parents policing their food intake, the act of eating became associated with something out of their own control:

> I grew up in a household where when I was little and wanted to go to McDonald's, my parents were like, 'No, you can only go once a month.' My dad hated that place, and I always wanted to go there. So just when I got to university, I'm like, 'oh my god, holy crap, I can do whatever I want.' *(P1 MP)*

Despite the association, the patients expressed the desire to gain control over what they put into their bodies:

> I'm more independent, so I got a job, and I had money, and I was lazy just at school getting food from outside or whatever. So it's my money, and I could do whatever. Back home [country of birth], we just stay at home and mom or whatever, they just cook food in the house, and you just eat that. *(P3 MP)*

University was, therefore, the patient's first experience of control over their eating, which coincided with a time that was central to the greatest weight gain and binge episodes:

> When I moved away when I was 18 to university, and I was able to live on my own, I was able to control my own groceries without my mum at home…I think I had that tendency when I was 8 or 10 if she was upstairs. I knew she was away, then I would try and sneak a granola bar, and I would get that same feeling. It's just it was a much smaller amount because it was just a granola bar, versus if I had a whole bag of chips. I think I have that same tendency, but the fact that I was smaller and hadn't pushed the limits and younger and also feelings of guilt because my mother was in the house. So, once I moved away, and I was larger, I consumed more, and there wasn't that parent, and that's when I think I probably started pushing the boundaries and starting binging, I guess, per se. *(P12 CBT)*

First-year university is typically a time of high stress, time-management difficulties, and easy accessibility to inexpensive and readily available, hyperpalatable foods – an integral part of binging. With the stress and pressure of school, many patients turned to food to clear their minds and reduce worrying. Therefore, there was an inability to control external or environment-induced stress - paired with the association of their food choices as being something they typically had no control over - led to the abnormal coping mechanism of binging: "It [university program] was really tough, it was too [much] stress, and I think eating was my way out of just you know just keeping myself calm" *(P3 MP).*

In cases where patients did not attend university or commuted to university rather than move away, bingeing behaviour became frequent when patients had the freedom to make their own decisions regarding their food intake. Typically, in cases where binges started to worsen before university, participants had a job and money to spend: "Because having money means you can spend it on food" *(P15 CBT).* For example, a patient who started to experience excessive bingeing in high school stated that she was working and making her own money to buy lunch. Another patient who began in the same period had access to a car and drove to fast food restaurants to engage in binge behaviours. In addition, these patients were not limited by parents because they were able to hide their actions. Only two patients interviewed lost weight during university. One lost weight (after gaining it during her first year) because her best friend motivated her to go to the gym together, highlighting the importance of supportive relationships. The other patient attributed her weight loss to the freedom to make her own food choices. This reduced her junk food intake, a contrast to her home food environment. However, similar to the other patients, this individual also stated that leaving for university meant that she was no longer pressured to eat foods that were not her choice:

> Once I came to university, and I was in charge of my own life, I lost quite a fair bit of weight, but not trying…when it was up to me what I ate, I was eating less junk food. Even though that's the opposite…That's cause at home, my mom cooks heavy foods, and it's a lot of food…So, yes, we have fairly heavy foods there that [I] was pressured to eat. *(P9 CBT)*

2.2 Subtheme: Conventional diet programs

The guilt that was associated with binge behaviour typically stemmed from childhood. In particular, parents seemed to have a role in adding an element of morality to eating behaviours. Engaging in the consumption of hyperpalatable foods was equated to something negative or bad.

For most patients, this perception started at around age eight and in some cases 11-13 years, when they began to take notice of their weight and parents influencing a negative body image:

> Cause I grew up in kind of a negative environment, 'cause my dad is definitely a fat shamer and fatphobic. Like sometimes when I was little, he'd say, 'You look fat.' I love him, but he would say stupid things like that. *(P1 MP)*

Like most of the other patients (n = 12), this individual's baseline shape and weight concern scores were clinically significant. There were several mentions of patients starting to diet at a young age and being taken to diet programs by their parents. Parents seemed to have a strong role in introducing the association between guilt and food, by controlling the child's food intake:

> My mom thought she'd help by rationing the food. She'd give me six apples and 12 cookies, but I'd eat them all the first day and then have nothing, and I'd have to try to borrow them from my sisters. Cause then you didn't have money or resources to go somewhere to get food, so it started a spiral… *(P13 CBT)*

Interestingly, most patients interviewed realized that when they looked at their younger selves in old photos, they were not as large as perceived, indicating a gap between the reality and perceived perception of the patient regarding this matter. Despite having the freedom to consume unlimited amounts of hyperpalatable foods during the patient's stage of independence, the guilt was carried with them and inadvertently caused them distress as to why they could not restrict themselves. This seemed to be a critical factor in leading many patients to engage in diet programs as a means of losing weight. Common diet programs included Weight Watchers, Nutrisystem, Dr. Bernstein, excessive exercise, starving and other fad diets. All of the patients who enrolled in these programs went back to binging because it was comforting:

> I felt comfort doing it [binging]…and the loss of control I also kind of liked. Cause I was like, well, it's not me, something has taken over me that's making me do this. And then, it's like I felt like a high during the moment. I really felt like this euphoria almost, like the most amazing feeling during that time and throughout the entire day, I feel nothing but pain and awfulness and starvation [when dieting]…[regarding binging] I've never really been high on drugs so I can't really compare it to that. But if I were to compare it, I feel like that's what it would be like, like you were just high on euphoria. *(P11 CBT)*

The restricted caloric intake model that is the foundation of most of the mentioned diet programs evoked stress, negative feelings and emotions, and hunger. For the patients, these characteristics seemed to have been associated with feelings of loss of freedom and control over their eating. Therefore, the availability and ease of access to hyperpalatable foods made it an ideal anxiolytic:

> I just want to do what I like, and I love, and I like food, I want to eat and plus I've always been eating and been happy with that so once somebody takes that away from me I just, I just can't handle that. *(P3 MP)*

Diets that used restrictive language where certain foods were prohibited, may have made patients feel like it was being imposed on them. This resulted in feelings of loss of freedom and control. An interesting example was that of Weight Watchers, as patients previously enrolled in this diet program were unable to continue because the perceived strict dieting increased their anxiety. For some, they realized their lives did not get better after going through it and losing the weight, likely because it did not address the underlying issues of their disorder. Within the three patients that did not exhibit clinically significant shape and weight concerns at baseline, one did not enrol in diet programs because of her belief that it would lead to an eating disorder: "I feel like those are just setting you up to an eating disorder… I never actually dieted, I never went out to [diet], like I never joined a program," *(P14 CBT).* Another patient described seeing a medical doctor who administered CBT. The last patient explained that she joined many diet programs over the years and lost a significant amount of weight. However, she realized that the weight loss did not have as profound an effect as anticipated, which may have deterred her from having shape and weight concerns:

> I've done Weight Watchers more times than I can count. Between 2011 and 2013, I lost a whole bunch of weight, and that's probably the healthiest way I've done it to date. But I was extremely [inaudible] with myself, and that wasn't so awesome, cause as soon as I fell off that strict thing, I [inaudible] and felt more badly about myself. I kind of made a deal with myself that if I lost all of this weight, suddenly life would be amazing, and life

> wasn't amazing. And that's, that's kind of the grub, right, we try to change things, and it doesn't always make a difference, yeah. *(P10 CBT)*

Some patients said that they would return to the diet program after CBT therapy because they no longer see it as oppressive, and it is: "Helpful when I run it, it doesn't run me" *(P10 CBT).*

3. The need for safety and comfort

There was evidence that patients who had trouble developing safe and comforting relationships turned to food to receive this. This association typically started from a very young age and was commonly in response to feelings of loss, particularly in relationships, where safety and comfort were prevalent themes. For some, the loss of a family member, either via death or divorce, may have initiated this replacement behaviour. For example, for one patient who lost her grandmother at a young age, it was around that time that she started to turn to food for comfort. One of the maladaptive cognitions in these patients was that food brought a safety that relationships did not. Another piece of evidence that supported this was that amongst the women interviewed, most of those who were in their 30s and older, were not married, and did not have children.

> I started to come to terms with a lot of things from my childhood that started to bother me… I'm a child of divorce. My mom got re-married. I love my stepfather [and] he and I got a good relationship, but he didn't have a good relationship with my brother. My father and I had a horrible relationship. I never dated, just all sorts of things that I attribute to that, and so I don't know what to do about that, so I would eat, that was part of the problem too. *(P4 MP)*

The same patient explained how the history she had with her father made her afraid of men and relationships and of getting hurt. She believed that if she kept food around, it would keep everyone away, signifying the safety associated with food. Therefore, food brought safety and protection from others whom the patient thought had the potential to hurt her. Food was used as a

coping mechanism, and allowed the patients to shut off negative thoughts, feel warmth and comfort.

The family also seemed to play a significant role in these shifts in perceived comfort and safety. For example, it was typical for patients to receive weight-based criticism from family members: "My dad always called me the chubby one. I was the second born, so I was always sedated easily by food, so it kind of started then" *(P13 CBT).* It is also possible that the maladaptive association between food and comfort was passed down from generation to generation through modelling:

> I gave her [daughter] some bad habits. She got really insulted that I passed this onto her. And she's not heavy or anything, but I could see the way she eats food, I taught her that, and my mom taught me how to eat like this too. *(P13 CBT)*

Food may have also become a means of bonding in the family as it fueled the shared belief that it was comforting:

> Food is how you show love, it's how you celebrate, it's how you mourn, it's how you feel together, and happy…not only was it [food] a coping mechanism, it's also very comforting. There's something that even when life is going well, and things are happy, there's something very comforting and just calming about the act of sharing food…My parents, both my mom and dad, struggled with their weight over the years. I remember lots of strange diets and weird things they were doing to try and get their weight down…It was this weird combination of the good nice comfort of food mixed with this more secretive impulsive stuff around food. *(P10 CBT)*

Somewhere in the patients' lives, there was a maladaptive association between food and safety. It is quite possible that this behaviour was learned and picked up in households that exerted the same practices. Therefore, the comfort associated with food seemed to become distorted at a young age, and one method could be through the modelling of maladaptive habits by family members.

The need for safety was also important to the patients, which became more pronounced in stressful situations. For example, for one patient, her threat to comfort was a fear of judgement, which increased her risk of planning binges:

> In [European country], where [it] is bikini season all year round, that's where I really noticed it [the binges], and that's where I felt it being extremely systematic…because it had to be [systematic and planned], more than it did in Canada. *(P7 MP)*

Negative feelings seemed to have increased the need for safety and comfort, and it was common for external sources, in addition to food, rather than people, to be used to fill these needs:

> I don't know. It's almost like I'm trying to fill something. I think the shopping, a lot of it was like, okay, well I'm binging so much, and I'm gaining all this weight and not feeling good about how I look, at least I'm going to spend like I'm going to go buy all the clothes that I like because then it'll make me feel better about it. And I'll go buy all the jewelry, all the stuff, because I need it to make me feel better about myself. It was more like a comfort. It was something to make me feel better, not like I deserve this, it was like I need, I need, this is something that's going to make me feel better. *(P5 MP)*

4. Physical and psychological sensitivities

Both physical and psychological sensitivities were apparent, and in the context of this study, were defined as excessive concern or attention towards external cues. From a psychological perspective, patients described themselves as people-pleasers, possessing low confidence or being disappointed with themselves. This was evident even when they disclosed having friends or were popular in school:

> I mean, I was fairly popular, I was friends with all of the kids in high school, so I never felt like it affected me, or I felt ostracized. I was really active in the student government and theatre and my music, and so it, I mean other than probably being unhappy with myself, I don't think it really affected my social interactions, no. *(P7 MP)*

The need to please others was a theme that came up quite often in this group. Some members of the group considered themselves socially awkward, not necessarily in the form of anxiety but as shy, and indicated signs of fear of judgement: "I'm socially awkward, but that's not the same as being [depressed or having social anxiety]… I'm kind of shy" *(P9 CBT)*. When

discussing therapy, patients mentioned their happiness towards being in a judgement-free environment, particularly when they were making meal plans with their therapists. This coincided with patients' belief of binges being a shameful secret, despite food being viewed as a comfort. Secrecy was also learned in the family, with some patients stating that they learned to hide food from their parents in childhood. This initiated a secretive and impulsive association around food, and this hiding behaviour may have been a way to avoid judgement. Fear of judgement also extended to eating food in front of others. Therefore, binges were done in private because they were considered embarrassing, there was a fear of parental repercussion (i.e., mother yelling at her), or a fear that a spouse will find out *why* the patient was overweight:

> I didn't want my husband to look at me and be like, 'Wow, no wonder she's overweight, look how much she's eating.' And my mom would just yell at me, so obviously, I didn't want her to know that I was eating all this food. To this day, she'll say, 'I dunno how she gains weight. She doesn't eat anything.' To this day, I've never really told her I'm a binger because she just won't understand. She'll say, 'oh, that's just an excuse,' but yeah, to this day, she still thinks that. *(P11 CBT)*

For this reason, binges were done typically at night or when alone because it became an opportunity to hide the behaviour that the person was sensitive about and feared to be judged on:

> *P11 CBT:* Where it gets really difficult is in the night. That's always my time to binge, like in the evening when everyone goes to sleep, and I'm alone
>
> *Interviewer:* So it's the loneliness that comes to play?
>
> *P11 CBT:* Well, it's just an opportunity because there's no one around, right, it's like, 'oh my God, I could literally eat the entire fridge, and no one will know but me.'

There was also evidence of physical sensitivities in these participants. Patients were very detailed when describing how the physical properties of the foods they consumed during binges were associated with their emotions:

> For me, eating the crunchy hard foods are pushing down the angry. The cold kind of soft, smooth foods like ice cream is numbing, is the kind of like 'it's going to be okay' feeling…It's particular to what the mood is. So if I am agitated and I can't calm myself in

> any way, I have no way to find someone who can help me calm myself or who can calm me or soothe me. It's soothing. Ice cream, for example, is soothing, it's numbing in that it's cold, but it also [has] that kind of brain freeze feeling you get if you eat ice cream too fast. It's really calming. It's numbing. It's a smooth, creamy texture versus something that's hard and crunchy. Like when I have the 'angries,' I just have had it with everything and everyone. It's all about the kettle chips that cut the top of your mouth because they're so sharp, and you're in pain because you're not paying attention. Because, many times, I paid the price of eating an entire bag of salt and vinegar kettle chips because then you have no taste buds left in your mouth for four days. Your skin peels off the inside of your mouth. But that's a very different place, right? *(P14 CBT)*

Interestingly, despite the comfort and pleasure that food brought, an element of physical pain and self-harm was also discussed, particularly in times of anger. However, it seemed that there was a limit to their self-harm – notably, as long as it did not affect other areas of their lives or day to day functioning, self-harm was reserved solely for their binges. Overall, food provided a safety net to these patients, with the term "comfort" being used when describing the foods:

> I think if I had to separate them [substance vs. act of eating], it was the substance. It was feeling the cream of the chocolate cake going down or the comfort of the cold chocolate milk or the ice cream. Yeah, the texture was huge for me while it [binges] were happening for sure. *(P11 CBT)*

Therefore, evidence suggested that physical sensitivities towards foods played a role in influencing the food choices that participants made. There was an apparent link between these physical and psychological sensitivities, whereby food choices were based on feelings and involved, largely, the texture of the food and how it coincided with the patient's emotions at the time. Crunchy and salty foods were typically consumed during anger, whereas smooth, creamy textures were consumed as sedatives (calming and numbing). For one patient, bread was described as soft, fluffy, and something that "gave her a hug" *(P15 CBT),* whereas, for another patient, meats like chicken wings, ribs or roasted meats were things she could eat during stress. Therefore, food became a comfort because it allowed the patients to act on their emotions, particularly in times of stress.

In the next section, the analysis will focus on the participants' experiences with CBT.

3.2 CBT group

1. Therapy addressed the patients' need to feel in control of their food intake

Therapy was very conducive to addressing the patients' desire to control their eating and allowed them to separate the guilt associated with their binges. It was important for patients to feel like they were in control of their lives and, in particular, their food choices. In so doing, feelings of restriction or a need to binge lessened for participants:

> *Interviewer:* A lot of people have mentioned that this sort of permission to have things that you've denied yourself before…am I right in hearing that, that was [your case]?
>
> *P14 CBT:* Yeah, I've given myself permission and that I can eat it in a more controlled way, and by a smaller amount. I'm still allowed to have it so then you don't feel deprived of it, of the cake or [these types] of foods.

This was also reflected in the quantitative data where binge eating severity and objective binge episodes were lower in all patients at the end of the 12-week study compared to baseline.

Therapy also taught self-control through skill-building in a way that was not restrictive and allowed the patients to *choose* to reduce the availability of trigger foods in their home. The absence of restriction was viewed as an important element of therapy, and as such, the compulsion associated with binges seemed to become less frequent:

> My cravings have decreased significantly. Don't get me wrong, I still love sugar... [in therapy, she was told] don't keep these foods in your house, so I don't. If you come into my house, if I do have foods there, they're either no sugar, so like I get this coconut ice cream now instead of real cream, it has no sugar. And you couldn't binge on that if you tried…and I sit at the table and eat it…I feel like I don't need them as much. Even at work, I'm surrounded by chocolates and this and that, and I don't feel compelled that I have to eat it. *(P11 CBT)*

The patients started to regain control over their food intake in a conducive manner by adopting skills that helped modify their eating behaviours. Some notable strategies included reducing the

availability of trigger foods, being mindful of food consumption, not eating out of the package, and eating at the dinner table instead of in front of the TV:

> I was a bit hesitant at first but just trying the skills just opened me up to wanting to try more. I think the benefit with CBT is that I don't use all the skills she taught me because there's so many that it's just hard to do them all in a daily life. But she [therapist] taught me so many that I can pick and choose the ones that work for me, and the ones that work for me might not be the ones that work for anyone else. So, I think that's why I'd recommend it, because there's so many skills. I think people could find at least two that would work for them and help them in some way. *(P12 CBT)*

In addition, the patients believed that the therapists acknowledged their individuality and uniqueness:

> Just having that one on one, and just sitting with her [the therapist] every week and going through…at first I felt the questions were kind of annoying, but then it became comforting in a way, like here you go, here's my week, here's the answers to the questions, here's the homework that I had to do, the exercises that we did, the tips that she gave me. I felt like she was really listening to me, like she wasn't just telling me something that's a one size fits all. It was, 'this is what I think is gonna work for you.' *(P11 CBT)*

In contrast to the restrictions of previous diet programs, in CBT, patients described a collaborative role in selecting strategies and skills that worked best for them. This allowed patients to have more control of their therapeutic progress, helped them reduce impulsive decision making, and allowed them to enjoy the structures in the program: "I was concerned that it [CBT] would be a little free form as opposed to 'This week we're going to do'…..because I like structure and rules, so I feel like it fit the way my personality is, very well" *(P14 CBT).*

2. Therapy enhanced self-awareness and mindfulness

Some aspects of the therapy allowed patients to increase their self-awareness and mindfulness surrounding food. In particular, structure, in the form of food diaries, was a strong example of this phenomenon. Most patients reported that these food diaries allowed them to visualize their food intake and keep track without judgement. This gave them the time to think

about the foods they were ingesting and to evaluate, with the therapist, why they craved a particular food and the thoughts and feelings associated with it. These diaries also allowed patients to analyze the behaviours that were related to their food choices and consumption, leading to increased mindfulness:

> I have noticed a change in my weight, so I feel I do a lot more in the sense of control…I know as much as I hate to admit it, I know it was the food diaries, like constantly writing it down and what time you eat and how much you eat, and over and over and over and over again. You just visualize it, and it just becomes such a part of you…I still eat at those [exact times] without even consciously thinking about it. I still eat at those exact times that we set out with my counsellor. It's like clockwork. It's literally ingrained in me. It makes life so much easier, and I think that also helps with the control of the food, for sure. *(P11 CBT)*

There were several important benefits of the food diaries. Firstly, they helped patients become aware of unconscious thoughts and behaviours by allowing them to visualize exactly what they were ingesting and how their thoughts and emotions were linked to their eating. It was reported that the repetitive nature of this process modified the habits of the patients to the point that it became automatic. Lastly, one patient described that the food journals gave them the time to explore their negative emotions, which had a positive impact on their binge eating:

> Knowing that I was keeping my food journal and that I was writing everything down that I was doing, just even the action of that, of taking the time to think about it, like 'oh I woke up this morning and I'm really upset and why am I upset about that okay, well I'm just going to write down that I'm upset.' I'm not sure why but it's just the act of doing that…like the act of having the structure around it. *(P14 CBT)*

For most patients, the practice of keeping a food journal did not continue post-treatment. However, the self-monitoring behaviour that came with keeping a food journal did continue, and this allowed patients to structure their eating to reduce or prevent impulse-induced binges. Patients worked together with the therapist to create a schedule and became aware of what they were consuming:

> She [the therapist] used to schedule my meals, a certain time for breakfast, a certain time for snack, a certain time for lunch, so I'd be more conscious of what I was eating…even if I don't physically write it down, I'm more aware of it in my head, monitoring, cause otherwise I would just eat throughout the day and not think about it. Now I think, 'Okay, I had that for breakfast, I'm going to have this for lunch.' So even if it's not physically writing it down, I'm still monitoring it in my head. *(P12 CBT)*

Despite some people not liking them, all but one of the patients believed that food diaries were an important part of their recovery. In the case of the one patient, despite providing detailed food diaries, she stated that she was doing it for ten years with Weight Watchers and that it made her think about food excessively when she wanted to think less about it:

> I didn't keep up with that. Because of the whole Weight Watchers thing of 10 years of already doing that. I found it a little annoying because the more you have to write, like every time you start thinking about food, I start thinking about what's next and then I'm sort of like, oh looking forward to this and that. So, one goal of mine is just to think about food less. *(P9 CBT)*

Interestingly, the scores on all of her outcome measures (except BMI) were reduced. She experienced complete binge abstinence by the end of the study, and she maintained these effects even at her 24-week follow-up.

Learning skills and strategies that worked for the patients led to a higher sense of self-awareness and mindful eating. This allowed patients to have a better understanding of why their binges occurred and how to stop them:

> [CBT] added to my confidence in being able to be more self-aware. I think what helped is that because I didn't think about what my thoughts were before buying my food, or I didn't think about my thoughts as I was eating. I was never really self-aware that I ate to clear my mind. I never thought about that before. So just knowing that about me and it makes me analyze it and think about why I'm doing what I'm doing. So it helped me in that way, which has given me more confidence to know that I can handle myself. *(P12 CBT)*

By reaching this level of self-awareness, patients started to gain confidence and became more empowered about regaining control over their eating in a conducive manner. Evidence of this

was also seen in the patients' language, which was more optimistic when referring to themselves, and there was a dissociation of guilty feelings from binges:

> [Therapy] helped me be kinder to myself, instead of just being so harsh about what I was doing. I was more able to say, 'okay, so that's okay, this is what happened right here [binge], this was one episode of binge eating, and you hadn't binge eaten in three days, or three months or three weeks or whatever'…and I sort of learn to be more gentle with myself, instead of being like, 'oh, what's wrong with you,' instead, being like, 'wow, it's been a really shitty couple weeks, you're really allowed to be pissed… *(P14 CBT)*

Some key skills that the patients discussed, in addition to visualizing how much they were eating, included: learning to feel hungry or full; not needing to eat as much as they thought they needed; the number on the scale not affecting them; targeting and getting rid of triggers; learning to be calm around food and not judging self; being aware of the intention when buying food; always eating at the dining room table; avoid TV while eating; avoid eating in bed; and not eating out of the bag or container. Because the patient and clinician worked together to create the strategies and rules, the patients were not afraid of them and, conversely, were adamant about integrating them into their lives.

Many of the patients retained the documents from therapy. They referred back to them, having the opportunity to select from a multitude of skills that worked best: "I still have every sheet, everything we did, right, I remember like, like every single solitary thing is in a folder in my kitchen cause that's where it's the most handy," *(P11 CBT).* Another reason why structure was valued by the participants may have been because chaos and unpredictability increased the risk of a patient's exposure to stress. Organization and continuous structure served as a plan of action to not only induce mindfulness but to also prevent relapse, particularly during times of stress:

> I like organization and structure…I make sure that we have groceries at home, and I make sure there's food at home, and I make sure that I make time to make food for myself… it's really easy for me to get going and drink coffee and forget to make myself

> proper food. So I've been good with that [element of therapy] where it's given me like the structure, it's also helped me because it's been like three months of really stressful, good stressful and bad stressful things going on. *(P14 CBT)*

Furthermore, by recognizing one's own thoughts, there was a shift in the cognitive distortions that led to binging. Specifically, negative thinking patterns were reduced, and a more realistic view of self became present. Ultimately this self-awareness started to serve as a positive reinforcement to shift the person away from the vicious binge cycle that had been created:

> I think it was just being more conscious of it [binges]…it felt like a drug where if I were feeling down or depressed, I would eat, thinking that it would make me feel better, but afterwards, I would feel more guilty… it's a vicious cycle, cause if I binge one night, I feel guilty and [those] feelings cause me to binge again. So, if I cut out two or three binges, I feel more positive, I feel better, and so it is just easier to tackle it. *(P12 CBT)*

This self-awareness allowed patients to understand their thought patterns, change them and choose more conducive ones. For some patients, the reframing of negative thoughts to more positive ones was reported to increase confidence, which was generally lacking in this group.

The result of reframing also extended to diet programs or traditionally stress-inducing events for the patients. For example, one patient no longer viewed their Weight Watchers program as a restriction but more of a guide. There was a more positive approach to what was previously seen as anxiety-inducing: "It [Weight Watchers] was seen more as a diet…Whereas this time [post-CBT treatment], it's more just a guide… like the eating every 3-5 hours, it's a guide. So my hope is that I feel calm about it" *(P15 CBT).* Indeed, by the end of the 12 weeks, the following patient's binge eating severity had moved from the severe to moderate range, and she no longer had clinically significant weight or shape concern.

The heightened sense of self-awareness and confidence and the reduced preoccupation with food enabled patients to engage in a plethora of other activities. Therapy taught participants to replace eating with activities that made them happy. Activities included puzzles, fun exercises

such as biking, swimming and walking, Netflix, reading, talking to friends, shopping, drinking coffee and tea, music, reduce TV, crocheting and meditation. It is important to note that replacement activities were, at times, classified as positive or negative. For example, one participant stated that she binged on Netflix when she felt bad, to avoid anxiety: "Maybe that's a way of zoning out, that's a different way of zoning out" *(P14 CBT).* In general, almost all the patients were happier engaging in the replacement activities and found them enjoyable.

Therefore, therapy seemed to contribute to a changed perception of food and self by enhancing the patient's level of mindfulness and self-awareness regarding their emotions, cognitions, and binges. The term "cured" was never used, but "helped" was used quite often when referring to the benefits of the treatment: "It [CBT] helped me guide my habits and my thoughts more" *(P9 CBT)*. Patients acknowledged that the treatment did not completely resolve all their issues but allowed them to think things through. Though they did not believe CBT to be a cure, they still worked towards managing the disorder:

> This [CBT] is something you can put in your toolbox. So that's the way I would recommend it. Not as a cure-all, not as a 'you're gonna do this, and it's gonna fix everything,' but as something that could help with the eating and with other parts of your life, I recommend it." *(P10 CBT)*

3. The psychoeducation component of therapy motivated patients to reduce binges

Motivation was important in helping patients to control their food intake. For example, one patient binged a lot during her pregnancy and justified it because she was pregnant. However, once she was diagnosed with gestational diabetes, she was able to control her binges. It was only after the pregnancy - where she was dealing with postpartum depression, loneliness, and high stress - that she started to binge all the time. For another patient, her incentive to stop binging was her wedding day, but after which, the binges returned. Therefore, without adequate cognitive and behavioural changes, the binges returned once the incentive was no longer present.

Understanding the reasoning and logic behind the elements of CBT made patients more inclined to use it. For example, CBT therapy provided context and evidence-based explanations of why reducing binges was beneficial in the long term. In cases where this explanation was not provided and was short term in nature (i.e., conventional diet programs), the risk of relapse was significantly higher:

> There's Dr. Bernstein. So that was the lowest calorie one I've ever done…and I tried to follow it…but I knew that was not safe or healthy and I knew I was going to rebound, and I knew I was going to binge…I went out and raided the Dairy Queen. That was a serious binge. *(P15 CBT)*

Therefore, treatments had to be safe and healthy and could not be restrictive. Restrictive diets that were perceived as unsafe and unhealthy increased the risk of relapse. By providing the psychoeducation component, CBT strategies were more likely to be utilized:

> It gave me a time frame of eating every 3 hours…learning to actually feel hungry and full. If you haven't felt it in 30 or 40 years, it takes time to learn that you're really [hungry] or you can eat. And learning to have all the foods you want but then learning that you don't need as much as you thought you needed, and then weighing yourself on the scale was good once a week. *(P13 CBT)*

An interesting point made by the patient was the reduced need to check her weight during treatment. She moved away from clinically significant shape and weight concern at baseline, to substantially lower and non-significant scores by the end of the study and at follow-up. In most of the patients, weight loss was not equated to treatment success, and they were very much "divorced" from scales, as one participant put it. The therapy's main goal was to reduce binges, not weight, and this notion was encouraged by the clinician. Despite this, while being happy that binges were decreased significantly, some participants did see a lack of weight loss as a downside to the therapy, though they were still very content with reducing their obsession with weight:

> [Something] really positive [about CBT] would be getting away from the focus on the scale. I used to be incredibly obsessed with checking my [weight] when I'm trying to lose weight, weigh myself every single day and then getting very discouraged when I didn't see the results I wanted to see. So, getting away from thinking everything as a black and white situation. *(P10 CBT)*

For this patient, despite complete binge abstinence at the end of the study and follow-up, there was an elevation in her BMI, an increase in her shape concerns and no change in her weight concern. Although there was a behavioural shift in checking her weight, a cognitive shift may not have occurred - indicated when she disclosed a lack of weight loss as a downside to therapy.

Providing explanations for the way CBT was structured further served as a positive incentive and motivation for patients to complete the program. CBT therapy moved away from a restrictive form of therapy, and the idea that eating bad foods is bad and eating good foods is good. Patients were instead encouraged to expose themselves to their guilt-inducing foods, which helped reduce their fear. They described that they could "relax around food" and were permitting themselves to eat these foods. Being equipped with the tools necessary to find balance and moderation may have given patients the confidence to trust themselves around "problem" foods. An important example of this tool was knowing their triggers and having a plan and structure to prevent binging:

> One of the super helpful things about the CBT therapy was we made a list of all of those things I would consider trigger foods, and instead of it me abstaining forever…[you would] eat a little bit of the chips and notice how you're feeling and what's going on, and it not being about cutting out some of those joys and good yummy food, but almost me learning how to trust myself around that food. *(P10 CBT)*

Because they were no longer forbidden or restricted from having trigger foods and structured their eating, they didn't think as much about it and were calmer and relaxed about food:

> I'm just gonna eat every 3 to 5 hours [strategy taught in therapy]… And you know, smaller portion that you put aside, how did that feel and write it down, you know write it down… You can have it then nobody's like gonna stand there and go, 'you can't have

> that.' And then it became a little easier to say well I don't need the chocolate chip cookie, so it became more relaxing. *(P15 CBT)*

With respect to the cognitive elements of black and white thinking, patients learned that bad days should not automatically be associated with a binge and not get discouraged if they didn't see the results they were hoping to see. Explaining to the patients the importance of giving themselves permission to eat what were labelled as "problem" foods paradoxically contributed to patients avoiding overindulging and to be aware of the concept of moderation. With CBT therapy, habits that had been practiced for many years were described to be guided towards more positive behaviours, resulting in a better awareness of cravings and associated thoughts and feelings. The benefit of this was that the concepts and skills that were taught could also be used after therapy, when more time was needed to integrate it into their lives or make sense of it: "I think it laid the groundwork or maybe I just wasn't open [during treatment] or needed more time to see how to weave it into the rest of my life and make sense of it" *(P10 CBT).*

4. Therapy acknowledged the need for patients to feel safe and comfortable

The psychologists played an important role in creating a safe and comforting relationship with the participants – an essential component of therapeutic progress. It was critical for participants to build rapport with the psychologists and enjoy working with them. Having someone that listened and made them feel valued was also of importance:

> It's just nice when you feel comfortable with that person [therapist]…like I tried to talk to my doctor, and she was gonna do psychotherapy with me, but I didn't have that. [The therapist] was always on time, and my doctor, when I went, she was always late, one hour late, so I didn't feel like I was valued, but with [the therapist], I felt valued. *(P13 CBT)*

Support in therapy was especially helpful when it was not available outside (e.g., from family members). Patients also acknowledged the importance of family support during their treatment and were aware that their disorder might be overwhelming. According to one patient,

"tackling it on our own is quite a feat" *(P12 CBT)*. Having the psychologists provide the necessary safety and comfort allowed these patients to better progress through therapy. The psychologists "helped make things safe" *(P10 CBT)* for the patients and provided a comforting space for them to talk to someone without limitations or judgements. Patients liked that there was individual focus and did not feel judged when disclosing their disorder details. They were also receptive to the positive feedback from the psychologists, even small praises like "That's great," and supporting the patient's progress:

> She [therapist] was very positive and encouraging to me. Even you know very small things, she would say 'that's great,' it was very positive and encouraging. She asked interesting questions and talked about more scientific aspects… how the mind works and different thought patterns and ways that you can change those patterns, or at least choose different ones. *(P9 CBT)*

The psychologists worked *with* the patient to gather tools and skills that worked best for the participant. Here, it was important that rules and restrictions were not imposed on patients. Instead, the educational and scientific components provided various strategies that the patient could select from to make meaningful changes in their lives.

Several patients also referred to the research team at CAMH and liked the feeling of belonging to the research community: "The people at CAMH were fantastic, everyone was so professional" *(P10 CBT)*. Working together in a team, with the psychologist included allowed patients to achieve the safety and comfort needed to have more confidence and control over their eating habits and successfully progress through therapy.

5. Therapy reduced psychological sensitivities

For most patients, the negative perceptions they had towards eating also extended to their environment. Specifically, there was an assumption that others would have a negative viewpoint if they knew of their eating behaviours, which reinforced the secrecy of binges. CBT therapy

addressed these concerns by allowing patients to become more aware of these negative thought patterns and to shift the focus away from them:

> I preconceive that people are thinking about that [her eating] because I think about it all the time. But we [participant and therapist] worked through those thoughts that I made, those statements. Most people are not thinking 'oh look, she's big, she's large, she doesn't fit on that subway,' you know, 'you're not gonna sit there, or you're not gonna fit.' I'm thinking that people are thinking that, but nobody thinks that, they're in their own head, right? *(P13 CBT)*

CBT reduced the psychological sensitivities associated with a fear of judgement by increasing confidence via reframing of negative thoughts:

> I was happy to reframe, learning and reframing my thoughts. That helped a lot. When they [reframed thoughts] start slipping, I'm thinking 'you know everybody's not thinking like I am,' cause it's a self-talk that I had so long in my head, that you have to reframe it and you have to constantly reframe your thoughts that come like that and I thought that was really great *(P13 CBT)*

By reframing thoughts, CBT increased confidence, allowed patients to take time for themselves and, for some, move away from extreme people-pleasing behaviours. One of the components of reframing thoughts was also teaching the patient to have a greater sense of control over their eating:

> Control was my longest lifelong problem ever, since I can remember. This has always been an issue for me. So knowing that I've taken steps to make this lesser of a problem has made me feel so much more confidence…I don't binge as much as I used to. I don't keep sugary foods in my house, and it's okay. I can live right. Just knowing those types of things has really made me feel more confident, and just doing other things made me feel like a more well-rounded person…it makes you feel like you can do more *(P11 CBT)*

By building this confidence, patients were less inclined to hide their disorder or to avoid eating in front of others. For many patients, CBT addressed and reduced psychological sensitivities associated with eating behaviours and reframed thoughts in a way that positively influenced behaviours, such as increasing confidence and control over eating. In addition, because therapy was not restrictive or imposing, confidence was further built when participants come to the

decision that they could consume what they would label as their "problem foods" and do so without it leading to a binge:

> I wouldn't have the whole thing [problem food], and I can do that because I know that I'm allowed to have that, and I'm not hiding it from people that I'm not eating that because I'm not the size I should be, and people who are large shouldn't have that, and that's not true. Everyone should have it, everyone feels like it, and everyone wants that right. So I gave myself permission to do that. *(P13 CBT)*

It was evident that therapy allowed patients to give themselves permission to enjoy eating problem foods in moderation without feeling guilty afterwards - particularly because of its association with overweight and obesity.

Despite the beneficial effects of CBT in treating psychological sensitivities in participants, certain assessments and questionnaires used during the study were frustrating and anxiety-inducing for some of the patients:

> I felt like throughout the instruments, there was this assumption, which maybe I was just overly sensitive to, but there was this assumption that if you're overweight, you hate your life. That was kind of what came out again, and again…but I think that was infuriating to me, because binge eating is troublesome and causes me grief and frustrates me to no end, but I have a really nice, full, interesting, fun life. *(P10 CBT)*

These patients believed that it was important to re-investigate these instruments to ensure that these negative stereotypes were not assumed or conveyed. Describing and re-living these traumatic experiences in the study had the potential to induce anxiety in a way that was counter-productive to therapeutic progress:

> It was one of the last visits that really floored me because I thought we were doing the standard come in weigh me, blood pressure, blah blah blah, answer questions and maybe some summery stuff. But they did the full thing again, and that triggered me for like two weeks after that. I was having a really hard time because it's one thing to fill in bubbles on a thing. It's another to describe your list of most traumatic behaviour events and then describe the most traumatic one. And the timing of it was really bad because it was around the anniversary of when it happened. *(P14 CBT)*

6. Therapy had some tools to reduce stress, but there needs to be a stronger emphasis on stress-coping skills

It was common for stressful events to encourage patients to turn to food for comfort. CBT addressed this by teaching patients specific skills and to change their mindset to one that permits them to eat trigger foods in moderation. For example: "We learned how to eat trigger foods and put them in baggies and incorporate them in my life by just eating the portion of them and not the whole thing" *(P13 CBT)*. Therapy also built on mindfulness and self-awareness skills to ensure that patients had the necessary tools when they were met with stressful situations:

> The only negative, like I said, if there's a change in my life, it's hard to keep track of things, and when it ended [therapy], it ended at a bad time because I had my birthday, so I was treating myself with the birthday cake, and even if I did slip up and have a binge, I had that meeting the next week to kind of get back on track. Because we ended right before my birthday, I didn't have the mentor to get back on track again, and I kind of slipped out of things. I wish the ending [of therapy] was at a better time, but then again, life never really gives you a better time…cause even now, there's sometimes where I binge, but it's giving me the skill to get back on track. *(P12 CBT)*

This indicated that although the skills were beneficial, more focus on stress management was needed to ensure that the patient no longer relied on the psychologist but could manage these difficult situations on their own to avoid resorting to binging behaviours. Together with the psychologist, the participant worked to create a plan of action, giving them a sense of autonomy and choice. Developing a structured plan was described as important to binge prevention:

> We set up structure around like, there'd be certain times in the week where I was more likely to binge when I was really tired on a Friday night after I had a long week. So we made a plan. So that would be something I would add to the top things I learned [in therapy] was making a plan and having some structure to prevent binging. *(P10 CBT)*

The food journals were also a great means of bringing about structure, likely through its ability to induce self-awareness. With the help of the psychologist, keeping the food journal was seen as something positive and beneficial:

> I felt valued because she [the therapist] would spend the amount of time, we always went through the journals, and that helps me, journaling and writing down…and now even when I feel myself slipping, I try to like have a journal in my book even though I don't do it all the time, I feel like I go back to that… that's a lifetime thing for me because it's easy for me to sway, like slip off, so then I try to bring back the tools we talked about, you know. *(P13 CBT)*

Overall, therapy was referred to as providing a "toolbox" of skills that patients could refer to once therapy ended:

> I think that the rest of my life, I will use the tools that I learned because it was, you know, just coming in every week and reinforcing and having that time for me, which was wonderful, and making that investment. I know how much a session costs to see someone. It's not cheap, and to have that invested in me, like I can't tell you what a great feeling that was. So I was glad that I got CBT in the end. *(P11 CBT)*

Unlike restrictive diets that placed boundaries, the toolbox provided the patient with skills they could use as a guide and something they could refer to.

A drawback was that the skills were not efficacious enough to result in a person completely abstaining from stress-related binges: "It was sometimes really infuriating that CBT seemed in some ways so cut and dry, just like 'Here's your tools apply it and don't worry about the rest of your life exploding right now'" *(P10 CBT).* With stress-coping not being fully addressed in therapy, skills learned seemed to be lost or unused over time. Therefore, it was suggested by some patients that increasing the length of the therapy could allow for the positive change to be better instilled. Some believed that check-up or top-up sessions might be beneficial post-treatment. Others believed it would be good to wean off CBT (i.e., every two weeks, then lessen to 3 months, six months, two years, etc. to get on track). Still, others believed 12 weeks was enough because it was difficult to come in every week due to job commitments. Finally, some felt that 12 weeks was enough and that anything beyond that would be nice, but not necessary. Overall, the length or methods in the treatment needed to be modified to allow patients to use the skills learned consistently, regardless of shifts in their environment. However,

in a realistic setting, some patients believed that the price could affect their ability to continue therapy. To address this, a combination of CBT and drug therapy was suggested by some participants:

> I think the two [drug and psych therapies] need to go together… if the medication would stop the cravings and you could physically feel that, and then you're having the homework, it can just help elongate it. Cause at some point you're gonna come off the medication [and then you have] new strategies maybe, new habits it's locked in a little better. *(P15 CBT)*

3.3 CBT psychologist group

1. The psychologist as a coach

Psychologists acknowledged the individual's self-efficacy and control over their eating. According to the psychologists, the client was seen as the expert of their own life, and the psychologist's role was to support the work the client was doing (i.e., monitoring). Over time, the psychologist reduced their role to allow the client to utilize problem-solving and planning skills to figure out their own strategies. Therefore, they described working with the patients collaboratively. The psychologists did not view themselves as authoritative and saw treatment as a classroom that possessed self-directed learning. In this way, the need for patients to retain a sense of control was met:

> I'm not like an authoritative doctor saying you must watch your sugar…I think that everyone sort of acclimates to the style that this is self-directed in many ways. I even use that terminology, like I'll say to somebody that 'This requires a lot of work on your own, you're going to be doing this on your own time, you might want to view me more as a coach because you're an expert in your life, so you're the one who's going to really have to do this work, and I'm here to support that.' So that's how I always frame therapy with clients… *(T2 CBT)*

This collaborative effort created a sense of teamwork, where the patient and psychologist worked together to solve issues related to binge eating. Again, it was important for the psychologist not to impose rules or dictate to the participant what to do. Psychologists made it clear that it was

important for them to be genuine, warm, and respectful. These traits were likened to the role of a coach who encouraged patients to change and take control of their lives:

> CBT can be mistaken as being a list of exercises that can be done by anybody or a computer and a self-help book. And self-help increases the accessibility of the intervention broadly, and I'm all for that. But, exactly what the skills development looks like, how you implement it, and how you encourage it in a person's daily life, I mean that can look relatively different from person to person, and you need to [as a therapist] be able to meet people where they are… It's a very collaborative endeavor…It's kind of figuring something together, so that kind of flexibility and collaborative stance, I think, is something that I would describe as particularly important. *(T4 CBT)*

As a coach, the psychologist helped the individual to clarify their thinking. For example, they assisted with problem-solving skills by brainstorming ways with the client to manage their eating goals and to determine whether they were realistic, feasible and likely to be successful. The patient was guided without the psychologist directly giving them the answer: "I think kind of like a cheerleading/coach stance could be really helpful too. To provide encouragement as people are navigating these challenging issues" *(T1 CBT).* Working through these important skills helped individuals regulate eating, avoid binges and deal appropriately with triggers. The goal was to make the positive behaviours automatic so that there was less risk of relapse: “If the skills they were gaining about how to regulate their eating, how to avoid binges, deal with the triggers, that sort of thing became more automatic for them, there would be less of a risk for relapse” (*T2 CBT).*

To take on the role of coach, the psychologists believed it was important to develop a good relationship with the patient. An inability to create a strong relationship early in the treatment increased the risk of patient dropout. To do this, the psychologists had to be empathetic and have a genuine interest in understanding the client's experience. Many of the psychologists drew on their experiences working with substance use disorders and addictions:

> One thing that struck myself as well as [my colleagues] was how similar this form of difficulty was to treating other addictions. That was something that I reflected on frequently with my other co-study therapists on this. *(T4 CBT)*

In addition, the focus was on the client, not the psychologist, and the client's concerns were explored. The psychologists did not believe that they had to be all-knowing, but they needed to be knowledgeable in the field, open to learning from patients, and empathetic. Most of the psychologists in the study had minimal or no experience working with BED patients, although they had lots of experience with CBT. Some also had a background in substance-abuse treatment for alcohol and smoking, which they saw as beneficial because of the parallels between food and substances of abuse. The psychologists saw CBT as very flexible in that it could be applied to numerous types of mental health issues. In line with this, a CBT manual was developed specifically for this study. For some psychologists, learning from their patients was also seen as a gratifying experience.

The psychologist also had to be non-judgmental, particularly if the participant experienced lapses such as "bad weeks." Psychologists reminded patients that they did not have to be perfect and did not criticize: "I always say this to my clients, if you have a bad week, that's the week you really need to come in because that means that we have work to do," *(T2 CBT).*

In terms of being genuine, a key factor described, was the belief in the treatment. The more they believed in the benefits of the treatment, the easier it was to provide it:

> I was really struck by how quickly things changed and how well people did, and, I mean, I know its self-report based [food journals], but I didn't necessarily think that they had a reason to lie to me or to hide that they were binging. I just thought it was amazing how effective the treatment was in that sense. And I think partly maybe the more I bought into it, the easier it was for me to provide the treatment and so I think for me that was really important, that I believed in the treatment and that it was producing those outcomes. *(T1 CBT)*

Therefore, knowledge and belief in the treatment's efficacy allowed the psychologist to better

deliver it to the participant. In addition to the psychologist having faith in the treatment, the client also had to be "on board" to ensure ease of treatment. In general, the psychologists believed that the patients were very much on board with the therapy, making it easier to administer. Overall, patients with BED were seen as very enjoyable to work with and easy to build positive relationships with:

> I'd say generally they [participants] were much easier to work with than a lot of other people I've worked with. I don't know how representative of individuals with binge eating disorder [that is] in general, or if it was just the people that were recruited in this study. They're very compliant in that they did the homework that was asked of them, which was very unusual. I think in my day-to-day practice that people come in and are prepared for their session. *(T1 CBT)*

The topic of food was also seen as very relatable, and this allowed the psychologists to better connect, empathize and learn from their participants. One psychologist also mentioned that they learned a lot about themselves and their relationship with food, particularly when applying some of the skills in therapy to their personal lives:

> I actually learned a lot about eating that I didn't really know before, from the protocol and from just learning more about it and learning from my clients, that I actually started practicing some of the skills myself. Because you know, just things like mindful eating, like being, and I, I'm somebody who's guilty of eating in front of the computer whatever and like I realized you know I'm asking people to sit quietly and enjoy their food let's try that. So, there were things I hadn't really done, and maybe, this was the type of treatment where a therapist can really get involved in it because everyone has to eat. *(T2 CBT)*

2. CBT encouraged patients to regain control over their food intake without being restrictive

One of the factors that indicated the important role that control plays in BED was the similarities and differences observed between BED and substance use disorders (SUD). One psychologist believed that the level of difficulty in treating BED and SUD patients was similar in that they both required identifying and managing triggers, and ongoing, persistent effort to change. Though there was resistance in both groups, the psychologist believed it was more common in SUD. The resistance to treatment in both groups involved avoidance strategies, the

belief that the disorder was demoralizing and hard to accept that they were struggling, and significant guilt and self-doubt. Despite this, one psychologist stated that the behaviour was more difficult to change in SUD and that these patients were typically disadvantaged, disenfranchised people. The psychologists viewed the study participants as more motivated, organized, and had perfectionist tendencies. Examples included the level of detail in their food diaries, their commitment to change (most knew they had a problem and wanted to change it), and their high response rate.

Control over their eating was a critical factor for BED patients, and the psychologists also observed this:

> Control is a major issue in this…I [the participant] should be able to control my eating, and the process, and the way that the process is going off the rails was what was bothersome, more so necessarily the result. [Participants believe] that I should be able to control myself, and I can't control myself, and that's what bothers me…It was the control issue that was the most distressing piece of the puzzle for them. *(T4 CBT)*

CBT acknowledged the patients' need for control by enabling them to regain it in a teamwork setting. Together with the psychologist, the patient defined their goals for treatment clearly:

> I find CBT to be very patient-centred anyways. The patient identifies their goals for treatment, usually in session two of the depression protocols that I've been involved with. If eating, weight or activity or anything like that is a goal that the patient identifies, then we incorporate that into our behavioural strategies, something that we systematically attend to throughout the course of the treatment. So, it's brought up by a patient. Then it'll be incorporated. If it's not, then it's not. *(T4 CBT)*

Therefore, it was in the patient's control to determine what they prioritized in their therapeutic journey, and together with the psychologist, they would work through these goals throughout the sessions. This is particularly significant since patients are especially sensitive to feelings of loss of control. For example, the treatment was structured so that the patient did not exhibit a loss of freedom over their choices, and instead, there was a sense of relief when they had permission to eat trigger foods. It was evident that the conventional idea of restricting and abstaining from

problematic foods did not seem to render positive results in this cohort and that permission to eat trigger foods and the concept of control seemed to have a deep meaning in these patients. Some elements of CBT were quite structured and directive, potentially giving the impression of loss of control to patients, in the form that they were not being listened to:

> In the real world, you might actually tailor the treatment that you're doing a little bit more to the individual. So if you have a client that comes in for binge eating but then you discover that they're really just having a lot of relationship issues or whatever it is, you might start integrating that a little bit more. And not that we didn't address that, but we had to do that in the context of the content…But sometimes clients can find that to be a little bit like you're not listening. *(T2 CBT)*

It was important for psychologists to be aware of this to ensure that the patients felt heard and in control of their therapeutic progress.

The structured elements in CBT that were deemed productive involved life skills that the psychologist encouraged in a patient's daily life. These included the food diary and food and meal scheduling that taught patients to structure their relationship with food (i.e., meal planning, making sure they were regularly eating at planned times, and having three meals a day, 2-3 snacks, 3-5 hours apart). According to one psychologist: "The food scheduling in the beginning seemed to make a really big impact on the frequency of binges, of making sure they're regularly eating, at certain, planned times" *(T1 CBT).* Therefore, structure was important in regulating the hunger signals that led to their binges, a potential route in which control was regained in these patients. According to the same psychologist:

> A potential contributor to the binge eating is having regulated hunger signals and thus by making sure that people are eating by the clock, so by an external stimulus instead of their internal, either wanting to eat or feeling like they're ravenous, that we can begin to re-regulate some of the biological and psychological signals that are leading to their binges. *(T1 CBT)*

Despite the structure, psychologists believed that CBT flexible to change, could be tailored to the individual, and reduced feelings of loss-of-control. One of the psychologists also

pointed out that regaining control over eating leads to increases in the patients' self-efficacy - something that may not be experienced in MP treatment:

> My bias is that by going through the behavioural treatment and the cognitive treatment, that I'd be providing tools that even once the treatment stopped, they'd be able to continue and maintain their progress. Whereas, once the medication would stop, that's not the case. And I think part of that also is the client feeling the sense of self-efficacy, that I have control, that I am in part responsible for this change, as opposed to this pill that I'm taking. *(T1 CBT)*

3. Stressful life events may reduce help-seeking and therapeutic progress

It was typical for life stressors such as work or school stress to make it difficult to stick to the CBT agenda. One of the reasons could be a lack of time:

> I think in one case, the woman was an over-extended professional, like working a very stressful job and engaging in continuing education and had two hours a day to commute. So, if you're looking at a lifestyle like that, then it was just not a good time for her to be getting treatment. It's really too bad cause I think if she'd come at a different time, she would be an excellent candidate. It was just she didn't have the time to expend the energy or so on. *(T4 CBT)*

Stress was likened to "opening a can of worms" *(T1 CBT),* indicating that stressful life events had the potential to increase the risk of binges in patients, particularly because their minds were preoccupied, and they were less aware of their thoughts and behaviours.

One of CBT's critiques was that the treatment did not focus enough on stress management – especially important since food was viewed as a major coping tool. According to one psychologist, one of the reasons there was a lack of focus on stress management was due to the rigidity of the program:

> [CBT] is a highly structured protocol, it's very specific to binge eating, but people aren't just disorders in a box. So to the extent that other people have other things going on in their life, I did have one client who had a lot of other circumstances that were really challenging for her, and it made it even challenging for her to come into her sessions, but sort of like life stressors. And she would want to talk a lot about them, and I would, of course, as a clinician, be empathetic and try to provide some feedback, but at some level, it was my job to move us onto the agenda. *(T2 CBT)*

Another psychologist stated also shared their views regarding the problem-solving components of the therapy:

> There was a mixed response to the problem-solving aspect of it. I would say that people understood why we were presenting the problem solving maybe it wasn't as well integrated into the protocol or, some people found it relevant and other people thought, 'well yeah if I have a problem, I know how to tackle it.' Part of that might be the education level. I mean a number of people have a sense of how to solve a problem and things like that. *(T1 CBT)*

The psychologists also corroborated patient accounts of food bringing comfort during times of stress:

> In some of the cases I worked with, most of the clients really wanted to go there, but some of them, you know, felt like there might be some resistance to the idea that they wanna explore their really deep-seated emotional wound… In addictions, we talk about it. We talk about it in terms of self-medication but maybe in eating. We can talk about it in terms of self-soothing, so using the eating to make yourself feel better or as a response to some kind of distress. I don't know. I think sometimes people really identify with that, and sometimes people find it demoralizing a little bit, or could be hard to accept that maybe they are struggling with some significant guilt or self-doubt or something like that, that's really driving this. That it's more than just really being triggered by food. *(T2 CBT)*

Therapy tried to address this by encouraging patients to come in, particularly when dealing with stressful situations. This was done by encouraging patients to move away from a "black and white" form of thinking and to understand that they did not have to be a perfect participant to attend therapy:

> We definitely address that right from the get-go that your involvement isn't contingent on being a perfect participant or anything like that…Especially when we know that issues of feeling guilty or having some self-blame or self-judgement is a major component that can be related to binge-eating disorder. So I definitely got the sense that could be going on with some clients, so I would do my best to address that sort of directly and always be mindful of any tendency to use any kind of judgement or criticism in the sessions. *(T2 CBT)*

Openness was, therefore, fundamental to treatment success and retaining the secrecy of their disorders was viewed as a form of resistance and induced self-blame, guilt or self-judgement.

4. Motivation was important to adherence and therapeutic success

According to the psychologists, for patients to be successful in therapy, they had to be motivated. The psychologists found that most people in the study were motivated. One psychologist mentioned that homework completion was a good indication of motivation, and that treatment response was directly proportionate to it. This may have been because motivation also improved communication between the psychologist and the patient:

> If folks are not doing the homework, they're not going to get as much of an impact otherwise. So I think openness is pretty critical cause, not every strategy, tool and piece of education that we discuss is relevant to a participant. And some things that we try together may not be a good fit at all. And if they can't tell me that, then that's bad. You know, like it's gonna be unpleasant for them and it's probably not gonna lead to the required or the desired result. *(T4 CBT)*

For patients who did not possess enough motivation to get through therapy, one psychologist suggested Motivational Interviewing, a psychotherapy technique, as an add-on to the program, before CBT:

> [Motivational interviewing] is appropriate for clients who might be ambivalent about making a change, and so it's really a style of engaging them in the change process so. There's different protocols that you could follow, but really, it deals with exploring client's motivations and understanding their ambivalence, trying to develop a discrepancy for them so they can see how maybe the way that they're behaving is inconsistent with the way they wanna behave, and then reinforcing any kind of change talk that they made. *(T2 CBT)*

There was evidence to suggest that being motivated also encouraged "openness" with the psychologist and allowed the patients to be more vocal about their needs when progressing through the therapy. However, one psychologist stated that it was important to analyze what factors could have been associated with engagement in the treatment and how this played a role for the patients. Motivation and thus, engagement may also stem from desperation to change:

> I think that these people [BED participants] had been through it all, they were desperate, they really wanted something that'd work, and then when they noticed the process, they were really appreciative and sort of ready to run with that. *(T2 CBT)*

For positive change to occur, it was important for the motivation to outweigh stressful life events. Examples of stressful events included school, parental needs, death in the family and ease of access to treatment. One psychologist mentioned that patients who did the best in treatment tended to be a bit older and believed that a possible reason for this might be because they had struggled with the disorder longer. Younger patients seemed to have more difficulty dealing with life stressors, the lack of convenience in therapy (i.e., commuting was problematic), a fear of judgement that made them less comfortable disclosing things, and less time struggling with the disorder. It is important to note that another psychologist mentioned that older patients had a difficult time in therapy because it was hard to change habits. However, this challenge could be overcome if they were ready and motivated to change. In all, the ability to manage stress impacted the therapeutic process and the motivation necessary to adhere to therapy. Support from family and friends also helped with motivation and treatment adherence and surpassed stress's ability to cease treatment:

> I did hear from numerous folks that they were motivated by their own children and wanting to be healthy for them, wanting to be a good model for them, also getting comments from them. Some of them actually engaged their entire family in the process, which was really interesting cause not everybody was open with their family about the fact that they were getting treatment of any kind, let alone that they have an issue. *(T4 CBT)*

Familial support and incentives, such as the example above, served as strong motivational factors because they were viewed as logical and meaningful by the patient. For many BED patients, beliefs were based on "a truth from reality," such as a book, nutritionist, or television show. Explanations had to be legitimate, making psychoeducation a critical component of therapy. The psychologist also had to be prepared and do the research. Though weight loss was not the primary outcome of treatment success, it was common for participants to address this. In response, psychologists focused on the importance of reducing binges as the primary goal:

> Almost invariably, people were bringing up wanting the binges to go away, wanting to have control of their eating. I can't think of a participant who didn't say one or both of those things. And then, I would describe that as an excellent fit to the protocol and or to this therapy because that's what it's intended to impact, not necessarily their weight. My common thing that I would say to participants is that I had no investment in what they ate at all. I wasn't a dietician; I wasn't there for that. What I cared about was when they ate and whether or not it was under their control. Ultimately, whether or not it's under their control. *(T4 CBT)*

The psychologists believed that CBT focused on the frequency of binges over time and that the patients were more in control of their eating, understanding the concepts, building a good rapport with the therapist, and homework completion. Once they regained some control over their eating, they were then able to focus on weight loss. This reduction in binging helped reduce negative feelings towards self, including feelings of guilt, shame, embarrassment, depression, and irritability. These elements further motivated the participant to continue treatment.

One psychologist also noted that caloric intake might not be affected even if binge frequency is reduced. By eating more regularly (i.e., snacks and meals), caloric intake may have stayed the same and rather than gaining weight, they were maintaining their weight. Therefore, the psychologist suggested that it may be good to have a 12-week intensive CBT and then spread out to a maintenance phase, which could then transition into weight loss goals.

5. Mindfulness and self-awareness were important in addressing the behavioural and cognitive components of BED

Psychologists believed that mindfulness and self-awareness in patients undergoing CBT seemed to come from addressing the disorder's behavioural and cognitive components. Psychologists found a distinction between the two, though both were important. In therapy, more focus was put on the behavioural components, compared to cognitive factors. Behaviour was seen as getting clients to their eating goals, changing their environment to avoid certain triggers, distracting oneself, coping with cravings, exploring the frequency of binges, avoidance,

reinforcement and punishment, and experiential learning. The cognitive components were addressed after establishing behavioural coping strategies. Its purpose was to allow clients to maintain their gains. It differed from person to person, but it was the ability to recognize triggers, cognitive distortions, negative self-views and fear of judgement. Overall, it was recognizing and addressing automatic thoughts:

> One thing that I thought was interesting with CBT in this context was that it felt very much like the behavioural work was getting folks to where they wanted to be with regards to their eating goals, and a lot of the cognitive work was essentially putting in place to maintain their gains…but it seemed to be that we were seeing rapid changes early, and the rest of what we were doing was kind of making sure that those were maintained. Both behavioural and cognitively, and really getting into the thick things of self-concept and so on, at that stage, and to make sure that things kind of stayed with them. *(T4 CBT)*

Therefore, by addressing these components, CBT evoked a sense of self-awareness in the patient, which may have increased their control over their eating. Moreover, patients learned to assess and understand the consequences of their binge eating behaviours, move away from feelings of loss of control (which could be distressing) and have a sense of self-efficacy, rather than negative self-talk and cognition. By paying more attention to their behaviours and cognitions, the psychologists believed that the patients could eat more mindfully and therefore have more control, preventing a binge.

The food diary was also viewed as an important tool in promoting mindfulness and self-awareness by allowing participants to reflect on their eating patterns. Another example was avoiding eating in front of the TV and instead to have meals at a table to promote a more conscious mindset when consuming food. The psychologists also played an important role when they described providing an enriching environment, which prompted the patients to think deeply about things, work to identify triggers, and go through the food journal together. Because of the

sensitive and secretive nature of the patients, the psychologists were mindful of techniques that patients used to mask their core, which could reveal their "true self":

> I felt often times it was very easy to build a positive relationship with these individuals, and that there would be like light-hearted conversations even when we're talking about something that was so challenging for them. I think some of that was very natural. Some of it was potentially a coping strategy, coping with humour, and that would emerge later in the sessions when talking about more of the cognitive work and core belief work, like making them sit with some of the narrative thoughts they have of themselves where the humour was less present. *(T1 CBT)*

Overall, self-awareness and mindfulness appeared to contribute to the patients' self-confidence by increasing their sense of self-worth, allowing them to have a more positive body image and a better capacity to change. Also, the focus on problem-solving skills and finding successful behavioural strategies was viewed as empowering. This also led to reduced binges post-study, with changes being observed within four weeks of the treatment, coinciding with when the behavioural changes started to occur. When asked about a combination of MP and CBT therapies, one psychologist stated:

> You know some folks would argue against medication and CBT for anxiety disorders at the same time. Because you don't get the same experimental learning because then you could also explain away your improvements as being to do with medication, not because of the behavioural change and your own competency, and your own resilience. *(T4 CBT)*

This highlighted the importance of working on the cognitive and behavioural elements of the disorder. By acknowledging these components, therapy may have encouraged the mindfulness and self-awareness needed for the patient to understand that they were, in fact, more in control of their recovery than previously perceived.

6. There are social determinants of health that impact the ability of patients with BED to access help

The psychologists described many factors that limited or inhibited an individual's access to care. For many patients, diagnosis was an important part of treatment as it was a means of

explaining and understanding their behaviours. However, many that were screened in the study were unaware that such a diagnosis existed. They were only made aware when identifying with the symptoms listed on the subway ads for the original clinical trial. Many patients struggled with the disorder since their teenage years, also highlighting not only the secrecy of binges but also the lack of access and knowledge to appropriate care:

> Almost across the board, everybody said that they had seen this ad while they were on the TTC [Toronto Transit Commission; subway] and that it just spoke to them that they didn't realize they had an eating disorder, but as soon as they read the content of the ads, the felt like 'Wow, this is what I'm going through.' *(T1 CBT)*

The psychologists believed that the low to lack of BED knowledge severely impacted an individual's ability to get diagnosed. Having knowledge of this diagnosis was seen as a means of explaining the patient's behaviour and identifying with the symptoms present in BED.

Though twelve weeks was viewed as sufficient by the psychologists, adding booster sessions was suggested as a kind of continued support. However, one psychologist said that it was important to be mindful of healthcare resources:

> I think it [12 weeks] is enough. I'm also mindful of healthcare resources and things like that. I don't think it is warranted to have individual treatment one-on-one for an extended period of time. If you know [inaudible] 12 weeks, most of our folks were down to zero at that point, in terms of the number of objective binge episodes. Booster sessions are something though, I think would be useful…Coming in, in 4 months, in 8 months, to review where your eating is at, how your goals are and whether or not you need to make any changes with regards to how you continue to go about things…So to me that makes a difference. That is a reasonable expenditure of healthcare dollars. Not necessarily seeing more of me at once. *(T4 CBT)*

Therefore, success in the therapy seemed to be defined by psychologists as a reduction in objective binge episodes *immediately* after the 12 weeks, without really observing the long-term effects of the treatment. The same psychologist went on to elaborate on the difficulty in access to healthcare when treating this disorder:

> I guess largely aftercare is a systemic issue in certain areas, in the hospital, as you know, some folks finished up, and they were ready to be doing everything on their own. And probably slightly relieved to be able to. But other folks still wanted continued care or support in some form or other. And there aren't as many options, particularly options that are regulated by a health professional or are covered by OHIP. And that's always a challenge because you know, 12 weeks is enough time, but it is also not very much time. And having some kind of continued support is something that we ended problem-solving about with the participants. What their options were when they left and how we can facilitate to the best of our ability. But there isn't any mechanism in place. *(T4 CBT)*

This passage was quite compelling because it outlined the need for better healthcare programs that are accessible to patients struggling with this disorder.

Furthermore, the psychologists described some of the factors that contributed to attrition and/or poor treatment outcome. For example, convenience was mentioned as an important factor in treatment-seeking. For many patients, coming in weekly may be too much of a time commitment. As one psychologist stated, when asked if 12 weeks is enough:

> Not necessarily, because also the idea is that it should be practical and you know, we need to be realistic here that people probably can't be, and most people can't afford to, nor desire to be in weekly treatment their whole life. *(T2 CBT)*

The psychologist then explained that it might be useful to start with the 12 weeks of intensive CBT and then spread it out to maintenance phases, with a transition for those ready for weight loss goals. However, the psychologist did question whether funding for a program like this would be realistic as well.

In addition to being able to afford the program, funding, and healthcare access, other factors impacted access to treatment. Time, in particular, was stated as an important reason why someone would drop out:

> You know it's hard to know if they're being honest about why they're dropping out, but one reason would be just the demands of the treatment. We were asking them to journal what they were eating throughout the day, every day, coming in weekly as well as the laboratory sessions, and for some people, that was too much to commit time. *(T1 CBT)*

This seemed to indicate the importance of convenience in treatment and questioned whether the motivation to prioritize treatment was present in this subset of patients. A clue that pointed to convenience in treatment was that the psychologist explained that some patients preferred being in the MP group as they found it easier to consume a pill. To deal with this, psychologists encouraged participants to try CBT at least once.

Another important factor was comorbidity, which was believed to have a significant impact on the study results. As previously explained, the psychologists stated that patients in the clinical trial showed great improvements, quite rapidly:

> In the BED study, that was some of the highest, most responsive I've seen. Like I mean, we had really dramatic impact on binge eating frequency within four weeks. You could see even the impact on the structure of the eating behaviour right away, the increase in control, the increase of just the changes to the eating behaviour over the course of the day. So I was seeing real impact right away, and at the end, we were also just seeing, getting a lot of feedback from participants about the therapy assisting them in meeting their goals and kind of enabling them, I guess, to make the changes that they wanted to make and to meet their goals. I found a really heartening increase or response to CBT in binge eating disorder, more so than I've seen in other studies. *(T4 CBT)*

When describing why they believed such a trend existed: "It's speculation, but I guess its comorbidity. We actually have relatively low comorbid concerns in the folks who were in the binge eating study" *(T4 CBT).* She explained that the frequency of cases that had ADHD and impulsivity related issues or depression wasn't as high as expected, indicating that she was hoping for more variability. Overall, the group was relatively homogenous in terms of demographic and clinical characteristics. The psychologist also believed that increasing the breadth of people in the study would have improved the study and its power. One psychologist speculated that comorbidities made it more challenging for BED patients to engage with the psychologist or treatment. They believed that a sequenced approach was more suitable for these patients, where they could focus on their primary concern (i.e., anxiety and depression) and then

continue onto treatment. Therefore, the social determinants of health were not only seen as impacting a patient's access to healthcare but could also influence who sought help and how the results of such studies could be interpreted and generalized to the population.

3.4 MP Group

1. The drug changed eating behaviour by reducing appetite and impulsivity

Most patients stated that the highest dosage they received was 54 mg. They reported the drug effects to be immediate and felt an increase in energy, productivity, and focus. The drug was described as reducing appetite and cravings. The patients reported not feeling as hungry, and a reduction in binges was observed. Some patients recounted having no binges in the 12-week treatment. Indeed, in all of the patients, there were a reduced number of binges and binge-eating severity post-treatment compared to baseline. The drug increase seemed to contribute to foods being less appetizing and reducing the preoccupation patients had with food: "It wasn't just thinking about food, nothing felt like it was appetizing, that's the way I can describe it" *(P2 MP)*. Therefore, there was evidence of rapid appetite cessation, ranging from the first dose intake to three weeks. One patient also reported that the treatment allowed her to feel hunger:

> [While taking the drug] starting to actually feel like what does hunger feel like because it's very rare that I'm actually truly hungry. I always make the joke like 'God, I haven't been hungry since like the mid-80s'. Because truly you know how there are some people who are like, 'I feel hungry we need to eat.' Because I can eat so much, I don't feel hungry, so it's a very foreign feeling to me. I'm like, 'What is this? I'm feeling sick. You think I'm hungry? It's weird. *(P7 MP)*

The same patient pointed out that binges never occurred during breakfast or lunch because it was not convenient, using the example of being unable to attend meetings if she binged on heavy foods. Therefore, her binges would solely occur in the evening, and the treatment helped reduce her dinner-time binges.

Patients also described the impact of the drug on their cravings:

> Appetite has been, I mean at first was kind of way, way down. I've kind of got to a point where like I don't feel, it's not that same, you know just zero desire to eat anymore, and I had that kind of in the morning, and then throughout the day, I get a little bit of appetite back. Now I have what I would think is a normal appetite. And the major effect is that if I crave something, which happens a lot less, but if I do crave something, it's not like this need, this super-strong urge. If I can't fulfill a craving, oh well, big deal, sometimes I've been in situations where I normally would have made one choice, but I thought I feel like the salad today, I feel like this, I still made the choices where I feel like the burger, but it took that overwhelming feeling, off. *(P5 MP)*

Therefore, it was evident that the drug targeted the impulsive nature of cravings and reduced appetite. The treatment as a whole was seen as a good launch, and patients no longer viewed food as a drug. By regulating eating patterns, patients started to eat three meals a day. Those who skipped breakfast no longer did, and they learned to plan meals, giving them a realization that balance is possible without having to avoid their trigger foods. A more structured eating pattern also enabled the patients to reduce snacking and develop a preference for complete meals with vegetables and proteins.

Despite its impact on the impulsive components of the disorder, the drug alone may not have adequately addressed some of the psychological elements of the disorder. This was noted by a patient who described looking for alternative therapies:

> I think there's still a way to go with my eating issues, and so I have been looking into treatment myself, following up with cognitive behavioural therapy, which again might help with the issues itself. *(P8 MP)*

Another piece of evidence that suggested a reduced acknowledgement of the cognitive elements of the disorder was that some patients did not disclose to their loved ones that they were in treatment:

> A lot of people, actually nobody knew I was on the meds but me, maybe my mom knew, I think she knew. A lot of people didn't point out any difference in my behaviour. But when I lose the weight, they were saying 'Oh yeah you are thinner, how did this happen?' and obviously I'm not gonna tell them, so I was like, 'It's a secret, I just lost the weight.' So yeah, I didn't share that with anyone. *(P3 MP)*

MP treatment did not seem to reduce the secrecy of binges, which may indicate that a cognitive shift did not occur. Many patients chose not to vocalize their treatment or reduce the sensitivity they had towards discussing their disorder. For some patients, they had a preference for the drug because it allowed them to keep their binges and disorder a secret from others, rather than openly talking about it like they would with CBT:

> I started to think afterward, so maybe like the CBT would take more time because I would have to come in more and spend more time talking to someone about these things. And then, after I did the first interview, it just felt really heavy having to answer all these questions about depression, and OCD and everything. So I was kind of happy that I had gotten the pills, but those were tough too. They were not easy for sure. *(P1 MP)*

The unaddressed cognitive components of the disorder may have contributed to the return of binge-related eating behaviours in some patients, post-treatment:

> *Interviewer:* When you explained your eating behaviours were more normal, how about the amount of food you ate? So during each meal, has there been a change in the portion size?
>
> *P5 MP:* Definitely, 100% at first or the beginning. I've started to kind of get that bad habit again of just overeating.
>
> *Interviewer:* After the study was done?
>
> *P5 MP:* Right, right. So I'm still on the medication, but I'm just noticing it more. It's like that habit of eating past full.

The patients expressed that MP could not provide long-term benefits, mainly because it did not address psychological issues and did not offer tools to curb binge eating behaviours and triggers. One such example was an inability to deal with stress adequately:

> *P3 MP:* So, I started going on my normal eating and binging, I think two months after. So the study was done end of summer, and then September/October still had the effects. I was still in my regular, and then during November/December, winter months and then exam time came again. As soon as I got off the meds, I would say sometimes I was fine but then after I got back to my regular eating…
>
> *Interviewer:* Regular eating meaning your regular binge eating?

> *P3 MP:* Yeah. And I wasn't talking to [the psychiatrist], I wasn't talking to anyone. I was just like, 'okay, eat and then feel better again.' I think my brain was okay during the summertime when the study was happening. So, I wasn't in school, that was another factor. So if I were in school and during the study, it would have been different results. That's another thing that affected. I think it's a huge factor. It affects my eating habits.

In this case, school and school-related stress seemed to trigger binge eating. As there was no indication of alternative strategies used by the patient to address this trigger, she resorted back to binge eating behaviours to "feel good again."

Patients were vocal about addressing the need to understand their psychological and behavioural processes as it related to this disorder. For example, when a patient described her previous treatment with a nutritionist as successful at first, but in the long term, it was not feasible because: "I don't want a nutritionist, I need someone to talk about my behaviour and why I'm doing it" *(P8 MP).*

The patients suggested that a combination of the two treatments could address both the physiological and psychological components of the disorder: "Combination [of CBT and MP] would be perfect…I prefer [CBT] over medicine because the medicine was just [changing my] eating and I don't even know it was happening, like how this is affecting my body" *(P3 MP).* Patients expressed the need to be aware of how the treatments worked, and it was evident that psychological therapy could address this:

> If you could combine the two, I think it would work actually. Cause then you'd actually be able to talk to somebody about what the drugs were doing instead of just coming in and talking about it for a couple minutes and then discuss your concerns or whatever and then just like getting the next dosage and leaving. I think sitting down and talking to someone about it would help you understand more about what was going on. *(P1 MP)*

Patients valued the treatment's psychological elements, and most were aware that the disorder was not all physiological. These elements were addressed through the conversations the patients had with the psychiatrist during their check-ins. Many patients believed that a combination of

psychological and pharmacological therapy would be an ideal option because both components of the disorder would be addressed.

2. Components of the therapy reduced stress-induced binges

There was some indication that a missing component in therapy was its focus on effectively managing stress and the anxious feelings that may drive an individual towards bingeing. However, one patient pointed out that while stress was a typical binge trigger, her behaviour shifted from binge eating to overeating, while on the drug: "I`ve had a couple of times where I had too much to eat, overeating, but not binge eating, not once" *(P4 CBT).* Food was described as a crutch and something to "arm" themselves with when patients were coping with stress. One patient, who found success in the 12 weeks, disclosed that she had no "ups and downs" and no depressive episodes. For another patient, she reverted to old patterns and binges once she was off the medication because her studies commenced, which exposed her to higher stress. Despite losing 10-15 lbs during treatment, she gained 20 lbs two months post-treatment.

> *Interviewer*: So now that there's no doctor, no medication, have the effects, these really good effects, have they stayed, or do you notice a change?
>
> *P3 MP:* To be honest, it's just right now what's happened is because my life [and] demographic has changed [and] I'm working full time now, so I'm not going to school. So the stress I have is just work-related…my meals are okay. Morning I don't eat breakfast again, [I] have a lunch and then come home have dinner, and that's it, and I go to sleep, and this is my regular pattern now…I started going on my normal eating and bingeing, I think two months after [post-treatment]

Therefore, in this particular patient, the positive effects lasted two months post-treatment, and stress was a large contributor to the short-lived benefits. Indeed, this patient experienced a greater number of binges at Week 24 than Week 12, and the largest increase amongst MP patients in BMI and binge-eating severity during the same period. Interestingly, she was also the only patient in the sample to experience a consistent increase in shape and weight concern, and

clinically significant restraint scores, throughout the treatment and follow-up. The challenges in coping with stressful situations may have contributed to BED patients believing that a cure is impossible, stating "always in recovery, never fully gone" (*P1 MP).*

In addition to a reduced preoccupation with food, structure, convenience and a sense of community may have also contributed to reduced stress levels. It is possible that structure and planning may implicitly reduce stress because it brings a sense of predictability. For example, the food diary, which many patients found was an important part of therapy, may have created structure by allowing patients to visualize and plan their food intake:

> It was crazy cause one day I had literally 1 line and one day I had 6, 8 lines [in her food diary]. It happens you know it's crazy…I started like, 'okay let's get this, you know, more regular.' So it did help [the food diary] visually seeing what I'm putting in my body every day. It felt like I needed to make it a more regular stable pattern. *(P3 MP)*

Convenience was also a positive benefit of medication use, and difficulties in obtaining the drug post-treatment stopped some patients from taking it:

> When I got the medication from the walk-in, they told me right there that they weren't gonna prescribe it again, that I thought, 'Okay, well, if I'm gonna have such a hard time finding and getting this, then I should probably not take it. *(P2 MP)*

The sense of community may have also contributed to reduced stress because of the perceived support and lack of judgement received from family and friends:

> I'm able to manage binge episodes easier if I manage my stress and I give myself like 3 proper meals and there's stuff that's ready in the fridge to go. So I doubt I have to resort to other things. And I think also the fact that I have this really supportive partner... he just says like if you really want to eat that whole pint of ice cream go for it, there's no judgement, like none. And that makes a huge difference because then it doesn't feel like I have to eat. *(P7 MP)*

Furthermore, the research team was also seen as helpful to participants because they felt like they were part of a community. It was clear that without structure, support and convenience, the

risk of binging increased, and it became more difficult for the patients to manage stress adaptively.

The impact of the medication's side effects on stress was also explored. Only one patient stopped taking the medication two weeks post-study because it induced nausea and made her throw up, making it hard to take the drug. One patient was recommended by her physician to go off the medication post-study because of a family history of high blood pressure. Many patients reported dry mouth and increased heart rate. One patient reported a little flutter of anxiety she felt all the time. There were also sleep disturbances reported, mainly because the pill was ingested at different times. patients experiencing this were recommended to take their medication in the morning. One patient who was consuming 72 mg dose of the drug and was diagnosed with an anxiety disorder reported increased anxiety, shortness of breath, and numbness in her toes, fingers and tongue. Overall, there were not many side effects reported from using the drug.

3. The drug helped enhance mindfulness and self-awareness, but not on its own

Patients reported experiencing higher self-awareness and responsibility and reduced feelings of guilt. They believed that by understanding their pathological eating behaviour and binges, it occurred less frequently. There was some evidence to suggest that a sense of mindfulness and self-awareness about their behaviours gave them more time to think things through, and when combined with the effects of the drug, reduced impulsivity. Many patients attributed these behavioural changes to the other elements of the treatment, in addition to the drug. For example, the food journal allowed patients to visualize what they were consuming, making them more aware of their eating patterns:

> I'm not sure if [the drug] affected my appetite, but like what [it] did was I'm just writing down in the food log, so maybe the two together kind of made me more aware and focusing on that [her appetite] a lot more… I think maybe it was just like the mix of the

> two. Just like the medicine and writing things down, like being more aware of things, having to talk about that every couple of weeks. *(P1 MP)*

There was evidence that other components of the therapy also contributed to a patient's self-awareness and encouraged them to engage in more regular and stable eating patterns. Combined with the drug's ability to address the physiological elements of the disorder, this led to more structure:

> I found that [the drug] made me focus more, at work, especially at work. I wasn't thinking about food, because it decreased by hunger and I had to eat at certain times. I was more mindful and thoughtful when planning my meals and because there wasn't that drive to binge. I had to learn to deal with issues in other ways when I was upset because I couldn't even if I wanted to binge eat, I couldn't do it, I just could not do it because the hunger wasn't there. I was eating satisfying meals, and I had to find other outlets. When I was binge eating before, I don't think I was doing it consciously, but I would not eat properly during the day, so by the time I got home, I didn't have lunch. By the time I got home, I was starving, so I would go straight to the grocery store and buy a couple of pizzas and four chocolate bars and just have that for dinner. So [during treatment] because I was eating a healthy breakfast, snacks, lunch, by the time I got home, I was satisfied, and I would just make a nice dinner. I had to write down my meal plan that helped a lot. *(P4 MP)*

An important property of the drug – as described by the patients - was that it reduced the preoccupation with food and hunger, resulting in binge cessation. By addressing these components, the treatment seemed to provide more opportunity to focus on the cognitions and behaviours. In line with this, eating concern scores were lower at post-treatment than at baseline for all patients.

Patients also indicated the importance of self-awareness and mindfulness on their therapeutic progress: "I think if anything, most of the study made me just more intuitive, like kind of just reflected more on myself. Just partially because of the journals, and also because of the interviews that were happening" *(P1 MP).* The positive impact of self-awareness may have also extended to the improved structure and consistency of their eating habits, resulting in a more positive outlook about self and image. For example, weight loss was not usually equated with

treatment success in patients, although most in the MP group lost weight. Indeed, for most patients, there was less shape and weight concern post-treatment than at baseline. Some patients did not remember how much weight they lost, and some did not want to measure their weight. Most patients did not care about whether they lost weight or not, and the focus shifted away from weight. This indicated that weight loss as an incentive was not strong enough for patients to progress in therapy, since according to one patient, "weight loss does not equal solving all my problems" *(P5 MP)*. Weight gain observed in treatment may be due to overeating rather than binging, since some patients reported overeating, but not binging during the treatment.

One patient explained how she was previously trying to lose weight (pre-treatment), which allowed her to gain confidence and reduce her anxiety. This allowed her to relax a little and start seeing someone, but as soon as they broke up, her anxiety increased, and the binging started again. Therefore, self-awareness, not weight loss, seemed to be a more sustainable motivation, which contributed to happiness, control over eating and, ultimately, a reduction in binges. Overall, the treatment improved patients' quality of life and allowed them to feel more in control of their lives. This improved quality of life and reduced preoccupation with food may be why patients had more time to engage in replacement activities. Some activities were considered less productive, such as Netflix/TV or shopping. However, most activities were viewed as productive, such as sleep, gardening, painting, reading, and listening to music.

4. The psychiatrist addressed the need for safety and comfort in patients

The patients viewed the positive relationship with the psychiatrist as an important part of treatment success. Most participants expressed that drugs alone do not work. Patients liked the talking sessions with the psychiatrist, and that therapy was more than just drug administration: "You're actually a human being, and these people care about you and want you to be benefiting

from this rather than just being like 'hey, have some pills and go off and take them'" *(P1 MP).* The need for this human interaction in a caring and safe environment was considered very important in therapy and may have shifted the need for patients to seek safety from food: "I think everyone was really helpful and I felt really safe which was really important to me because again I was a little apprehensive about taking this drug" *(P6 MP).*

The psychiatrist was highly praised by the patients and was described as playing an important role in their recovery. Some of the descriptions of the psychiatrist included caring, someone patients could talk to and could be part of their success in the study, loving, positive, present, encouraging, able to answer questions and build rapport, empathetic, did not have unnecessary opinions and judgements, did not assume things about the patients, listened, was not controlling, asked instead of imposed, showed genuine concern, and genuinely wanted to help. These are all characteristics that may be positively associated with safety and comfort. When one patient was asked about her experience with another clinician vs. the psychiatrist in the clinical trial, she stated:

> That person was very nice, I connected with her, but I just connected with [the psychiatrist] more. I don't know what it is about her. She's just very caring. So was the therapist, but in a different way, I don't know. I felt more comfortable with [the psychiatrist], I felt like she really wanted me to excel in this, and she really cared…Like she was doing this because she was more passionate about the project. She wanted to help the people involved, and I really connected with that. I really liked her, everybody on the team. *(P4 MP)*

The psychiatrist may have reduced fears of judgement in the patients by being extremely genuine and passionate - something that was observed and well received by them. The perceived safe environment may have encouraged patients to talk more freely about their internal struggles:

> When I enrolled, the first thing I was thinking was that I would get to talk to someone about my history and what I go through and what I feel and what I think is happening with me and just somebody that will be able to just take that in, somebody just to listen basically, cause I've never really shared any of this stuff before with anyone. The study

> was the first time I actually came out, and I told them, and it was a really emotional day that day. I just wanted to let it out, you know, I just had to let it out, and then after I was sharing they said some term, they said some statements, 'so do you do this when you do this?', so when they said those statements, I was like 'how do you know, because that's exactly how I feel.' I connected in that sense. This is why it's better because I gained more knowledge about myself, and I get more information about what I'm going through right, instead of just sitting there and doing nothing about it. I actually just went into the study like I'll learn something new and figure out more things about myself. *(P3 MP)*

Therefore, it appears that a safe and comforting environment can be developed with a psychiatrist who is understanding of what the patient is going through and genuinely listens to the individual's struggle. In this way, the patient may start to feel safe and comfortable enough to disclose their personal information. The role of the psychiatrist was so important that one patient even believed the drug was "a decoy" and attributed treatment efficacy to talking with the psychiatrist. For another patient, the psychiatrist played a role in her ability to get over her worry of using the drug:

> I think everyone was really helpful, and I felt really safe, which was really important to me cause again, I was a little apprehensive about taking this drug… they assured me that it was fine. So once I had that reassurance, I felt a lot better. The doctor and everyone that helped me throughout were really nice and answered all my questions. *(P6 MP)*

For many patients, the relationship with the psychiatrist served as a motivation to continue therapy successfully:

> I think the main motivation for me, I would say, was talking to [the physician]. She was really persistent, like 'okay you should make your meals regular,' she was motivating me in that sense…talking to people when I came in, and you know they were just asking me about my experience and I was sharing what I felt and everything. So that was good, why I think I kept motivating myself to really participate in the study properly and not be like a bad, I guess, participant. So you know, actually do what they're trying to tell me, they're trying to help me. *(P3 MP)*

A motivating factor for patients to do well seemed to be the exposure to an environment that supported their growth. This effect may have also been more amplified because patients were typically people-pleasers or with low confidence. There was a fear of judgement, which was

evident when some patients avoided certain foods to avoid writing them in the food diary. Others had a fear of judgement from the psychiatrist, not because of negative repercussions, but because they respected her. This was seen as beneficial during treatment because it induced a sense of accountability:

> [Psychiatrist name], oh my gosh. Wow. And I think we got on so well, this worked for me, this approach because I know myself, I know I'm a people pleaser, and when I'm accountable to somebody, I just excel. So that you know, every week she would praise me and I love that, and so I wanted to please her, so it worked really well. And I found the medication. It worked well with me. Yeah, it was wonderful. *(P4 MP)*

In such a case where patients were in a safe and comforting environment, their people-pleasing behaviour may have enhanced their feelings of accountability. It is important to note that for some patients, the people-pleasing behaviour lessened in their personal lives as their focus started to shift more onto themselves.

Because of the respect patients had for the physician and the safe and comforting relationship, it was easier for them to follow the treatment protocol without resistance:

> I'm just a random participant, and she's showing that much care to me, I better listen to her. It's kind of a sign of respect. Like she's showing that much care for me, she genuinely wants to help me, why am I not responding to that, so I better respond and do something that's helping me, you know…Some people, I have met they say 'okay, it's my job, I'm here to do my job, I'm just going to do it and get out,' and you know, then some people just try to throw facts on you like, 'oh I have read this book about you know, this disorder and I think you're showing the same symptoms from there,' and they're just throwing facts on you like 'oh you feel this, do you feel that.' I don't like that… I'm like, 'why are you putting me in that category without even talking to me and understanding what I'm trying to tell you.' *(P3 MP)*

The patients also explained how important it was to be guided by the psychiatrist to eat meals at the right time and consistently. However, the critique was that patients would have preferred a combination of CBT and medication because they didn't really learn strategies or takeaway points that could be used in their day-to-day life. Other patients also believed that if they

continued to see the psychiatrist for follow up sessions, they would have done even better. Although they believed 12 weeks was enough, most were open to the idea of follow-up sessions.

The relationships patients had with their family physicians were also of importance post-treatment. For one patient, limited accessibility was why she stopped taking the drug and had to wean herself off it two weeks post-study. This person did not have a family physician for many years. The same patient slipped back to pre-treatment eating behaviours one year after. Overall, physicians were seen as a means of encouraging support system, indicated by the patients who continued treatment post-study having good relationships with their family physician.

3.5 MP Psychiatrist

1. There are social and pharmacological barriers to drug therapy

The psychiatrist was cautious about prescribing the drug, despite believing it to be efficacious. She stated that physicians should be aware of the drug's dangers, which include it being a psychostimulant, a neurotoxin, and a substance with a prominent addiction profile. This made it important not to substitute one dependency for another. Because MP is a controlled substance, she believed it was important for it to be prescribed by just one person in a rigid way. She stated that the drug had many side effects and potential dangers, particularly for young people, which may cause them to terminate their treatment. Some of the side effects found in the study were its impact on pre-existing medical conditions such as colitis and anxiety, which it worsened. She did note that the benefit of the treatment protocol was that the dosage could be changed to reduce side effects while still impacting BED symptoms. Overall, medication was seen as an integral start:

> Our approach was to consider medication as a helping start because it still has a very behavioural component. So it helps you to kick in with your new life. It helps you to sustain while you feel comfortable to just continue. And then, as I told all my participants, you have to taper it off and discontinue medication. *(T3 MP)*

In addition to the side effects, another barrier to MP treatment was that some physicians do not prescribe the drug since it is a controlled substance. Furthermore, it is difficult to get a psychiatrist as an outpatient, and some pharmacies do not carry the medication because of its high addiction potential. Though it was viewed as a good "push," she stated that the drug could not be used long-term (i.e., 2-3 years daily) because of its potential side effects and difficult accessibility outside of the study. She believed that CBT and MP could potentially be administered together:

> I honestly think they have to go in conjunction. You have medication. You can push it with medication because it was very hard for girls to start. They felt so overwhelmed with this urge to do, they hated themselves, and that's what medication can be helpful with…I think with CBT, it will take a bit longer for the person to, you know, develop a [inaudible] or get through thoughts. Medication can be very helpful to start *(T3 MP)*

The medication was seen as a good start, which was the same language observed in patients, and because it works fairly rapidly, it was seen as a good complement to CBT, which takes longer for its effects to be observed.

Despite the barriers, the clinical described that the convenient nature of the drug therapy made it appealing to patients:

> It was a good fit for the participants. It wasn't overwhelming as a protocol. It's a weekly meeting. It was a good balance and frequent enough, not too much type of thing. So the weekly sessions we had were pretty sufficient. You have a check-in with the participant and see what's going on. And I think it was handled well by the vast majority of participants, and they appreciated the part of seeing a physician on a regular basis. And it also wasn't really overwhelming. Sometimes you have a lot of studies, a lot of scales. It adds up to like 2-3 hours with each visit, and people just cannot commit. The population-specific with this one, people, we're all working. They have to accommodate our visits into their schedule, and I found if the schedule is not flexible enough, people will just drop off. I don't think we actually had any dropout in this study in the medication arm, which probably shows that it was a good protocol, and people were very engaged. *(T3 MP)*

However, the stigmatization and lack of knowledge regarding the disorder was also seen as impacting the number of individuals who sought help and were diagnosed with the disorder:

> "Not a lot of people had a deep understanding about diagnosis before they were asked specific questions [in the trial], and I think for this specific condition its very common actually across all sites and a lot of people outside of the trial. Because first of all it's very stigmatized, and secondly not everybody believes that you have some sort of issue and you need help. Because oh you're just overeating, not a big deal." (T3 MP)

2. MP reduced binges by addressing the impulsive component of the disorder

According to the psychiatrist, the drug may have impacted behaviours that were central to BED, namely the impulsivity associated with food intake. Overall, there was less of an urge to eat after medication use. In addition, there was a diminished preoccupation and obsession with thoughts of food. The drug also changed the patients' reaction to hunger:

> You won't feel hungry, and you will not be eating. With people with binge eating, they will eat even when they don't feel hungry. This is fully different stuff. It's not because they're hungry. So impulsivity was the biggest issue and the best response symptom for medication…For this population, I haven't actually noticed a lot of other impulsive behaviours. It feels like if the person chose the impulsive behaviour, they stick to it. Or maybe it's by sampling because people who had other addictions did not make it [to participate in the study]. *(T3 MP)*

Reducing impulsivity was what was perceived as leading to positive behavioural changes. Although patients reported a reduction in appetite, their recounts also validated the effects of the drug on impulsivity. Regarding appetite suppression, the psychiatrist elaborated:

> "But I don't think it's actually coming from appetite specifically. I think it's actually coming from obsessionality with food. This preoccupation with specific food and, 'I have to eat, and I need to eat,' it's an urge. Not so much about appetite." *(T3 MP)*

3. Patient-psychiatrist relationship was important to the therapeutic process, but the main beneficial effects were attributed to the drug

The psychiatrist acknowledged that patients appreciated seeing her regularly and believed that the clinical assessments during the study impacted the psychiatrist-patient

relationship positively by building a relationship with the patient. The psychiatrist also provided an example of a participant who liked receiving validation and normalization on what they were going through, especially because she did not receive it elsewhere. She also believed that participants enjoyed feeling part of a team and having greater access to the psychiatrist- a benefit that was associated with participating in the trial: "You won't see your physician often on a weekly basis, so direct benefits associated with participating in trial" *(T3 MP)*. She believed that these interactions could not be avoided during assessments and that clinical details were important for this medication, which is why a psychiatrist was needed in the first place: "You [the physician] still have to talk to the person, you still have to clinically assess and ask clinical questions. There's a lot of data that shows it's very important, physician-patient relationships" *(T3 MP).*

The psychiatrist acknowledged the uniqueness of every BED patient and believed that an intent to change and motivation were very much related:

> Well, they're all unique to me because they were actually all unique, even though they had the same diagnosis. Qualitatively speaking, they're all different. [They] went through their own struggles, some were more ready than others, and people who entered the trial already having an intention to change, they were more willing to change and employ behavioural changes. Medication was very helpful to push the behaviour change. I still found that people who were not really ready, or maybe not able to incorporate any behavioural changes, benefited less from the medication, or even though they benefited weight-wise, they were not able to sustain changes. *(T3 CBT)*

Therefore, the intent to change was an important motivation for patients. Other factors also influenced their degree of motivation. These included having a high level of education, knowing what they wanted, accepting themselves, having a healthier self-image, and having fewer financial stressors (i.e., employment).

Despite this, the psychiatrist did not believe that her relationship with the patients was more effective than the drug, contrary to what some participants in the study believed:

> It's 12 weeks. So you do build relationships with your patient. Is that more effective than the drug? No, I don't think so. You cannot really cure BED in just 12 weeks, just with talking and discussing symptoms, so there's a very specific medical component. The addition of a good relationship with the physician will probably impact compliance more. *(T3 MP)*

Therefore, there was evidence that the psychiatrist may have seen her role as smaller than how patients perceived it. She did, however, believe that without the behavioural changes in eating patterns, the efficacy of the medication may be compromised, particularly in this cohort where interaction with the patient is necessary.

There was also some indication that better relationships with patients allowed the psychiatrist to detect certain behaviours and patterns that may not otherwise be noticed without good rapport. For example, she used the example of detecting the disorder, which could sometimes be overshadowed by perfectionist tendencies:

> When you talk to the person who overeats, you don't really see the person as having major issues right away…you see varied intelligence, [a] highly educated, well off female, a bit overweight, but not significantly, and very well put together, and you think what's the problem? There's nothing wrong with you! I think they learned somehow to hide it and not present it as a problem, and this is a problem. *(T3 MP)*

4. Diagnosis was a motivating factor in therapy

Due to the secrecy of binges, the psychiatrist believed that it might make it difficult for patients to get an appropriate diagnosis. Therefore, it was believed that those formally diagnosed had a sense of relief and could explain their behaviours (i.e., lack of control overeating). Understanding the behaviour allowed patients to seek treatment. A diagnosis also had the ability to remove the feelings of guilt and replace it with relief and hope: "It's not like I'm [patient] a bad person anymore… it's an actual condition that has biological and psychological traits and here is what I can do. So, a lot of people felt hopeful that they can do something" *(T3 MP).* Therefore, diagnosis allowed participants to better understand their disorder and the reasoning behind their

behaviours and their thoughts and feelings. Although many patients had a deep understanding of the diagnosis before enrolling, most believed it to just be overeating:

> When you actually break it down and describe like 'okay here's a binge, here's a lack of control, that's why we diagnose it,' a lot of people are relieved, I guess, to some extent. Because okay, now I [participant] know it was wrong, now I know that you can actually do something for that. *(T3 MP)*

Overall, a diagnosis provided hope and was another motivating factor that allowed patients to seek appropriate treatment. In addition, the psychiatrist believed that not having a diagnosis anymore post-treatment was liberating and motivating, as this was something she observed in one of her patients.

CHAPTER 4: DISCUSSION

The current section will summarize the findings and provide an overview of the unique characteristics of patients with BED. I will also discuss the findings in connection to current and related research and the RCT. In addition, the strengths and limitations of the study will be highlighted. Finally, suggestions for future research in BED therapeutics will be proposed.

4.1 Overview of findings

The current study provided insight into the lived experiences of clinicians and patients involved in the psychological and pharmacological treatments of BED. Thematic analysis of the data described the role of self-awareness and mindfulness in the patient in enhancing their self-confidence and reducing binge-eating behaviours. The food journal was viewed as an essential tool for patients to better connect their emotions and thoughts to their eating patterns. Although participants in both therapies expressed the reduced compulsions and impulsions associated with binges, each treatment used different modalities to achieve this. The key differences that emerged between the two therapies were that CBT had a deeper focus on the psychological components of the disorder and provided a toolbox of skills that patients could use even after

therapy. In MP therapy, the physiological components were acknowledged. Namely, it was reported that the drug reduced the appetite, cravings, hunger, and impulsivity associated with binges.

The clinicians were viewed as integral in creating a collaborative, safe, and comforting environment, which encouraged participants to feel more in control of their therapeutic progress. Although there was less patient-physician communication in the MP group (appointments were approximately 20 to 30 minutes in length), the participants' description of the psychiatrist as a caring, empathetic and encouraging support was fundamental, and many attributed a large part of their success to her. While these positive clinician traits are well-established in psychological therapy (Elliott et al., 2018), in MP therapy, the themes further demonstrate that it is not enough for the psychiatrist's role to be simply the drug dispenser - communication and rapport is important for successful therapy. Although the patient-psychiatrist relationship was viewed as important, the MP psychiatrist did not seem to see her role as significant as the patients recounted, and she attributed most of the treatment's success to the drug.

The results also suggest that in both treatments, patients needed to gain effective stress-coping skills. For most of the participants, stress was a commonly reported binge trigger, even during treatment, which highlighted the challenges in adaptively coping with it. Both the clinicians and patients believed that 12 weeks of treatment was sufficient. Still, many endorsed the potential benefits of follow-up or top-up sessions and suggested that a combination treatment approach may be more efficacious.

The current study is unique in that it not only explored the perspectives of the patients but also those of the clinicians. In this way, a more fulsome picture of the clinical knowledge base in this field was provided. By reviewing the themes developed in both the MP and CBT groups, the

study adds to the literature by detailing the views of the patients and clinicians on the efficacious components of these BED treatments as well as those that require improvement.

4.2 The BED profile

The manner in which the women described their binges strongly paralleled the language/terminology used by those with substance abuse and other addiction disorders In line with previous research (e.g. Schulte et al., 2016), the findings of this study support the definition of "craving" as an extreme and compulsive desire to use the drug (in this case, hyperpalatable foods) (Tiffany & Wray, 2012). Despite the distinction between cravings (a motivational desire) and compulsions (behavioural intention) (dos Santos et al., 2018), the current study provides evidence that for patients with BED, the two are very much intertwined.

Analogous to drug-addiction language, food was described as something that provided comfort and numbing, particularly during times of stress. Though many types of hyperpalatable foods were consumed during binges, sugary foods were typically the most common choice. Indeed, high sweet preferences in BED patients have been found to increase the frequency of both binge-eating episodes and overeating behaviours (Goodman et al., 2018). Sweet tastes can be used as a form of self-medication to elevate mood and suppress pain (Davis, 2013; Gibson, 2012). Our study indicated that the association was especially amplified when feelings of loss were present in the patient - particularly when a perceived loss of control, safety, or comfort occurred.

Most patients also disclosed that there was physical pain following a binge, usually in the form of stomach aches. However, they were willing to tolerate physical discomfort for psychological comfort. Although there is a link between low tolerance for emotional distress and unhealthy eating, this relationship appears to be mediated by pain catastrophizing - where the

perceived impact of psychological pain is exaggerated by the patient (Emami et al., 2016). Furthermore, in patients with BED, difficulty tolerating uncertain events tends to increase the risk of impulsive behaviours such as binging, as a way to alleviate negative and distressing emotions (Ágh et al., 2016; Sadeh-Sharvit et al., 2018). Interestingly, when compared to normal-weight and non-BED obese groups, obese BED patients have significantly elevated physical pain thresholds (Raymond et al., 1995; Velkoff & Smith, 2019). In other words, the threshold for emotional pain tolerance seems to be lower than for physical pain tolerance, providing context for why physical pain was preferred over psychological distress.

According to the patient accounts, the association between food and comfort typically developed in childhood - around 8-13 years of age. Although previous studies support the link between childhood trauma, abuse and neglect, and binge eating (Federico Amianto et al., 2018; Imperatori et al., 2016), the current study adds to this by presenting two potential influences that contribute to the onset of BED. Firstly, it was reported that parents played a role in creating a link between guilt and food consumption. The children of parents with BED or dieting behaviours are at increased risk of binge eating and emotional overeating themselves (Lydecker & Grilo, 2017; Williams et al., 2017). However, the current study demonstrates that this association is established when parents model their relationships with food or by direct infliction of guilt and punishment if the child overconsumes. Secondly, expressions of loss were widespread. Examples included parents divorcing, abuse, or the end of a relationship. Indeed, there is a positive association between stressful life events and binge eating severity (Woods et al., 2010; Zhu et al., 2016). In the current sample, these events specifically tended to involve loss. Although the resulting binge eating behaviours were not always immediate, these two key events were typical present in patients' self-described personal histories.

There is also evidence to suggest that stressful events can contribute to neural and emotional dysregulations that lead to feelings of loss of control, predominantly over eating (Groesz et al., 2012; Giovanni Luca Palmisano et al., 2016). Interestingly, opportunities where patients had more control over their eating behaviour coincided with the greatest binge periods. For example, independence, particularly during the first year of university, was strongly associated with the greatest increase in binge episodes. First-year university students living away from home are three times more likely to binge-eat than those who live with their parents (Barker & Galambos, 2007). It may be that the excessive scrutinizing experienced in childhood may have contributed to an illusion of food insecurity in the individual. While household food insecurity is associated with BED and obesity (Rasmusson et al., 2019), future studies must explore whether the perception of limited food availability can also be fostered by parents who restrict or strictly monitor their children's eating.

Although psychopathological distress, particularly in a novel and high-stress environment, strongly influences binge eating (Serra et al., 2019), this study found that financial independence might also trigger binge eating. That is because it provided patients with a greater opportunity to overeat without feeling "policed" by their parents. The findings suggest that in addition to guilt, and stressful life events, easier and greater access to hyperpalatable foods can also exacerbate binge eating behaviours.

Despite the wide array of substances that can illicit similar, if not stronger, feelings of hedonic pleasure, the patients described directing their compulsions towards food because it did not impact their day-to-day functions, and it was something that they could hide. It is important to note that the sample recruited in the study did not have psychiatric comorbidities and consisted of several highly educated and employed women. Typically, BED is associated with

impairment and lower levels of education, employment, and work productivity (Pawaskar et al., 2017; Thompson-Brenner et al., 2013).

The women in this study also displayed psychological and physical sensitivities. Many patients described having one or a combination of low confidence or extreme people-pleasing behaviours. Overly submissive and friendly personality types are frequent in those with BED (Brugnera et al., 2018, 2019). In the current study, the patient experiences indicated that this may be due to their fear of negative evaluation and high sensitivity to punishment. Indeed, both sensitivity to reward and sensitivity to punishment have a positive association with binge eating frequency and, in women, can result in compensatory behaviours (Eneva et al., 2017). For example, patients expressed that they engaged in binge eating at night because it was a better way to avoid others, including family members, from seeing and judging them.

Furthermore, a prominent theme was the individuals' sensitivity to physical sensations. It was common for the women's emotions to determine their binge food choices. For example, on days they were angry, they would consume crunchy chips, or when they needed to calm down, they would consume cold and creamy ice cream. Indeed, patients with BED are more likely than patients with BN to enjoy the taste, smell and texture of their binge foods (Mitchell et al., 1999). The current study adds to this by demonstrating that the hedonic pleasure associated with binging may also be due to the physical enactment of their negative emotions through food consumption.

The traits and behaviours described by the patients aligned with high sensory processing sensitivity (SPS; Aron & Aron, 1997). A highly sensitive person (HSP) is described as having a greater sensitivity to external stimuli, greater depth of processing stimuli, and a stronger emotional reaction to external stimuli (Aron et al., 2012). Although maladaptive stress management, high reward sensitivity, including towards the physical features of food, (Kessler et

al., 2016) and fear of negative evaluation (Sawaoka et al., 2012; Trompeter et al., 2019) support the existence of high SPS in individuals with BED, future studies must corroborate this association.

In the following section, the women's experiences of the impact of therapy on their disorder will be explored.

4.3 Objective 1: *Women's lived experience of MP and CBT treatments for BED*

Self-awareness and mindfulness

According to Bishop et al. (2006), mindfulness is defined as the ability of a person's attention and awareness to be oriented to the present moment. Although there is an inverse relationship between mindfulness and ED psychopathology (Sala et al., 2020), most treatments use exercises such as meditation to enhance mindfulness (Pinto-Gouveia et al., 2017). The current study demonstrates that food journals can also be an important tool in enhancing mindfulness, allowing patients to become more aware of their thoughts and behaviours surrounding their food choices.

There is a positive link between mindfulness and monitoring food intake, specifically when it allows the individual to focus on how and why they are eating (Mantzios & Wilson, 2014). It is important to note that this form of monitoring is not the same as calorie tracking. In a study where participants used a calorie tracking application, 73% of participants reported it as contributing to their eating disorder (Levinson et al., 2017). By contrast, the food diaries in the current study were deemed effective because they monitored the type of food and a basic estimate of its amount - not its calories. In addition, they were discussed with the clinicians in a non-judgmental environment and explored the emotions involved during binges. This enabled patients to identify and modify their problematic binge eating and associated thoughts and

feelings and to monitor their progress. Because MP reduces impulsivity and inattention (Davis, Levitan, Kaplan, Carter-Major, & Kennedy, 2016; Kaplan, Howlett, Yilmaz, & Levitan, 2016b; Reinblatt, 2015), the effectiveness of these diaries may have been enhanced by the increased focus and clarity reported. This allowed patients to focus on the foods they were consuming and to self-monitor.

Self-awareness and mindfulness may have also helped individuals differentiate between feelings of hunger and fulness. Prior to the treatment, many of the patients were unable to understand the difference between cravings and hunger - a phenomenon also observed in other BED studies (Giel et al., 2017; Meule et al., 2014). For example, some participants reported that an awareness of the emotions, sensations, and cognitions associated with their eating patterns, enabled them to better recognize their hunger cues and stopped them from automatically associating it with a need to binge.

Relationship with the clinician

Irrespective of the treatment type, the critical role of the psychologists and the psychiatrist was highlighted by the patients. One of the important pillars of psychological therapy is that clinicians play an active role in building rapport and ensuring that their relationship with patients is positive (Wampold, 2015). The findings of the current study indicate that when the clinician created a safe, supportive, and non-judgemental environment, the patients became more motivated to progress through therapy out of respect for the clinician. Therefore, positive human support increases adherence through accountability to a coach who is viewed as trustworthy, benevolent, and having expertise (Mohr et al., 2011). In patients, this supportive accountability enhances motivation, participation, and treatment adherence (Estrada et al., 2019; Mohr et al., 2011; Ryan et al., 2019). The results of the current study also indicate that in CBT,

supportive accountability is further strengthened by the collaborative role of the patients in outlining the goals and strategies that worked best for them. Patient-clinician collaboration is associated with positive psychotherapy outcome since it equalizes the relationship, builds trust, and encourages the patient to play an active role in therapy (Shick Tryon et al., 2018; Spencer et al., 2019). In the current study, it is likely that because the collaboration acknowledged the patients' voices and thus control over their treatment, a deeper sense of respect and comfort towards the clinician was established, resulting in successful therapeutic progress.

Some patients also noted that they wanted to be "good patients" for their clinicians, even refraining from eating certain foods to avoid writing them in their journals. This observation supports the evidence that fear of judgement and people-pleasing behaviours are key characteristics of those with BED (Brugnera et al., 2018, 2019; Thurstin, 1999). In the current study, patients described displaying these behaviours, not out of fear of the clinician but rather out of respect and admiration. Although the behaviour itself may result from low-confidence and insecurity, in a safe, non-judgmental environment - as in the case of these treatments - a sense of responsibility and motivation seems to be fostered in the patient. In CBT, one goal was to reframe negative thoughts, which helped increase self-confidence. The combination of the heightened sense of self-awareness, trust and increased confidence may have contributed to CBT patients becoming less sensitive and, therefore, less secretive about their disorder. The lack of a deep focus on reframing thoughts in MP participants may be a contributing factor to why many refrained from disclosing their disorder to their loved ones. As indicated by the number of themes in both groups (six in the CBT and four in the MP), there was evidence that the CBT patients were more vocal about describing the details of their disorder and treatment, compared to the MP group.

The interviews and questionnaires were viewed as anxiety-inducing for some individuals since it caused them to relive their traumas or describe very personal information. This may be difficult, particularly early on in the treatment before rapport with the therapeutic team has been established. Although a previous study estimated that mental health questionnaires negatively impacted only 5% of respondents (Surkan et al., 2008), these numbers may be higher if replicated in BED studies - particularly in those who have experienced past trauma. Therefore, both questionnaires and the clinicians who administer them need to be sensitive to the person and their experiences.

While rapport was an important component of CBT, the findings of this study indicated that this was equally, if not more important, in the MP group. Although there was no formal psychotherapy in the MP group, the psychiatrist formed a therapeutic relationship with the patients through weekly discussions. Typically, poor verbal and non-verbal communication and low empathy are common complaints amongst patients (Kee et al., 2018). In a study examining the impact of the doctor-patient relationship, participants who believed physicians listened more to their concerns were less likely to avoid treatment, outlining the impact of a participant's treatment experience on delaying or avoiding healthcare (Moore et al., 2004). The current study also corroborates these findings. The positive view of the MP psychiatrist by the patients may have contributed significantly to patient satisfaction, adherence, and treatment outcomes. These trends have also been observed in other studies examining the role of empathy in patient-clinician relationships (Derksen et al., 2013). Had the psychiatrist only been responsible for administering the drug, the results observed in the MP group may have been different, potentially reducing the efficacy of the drug itself. The results indicate that similar to psychologists, it is important for psychiatrists to establish rapport and display empathy towards their patients since it

may have the potential to motivate them to progress through treatment successfully. A previous study has demonstrated that BED patients have insecure attachment styles, which may be improved via psychological treatment (Maxwell et al., 2017). Rather than the patient finding safety and comfort in maladaptive behaviours involving food and binging, they can instead be found in positive human interactions. Therefore, doctors cannot be immune to the critical role they play.

Perceived stress

BED is associated with a heightened response to stress (Anversa et al., 2020; Naish et al., 2019) and was one of the most commonly reported triggers of binge eating in our study. Despite only partial evidence for the association between BED and stress (Naish et al., 2019), in contrast to previous work, the stress in the current study was not experimentally induced. When evaluating the impact of real-time self-reported stress on binge eating, individuals with BED report significantly worse moods prior to binge eating episodes compared to normal eating episodes (Razzoli et al., 2017). Furthermore, binge-eating episodes are more likely to occur on days when negative affect is high (Razzoli et al., 2017). Therefore, stressful events in real-world conditions may have a stronger association with binge eating behaviour, questioning the ecological validity of experimentally induced stress common in these types of studies.

Although stress itself is subjective, its impact on an individual depends on the magnitude of the stressor and the magnitude of the sensitivity of the person experiencing the stress. Stressful events impact individuals differently, and in people with BED who possess a high sensitivity to reward and punishment, these experiences can be difficult to manage (Fischer et al., 2017; Micioni Di Bonaventura et al., 2020). Negative urgency, an impulsive trait defined by a rash response to negative emotions, tends to be displayed by patients with BED and can adversely

impact treatment (Fischer et al., 2008; Manasse et al., 2019). It is postulated that a positive response to the structure in therapy may be due to its ability to reduce the risk of unpredictable stressful events. The predictability that is brought on by structure may help reduce impulsive-driven binge behaviours. While it renders further exploration, the reliance on structure displayed in the following study may indicate a fundamentally environment-driven individual who depends heavily on external events to modulate their binge-eating (Micioni Di Bonaventura et al., 2020). For a large majority of the patients in the study, stressful life events were directly associated with increased binge episodes, even during treatment. Not surprisingly, current treatments typically fail to focus on coping strategies for the high levels of negative affect that drive binge eating (Juarascio et al., 2017). Therefore, it may be important initially to explore whether the individual uses binges as a means of controlling negative internal experiences – which include difficult thoughts, perceived uncontrollable urges, or painful emotions (Lillis et al., 2011; Pinto-Gouveia et al., 2019).

To address implicit feelings of control in the patients, one method indicated in our study may be to focus more on the events leading to the binge itself. As described by some of the patients, a binge is often meticulously planned and is something that the patients look forward to. Therefore, a focus on this key time-event may remind the patients that despite the *perception* that they are not in control, they can regain control, not just over their eating but also their internal experiences. The goal is not to blame but to empower individuals to feel more in control of their thoughts and behaviours. It is speculated that because this cognitive shift does not occur in therapy, it is much easier and justifiable for patients to binge during times of stress. A treatment that addressed unwanted internal experiences and integrated psychoeducation, mindfulness and

compassion, effectively eliminated BED - trends that were maintained at 3- and 6-month follow-ups (Pinto-Gouveia et al., 2017).

Nevertheless, by collaborating with the CBT therapist to implement adaptive strategies, patients were able to exert greater control over their eating behaviours and reduce the fear and guilt associated with food. As demonstrated in traditional diet programs, restrictions and imposed rules can lead patients to binge-eating behaviours by increasing their fear of losing control over their eating (Jackson et al., 2018). Working collaboratively with the CBT therapist enabled patients to select strategies that worked best for them, including those that reduced the fear and guilt surrounding food intake.

In the MP group, these strategies were not addressed, and stressful situations were frequently reported as inducing post-treatment binges in patients. Although impulsivity and hunger were significantly diminished in patients, many patients believed that these effects were not permanent. In contrast to CBT, a lack of skills or strategies, may put participants at higher risk of reverting to pre-treatment binging behaviours, particularly at the onset of a stressful situation in their life or drug cessation. In a 12-month trial examining the long-term safety and tolerability of the drug, out of 604 subjects, 506 experienced adverse effects (Gasior et al., 2017), supporting the idea that it is not a feasible long-term solution. However, it is a good start to improve focus, reduce impulsivity and the physical sensations of hunger that may inhibit a person from reducing their binge episodes.

Taken together, the study provided some evidence that a sustainable cognitive shift did not occur. This was demonstrated by the lack of change in how the patients viewed their disorder. None of the patients considered a recovery from BED, and most believed that they would have to manage the disorder for the rest of their lives. The same language was also present

in the MP group, and the long-term efficacy of this treatment form was also questioned. This "incurable" language reflects the high relapse rates amongst BED patients who have sought treatment (Brown & Keel, 2012; Vocks et al., 2010), allowing environmental influences to become easy means of rationalizing binge behaviour.

Indeed, blame externalization was evident when the women described their binges post-treatment, particularly in the CBT group. Both internalizing (i.e. being withdrawn, self-blaming and criticizing) and externalizing (i.e. impulsivity, tendency to blame others, make external attributions of cause) coping styles exist in BED patients (Chyurlia et al., 2019; Pace & Muzi, 2019). Though most of the women reduced their guilt and internalizing coping styles post-treatment, many continued to externalize blame when explaining the reason for their binge episodes.

Despite its benefits, the current study also demonstrated that for some, a diagnosis of BED can contribute to this blame externalization. Many of the women found that their diagnosis gave them a better understanding of the disorder and was liberating. However, there was some indication of blame externalization when the participants attributed their binge behaviours solely to the disorder without acknowledging their ability to exert self-control. Despite the positive view of a diagnosis by the participants, attributing overeating behaviour to the disorder may imply an inability for someone to control their eating (Rogers, 2017). Future studies need to explore how this may impact the risk of relapse in patients since these maladaptive coping styles can hinder recovery and promote a feedback cycle of binging (Lord et al., 2018). The externalization of problems is considered an important predictor of binge eating (Allen et al., 2016). Because there was no indication that this was addressed or modified in the treatment

groups, it may explain why complete abstinence from binging was not achieved by the patients and the high susceptibility of patients to stress-induced binging.

Many participants also suggested a combination of MP and CBT to address both the psychological and physiological components. To date, limited research has examined the combination of psychological and pharmacological treatments for BED to enhance outcomes. A review of combination treatments found that CBT therapy with pharmacotherapy resulted in superior outcomes compared to pharmacotherapy, but not CBT alone (Grilo et al., 2016). Currently, a clinical trial is being conducted comparing LDX, CBT and the combination of the two in the treatment of BED (https://clinicaltrials.gov/ct2/show/NCT03924193). The current study suggests that although the combination of the treatments may be more efficacious in reducing binges and normalizing maladaptive eating behaviours, the long-term post-treatment effects are unlikely to be sustained, and complete binge abstinence will not occur.

Weight loss

Over the 12-week treatment period of the RCT, individuals in the MP group experienced significant weight loss, whereas the CBT group did not (Quilty et al., 2019). In contrast to most current therapies, psychomotor stimulants have been shown to significantly reduce appetite and food consumption both in BED patients (McElroy, Guerdjikova, et al., 2015) and healthy, normal-weight adults (Davis et al., 2012). Based on the patient reports, the weight loss observed in the MP group may be the result of the appetite-suppressing effects of the drug. Although this study could not determine whether the effects were direct or indirect, it is postulated that by regulating homeostatic hunger, MP reduces the hedonic drive to binge on large amounts of food, resulting in weight loss. Although there is evidence to suggest an overlap between the neurocircuits modulating homeostatic and hedonic feeding in healthy individuals (Rossi &

Stuber, 2018), future research must investigate MP's role in both hedonic and homeostatic hunger in BED patients.

Aside from the drug's effect, the therapies did not lead to weight loss in the patients. This may be due to the reduced focus on shape and weight in these treatments (Quilty, Allen, Davis, Knyahnytska, & Kaplan, 2019). The fact that the primary goal was to reduce binges, not weight, may explain why many patients reported that their eating patterns shifted from binging to less compulsive overeating. Compared to obese, non-BED patients, those with BED have a significantly higher threshold for what comprises a "large amount of food" (Chao, Wadden, et al., 2019). In addition, laboratory-based studies have also demonstrated that when compared to their non-BED counterparts, individuals diagnosed with BED tend to have a significantly higher caloric intake and consume large amounts of food even during non-binge-eating episodes (Walsh & Boudreau, 2003; Yanovski et al., 1992). It may be for this reason that despite the reduction in binges, the CBT patients' weights remained unchanged.

4.4 Objective 2: Clinicians' lived experiences treating women with BED

Diagnosis

The clinicians believed that a formal diagnosis was beneficial for the patients and that it provided them with an explanation of their eating behaviours. Similar to what was observed in our sample, individuals with BED tend to seek traditional weight loss treatments (13-27%) and bariatric surgery (15.7-17%), and most are unaware of a BED diagnosis (Barnes et al., 2014; Dawes et al., 2016; Mitchell et al., 2015; Montano et al., 2015; Sandberg et al., 2013). The more recent addition of the disorder to the DSM-5 may contribute to this observation and explain why most of the clinicians in the current study had limited experience working with BED patients.

Because both the healthcare system and the public are not well-informed of the existence of this disorder, individuals with BED are less likely to seek appropriate treatment (Citrome, 2017).

In the current patient sample, almost all of the women became informed of BED when they identified with a list of symptoms on a subway ad. This is significant as it outlines the lack of public and stakeholder knowledge of BED. An inability to view BED as a distinct disorder results in low screening and diagnosis rates (Supina et al., 2016). Although patients with BED are more likely to seek the help of a general practitioner, most healthcare providers have trouble correctly identifying BED symptoms because of their limited knowledge of the diagnostic criteria (Chao, Rajagopalan, et al., 2019; Hay et al., 2020; Supina et al., 2016). Many clinicians evaluate some diagnostic criteria while missing others, even when patients explain the emotions, coping strategies, and compulsions associated with their binge episodes (Kornstein et al., 2015).

Relationship with patients

Although the MP psychiatrist stated that her relationship with patients was important to their compliance and the medication's efficacy, she did not believe it was more effective than the drug for treating symptoms. Here, there seemed to be a disconnect between how the patients viewed the psychiatrist's role in the therapy and how the psychiatrist saw her own role. Physicians typically have a pragmatic view of their relationship with their patients and focus more on solving problems rather than softer interpersonal aspects like empathy and care (Berger et al., 2020). Although the patients in the current study described the psychiatrist as caring and empathetic, she may have seen her role as smaller than what the patients perceived. Clinician contact is a critical component for maintaining motivation and treatment efficacy (Yim & Schmidt, 2019). Future studies need to examine how a psychiatrist's viewpoint of the relationship with their patients can impact BED treatment.

The therapeutic relationship was also an important focal point when CBT psychologists described their experiences with the treatment. They viewed themselves as an empathetic coach and "cheerleader" who supported the client and collaborated with them. Because food consumption is a universal behaviour, the psychologists described finding it easier to connect with patients and to apply some of the therapeutic strategies (i.e., meal scheduling) to their own lives. Appropriate therapist self-disclosure has been demonstrated to increase recovery motivation in ED patients and is an important way to establish rapport and trust with the patient (Wasil et al., 2019). Furthermore, the applicability of the strategies described by the clinicians may have enhanced their belief in the treatment's efficacy. A therapist's trust in treatment efficacy is associated with greater use of the therapy (Levinson et al., 2019), shedding light on why the clinicians had such a positive view of the treatment. When the patient and clinician share the same opinions on treatment goals and believe the methods to achieve them are relevant and efficacious, an optimal therapeutic alliance can be achieved (Ardito & Rabellino, 2011).

The flexible nature of CBT was also cited as an important factor in treatment adherence. This is because the challenging exercises that make patients feel overexerted (Waller, 2016) can be modified and adapted so that they can be completed. From the clinicians' perspective, the protocol's flexibility also allowed clinicians to better adhere to it, which positively influences the therapeutic alliance (Brauhardt et al., 2014). It is important to note that although specific strategies and skills could be flexible, the protocol as a whole followed a specific weekly schedule. As a result, the clinicians did find that life stressors made it difficult for patients to stick to the agenda, and this was seen as a negative impact on the therapeutic process. Generally, the CBT psychologists viewed BED patients as motivated, organized and perfectionist - as indicated by the detail in their food diaries and their high compliance. Indeed, both impulsive

and perfectionist tendencies exist in ED patients (Obeid et al., 2020; Slof-Op't Landt et al., 2016). The participants being viewed as "perfect patients" may have contributed to the psychologists' enjoyment of the study, therapeutic adherence, and a positive view of CBT.

Although the relationship with patients was important to therapy, some of the clinicians' comments provided insight on how they viewed the roles of their fellow healthcare professionals. When describing their collaborative relationship with patients, one psychologist commented that they were not an authoritative doctor. Furthermore, the psychiatrist also explained that the disorder could not be cured in 12 weeks by just talking and discussing symptoms. Although collaborations between physicians and psychologists enhance patients' health and the standard of care, 64% of psychologists report that this collaboration is inadequate and unsatisfactory and that physicians lack knowledge of the psychologists' activities (Vergès et al., 2020). It is postulated that if the same collaborative relationship seen in patients is established between healthcare providers, a better exchange of knowledge can occur, which will ultimately benefit the patient and result in a more efficacious therapy.

Social and pharmacological barriers

Despite the drug's benefits, the clinicians described social and pharmacological barriers and limitations that did not make it a feasible option in the long term. For example, the psychiatrist explained that because of the drug's prominent addiction profile, many pharmacies and doctors are cautious about carrying and prescribing this medication, making accessibility difficult. Although the drug was seen as a good "push," its feasibility as a long-term solution was not endorsed by the physician. There is evidence that 12 months of LDX use for BED - a drug in the same family as MP - had the same tolerability and safety profile as short-term studies (Gasior et al., 2017). While the drug can be safely and consistently monitored and is accessible in a

clinical trial, the ecological validity of these findings is questionable considering the barriers that exist in real-world circumstances. This was also confirmed by MP patients who described the difficulties in continuing the drug treatment after the trial had ceased, particularly if the relationship with their general practitioner was strained or they did not have a family physician.

Like MP therapy, there were also social determinants of health that impacted patients' ability to receive CBT therapy. Although diagnosis is an important component of treatment-seeking (de Similien, 2017; König et al., 2018), difficulties in healthcare access, costs and the convenience and time to commit to treatment were also addressed as barriers to obtaining adequate treatment. Indeed, because of the barriers in obtaining in-person psychological treatment, a more accessible e-health CBT, with comparable benefits, is starting to gain popularity (Moghimi et al., 2020).

4.5 Study implications

4.5.1 Comparison of the qualitative findings to the RCT data

The efficacy of the treatments in reducing binge episodes was corroborated by both patient and clinician accounts. Despite the original RCT study being underpowered, many patients indicated a change in their eating disorder symptoms by disclosing a reduced concern about their shape, weight, and eating during treatment. Furthermore, the qualitative findings support the therapeutic value of the psychiatrist – a factor that was suggested by the authors of the RCT to reduce the number of differences between groups.

While the generalizability of the qualitative results is not the focal point of this methodology, a numerical comparison of outcomes variables at baseline and post-treatment is displayed in Table 4. Here, patients in the qualitative sample were compared to the remaining patients in the RCT. The outcome variables include objective binge episodes, BMI, binge eating

severity, and age. An independent samples t-test was conducted to determine if there were any significant group differences. None of the group means were statistically different. Although the sample sizes provided low power to uncover differences, it is important to note that the group means were very similar, and the observed differences were not clinically meaningful (Table 4).

Table 4. Mean difference of outcomes between qualitative and RCT samples at baseline (0 Weeks) and post-treatment (12 Weeks).

		BASELINE			**POST-TREATMENT**		
		M	SD	*t* (p)	*M*	SD	*t* (p)
OBE	RCT	2.12	1.69	0.39 (0.70)	0.55	1.36	-1.16 (0.26)
	QUAL	2.33	1.84		0.13	0.35	
BMI	RCT	37.70	8.46	0.43 (0.67)	37.33	9.6	0.15 (0.88)
	QUAL	38.77	6.69		37.76	7.00	
BES	RCT	30.32	6.47	0.81 (0.42)	16.82	9.02	0.37 (0.71)
	QUAL	31.87	5.18		17.93	8.70	
AGE	RCT	33.33	8.18	0.41 (0.69)	32.55	8.53	0.69 (0.49)
	QUAL	34.40	8.89		34.40	8.90	

Note: *=statistically significant difference OBE = Objective binge episode frequency; BMI = Body mass index; BES = Binge eating severity scale

4.5.2 Patient profiles and treatment type

The data provided insight into characteristics of the patients that might indicate who was a better candidate for MP compared to CBT treatments (Figure 2). MP was described as a more convenient and lower-cost form of treatment and may be more appropriate for individuals that need a stronger motivation and push to commence their therapy. MP may also be better suited for individuals who are not quite ready to disclose and discuss the full details of their disorder. CBT, on the other hand, may be better suited for those who are motivated to delve deeper into the psychological aspects of the disorder with the help a clinician in order to find successful strategies to modify their cognitions and behaviour. CBT may also be better suited for individuals who can afford the money and time to commit to treatment.

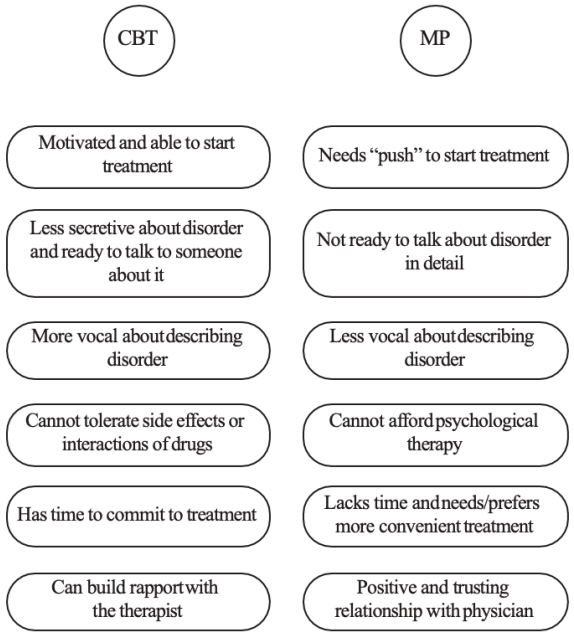

Figure 2. Summary of participant profiles that may make them more suitable candidates for MP or CBT therapies.

4.5.3 Cognitions and behaviours surrounding binges

Although the main intent of the study was to explore the experiences of treatment of patients in the MP and CBT groups, a proposed outline of the individual's cognitions and behaviours surrounding their binges was also developed (Figure 3). Undoubtedly, one of the most important triggers that led patients to binge-eat was life stressors and external events that were perceived out of the individual's control. It is important to note that although BED is characterized by a perceived loss of control over eating, binges were typically planned ahead of time, and patients looked forward to engaging in them. Therefore, the perceived loss of control over eating that is typically associated with binges seems to occur when the person engages in the binge, not prior. Due to the guilt associated with binges, patients tend to punish themselves by eating until they experience severe stomach aches. This physical pain was reported to be exchanged for psychological comfort and relief. As previously explained, it may be beneficial for therapies to address adaptive coping mechanisms to deal with stress and to acknowledge the

planning of binges as a potential means of regaining control over distressing thoughts and behaviours. Nevertheless, these treatments encourage self-awareness and aim to change the use of food as a coping mechanism. A potential benefit is that more adaptive behaviours are adopted, and the individual may start to exercise better self-control to reduce their binge behaviours.

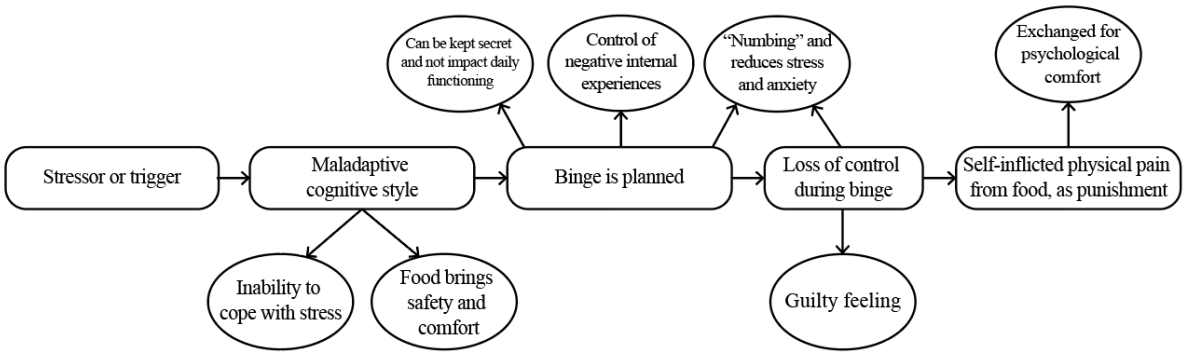

Figure 3. Components of a binge eating episode in a person with BED.

For patients to experience self-efficacy, it may be important for clinicians to distinguish between blaming and responsibility and to convey to the patients that binges may represent a way of controlling an individual's negative internal experiences. In therapy, mindfulness and self-awareness are not equated to placing judgement, but rather are used to understand a person's way of thinking and the connections they have made between their emotions, thoughts and actions. An important method to induce this self-awareness is to visualize their behaviours and cognitions through food diaries - a component that needs to be considered in all BED therapies.

Similar to illicit drugs, binging with hyperpalatable foods may sedate some individuals from the perceived psychological difficulties and feelings of loss they experience. In a disorder that can be isolating and results in tremendous distress in the individual, it is important for healthcare practitioners to understand that there may be deeper meanings behind the language and concerns voiced by their patients. To successfully treat this disorder, practitioners should take into account the value of building non-judgmental and empathetic relationships with their

patients, most of whom already have much difficulty creating these connections with others anyway.

The efficacy of the pharmacological treatment has demonstrated the physiological underpinnings that influence a person's behaviours and thoughts, namely those related to appetite, and impulsivity. By addressing these issues, MP treatment was described as bringing clarity to the patients such that they could focus on themselves without internal distractions. At the same time, the psychiatrist's role demonstrated that BED treatment cannot focus solely on one treatment modality since the disorder itself is multifaceted. The reality, however, is that CBT therapy is expensive and may not be accessible to all individuals with BED, just as psychostimulant therapy, being a controlled substance, limits the number of doctors who prescribe this medication and pharmacies that carry it. Therefore, when exploring treatment efficacy, researchers need to be mindful of how their protocols can be translated into real-world instances and maximize the number of individuals from all backgrounds who can access it.

Taken together, it is evident that BED treatment takes time and consistent support, both from the self and others. In an encouraging environment that empowers and promotes recovery without controlling the patient through restrictions and imposed beliefs, therapeutic progress becomes easier and more productive.

4.6 Strengths of the study

The current study had several strengths. Although it is not common to have two interviewers present in non-focus group qualitative interviews, it was considered a strength of the study. There are several ways that we ensured consistency. Firstly, in all but one case, both interviewers were present. Secondly, the participants were notified that one researcher would lead the interview, and the second would ask additional questions if they felt it was necessary.

Although there is no data regarding the impact of two simultaneous interviewers in semi-structured interviews, in the following study, the advantages were found to outweigh the disadvantages. Most important, because my supervisor and I were both present in the interviews, an additional perspective was given to the emergent themes and the interpretation of the data. This was further enhanced by my supervisor's extensive clinical experience and generational difference. Her presence and insight resulted in the stimulation of new ideas and concepts that may have otherwise been overlooked had only one researcher conducted the interviews. Lastly, having two female researchers from very diverse backgrounds and considerable age difference was seen as a good way to establish better rapport and connection with the participants, particularly since gender, age, ethnicity, and social status can influence rapport and the power relations between the interviewer and interviewee (Broom et al., 2009; Thurnell-Read, 2016). It was, therefore, important for each interviewer to focus on how they presented themselves, gain trust, and establish rapport with the participants (Matteson & Lincoln, 2009). Sharing commonalities and implicit or explicit link(s) in the "life-worlds" of the interviewer and interviewee are important ways to establish rapport and reciprocity, which benefits both the interviewer and interviewee (Broom et al., 2009). This diversity increased the chances of finding these similarities, allowing for more authentic connections with the participants.

By having the study informed by phenomenology (Smith et al., 2009), there was a deeper examination of participant and therapist experiences of both treatments. Though a concern was that the individual accounts and 'voices' could be lost, I ensured to minimize this by being mindful of outliers. To do this, not only did I report the majority viewpoints, but I also included the perspectives of participants that did not align with these trends and the context of their statements and perspectives. Indeed, this is especially important in thematic analysis since the

methodology is idiographic and stresses the importance of honouring individual voices and accounts (Braun & Clarke, 2006; Clarke & Braun, 2014).

Taken together, the complexity of the study and its innovation in recruiting both clinicians and participants has produced results that can be informative and encouraging for individuals, healthcare professionals and stakeholders that are impacted by BED. By exploring both the background and history of the patients in addition to their treatment experiences, the connection between the therapies and their impact on very specific dimensions of the disorder has become better highlighted. Not only did the results provide a greater understanding of the treatments, but it also provided a more fulsome picture of how an individual experiences and views their disorder. The qualitative exploration of this phenomenon has produced findings that would have otherwise remained dormant had the project solely relied on a quantitative dissemination of the knowledge. This dissertation intended to utilize the emergent themes to create a blueprint of the most important factors that lead to the success and failure of the treatments and to inspire future research to further explore and validate these findings.

4.7 Limitations

Despite its strengths, the current study also had some limitations. The majority of patients consisted of educated and high-achieving Caucasian women with low psychiatric comorbidities. Such a demographic profile diminishes the generalizability of the findings to a broader swath of the general population. The homogeneity of the current sample may have been due to the stringent exclusion criteria for patients. Therefore, generalizing the results to other groups, particularly those with high comorbidities, must be done with caution. Typically, generalizability in qualitative research is not expected since this methodology aims to study a specific issue or

phenomenon in a selected population with a very niche focus and particular context (Leung, 2015).

The original RCT was restricted to women because BED has a higher prevalence in this group and because female sex hormones enhance the response to psychostimulants such as MP (Quilty et al., 2019). Furthermore, due to consent and the nature of the research project, this study was limited in its ability to recruit from a diverse and more representative sample. However, a recent study has demonstrated that race does not significantly moderate treatment outcomes in BED cohorts (Lydecker et al., 2019), which provides more confidence that the results can be generalized to other ethnicities. Conversely, another study has demonstrated that in a sample of patients with binge-eating behaviours, participants with higher income and education and who were married experienced the greatest quality-of-life improvements (Hildebrandt et al., 2020). White non-Hispanic participants with higher BMI also reported greater improvements in eating concerns (Hildebrandt et al., 2020). At the same time, it is noted that context is very important in qualitative research, as this is what gives meaning to the results. Therefore, the significance of the study lies in its ability to represent the experiences of the women in this particular study and how others can relate to them - more so than its generalizability to the broader population.

Additionally, the patients in the study provided retrospective accounts of their experiences, and each had different study completion dates, ranging from a few weeks to several months. It is likely that, for some, more than others, the accounts may have faded over time, potentially limiting the range of events that the participants could remember subsequent to the study's completion. Despite this, the interviews provided a substantial amount of detail, and the inclusion of the clinician data provided a more fulsome account of the therapeutic experience.

Although it can be argued that the presence of only one psychiatrist was a limitation of the study, her experiences contributed to novel insights regarding the clinician-patient relationship. Importantly, future studies need to determine how the characteristics and behaviours of different healthcare providers can impact the treatment since the findings of the study have indicated the influential role of the psychiatrist on therapeutic success.

4.8 Conclusions and Future Directions

Taken together, the findings of this study provide insight into the strengths and areas of improvement in both MP and CBT treatments. While patients endorsed both treatments, some issues need to be addressed, particularly in terms of their impact on the patient's cognitions surrounding their eating behaviours and stress. For example, stressful events that occurred post-treatment typically led to binges, and none of the patients believed in a full recovery from their disorder. Taken together, there was evidence to suggest that a sustainable cognitive shift did not occur. As described by one of the CBT psychologists, behavioural changes, in the form of skills and strategies, was the fastest to take place and was the first to be addressed in treatment. The cognitive work was meant to maintain those behavioural changes. Although this modality in CBT has demonstrated benefits *during* treatment, its low abstinence rates post-treatment (Lammers et al., 2015; Linardon, 2018) may be a result of this very structure.

Indeed, a salient feature of individuals with ED is their poor cognitive flexibility and difficulty finding adaptive means of coping with problems (Tchanturia et al., 2012). Combined with a high sensitivity to reward and punishment, it has been suggested that the compulsivity that arises in disorders such as BED is a result of an impairment in behavioural adaptation subsequent to negative feedback (Fineberg et al., 2014). The reduced cognitive flexibility in BED may be a result of perseverating on a once rewarding behaviour that has become associated with negative

consequences (Kakoschke et al., 2019). Impairments in reversal learning, a measure of cognitive flexibility, have been observed in patients with BED, making it challenging for individuals to change their reward-related yet maladaptive binge behaviours (Izquierdo & Jentsch, 2012; Kakoschke et al., 2019). Indeed, negative affect and guilt are significantly elevated prior to a binge episode and decrease substantially after one (Schaefer et al., 2020).

Similarly, the findings of our study also suggest that binges are a means of regaining control of negative internal experiences by engaging in a behaviour that is viewed as rewarding yet guilt-inducing by the individual. Therefore, for changes to sustain, therapies need to have a greater focus on the mindset and unconscious thoughts that contribute to cognitive flexibility. Although this further investigation is warranted, acknowledging this component is an integral part of recovery and may be a key part of long-term success.

Although MP focused on the physiological elements of the disorder - which was essential to sustainable weight loss - the presence of the psychiatrist and her suggestions, as well the food journals, also contributed to behavioural and, therefore, cognitive changes in the participants. Many patients in this group embraced the shift in their thinking patterns. Based on the evidence, it is predicted the MP group is less likely to experience substantial long-term effects if drug intake ceases. Stressful events may put an individual at greater risk of experiencing a binge if drug intake ceases. According to patient accounts, this could be because patients in the CBT group are equipped with a "toolbox" of skills post-treatment. In contrast, in the MP group, such an archive does not exist, putting individuals at greater risk of relapse when they terminate treatment.

In both treatments, where the behavioural component of therapy promoted strategies for patients to display their self-efficacy, the cognitive component may have inadvertently pressed

for the agenda of loss of control. This was highlighted by a patient who believed that her binging behaviour was mostly the result of the disorder rather than something within her personal control. This may imply low self-efficacy. Although behavioural self-efficacy was present in the individuals, namely in how they implemented the strategies and suggestions into their lives, changes in their cognitive self-efficacy, or belief in their ability to control their internal experiences without a need to binge, was not evident in these treatments. Further exploration is necessary to determine how this mindset contributes to cognitive inflexibility in the patient, the impact of treatments in adequately shifting these beliefs, and how all of this contributes to long term remission in the patient.

It is also suggested that therapies need to be modified to focus on the behavioural elements of the disorder as well as the cognitive. The study has provided important evidence for the ability of these treatments to induce mindfulness and self-awareness and outlined the specific elements of the treatments that contribute to this phenomenon. The evidence also supports the psychiatrist's role as a contributing factor to the lack of a significant difference observed in the efficacy of the two treatments in the original RCT. Her ability to connect deeply with her patients may have resulted in better treatment outcomes than if she had only been responsible for dispensing the drug. The results of the current study are also of extreme importance because they provide researchers with the "real-world" perspectives of these treatments, which stem beyond a controlled lab environment.

In conclusion, the study has contributed to the limited research on the psychostimulant treatment of BED. It has done so by providing a thorough outline of the experiences of patients and therapists involved in this process. Having been the first RCT to compare a psychostimulant to CBT therapy, it was important to add a qualitative dimension as it was through these lived

experiences that many of the anomalies of the original RCT were explored. By being the first study to add a qualitative perspective to this phenomenon, it is anticipated that future studies will consider implementing these findings to enhance existing therapies and develop more efficacious ones.

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Appendix A: Consent Forms

**CONTACT INFORMATION OF RESEARCH PERSONNEL HAS BEEN REDACTED FROM THIS COPY

camh
Centre for Addiction and Mental Health

Consent Form (Patients)

Name of the Study
A Qualitative Study of Responses to Treatment with Methylphenidate or Cognitive Behavioural Therapy in Women with Binge Eating

Funding Source
Minor Research Grant from the Faculty of Health, York University, to Dr. Caroline Davis

Investigators Responsible for the Study **[REDACTED]**

- The information in this form is to help you decide whether or not to take part in this study. Please take time to read all the information carefully. This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about, and what your participation will involve. If you would like more detail about something mentioned on this form, or information not included here, please ask.

- Please initial each page of this consent form to show that you have read it.

- You will receive a copy of this form.

Purpose
  - You recently completed a study is to assess whether a [either: psychostimulant medication or cognitive behavioural therapy[CBT]] can be helpful in the treatment of binge eating difficulties. Our research question is whether the treatment experiences of women who received stimulant medication differ from those who received CBT with respect to normalizing their eating behaviours and improving their quality of life. The specific purpose of the current study is to talk with you about your experiences in the study, your perceptions of how the treatment impacted your eating behaviours, and your emotional responses to the treatment you received. We are also interested in obtaining some information from you concerning other times in your life when you felt you were overeating, whether you experienced periods of overweight as a child, and whether you feel either of these things is related to your recent binge eating. This information will be

obtained through a face-to-face interview. We will include approximately 24 participants in this study.

- You are invited to participate in this study because you completed participation on our previous study entitled: *A Randomized Comparison of Osmotic Release Oral System Methylphenidate and Cognitive Behavioural Therapy for the Treatment of Obese Patients with Binge Eating Disorder*.

Your Role

- If you are interested in taking part in this study, we ask you to give your consent to participate by signing this document and then completing the interview. As part of this assessment, the interviewer will ask you a number of open-ended questions related to the topics described above, which you can answer in as much detail as you like – or you can decline to answer if you wish. Each interview will be tape recorded so we have an accurate record of your statements, although no names or other identifying information will be mentioned during the interview. The interview will take approximately an hour to an hour and a half.

Voluntary Participation

- Your participation in this study is voluntary.

- You must have all of your questions answered to your satisfaction before deciding to be in this study.

- A decision not to participate, a decision to withdraw, or other cessation of participation in this research project will not in any way affect your ongoing or future contacts with any clinic at the Center for Addiction and Mental Health or with any health care facility.

Risks

- There are no short-term or long-term risks associated with the completion of the interview. You may find, however, that thinking about, and answering, some of the questions may be upsetting or somewhat embarrassing. Talking about them may cause you to experience some negative feelings (similar to what might be expected from a doctor's visit). If you have any concerns about the questions you are being asked, please let us know at any point during the study.

- You may leave the study at any time without affecting your future relationship with any health care facility.

Benefits

- There are no known specific benefits to the completion of this study other than finding the questions potentially interesting. You might also benefit in sharing your feelings and past experiences with the interviewer.

Costs

- You will incur no costs as a result of participation in this study. You will receive a $35.00 cash stipend for your participation in the study to compensate for your time and to help defray transportation costs.

Confidentiality

- On all data collected for this study, an assigned number will identify you (rather than your name or any other personal information). Your assessment information will be stored in a locked file cabinet and computer file. Your name and other identifying information as well as the consent form will be stored separately from your assessment information in a locked file cabinet and password protected computer file.

- Only the investigators or their representatives will have access to your assessment information.

- The information gathered in this study will be linked to the information received from you in the treatment study you completed. This will be done to avoid repetitive questioning and in order to obtain relevant data for the current study, such as basic demographic and clinical details.

- As part of continuing review of the research, your study records may be assessed on behalf of the Research Ethics Board. A person from the research ethics team may contact you (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.

- As part of the Research Services Quality Assurance Program, this study may be monitored and/or audited by a member of the Quality Assurance Team. Your research records and CAMH records may be reviewed during which confidentiality will be maintained as per CAMH policies and to the extent permitted by law.

- Full confidentiality of all information relating to your participation in the study will be maintained as stipulated by the law. The only legal limits to confidentiality during this study will be for example: if you disclose intention to harm yourself or others; if your records are subpoenaed by a court of law; if we have reason to believe a child is being, has been or is at risk of being abused or; if we have reason to believe that a client/patient is being sexually abused by a health care professional.

- Although the results of this study may be presented at meetings and may be published, your identity will not be disclosed at these presentations or in any publications.

- You will not be identified in any way on an individual basis. Group data from this study will be used in qualitative analyses of these treatments for binge eating.

Note: The investigators responsible for this study are not conducting this study to receive commercial benefit. However, if this research leads to financial returns from a commercialization

of the results in the future, you will not receive any benefit from these returns. Drs. [REDACTED] do not receive any personal income from this grant.

AGREEMENT TO AUDIO, VIDEO AND PHOTOGRAPHY

I hereby grant permission to the staff of the Centre for Addiction and Mental Health to make a recording of me in the following format:

☐ Video Record ☒ Audio Record ☐ Photograph

The specific event/activity to be recorded is a face-to-face interview to obtain qualitative information for a study concerning subjective responses to treatment for binge eating using either methylphenidate or cognitive behavioural therapy.

The date(s) upon which the recording will occur is: (dd/mm/yyyy) TO BE SCHEDULED

The recording is being prepared for the following purpose: DATA COLLECTION

And may be viewed by: RESEARCH STAFF

I understand:

1. That the recording cannot be used for any other purpose or shown to any other audience than is listed on this form.

2. That although the recording may identify me as a former study participant, my personal identity
   ☐ will ☒ will not
   be disclosed and my agreement or refusal to participate will in no way influence my treatment in the hospital.

3. That I am entitled to withdraw my consent at any time. If I chose to withdraw my consent, I will inform the study coordinator.

4. That this recording will be retained for **10 YEARS** and kept in the **CLINICAL RESEARCH LAB**

_____ (Person Obtaining Consent) _____ (Client/Patient Signature) Date: _____ (dd/mm/yyyy)

(To be completed and signed off by Clinical Staff)

I have explained the content of the form and the implications of consent to this client/patient. I believe that the client/patient's consent is freely given and that the patient is capable to give consent.

_____ (Signature) _____ (Print Name and Credentials) Date: _____ (dd/mm/yyyy)

AGREEMENT TO PARTICIPATE

- I, _____, have read the consent form and have had an opportunity to discuss it with a representative of Dr. [REDACTED]; any questions I had were answered to my satisfaction. If, during the course of the study, I have any questions or concerns, I will contact Dr. [REDACTED].

- For any other issues regarding your participation in this study, I may also contact Dr. [REDACTED], Co-Chair of the Research Ethics Board, who is not connected with this study [REDACTED]

- My signature on this form indicates that I have understood to my satisfaction the information regarding my participation in the research project and that I agree to participate.

- *In no way does this consent form waive your legal rights nor release the investigators, or involved institutions, from their legal and professional responsibilities.*

- *Please initial each page of this consent form to show that you have read it.*

Research Participant	Person Obtaining Consent
Signature: _____	Signature: _____
Date: _____	Date: _____
Name: _____ Please Print	Name: _____ Please Print

- I have been given a copy of this consent form.

**CONTACT INFORMATION OF RESEARCH PERSONNEL HAS BEEN REDACTED FROM THIS COPY

camh
Centre for Addiction and Mental Health

Consent Form (Therapists)

Name of the Study
A Qualitative Study of Therapists who treated Women with Binge Eating in the Randomized Control Trial of Methylphenidate vs Cognitive Behavioural Therapy

Funding Source
Unfunded study

Investigators Responsible for the Study **[REDACTED]**

- The information in this form is to help you decide whether or not to take part in this study. Please take time to read all the information carefully. This consent form is only part of the process of informed consent. It should give you the basic idea of what the research is about, and what your participation will involve. If you would like more detail about something mentioned on this form, or information not included here, please ask.

- Please initial each page of this consent form to show that you have read it.

- You will receive a copy of this form.

Purpose

- You recently served as a cognitive behavioural therapist or as the study physician in the study comparing cognitive behavioural therapy (CBT) vs methylphenidate in the treatment of women with binge eating disorder. The specific purpose of this study is to talk with you about your experiences as a caregiver in the study, your perceptions of how the treatment impacted the eating behaviours of your clients, and your own experiences in the therapeutic alliance with the clients in the treatment study. This information will be obtained through a face-to-face interview.

- You are invited to participate in this study because you had a therapist role in our previous study entitled: *A Randomized Comparison of Osmotic Release Oral System Methylphenidate and Cognitive Behavioural Therapy for the Treatment of Obese Patients with Binge Eating Disorder*.

Your Role

- If you are interested in taking part in this study, we ask you to give your consent to participate by signing this document and then completing the interview. As part of this assessment, the interviewer will ask you a number of open-ended questions related to the topics described above, which you can answer in as much detail as you like – or you can decline to answer if you wish. Each interview will be tape recorded so we have an accurate record of your statements, although no names or other identifying information will be mentioned during the interview. The interview will take between half an hour and an hour to complete.

Voluntary Participation

- Your participation in this study is voluntary.

- You must have all of your questions answered to your satisfaction before deciding to be in this study.

- A decision not to participate, a decision to withdraw, or other cessation of participation in this research project will not in any way affect your ongoing or future contacts with any clinic at the Center for Addiction and Mental Health or with any health care facility.

Risks

- There are no short-term or long-term risks associated with the completion of the interview. You may find, however, that thinking about, and answering, some of the questions may be upsetting or somewhat embarrassing. Talking about them may cause you to experience some negative feelings (similar to what might be expected from a doctor's visit). If you have any concerns about the questions you are being asked, please let us know at any point during the study.

- You may leave the study at any time without affecting your future relationship with any health care facility.

Benefits

- There are no known specific benefits to the completion of this study other than finding the questions potentially interesting. You might also benefit in sharing your feelings and past experiences with the interviewer.

Costs

- You will incur no costs as a result of participation in this study.

Confidentiality

- On all data collected for this study, an assigned number will identify you (rather than your name or any other personal information). Your assessment information will be stored in a locked file cabinet and computer file. Your name and other identifying information as well as the consent form will be stored separately from your assessment information in a locked file cabinet and password protected computer file.

- Only the investigators or their representatives will have access to your assessment information.

- As part of continuing review of the research, your study records may be assessed on behalf of the Research Ethics Board. A person from the research ethics team may contact you (if your contact information is available) to ask you questions about the research study and your consent to participate. The person assessing your file or contacting you must maintain your confidentiality to the extent permitted by law.

- As part of the Research Services Quality Assurance Program, this study may be monitored and/or audited by a member of the Quality Assurance Team. Your research records and CAMH records may be reviewed during which confidentiality will be maintained as per CAMH policies and to the extent permitted by law.

- Full confidentiality of all information relating to your participation in the study will be maintained as stipulated by the law. The only legal limits to confidentiality during this study will be for example: if you disclose intention to harm yourself or others; if your records are subpoenaed by a court of law; if we have reason to believe a child is being, has been or is at risk of being abused or; if we have reason to believe that a client/patient is being sexually abused by a health care professional.

- Although the results of this study may be presented at meetings and may be published, your identity will not be disclosed at these presentations or in any publications.

- You will not be identified in any way on an individual basis. Group data from this study will be used in qualitative analyses of these treatments for binge eating.

Note: The investigators responsible for this study are not conducting this study to receive commercial benefit. However, if this research leads to financial returns from a commercialization of the results in the future, you will not receive any benefit from these returns. Drs. [REDACTED] do not receive any personal income from this grant.

AGREEMENT TO AUDIO, VIDEO AND PHOTOGRAPHY

I hereby grant permission to the staff of the Centre for Addiction and Mental Health to make a recording of me in the following format:

☐ Video Record ☒ Audio Record ☐ Photograph

The specific event/activity to be recorded is a face-to-face interview to obtain qualitative information for a study concerning subjective responses to treatment for binge eating using either methylphenidate or cognitive behavioural therapy.

The date(s) upon which the recording will occur is: (dd/mm/yyyy) **TO BE SCHEDULED**

The recording is being prepared for the following purpose: **DATA COLLECTION**

And may be viewed by: **RESEARCH STAFF**

I understand:

5. That the recording cannot be used for any other purpose or shown to any other audience than is listed on this form.

6. That although the recording may identify me as a former study participant, my personal identity
   ☐ will ☒ will not
   be disclosed and my agreement or refusal to participate will in no way influence my treatment in the hospital.

7. That I am entitled to withdraw my consent at any time. If I chose to withdraw my consent, I will inform the study coordinator.

8. That this recording will be retained for **10 YEARS** and kept in the **CLINICAL RESEARCH LAB**

_____ (Person Obtaining Consent) _____ (Client/Patient Signature) Date: _____ (dd/mm/yyyy)

(To be completed and signed off by Clinical Staff)

I have explained the content of the form and the implications of consent to this client/patient. I believe that the client/patient's consent is freely given and that the patient is capable to give consent.

_____ (Signature) _____ (Print Name and Credentials) Date: _____ (dd/mm/yyyy)

AGREEMENT TO PARTICIPATE

- I, _____, have read the consent form and have had an opportunity to discuss it with a representative of Dr. [REDACTED]; any questions I had were answered to my satisfaction. If, during the course of the study, I have any questions or concerns, I will contact Dr. [REDACTED].

- For any other issues regarding your participation in this study, I may also contact Dr. [REDACTED], Co-Chair of the Research Ethics Board, who is not connected with this study [REDACTED].

- My signature on this form indicates that I have understood to my satisfaction the information regarding my participation in the research project and that I agree to participate.

- *In no way does this consent form waive your legal rights nor release the investigators, or involved institutions, from their legal and professional responsibilities.*

- *Please initial each page of this consent form to show that you have read it.*

Research Participant	Person Obtaining Consent
Signature: _____	Signature: _____
Date: _____	Date: _____
Name: _____ Please Print	Name: _____ Please Print

- I have been given a copy of this consent form.

Appendix B: Interview Questions

CBT Patient Questions

1. I would like to start by understanding how your weight has changed since you were a child. For example, would you describe yourself as skinnier than most, or chubbier than most, or about average during your childhood, early adolescence, late adolescence, and young adulthood?

2. Can you tell me about your relationship with food from childhood to the present time?

3. In your opinion what might have contributed to your challenges with overeating and/or binge eating?

4. What are some of the foods you really crave and/or which have become the foods you tend to binge on?

5. Do you feel there is a difference between overeating and binge eating? Can you explain?

6. What, if any methods have you used prior to taking part in our treatment study to try and cope with binge eating?

7. Can you tell me what strategies worked and what didn't? Can you tell me why you think that was the case?

8. What were your expectations for taking part in our treatment study at CAMH?

9. What were your general experiences with the treatment program you received?

10. Can you describe any skills or strategies the therapy may have taught you that really helped with your binge eating?

11. In what ways did the treatment change (or not change) your ability to control binge eating, and any negative moods or feelings that might go along with that behaviour?

12. Can you describe the effects of the treatment you experienced over the 12 weeks of the study?

13. What highlights of the treatment can you share with us?

14. Did the treatment affect your food cravings, and if so how?

15. Did the therapy have any effect on the amount of food you ate, and if so can you explain in what way?

16. At the time, what were your thoughts and feelings about keeping a food diary, and how did that affect your treatment?

17. Can you please describe how your eating behaviors changed once the treatment began?

18. Were these changes sustained after the 3-month treatment period, or did other changes take place when the study was over?

19. Can you give me an example of how your thought processes and thinking patterns may have changed during the course of the treatment? How might it have affected your behaviour?

20. What parts of the treatment did you find especially helpful?

21. Were there aspects of the treatment that were less helpful for you?

22. What were your experiences with trying to stick with a meal plan?

23. What other eating behaviours did you try to change during the course of treatment? What was the outcome?

24. Was there anything that has changed your life or who you are as a person as a result of your participation in the program – for example, changed how you spend your time, or how you think about your identity or value?

25. As a result of the treatment, were any changes made to how you rewarded yourself, or coped with stress?

26. Based on your experience, what would you recommend to those who are struggling with binge eating?

27. When the treatment was completed, which of the positive changes were sustained, and if so how were you able to do that?

28. Would you recommend CBT therapy, and if so why?

29. Is there anything further you would like to tell us about your experience in our treatment study?

MP Patient Questions

1. I would like to start by understanding how your weight has changed since you were a child. For example, would you describe yourself as skinnier than most, or chubbier than most, or about average during your childhood, early adolescence, late adolescence, and young adulthood?

2. Can you tell me about your relationship with food from childhood to the present time?

3. In your opinion what might have contributed to your challenges with overeating and/or binge eating?

4. What are some of the foods you really crave and/or which have become the foods you tend to binge on?

5. Do you feel there is a difference between overeating and binge eating? Can you explain?

6. What, if any methods have you used prior to taking part in our treatment study to try and cope with binge eating?

7. Can you tell me what strategies worked and what didn't? Can you tell me why you think that was the case?

8. What were your expectations for taking part in our treatment study at CAMH?

9. What were your general experiences with the treatment program you received?

10. Can you tell me more about how the medication treatment affected your appetite and your food choices or food preferences?

11. In what ways did the treatment change (or not change) your ability to control binge eating, and any negative moods or feelings that might go along with that behaviour?

12. Can you describe the effects of the treatment you experienced over the 12 weeks of the study?

13. What highlights of the treatment can you share with us?

14. Did the treatment affect your food cravings, and if so how?

15. Did the therapy have any effect on the amount of food you ate, and if so can you explain in what way?

16. At the time, what were your thoughts and feelings about keeping a food diary, and how did that affect your treatment?

17. Can you please describe how your eating behaviors changed once the treatment began?

18. Were these changes sustained after the 3-month treatment period, or did other changes take place when the study was over?

19. Can you tell me when – for example, during which week of the study - did you start feeling the effects of the medication you were taking?

20. Can you tell me about any concerns you had regarding side effects from the medication before you began the treatment, and if so, what was most concerning and why?

21. Can you talk about any side-effects you experienced, which may have affected your treatment?

22. Did you substitute anything else in place of food, either a behaviour or another substance, during or after the treatment?

23. Was there anything that has changed your life or who you are as a person as a result of your participation in the program – for example, changed how you spend your time, or how you think about your identity or value?

24. As a result of the treatment, were any changes made to how you rewarded yourself, or coped with stress?

25. Based on your experience, what would you recommend to those who are struggling with binge eating?

26. When the treatment was completed, which of the positive changes were sustained, and if so how were you able to do that?

27. Would you recommend methylphenidate, and if so why?

28. Is there anything further you would like to tell me about your experiences in the treatment study?

CBT Therapist Questions

1. Have you worked in a therapeutic capacity with BED patients prior to your involvement in this study?

2. If so, can you talk about your experiences working with those particular clients?

3. Before this study began, with what group of patients had you employed CBT techniques?

4. What have been your experiences of the success of this type of treatment?

5. What were your general experiences with, and opinions of, the 12-week treatment protocol used in this study?

6. Can you highlight some client-therapist interactions that occurred during the BED study that really stood out or were significant for you?

7. With this treatment group, how did you define or assess good treatment progress or good outcome?

8. In your view, what aspects of the therapy worked best for the clients and which were less successful?

9. For the clients in this study who did not reduce the frequency of their binge episodes or lose weight, what, in your opinion, were some of the reasons for this outcome?

10. In your opinion, what are the qualities of a therapist that make CBT successful?

11. Similarly, what are the qualities of the client that enhance the success of CBT?

12. Can you explain some of the challenges or barriers that existed when you were working with the BED clients in this study?

13. What types of outcomes did you hope or expect to see in your clients?

14. What are the primary differences you feel exist between CBT and stimulant drug therapy for BED patients?

15. Were there any skills you learned that were specific to treating BED compared to CBT for other client groups?

16. If you could change any aspect of this study, what would it be and why?

17. Is there anything further you would like to add that you believe is significant or relevant to how the study was conducted and the outcomes that were achieved?

MP Physician questions

1. Have you ever treated clients with BED prior to your involvement in this study?

2. If so, can you share your general impressions of working with this group of clients?

3. Have you ever prescribed methylphenidate for any other disorder? If so, can you please describe your experiences with prescribing this drug?

4. What were your general experiences with, and opinions of, the 12-week treatment protocol used in this study?

5. Can you highlight some client-therapist interactions that occurred during the study that really stood out or were significant for you?

6. With this treatment group, how did you define or assess good treatment progress and good outcome?

7. In your view, which of the drug effects seemed to work best for some (or all) of the clients?

8. Were there any side effects that were detrimental concerning patients' reaction to, or compliance with, the drug?

9. For the clients in this study who did not reduce the frequency of their binge episodes, or did not lose weight, what, in your opinion, were some of the reasons for this?

10. In your opinion, can a physician impact the success of a drug therapy? If so, in what way?

11. Similarly, what appeared to be the qualities of the client that enhanced the success of the drug treatment?

12. Can you explain some of the challenges or barriers that existed when you were working with the BED clients in this study?

13. If you could change any aspect of this study, what would it be and why?

14. What are the primary differences you feel exist between methylphenidate and CBT therapy for BED patients?

15. Is there anything further you would like to add that you believe is significant or relevant to how the study was conducted and the outcomes that were achieved?

Appendix C: Patient quotes supporting each theme

	MP	CBT	MP + CBT
Some	2-3	2-3	4-6
Many	4-5	4-5	7-10
Most	6+	6+	11+

Cross-cutting themes

1. Use of addiction-related terminology

Subtheme: Cravings

P15: And the anxiety just raises the cravings higher.
P9: *After therapy:* Like I don't have to act on every craving.
P10: *Regarding mindfulness and homework in therapy:* And I think it helped with the cravings because I started to notice more what I was craving and why I was craving it because of the thoughts and then the feelings I was having.
P11: *Post-therapy:* My cravings have decreased significantly.
P12: Cravings is a huge aspect. Like once I get a craving it's in my mind and it doesn't leave until I do something about it. So those would be really difficult…when I was talking about treating and rewarding myself, sometimes to make it seem okay if I got a craving, I would think about something coming up and then I would treat myself with it so it was almost like I planned it in the future to reward myself to help with that craving. Or sometimes I would just go and get something to satisfy the craving right there.
P13: Because I'm not having forbidden foods, I don't get as many cravings…
P14: *Doesn't get cravings-calls it flicking of a light switch:* For me, binging is very much like flicking a light switch. Like I get to a point and I'm like 'oh no that's fine', and then you'll find me in the like potato chip or ice cream aisle at metro and I will be very carefully contemplating exactly how much and what I'm getting…I don't have cravings like that, it's very much like this is what is the problem and here is the solution.
P4: *When asked if she would act on cravings:* Yeah I'd make myself like a rice crispy square or I'd go to the store and get a chocolate bar
P5: *After use of MP:* the major effect is that if I crave something, which happens a lot less, but if I do crave something, it's not this like need, this super strong urge. If I can't fulfill a craving, oh well big deal…
P6: *Post-treatment, didn't think as much about food and reduced binges:* [The drug] changed the cravings that I had for food.
P7: *Believed cravings did not lead to binge:* No, no I don't. I feel like mine are after many years of doing this, if I'm really tired, if I'm really overwhelmed, if I'm extremely frustrated, if I'm really disappointed with something, if there's something coming up, and you know, it's like

emotional, I think that's where the binge comes… I know that I'm able to manage I wouldn't even say the cravings, but I'm able to manage binge episodes easier if I manage my stress and I give myself three proper meals and there's stuff that's ready in the fridge to go.
P8: Yeah there was that [craving] to a certain sense. Like something would pop into my head a certain food item and that was it, I was going to get it and I was going to eat it…No doesn't have to be a burger, have a banana and a yoghurt, and it was enough to sustain me, and because I wasn't craving [with treatment] or having obsessive thoughts I could just eat it and go. So, it did make it in some ways easier to make healthy choices… It's a craving, it's also like an obsessive thought that won't go away.
P1: [Regarding food addiction] I don't think fully dependent, I think it came through waves, that's what it was. It was never just a constant thing but it's just like different cravings at different days and just having to settle that but nothing like day to day, no.
P2: *Post-treatment:* If I was eating, it was more just fruit like nourishment, it wasn't to like, expel some sort of thing, or, because I had a craving, yeah, it was just purely, because…like its lunchtime I have to eat something.
P3: I don't have exact cravings I would say, the, the impulse I get, to just eat you know and usually I aim for items, it could be, it could be ice cream it could be chocolate, it could be the rice or stuff at home, or it could be like a Tim Horton's bagel or sandwich. You know it could be anything as long as I have it and I'm just craving something like that, some item I like. It's not an exact thing like I don't want chocolate ice cream.

Subtheme: Overeating vs. binge eating

P10: I do think there's a very big difference because I would say probably where I'm at since the study has finished, I have not been bingeing as I have in the past. That said, I still overeat. But when I overeat it's almost like I go to that line of comfort that I talked about where it feels really nice, it doesn't feel crazy, and, it's almost like two strands, there's overeating here, and binge eating here. And I think my family went back and forth between the two as long as I can remember. So when things would be stressful there'd maybe be a tendency to binge, and that secret of hiding food. But overeating would kind of be a constant, and sometimes bingeing and sometimes there wouldn't. It's almost like the control with overeating, and bingeing would kind of come and go. I would say the comfort comes from a release of anxiety, that's the biggest difference. The comfort form overeating is not connected for me with the anxiety. When I binge it's because I felt anxious so the comfort is "oh god I feel so much better I don't feel as anxious I can just numb out and I don't have to think about whatever is bothering me."
P11: So overeating would be like having a 5-ounce portion of chicken instead of a 3 ounce. Where bingeing is, it's not a snack time or it's not a meal time or anything like that but you've decided that you're gonna eat and you're gonna eat a lot more than you would at any one particular meal. Like I'd probably say it's almost a day's worth of food that's squeezed into this short amount of time is what I probably would define for myself as bingeing.

P12: I think I knew the concept but I didn't really use the actual term binge until the study. Like I knew it was overeating but to an extreme, I just never labelled it… I think now that I've done the study just because overeating could be you know Christmas or turkey dinner or even just a regular dinner you maybe have an extra helping when you're already full, I would consider that overeating. But with my binges they're like planned, and almost like self-harm.
P13: There is a difference, yeah [between binge eating and overeating]. Yeah. But I, like I can binge eat even now not using heavy foods or bad foods but you can still eat more of not like not proportional amounts…like rice cakes…I'd eat the whole bag still, but it's better than eating a whole bag of chips.
P14: Overeating is just that you ate a little bit more or maybe to the point of a little uncomfortable more than you would have. You know you went out with friends and you had nachos and wings and you had a couple beers, and all of a sudden your pants are a bit tight. You had a bit more than you intended to maybe because the food tasted great or maybe because you were on your phone and you weren't paying attention and you kept shovelling it in. Sure I've done that, when I'm not paying attention, I overeat. When I'm with friends, oddly enough I tend to leave the food on my plate because I'm so busy talking, not shocking to anyone who knows me. But, again, overeating to me is just that, you just eat a bit more than you intended to or the average plate full. Instead of having one plate of macaroni and cheese you're like "god that tastes so good," you went back and got another plate. When I say I binge, I mean I eat an enormous quantity of food, more than in any way I could really imagine that you could eat that much in one sitting but I can and do in a short period of time, like less than an hour, and to the point that I feel so full that I feel like I'm going to be sick, like either I'm going to vomit or like I have to take my pants off and lay down and have some antacid and some sparkling water because I made myself physically ill. So you know I've eaten an entire pizza, or an entire bag of chips with an entire carton of ice cream and an entire dinner. So like such a volume of food that its excessive for multiple people let alone one, and in a very like short time span. Versus where were all sitting at a dinner for hours and maybe the dessert was a bit too much but you know you had it anyways cause it's a great restaurant and you had a little too much. So for me I never use the word binge unless I'm speaking clinically in a study or in a physician's office. Because to me that's a very different thing than "oh I was watching a movie and ate the whole bag of popcorn."
P15: Binge is when I consume a lot of calories in a sort of a two hour period of time, like a voluminous amount that I could have say physical symptoms like say fast heart rate or you know, cause the body's trying to process way too much food and nonstop… whereas overeating is just more, gentler, I guess it is in some ways. It's just overeating over time, or like, eating too much too close together, but not to the point… I could stop. You know just having lots of food.
P9: Honestly binges are planned for me… Overeating it would kind of be like "oh I didn't really mean to, I didn't really mean for that to happen." But bingeing it was clear this was going to happen, I set it up.
P1: I think there is a difference, I think the study kind of helped me learn that, because sometimes they'd ask me harder questions, like if I had a binge, and I would start to question it a

lot, but it's like I don't know how I would define the difference. Maybe binge eating would just be up until where you feel like you're gonna throw up and you just like you can't deal with it. I think both have associations with guilt afterwards, it's just like I feel like ones just way more escalated than the other. Yeah, if that makes sense, yeah. I don't really know how to describe the difference too well.

P2: The overeating and binge eating never, it never, crossed my mind that it would be a psychological thing, it was just like a, like a shameful secret…it's [binging] an extreme…it's not passive in the way that its, "oh I guess I just ate a bit too much of supper," or you know**…** breakfast. It's more like a compulsion that is hard to stop once you start.

P3: I never realized that eating was kind of my coping strategy. I realize when I came to university I'd eat more, cause whenever I'm stressed or depressed I just eat. Before that I didn't actually realize that cause before I was just like, "whatever I'll eat I have nothing better to do I'll eat"… what I think when I think of binge eating is when I continuously eat so much that I just feel extremely full and I, I'm not stopping. That's what I consider binge eating. And that happens to me I have those episodes, where I just keep stuffing myself. I don't puke or anything, but I get extremely full to a point where I'm just like. "what am I doing?" but it makes me feel good at some weird, in some weird way.

P4: Overeating I would say is something that one doesn't set out to do. It may be something that occurs on occasion. You overeat, you go out with friends and you're celebrating something, I'll indulge in two pieces of something like that. But to me binge eating is something you set out with a mind, something, you have a mindset to do. Like for me let's say for example McDonalds, I'm not feeling very good about myself, and I need to punish myself and I'm going to go and buy, you know, four big macs, 6 apple pies, 20 nuggets, and I'm going to eat it all till I feel ill. And then when I feel ill, then I know I've accomplished what I've set out to do. I would feel as though I am hap-, euphoric, and, guilty.

P5: I definitely had a lot of periods of overeating, where I wouldn't consider it bingeing in my mind then, and even looking back on it, it would just be, you know, habitual or it was something so good I don't want to put it down. But for me the bingeing it was like this kind of crazy urge, it was something that I had to have, and I couldn't calm down basically until I had to have just the right thing. It was a lot of variety was a big thing. I couldn't just have like one thing, I had to sort of be stocked with stuff, so that in the moment if I needed something it was there. And then I would be just sort of really quickly wolfing it down to the point where I'd be nauseous and then thinking, "oh this is making me sick I don't want this but it was the compulsion to just keep putting it in my mouth till I like just couldn't handle it anymore." Overeating for me is just, you know, having a large portion past the point where I know I'm full. But not to the point I'm feeling guilt. Not to the point you know where I'm doing it because I feel like I have to, it's just, you know something I'm really enjoying and I just don't want to put it down, or its, you know you're in a restaurant and it's a big portion and I paid for this I'm gonna finish it, even though I know that I'm passed satiated I'm into full but I'm still gonna keep eating. And it's not associated with any panicky kind of feeling.

P7: For example there's popcorn that I really like, its Neil Brothers with just a little bit of sea salt on it. And it's just really nice, it's very light, it's a really nice snack to have, and I can have a bowl and be completely fine with it, and sometimes I just sort of eat it a little bit mindlessly and be like, "holy shit I just finished the whole bag," and I'll feel really disappointed and be like "I didn't need that." But a binge for me is almost like a different kind of compulsion and a bit more feeling of a lack of control, but a weird way it's a lack of control but so planned. It'll almost start like a little idea in the back of my head, "you want this, you want this, you really need this" you know, and it'll gradually build, and it will just be completely like this is what's happening and I'll go to the grocery store and go through all of the isles and get all of the necessary evils that I need and they include many different food groups none of them healthy. And then I go home and I eat them all in order until they're gone and it happens in a very fast, very short period of time like not even a half an hour, and I feel entirely sick afterwards, my stomach hurts, and I feel awful about myself.

Subtheme: Food as a drug and food addiction

P10: If I think of it as an addiction? I've thought about that a lot, and I think at certain times it seems like yes I would consider it an addiction. But then, but to be honest I don't know. Because I don't drink I don't smoke I've never been addicted to anything. The closest I would have is, in some ways, like I can read lots about those addictions, but, I don't know, I don't know if it is or not. I mean certainly when I was doing the CBT, and the therapist I was working with talked about how similar the things we were doing were to what he would do with someone who was an alcoholic, or an alcohol dependency, then I'd kind of be amazed by that, because they did seem really similar. So I know I'm very vague, but I'm really not sure. I mean I don't know if you could tell me, but I'd be interested to know what you think or what the literature is kind of saying… if you look at it in terms of the compulsive piece… then I would say if you define addiction as being compulsive, then that's one huge element to it then yeah, for me definitely, cause it does feel very compulsive and like I can't stop and it's a bit overwhelming.
P12: Sometimes it is hunger but more so I think it was just a comfort,, it just made me feel, I guess, like a drug, it kind of makes you feel warm, and when I was really little my mom would give me apple juice, like, and she liked seeing how happy I would be. So I think that's kind of where the sugar addiction came from.
-I wouldn't say it's the physical act of eating entirely, cause if you sat me down with like a bowl of broccoli I'm not going to get the same feeling out of it. So, it had to be the food that I liked that I associated with reward… That gave me that addiction. But then once I was in that addiction zone I don't even think I took into consideration what I was eating at that point. It was like my heightened sense of excitement for the reward I knew I was going to eat. So once the action started taking place it was a in its own other zone. So the mixture of the two I guess.
P13: Cause it's like any kind of addiction, it's for your life, it's always dormant and then one little thing like my [family member] passed away, and you know stress comes, like my [family

member] had surgery and it's not good, so you, you know different things… You really work on not going back to that because that's what you've used.
P14: It's the feeling I remember, and I know people who use recreational drugs describe things similar to that cause I have friends who have addiction issues. But I remember the feeling of taking a drug and a cigarette and I remember that feeling, and even now if I watch people smoke I have to walk away because I would have one in a second. And I know sometimes that having that glass of wine you're just like [exhales], that, it's just that feeling and it's the same with the food… And again, I don't know if its physically chemically addictive, the way you know like nicotine is or alcohol is or caffeine or what have you, is. But I know, I know that association of feeling that I would get I can associate it similar to smoking similarly to drinking, for me anyways.
P9: I heard somebody use the expression, food [is] the good girls drug… But I'm not going to mess up my life. So for me it, its food because usually when I'm stressed I'm sort of locked into a spot like a cubicle or I'm worried and I have 2 hours to present a document…and I can't go out drink. And you know people say all these activities, like, "oh go for a walk, or have a bath," that doesn't work when you're [busy]… Yeah so that's a real instant hit of something that is legal, its everywhere.
-I have never been addicted to any other substances so I don't know the levels of desperation that an alcoholic or drug addict would experience. But definitely it was, sweets especially, anything chocolate based especially, it's very much like a coping, something that helps me cope with things.
P11: In the past I would joke about it like, "yeah oh ha ha funny this is my, this is my drug," like you know. And I would even think it's okay like this isn't drugs so it's okay, right. Its legal, and its acceptable, I could go to the supermarket and buy it so it's not harmful. But really, it caused me a lot of harm, it is my drug. Like I still struggle with food, I think I'll always struggle with food, forever.
-*Regarding binging:* I felt comfort doing it. And then the loss of control I also kind of liked. Cause I was like, "well it's not me, something has taken over me that's making me do this." And then, it's like I almost felt like a high during the moment. I really felt like this euphoria almost, it was like the most amazing feeling during that time and then throughout the entire day I feel nothing but pain and awfulness and starvation. You know at that moment you feel amazing, like I've never really been high on drugs so I can't really compare it to that. But if I were to compare it I feel like that's what it would be like, like you were just high on, on euphoria. You're like, "this is just the most amazing moment right now."
P15: A chocolate bar, to me that's Las Vegas slot machines. There's people sex, gambling, whatever that triggers your nucleus accumbens…mine is sugar.
P2: I would most certainly ascribe to that view [food addiction] because I I experence it right, so, like especailly sugar, I've tried, I've tried quitting sugar many times and it's, it's horrible, it's horrible to go through.
P3: It wasn't like I was addicted. Yeah so that wasn't my case, I just had to eat. That was the

urge I was more addicted to than the actual food.
P8: So then when I had read this book on food addiction and I started thinking about it and looking into it a bit more, that thought came back to me, like I'm still doing it but it's not funny when you're overweight. Sure it was funny and cute when I was much thinner. It's not funny or acceptable now, and I think I really realized there was something wrong, and I had to do something about it, cause it's never gonna go way. And even following a nutrition program, and doing something where I'm still losing weight, there was still an issue there.
P1: *Post-treatment:* I think for sure I don't see it as a drug anymore, I just see it as something people should use to benefit themselves and to heal themselves. I always believe you heal yourself from the inside out so depends on what you put into your body. But back in like four, three four years ago, yeah I definitely saw it as a drug. Cause like I treated it as something like a thing, not like something that should be healing or nourishing you

Subtheme: Perceived stress (includes blame externalization)

P11: I was like, "well it's not me, something has taken over me that's making me do this."
-Just knowing that that bingeing is classified now as an eating disorder just makes you feel like, "it's not just all me." It's not because I have no self-control or you know, you wouldn't say that to someone who had anorexia right? So, to me, it made me, it was very comforting for sure to know that
-I feel like a week before my period I started to really crave carbohydrates and sugar, and it was exactly a week to the day that this [binging] happened, right?
- *Reasons for binges:* I remember going through university and no one in my family had ever gone to university so you know just never understood how much stress and pressure there was and that sort of thing. So definitely stress was a trigger. Stress for sure, but I'm just trying to think if there's anything else really. Maybe even loneliness sometimes, like you just feel lonely, that can also give be a trigger for sure.
P14: I have to eat normally to live whether its 10 bags of chips or 10 bags of apples, I have to eat to live. It's a harder line to draw because we all need food to eat… we need energy containing units to live and if that's in a vegan protein shake like whatever it is if you take in enough calories you can keep surviving.
-When I'm at the point where I don't know whether to cry or scream and I can't breathe anymore feeling of stress, that ice cream is just a different kind of numbing than alcohol would be. Because maybe it's 2 in the afternoon and I have to go pick up my husband at 4 and it's really not feasible to have a bottle of wine.
-It's been like 3 months of really stressful, good stressful and bad stressful things going on. So I've definitely had episodes where I binged.
P9: That's cause at home my mom cooks heavy foods and it's a lot of like food… family culture, not particular country background. So we have fairly heavy foods, there was pressure to eat. It was like a weird thing where I was pressured to eat but also, "oh you're getting quite chubby you

need to pay attention to that."
-So for about a year and a half I was going through not knowing if I was gonna have a job, and ups and downs. And my weight [went] up 30 pounds in about 6 months, so, it was a lot of stress eating. I would just buy whatever I felt like eating at the grocery store.
P15: There's something wrong, not wrong…this must be how my brain is wired…it's wired on sugar
-*Discussing replacement behaviours:* Other than just working on doing things that if I'm stressed…not food, yeah. Try to do something else.
P12: There's a lot of stress in learning. So right now I don't have any of those foods in my home because I know it could be a trigger, but once I get into the rhythm of things I think I'll be able to introduce that back into my grocery list, just be able to have that when I can but not [inaudible] I hinder myself
-I would never really associate cravings with hunger, it was more of just, I associate it more with the motion, and tension and stress. So I could have a craving even if I'm full.
-If I'm stressed, my mind doesn't shut up. So if I'm stressed about something and I'm worrying about it, and if I'm worrying about it it's on my mind. So one of the things is when I binge, it completely clears my mind about myself. It like, it empties it, and so that helps me not worry and not have all those paranoia in my head I guess
P10: So when things would be stressful there'd maybe be a tendency to binge, and that secret of hiding food.
P13: Cause it's like any kind of addiction
P3: Its oily and heavy food [mom's cooking], my mom is stuffing me with it all the time, it's not as healthy.
-You know I did reject food that's why she used to force feed me…she just kept doing it and then I got into the habit of it I guess some kind of thing I could just do, or I'm good at.
-When I came to Canada, I guess I was stressed out or what, and I started eating like crazy. I remember my weight gain was huge, 30 pounds in a year is a lot actually, so I was like you know, it's getting out of hand.
-Yeah freshman year and I was like, I was in the [university] program, it was really tough, it was too stress[ful], and I think eating was my way out of just you know just keeping myself calm.
P4: My father and I had a horrible relationship, I never dated, just all sorts of things that I attribute to that, and so I didn't know what to do about that so I would eat, that was part of the problem too.
Usually high stress for the most part, or an event [binge trigger].
P5: The last few times when you know it was bingeing it kind of would be, I would get very anxious, probably because of stressors in life, but my immediate reaction, and while I was getting anxious was like to plan out, what am I gonna buy, what am I gonna arm myself with, so it would happen almost simultaneously.
P6: And then like university obviously you're eating junk and all that jazz. Like I did lose weight but then I put it on cause I was very stressed out and I worked a lot and I didn't really have time

to focus on what I'm eating. It was kind of like, "oh there's food here let's eat it cause I need to."
-Other days I just can't stop eating, and this tends to be the days where I'm really stressed out or upset about something, but generally speaking I'm not really a lover of food or anything like that.
P7: I'm able to manage binge episodes easier if I manage my stress and I give myself 3 proper meals and there's stuff that's ready in the fridge to go.
P8: *Explaining triggers for binging:* Definitely, stress, and then I feel like I deserve it, or you know stress business, there's a reward element absolutely. My [family member] was ill and she actually passed away and it went through a period of time all the comfort food she had made for us, as a kid but to the point where I would like cook a meal for 4 people and eat it myself. And I was doing that regularly throughout the week,] you know a lot of carbs, a lot of sugar.
-I've always been very free to admit that my two stress mechanisms are eating and shopping.
P1: *Impact of stress on binging:* I think it could, like I think it has the potential to. But I think, like, the types of food would be different, so I don't know if that affect my weight nearly as much, but yeah, I think it has the potential. So I think it's just something that I would have to be extra focused on, like throw more of my energy into that rather than my energy into like the stress levels. Or like just try to find a balance there because I don't want to slip back into that, and I think it does have the potential to if something bad happened, yeah.
-I feel like sometimes like it depends on the situation but I can get stressed out pretty easily sometimes.

2. The need to be in control

P13: *Post-treatment:* Yeah I've given myself permission and that I can eat in a more controlled way and by a smaller amount. So I'm still allowed to have it so then you don't feel deprived of it. of the cake or certain foods…
P15: *Regarding therapy:* I think it was just more positive that I can have some control.
P10: Bingeing feels impulsive and uncontrolled, and it's comforting, but they're two different kinds of comfort. I don't know if that makes sense, but it's almost how I distinguish them in my mind.
P11: *Regarding binging:* I didn't know what it was, you just lose control, like, I always feel like, you're out of your body, like you can't control yourself.
-The loss of control I also kind of liked.
-*Post therapy:* I do feel a lot more in the sense of control
-So the control [over eating] was definitely one of them, this is my longest lifelong problem ever, right, like since I can remember this has always been an issue for me. So knowing that I've taken steps to make this lesser of a problem has made me feel so much more confident, so much more like I feel like, you know this is so cheesy to say, but I feel like I can do anything.
P12: I wanna get in control of my life and stop this thing cause I don't like it.
P14: The surest way to make me put my face into something is to tell me I'm not going to eat it ever again.

P3: *Impact of the drug:* I was just like you know normally eating they didn't tell me okay you know control your appetite whatever, they were just like eat, eat healthier and I tried and that wasn't working. But I just didn't have those huge episodes of binge like when I used to eat like, eat constant amounts of food like I kept eating I kept eating I would eat a bit and I would stop.
-It's [MP] supposed to help you like control your urges and make you lose weight and everything. So yeah I would recommend it.
P5: *Impact of drug:* I definitely have reduced appetite in the morning… that thing that was controlling me, it was just, its quiet, its gone.
P6: *Impact of drug:* I did feel better and you know I felt like I had more control over food and the way I was eating for sure.
P7: But a binge for me is almost like a different kind of compulsion and a bit more feeling of a lack of control, but in a weird way it's a lack of control but so planned.
-*Regarding recommending the drug:* I think if I knew someone was bingeing all of the time, and felt really out of control, I would probably recommend that cause I think if you do just talk therapy that takes a little while to kick in. If they needed immediate relief it could be something.
P8: *Starting the RCT:* All I wanted was to feel in control. I lost weight, okay, that's great too, but I almost think that's a separate issue. I wanted control. I had started searching for help, I felt out of control.
-There's literally something in my brain that creates these thoughts that I can't control them.
-*Effect of drug:* I felt like it absolutely changed me for the better. So I was the same person, I you know almost everything was exactly the same except for the fact that my thoughts about food were more controlled and more in my normal. So, having no, really no memories of having a normal relationship with food, I've just felt that it just complete shifted that one aspect of me that was bothering me so much.
P3: When I was 15, 16 I was gaining weight really, like I gained 30 pounds in 1 year… and I'm more independent, so I got a job and I had money and I was lazy just at school getting food from outside or whatever right so it's my money I could do whatever… I got really independent since high school I've been just you know studying, out with friends, going working, so started eating out a lot.

Subtheme: First year university

P1: *When binging started:* Probably like 19, 20, when I started getting that control over what I can put in my body. Since I left home, and having that freedom, and going overboard with it, and just in conjunction with the depression, and just wanting to feed into that.
-I guess I started gaining weight when I was 18, cause that's when I went to university, and I think that's when these symptoms started occurring.
P8: And then when I got to the age again when I was in university, I had control over what I ate and it was almost like an insult to them [parents] just for me to eat whatever I wanted and not be concerned cause they couldn't control it anymore.

-I have memories of when I was about 16 or 17 I had a part time job, and I would go to a fast food place, go through the drive through, order the food, and sit in my car and eat it. And again it was like my parents can't control, but I didn't want anyone seeing me doing it. In university I don't remember binge eating I just remember eating terribly and drinking a lot.
P3: The most drastic year for me to gain weight was first year of university… Yeah freshman year…it was really tough, it was too stress, and I think eating was my way out of just, you know, just keeping myself calm.
-I realize when I came to university I'd eat more, cause whenever I'm stressed or depressed I just eat.
P4: I went to university the whole freshman 15…it was probably more of a freshman 30.
P6: And then like university obviously you're eating junk and all that jazz. I did lose weight but then I put it on cause I was very stressed out and I worked a lot and I didn't really have time to focus on what I'm eating. It was kind of like, "oh there's food here let's eat it cause I need to."
P10: In university I would say probably from the time I finished high school to the time I finished university I maybe gained like 30 pounds.
P11: *Binge triggers:* I remember going through university and no one in my family had ever gone to university so you know just never understood how much stress and pressure there was and that sort of thing. So definitely stress was a trigger…Maybe even loneliness sometimes, like you just feel lonely, that can also give be a trigger for sure.
P12: *When eating was out of control:* Probably when I moved away when I was 18 through university and I was living on my own. When I was able to control my own groceries without my mum at home, cause I think I have that tendency when I was 8 or 10, if she was upstairs and I knew she was away then I would try and sneak a granola bar and I would get in that same feeling it's just that it was a much smaller amount it was just a granola bar, versus if I had a whole bag of chips. So I think I have that same tendency but the fact that I was smaller and haven't pushed the limits and younger and also a feeling of guilt cause my mother was in the house. So once I moved away and I was larger so I consume more and there wasn't that guilty parent and that's when I think I probably started pushing the boundaries and started bingeing I guess per se.
P9: *University led to healthier eating behaviours:* Once I came to university and I was in charge of my own life, I lost quite a fair bit of weight, but not trying…when it was up to me what I ate, I was eating less uh junk food. Even though that's the opposite… That's cause at home my mom cooks heavy foods and it's a lot of like food is…Well family culture, not particular country background. Yeah, so, yes, we have fairly heavy foods there that was pressured to eat. It was like a weird thing where I was pressured to eat but also oh you're getting quite chubby you need to pay attention…but once I had my independence it was quite different. And I had access to a gym and that kind of thing.

Subtheme: Conventional diet programs

P13: Then in grade 6 I started dieting… my whole body image throughout I always felt larger and always tried to cover that up but I wasn't large…my mom, she thought that she'd help by

rationing the food. So she'd give me apples, 12 cookies, but I'd eat them all the first day and then have nothing and I'd have to try to borrow them from my sisters…so, it started a spiral…I just knew I was over hungry but I couldn't get full so I'd have like 3 sandwiches peanut butter and jam sandwiches when I get home cause I'm starving and then it would continue the whole night, you know. But I didn't know what that was but I knew it was something wrong but then everyday I think I could do it again you know would just be thinner but I wasn't fat at all. But in my mind I was… and then 16 I went on diets and lots of exercising, and then I moved out of the house at 20 and gained some weight because all I ate was junk food.
-*Regarding therapy:* It's so freeing not to be on a diet when you've been on a diet since you're in grade 6.
P15: *Referring to self:* I guess you could call it a yo-yo dieter... it must have officially started I'm gonna say 15. Whether it's a like a, how you say, a very conscientious effort.
-There's Dr. Bernstein…I knew that was not, how do you say, safe or healthy, and I knew I was going to rebound, and I knew I was going to binge. And I told the doctor I was going to raid Dairy Queen today, unless I can just stop…I went out and raided the [Dairy Queen], that was a serious binge. I'm sure I ate 20,000 calories, I'm sure I did. And I couldn't stop stuffing the food until my heart was literally pounding almost out of my chest and I thought, "oh my god I'm going to have a heart attack," which made me stop.
-I went on so many [diets], like whether its Dr. Bernstein, I did go to some you could call them healthier like Weightwatchers or Weightcare…
P9: Those things [calories and good foods] I already knew pretty well from years of dieting. But just more to do with, really how the mind works and different thought patterns and ways that you can change those patterns, or at least choose different ones.
Started weightwatchers: first time was probably 10 years go. So for a long time, but I found that it doesn't address my, emotional eating concerns. It's more for people that don't have any clue of what a calorie is.
P10: *Diet strategies:* Lots of different things over the years. So certainly trying to cut out certain foods. I've done weightwatchers more times than I can count. Between 2011 and 2013, I lost a whole bunch of weight and that's probably the healthiest way I've done it to date. But I was extremely [inaudible] with myself, and that wasn't so awesome, cause as soon as I fell off that strict thing, I [inaudible] and felt more badly about myself and I kind of made a deal with myself that if I lost all of this weight suddenly life would be amazing, and life wasn't amazing. And that's, that's kind of the grub, right, we try to change things and it doesn't always make a difference, yeah.
P11: *When dieting started:* I would say my early teens, early teens I would say…I remember always being on a diet…but I also remember like a lot of the foods that we had at home were not healthy. So it's not like I had healthy options and I just wasn't choosing them. Like, we would have like a chocolate milk sometimes in the morning and rush to school kind of thing. So you know what I mean? It wasn't like, there was salad and a good piece of protein, I was just not eating that. I was really eating whatever I was given.
-I tried like everything. So I tried I think Nutrisystem when I was like a teenager, I went to Dr. Bernstein at one point when I was a teenager, I even tried once to vomit but I didn't like it and I couldn't do it so thank G-d right. But I tried that, I've tried starving myself, I tried exercising ferociously. Like I remember I was on this huge exercise kick at one time where every single day I would do like at least an hour of ex-, like really rigorous exercise, I've tried everything. Like if

there was a fad at the time I tried it. Like any, any of the equipment that they sell online, the Suzanne Summers stuff, anything, I would try it.
P14: *Did not join conventional diet programs:* Because, you know sure there would be a couple times where I was like enough enough, like you're gonna, you're going to lose weight, so I would like go online and use like a, a free food tracker. Nothing like 'My Fitness Pal' or any of those things, because I feel like those are just setting you up to an eating disorder… I never actually dieted, I never went out to, like I never joined a program.
P2: Well I did diets my whole life… Well fad diets, but, not, like, bulimia or any of those other types…
P3: Yeah I've tried diet of course, going on diets, usually they don't last more than 2-3 days, it's always been that, and I think it's for everybody yeah…It was just like a, like a an ad or something they were like oh yeah selling these diet supplement and I took it and I was not eating and they were saying, "okay you shouldn't eat this this,"and I lost like a lot of weight but then I gained it even faster the next month. Because I wasn't happy being on the diet I was miserable like my parents were like okay it'll pass don't worry you will look better you will be thinner…
P4: Oh I tried like, not like pills, but I tried different things like the master cleanse and this and that and starve myself and juices and stuff…I did try a lot of stuff, I tried just about everything, every crash diet you can think of that came out I tried.
P5: I wasn't at my goal weight according to weightwatchers but I'm still feeling like I still had so much further to go…

3. The need for safety and comfort

P9: And definitely it's [food] a comfort for me, yeah.
P10: I would say a lot of my best memories are focused around a dining room table… it is a coping mechanism, it's also very comforting. So, there's something that even when life is going well and things are happy there's something very comforting and just calming about the act of sharing food. Now the bingeing that's like a different kind of comfort, it's not, I would say they're kind of a different category. Bingeing is um, impul-, it feels impulsive and uncontrolled, and it's comforting, but they're two, they're two different kinds of comfort.
-The comfort comes from a release of anxiety, that's the biggest difference. The comfort form overeating is not connected for me with the anxiety. When I binge it's because I felt anxious so the comfort is, "oh god I feel so much better I don't feel as anxious." I can just numb out and I don't have to think about whatever is bothering me.
-And when I'm around friends or family who also tend to either overeat or binge and it's almost like you're creating you're creating this dysfunctional circle of safety where you can just eat whatever you want.
P11: *Food as a comfort:* I do remember the comfort of it…you know while you're doing it you just feel like you're on such a high. And then of course the second you realize, you stop and realize, I can't believe, then, then you just crash right back down to such self-hatred, right, so, but I do remember feeling the comfort of it at the time.

P11*:* *Reason for binging:* I think it's a few things. Comfort is one of them, like I felt comfort doing it. Like I felt like, and then I, and then the loss of control I also kind of liked. Cause I was like well it's not me, something has taken over me that's making me do this.
P12: *Reason relationship with food:* Sometimes it is hunger but more so I think it was just a comfort, it just made me feel, I guess, like a drug, it kind of makes you feel warm, and when I was really little my mom would give me apple juice, like, and she liked seeing how happy I would be.
-Using food at night for comfort and over eating…
P9: *View on food:* Definitely it's a comfort for me, yeah.
P1: *Regarding RCT experience:* I don't know if I would change anything. Like I was just, I feel like I was just so open to anything that you guys were throwing at me that like, I, and I didn't know what else to expect cause I've never done anything like that before. Well like nothing ever made me feel super uncomfortable and I never dreaded coming here.
P3: *When eating:* I feel really comforting after like I'm in my comfort zone and I feel safe I feel relaxed and relieved…
-I preferred the comfort from eating over looking skinny
P4: I felt more comfortable with [the therapist], I felt like she really wanted me to excel in this and she really, she really cared.
P5: I did lose my [family member] when I was 8. Probably, no I think I was just about 8, and that was the first experience with loss for me. I, I didn't really at the time put it together or, still kind of looking back at it think oh yeah that's when I started turning to food for comfort but it, is the only thing that really sticks out.
[Food] is like a comfort. It was something to make me feel better not like I deserve this, it was like I need, I need, this is something that's going to make me feel better.
P6: When I got older it definitely was a comfort or um as opposed to anything else, like even now I can go be like not really hungry and then I'm like, "oh right that food thing I should do that." Other days like I just can't stop eating, and this tends to be the days where I'm really stressed out or upset about something, um, but generally speaking like I'm not really a lover of food or anything like that.
-*Regarding study team:* well I think everyone was really helpful and I felt really safe which was really important to me cause again I was a little apprehensive about taking this drug… the doctor everyone that helped me throughout was really nice and, and answered all my questions…
P8: my [family member] was ill 2 years ago and she actually passed away and it went through a period of time all the comfort food she had made for us, as a kid but to the point where I would like cook a meal for 4 people and eat it myself.

4. Physical and psychological sensitivities

P11: It was like feeling the, the cream of the chocolate cake going down, or the comfort of the cold chocolate milk or the ice cream, yeah, like the texture was huge for me while it was happening for sure.
P14: Like it's really calming, its numbing, it's a smooth creamy texture versus something that's hard and crunchy. Like when I have the angries and I just have had it with everything and everyone it's all about the kettle chips that like cut the top of your mouth cause they're so sharp and you're in pain because you're not paying attention. Because I've many times paid the price of eating an entire bag of salt and vinegar kettle chips because then you have no taste buds left in your mouth for 4 days. Your skin peels off the inside of your mouth. But that's a very different place, right?
-*Friends coming to her with their problems:* I'm always the answer to every question… with my friends it's because I find that I'm exceptional at applying it with my friends and remedial with applying it to myself.
P15: Bread gave you a hug.
P13: Most of the time yeah but if I think they're gonna be judgemental about what I'm eating or comment, if they make, make a comment then I feel it still hard.
What she took away from therapy: I preconceive that people are thinking about that because I think about it all the time. But she like we worked through it that I'm, those are thoughts that I made those statements, but not ever, most people are not thinking, "oh look at she's big, she's large, don't sit on that subway, don't, you know, you know you're not gonna sit there, or you're not gonna fit," like I'm thinking that people are thinking that, but nobody's thinking that they're in their own head, right?
P7: They're some sort of savoury, there needs to like, and also texture. All my binges include some sort of yoghurt or ice cream, milk, rice pudding, something that has a cool creamy texture.
-If there's something coming up, and you know, it's like an emotional, I think that's where the binge comes
In therapy: But he just says like if you really want to eat that whole pint of ice cream go for it, there's no judgement, like none. And that makes a huge difference because then it doesn't feel like I have to eat, I think also eating in secret makes you eat more because there's thing of like I only had this limited window to get it all in before someone sees me so I think that also cuts it down if you live as someone who's in the same place as you are all of the time in a small apartment, you're less likely to do that but knowing that if I really want to have a pint of ice-cream or eat a whole chocolate bar or eat a bag of chips and chocolate bar there's 0 judgment.
P3: *Qualities that should be in a therapist:* First thing that comes to mind is don't judge me based on what I'm saying. So some therapists do have opinions and they do throw it out there which I don't like. So first therapist I met um, she was like oh maybe you have this maybe you have that, no you don't say that to me because I know what I have but you're just assuming things about me so I hated that so I had to let her go. Um and then, I think she was, the second one I got, she listened to me, she just listened like I just talked and she listened…and then it was more calm…She actually tried to understand what I was saying and tried to connect with me at

some level and she showed some care and actually you know that okay I actually give her crap about
- When I'm eating, my mind clears up right that's another thing…I give mentally, mental relaxation priority over physical discomfort every time.
P4: I know I'm a people pleaser, and when I'm accountable to somebody I just excel.

CBT Themes

1. Therapy addressed the patients' need to feel in control of their food intake

P11: I do feel a lot more in the sense of control, and I know as much as I hate to admit it, I know it was the food diaries, like constantly writing it down and what time you eat and how much you eat, and over and over and over and over again…like its literally engrained in me now, you know, but it makes life so much easier and I think that also helps with the control of the food, for sure.
P13: I've given myself permission and that I can eat it in a more controlled way, and by a smaller amount. I'm still allowed to have it so then you don't feel deprived of it, of the cake or [these types] of foods.
P15: I think it was just more positive that I can have some control.
P11: My cravings have decreased significantly. Don't get me wrong, I still love sugar... [in therapy she was told] don't keep these foods in your house, so I don't. If you come into my house, if I do have foods there, they're either no sugar, so like I get this coconut ice cream now instead of real cream, it has no sugar. And you couldn't binge on that if you tried…and I sit at the table and eat it…I feel like I don't need them as much. Even at work, I'm surrounded by chocolates and this and that, and I don't feel compelled that I have to eat it.

2. Therapy enhanced self-awareness and mindfulness

P12: I feel like it added to my confidence in being able to, it made me more self-aware, I think that's what helped is that because I didn't think about buying, what my thoughts were before buying my food, or I didn't think my thought about as I was eating. Like I never really was self-aware that I ate to clear my mind
- Even if I don't physically write it down, I'm more aware of it in my head monitoring, cause otherwise I would just eat throughout the day and not think about it. Now I think okay I had that for breakfast I'm going to have this for lunch. So even if it's not physical writing it down I'm still monitoring it in my head.
P10: *Therapy's effect on food cravings:* While I was going through the therapy, yes, because I was being extremely mindful and I was doing the homework and I was working really hard at it. And I think it helped with the cravings because I started to notice more what I was craving and why I was craving it because of the thoughts and then the feelings I was having.

- I would say the mindfulness piece of things, the building evidence, I, again, I hate to overstate this but I think in the short term of being done that study, I really didn't know if it had been useful, but now looking back at it I think it laid the groundwork for where I'm kind of at now, which is certainly I have my struggles but, I don't feel like I need to bring in the whole story anymore, I can pull a thought, pull a feeling, examine it and then be like okay there you are and now you can go.
P15: *Whether CBT effects sustained:* Some are sustained, and I knew, I knew that I went, fell into old habit. I didn't go back to binge, overate, and yeah overate, and always be mindful of the 3-5 hours so I've gone back to it now.
P11: I didn't realize until I was actually going through my documents a while ago, that it was the food diaries that makes me now, I still eat at those times without even consciously thinking about it, right, I still eat at those exact times that we set out with my counselor. It's like clockwork.
P13: I was happy to reframe, reframing, learning and reframing my thoughts that helped a lot and I keep like when they start slipping I'm thinking you know everybody's not thinking like I am, cause it's a self-talk that I had so long in my head, that you have to reframe it and you have to constantly reframing your behavioural thoughts that come like that and I thought that was really great.
P9: How to recognize in your thoughts. For example, all or nothing thinking, if I have one bad thing then I blown it everything kind of thing. Um, emotional reasoning, disqualifying positive mental filter, all these kind of things, yeah they were something that I kept with me.
- It [therapy] helped me to guide my habits and guide my thoughts more

3. The psychoeducation component of therapy motivated patients to reduce binges

P13: It gave me a time frame of eating every 3 hours…learning to actually feel hungry and full. If you haven't felt it in 30 or 40 years, it takes time to learn that you're really [hungry] or you can eat. And learning to have all the foods you want but then learning that you don't need as much as you thought you needed, and then weighing yourself on the scale was good once a week.
- But I'm happy, happier with my body image no matter what size it is, as long as I'm eating properly and not binging cause then it seems to trigger something about my body image you know.
P10: One of the super helpful things about the CBT therapy was we made a list of all of those things I would consider trigger foods, and instead of it me abstaining forever…[you would] eat a little bit of the chips and notice how you're feeling and what's going on, and it not being about cutting out some of those joys and good yummy food, but almost me learning how to trust myself around that food.
P12: I've learned skills that I've been able to carry with me. I don't think I've ever gotten to the success rates that I had within the study just [inaudible] my birthday it just seemed like a bad

transitional timing for me, although it might just be something [inaudible]. But I've had, I've had ups and lows, but I've had the skills where I can come back and reel it in. It's just a matter of how long it takes me to realize I need to put the skills back into action, I've had them and I've been able to do well with them.
-Cause it's a vicious circle, cause if I binge one night I feel guilty and [inaudible] feelings that cause me to binge again. So if I cut out 2 or 3 binges I feel more positive I feel better and so it just easier to tackle it, so there's multiple things going on but I would say just trying to get in that positive cycle makes it a lot easier to follow.
P14: Like knowing that I had an appointment on Tuesday morning, knowing that I was keeping my food journal, and that I was writing everything down that I was doing, just even the action of that, of like taking that time to think about it, like oh I woke up this morning I'm really upset and why am I upset about that okay well I'm just going to write down that I'm upset, I'm not sure why but it's just, even, pardon me, just the act of doing that. Like the act of having the structure around it, I know helped, because again I'm someone who works well with structure. So, that in itself was useful, um, some of the, the strategies that we went over, um, again like, things I know but it was like a, oh right that's a really good point I should do that, I should, you know, put all the papers and everything away and focus on what I'm eating, because I can give myself 15 minutes to eat, I don't need to be attending to my phone all the time [inaudible].
P15: I think a positive experience. It was a good learning, new learning, reinforce in me some learning that was already happening and it just helped to, to, solidify… I guess it's the, the skill of like writing down a baseline of eating and don't judge yourself. Just write it out for the, the first I mean, wrote it out each week, but then the first week. And then talking, like coming back… the food diary. And then reading it to the therapist, so reading it out loud, it's like hm I don't think I wanna do that anymore. That reading out loud, and then, saying okay, so let's, so it's somebody saying permission to allow you to eat, was like, oh I'm allowed to eat? Uh, let's eat every 3 to 5 hours, and have as much water as you want in between.
- I guess, was, I mean, partly the skill training in CBT. Still that 3 to 5 hour technique, sticks, stays. Still in there… the CBT is different than say, other therapies that I tried, that was that skills training that's done at the same time as the talk therapy
P9: So I did find it a value, and I almost keep my new notes [inaudible]. I have kept all the notes.

4. Therapy acknowledged the need for patients to feel safe and comfortable

P10: *Regarding therapist:* He really helped make things safe for me.
-The people at CAMH were fantastic, everyone was so professional
P11: *Regarding therapist:* I felt like, she was really listening to what I was saying, and she was telling me things that I still do to this day to try and minimize my binges. And it made me feel like, it just knowing that, like that bingeing is like classified now as an eating disorder just makes you feel like, it's not just all me, like you know, there's, there's, it you know, it's not because I

have no self-control or you know, you wouldn't say that to someone who had anorexia right like, so, to me, it made me, it was very comforting for sure to know that, she was wonderful.
P13: *Regarding her therapist:* But it's just nice when you feel comfortable with that person… [therapist] was always on time, and my doctor when I went she was always late, one hour late, so I didn't feel like I was value but this I felt value.
P9: She [therapist] was very positive and encouraging to me, even you know very small things she would say 'that's great', it was very positive and encouraging. She asked interesting questions, and talked about more scientific aspects… how the mind works and different thought patterns and ways that you can change those patterns, or at least choose different ones.

5. Therapy reduced psychological sensitivities

P13: I preconceive that people are thinking about that [her eating] because I think about it all the time. But we [participant and therapist] worked through those thoughts that I made, those statements. Most people are not thinking 'oh look she's big, she's large, she doesn't fit on that subway', you know, 'you're not gonna sit there, or you're not gonna fit.' I'm thinking that people are thinking that, but nobody thinks that, they're in their own head, right?
Ways of rewarding self: It can sometimes still be food, but most, its more other things that I like to do now like riding a bike, and um, crocheting, um, talking on the phone, um, just spending more time doing things that I want to do. It's not so much food, yeah.
P11: Control was my longest lifelong problem ever, since I can remember this has always been an issue for me. So knowing that I've taken steps to make this lesser of a problem has made me feel so much more confidence…I don't binge as much as I used to. I don't keep sugary foods in my house and it's okay, I can live right. Just knowing those types of things has really made me feel more confident and just doing other things made me feel like a more well-rounded person…it makes you feel like you can do more
P15: I guess it's the, the skill of like writing down a baseline of eating and don't judge yourself.
P10: Because I felt like it wasn't it um, narrow and restrictive, it just more write it down, just write it down, and then we'll take a look at it afterward. Which is what I've been trying to do recently again, is just write it down and not place a ton of judgment on what's there just to keep track.
P12: I never really was self-aware that I ate to clear my mind like I had just explained a minute ago, I never thought about that before, so just knowing that about me and it makes me analyze it and think about why I'm doing what I'm doing, so its helped me in that way, which has given me more confidence to know that I can handle myself.
- The different activities [in CBT] helped with the cravings cause it would put my mind off it, or the fact that I could still have the temptful food in the house and know that I could have them whenever I want

6. Therapy had some tools to reduce stress, but there needs to be a stronger emphasis on stress-coping skills

P12: The only negative like I said, if there's a change in my life, it's hard to keep track of things, and when it ended [therapy], it ended at a bad time because I had my birthday so I was treating myself with the birthday cake and even if I did slip up and have a binge, I had that meeting the next week to kind of get back on track. Because we ended right before my birthday, I didn't have the mentor to get back on track again, and I kind of slipped out of things. I wish the ending [of therapy] was at a better time but then again life never really gives you a better time…cause even now there's some times where I binge but it's giving me the skill to get back on track.
P10: It was sometimes really infuriating that CBT seemed in some ways so cut and dry, just like 'here's your tools apply it and don't worry about the rest of your life exploding right now
- I do think there's a very big difference because I would say probably where I'm at since the study has finished, um, I have not been bingeing as I have in the past. That said, I still overeat. But when I overeat it's almost like I go to that line of comfort that I talked about where it feels really nice, it doesn't feel crazy making, and, it's almost like two strands, there's overeating here, and binge eating here. And I think my family went back and forth between the two as long as I can remember. So when things would be stressful there'd maybe be a tendency to binge, and that secret of hiding food. Um, but overeating would kind of be a constant, and sometimes bingeing and sometimes there wouldn't. It's almost like the control with overeating, and bingeing were kind of come and go.
P13: Cause it's like any kind of addiction, it's for your life, it's not, it's always dormant and then one little thing like my [family member] passed away, and you know stress comes, uh, like my [family member] had surgery and it's not good, so you, you know different things.
P14: When I'm at the point where I don't know whether to cry or scream and I can't breathe anymore feeling of stress, that ice cream is just a different kind of numbing than alcohol would be. Because maybe it's 2 in the afternoon and I have to go pick up my husband at 4 and it's really not feasible to have a bottle of wine.
-I've been good with that where it's [CBT] given me like the structure, it's also helped me because it's been like 3 months of really stressful, good stressful and bad stressful things going on. Um, so, while I've definitely had episodes where I binged and like just I, I was like no, no, not doing any of the good things, just, no, no it's not happening
P15: Just working on doing things that if I'm stressed… not food, yeah. Try to do something else.
P9: *Pre-treatment:* Stress, so bad, made a big dent.
- *Replacement activities post-treatment:* more than I used to I'm listening to music at my desk. I've got some good, I've got some good headphones, and more often listen to music like if I can. If I'm in a meeting obviously not but I am using music more as a treat than chocolate or something.

-I believe that although I didn't completely resolve all these issues that I have carried them through and I am thinking things through before. Like I just mentioned I was going to a certain restaurant and then I foresaw myself feeling Ill from eating too much broth that I didn't go, so this kind of um thinking things through, uh, I think has uh helped me also.

MP Themes

1. The drug changed eating behaviour by reducing appetite and impulsivity

P2: It wasn't just thinking about food, nothing felt like it was appetizing, that's the way I can describe it
- I didn't have an appetite, so it, I didn't have that, that, that need to, to space out, I don't know how else to describe that, but that wasn't as strong
P7: [While taking the drug] starting to actually feel like what does hunger feel like because it's very rare that I'm actually truly hungry. I always make the joke like 'G-d I haven't been hungry since like the mid-80s'. Because truly you know how there are some people who are like, 'I feel hungry we need to eat.' Because I can eat so much, I don't feel hungry so it's a very foreign feeling to me I'm like 'What is this? I'm feeling sick, you think I'm hungry? It's weird
-Sometimes I didn't feel as hungry. Um, and so that was one thing that [the therapist] said, she's like you have to make sure that you eat because you will feel like you are not hungry, like almost like you're running on adrenaline.
P5: Appetite has been, I mean at first was kind of way, way down. I've kind of got to a point where like I don't feel, it's not that same, you know just zero desire to eat anymore, and I had that kind of in the morning and then throughout the day, I get a little bit of appetite back. Now I have what I would think is a normal appetite. And the major effect is that if I crave something, which happens a lot less, but if I do crave something, it's not like this need, this super strong urge. If I can't fulfill a craving, oh well big deal, sometimes I've been in situations where I normally would have made one choice, but I thought I feel like the salad today, I feel like this, I still made the choices where I feel like the burger, but it took that overwhelming feeling, off
P4: *Effects observed after the first week:* So I wasn't thinking about food, um, because it decreased my hunger and I had to, I had to eat at certain times, um, I was more mindful and thoughtful when planning my meals, and um, and because of that there wasn't that drive to, to binge. I had to learn how to deal with issues in other ways when I was upset because of, I couldn't even if I wanted to binge eat, I couldn't, I couldn't do it, I just could not do it, cause the hunger wasn't there. I was eating satisfying meals and I had to find other outlets.
- No I was not hungry. By the time I reached the max dosage I was not hungry at all, so I had to force myself to eat. It was almost like I was retraining myself to eat.
P8: [the drug] definitely changed my appetite. I noticed it almost immediately. I felt that I didn't need as much food. Surprisingly fast, like the first or second day I noticed it right away. And then maybe because I didn't need as much food I had to consciously eat less, because if I ate the

same amount I would end up feeling really really nauseous. it was not that it hadn't happened to me before during binge episodes but it almost seemed a little worse, I'm not sure.
P3: *Asked if drug suppressed appetite:* Yeah, kind of, kind of it did.

2. Components of the therapy reduced stress-induced binges

P6: Like even now I can go be like not really hungry and then I'm like oh right that food thing I should do that. Um, other days like I just can't stop eating, and this tends to be the days where I'm really stressed out or upset about something, um, but generally speaking like I'm not really a lover of food or anything like that.
P3: to be honest it's just right now what's happened is because my life uh demographic has changed right I'm working full time now, so I'm not going to school so the stress I have is just work related and it usually is just you know my meals are like okay. Morning I don't eat breakfast again have a lunch and then come home have dinner and that's it and I go to sleep and this is my regular pattern now. So I started going on my normal eating and bingeing was I think 2 months after… As soon as I got off the meds I would say some, sometime I was fine but then after that I got back to my regular eating. And I wasn't talking to like [the therapist], to anyone, I was so I was just like okay eat and then feel better again so. I think it's more, I think what I my brain was okay was summertime when the study was happening. So I wasn't in school that was another factor. So if I was in school and during the study it would have been different result that's another thing that affected I think that's a huge factor it affects my eating habits.
P4: *How she copes with stress now:* I really don't over indulge anymore like I, like I used to. Um, before the study as I said I'd stop on my way home and buy all the stuff, um, last year um, this study ended about November-ish. Well I was still on the medication but I just, and even though I wasn't reporting to you know I'm going to see [the therapist] once a week anymore I found that I was still, um, managing not to overindulge…I mean I have had a couple of episodes uh just this past summer where work was just so stressful that I went into the washroom and I cried. But other than that. Its quite stressful, yeah, but yeah I'm dealing with it. So now I just go out I go for a walk when I can, that, that helps.
P5: Sometimes like, or, or, the last few times when you know it was bingeing it kind of would be, I would get very anxious, um, probably because of, you know stressors in life, but my immediate reaction, and while I was getting anxious was like to plan out, what am I gonna buy, what am I gonna arm myself with, so it would happen almost simultaneously.

3. The drug helped enhance mindfulness and self-awareness, but not on its own

P1: I'm not sure if it [the drug] affected my appetite but like what did was I'm just writing down in the log, like the food log, so, that maybe like the two together, kind of just made me more aware and focusing on that a lot more. Also like I didn't want the embarrassment of writing something really bad down, so I would try to avoid that stuff, because I didn't want to hand it in, having them like read it next to me, so, but it wasn't, I don't think it was the pills.

-I'm glad I did like it [the treatment] really opened my eyes. And just even doing the journaling and having to bring that, like that helped a lot and kind of made me more aware of what I was doing every day.
P2: *Ceased drug two weeks post-treatment:* the appetite stuff, happened pretty quickly that, it was a motivation, a motivation in a sense, and, um, and it towards maybe towards like the end, it started plateauing, and, you know, falling off a bit.
P3: In, during the study actually I was uh, taking the the part of you know the motivation was taking over the, the impulse I had of eating eating. So it was, it was actually helping me when I actually was talking to someone and the meds on the top.
P4: At work, especially at work. So I wasn't thinking about food, um, because it decreased my hunger and I had to, I had to eat at certain times, um, I was more mindful and thoughtful when planning my meals, and um, and because of that there wasn't that drive to, to binge.
P5: I haven't had any of the like super fast paced [binges] just like you know can't control it. I've had times where I, you know, I've been having something that maybe was, was previously a binge food, and I'll eat like way too much of it and kind of stop and think I think I'm bingeing right now. Definitely became more aware of it. More um, like it's when I get to the point where I'm full it actually hurts now and before it, it didn't, it wasn't the same feeling. I can't really describe it. It's a stomach pain now where if I have just way too much, it's like I can feel my stomach is full. Yeah it's like quit it no more. And before it was just kind like I didn't even notice it. I wouldn't really start to notice it till I feel nauseous. And now it almost like something's kind of like putting on the breaks and that feels awful but it stops me because and, and it's not like just after slightly overeating it's when I'm like really overeating a lot. Um, I feel like just feel full like I notice it physically.
P7: I guess it's also because you become a little bit more self-aware and you say yeah so I, it's really hard to say, I feel there's so many different pieces to it. Because there was a part where I was like you know there was actually the drug… and then there was the fact that every week you know I would be able to go and ask [the therapist] questions and get that sort of support and encouragement. And then I was writing things down and then at home I was also making an effort to say like how can we really maximize this experience.

4. The psychiatrist addressed the need for safety and comfort in patients

P1: You're actually a human being and these people care about you and want you to be benefiting from this rather than just being like 'hey, have some pills and go off and take them.
P4: I felt more comfortable with [the psychiatrist], I felt like she really wanted me to excel in this and she really cared…Like she was doing this because she was more passionate about the project she wanted to help the people involved, and I really connected with that I really liked her, everybody on the team
- Because I now myself, and I know I'm a people pleaser, and when I'm accountable to somebody I just excel. So that you know every week she would praise me and I love that, and so I wanted to please her, so it worked really well. Um, and I found the medication to be really um, it worked well with me, yeah it was wonderful.

P3: When I enrolled, the first thing I was thinking was that I would get to talk to someone about my history and what I go through and what I feel and what I think is happening with me and just somebody that will be able to just take that in, somebody just to listen basically, cause I've never really shared any of this stuff before with anyone.
- I think the main motivation for me I would say yeah talking to [the therapist] cause she was really persistent on you know okay you should make your meals regular, she was motivating me in that sense.
P6: I think everyone was really helpful and I felt really safe which was really important to me cause again I was a little apprehensive about taking this drug… they assured me that it was fine. So once I had that reassurance I felt a lot better. The doctor and everyone that helped me throughout was really nice and, and answered all my questions.
P7: Then there was the fact that every week you know I would be able to go and ask [the therapist] questions and get that sort of support and encouragement.
P8: I think at the beginning I found her, um, and we were also, I had met her once or twice when we were still determining whether or not I would qualify, and I wasn't sure what I thought of her but by the end I really really enjoyed her. And she was very encouraging and uh, she was just as excited as I was about my success, so.
P2: I do think that having [the therapist] there as like, somebody to talk back to, to, to, I don't know. But I do, that was, I don't know if, if part of my success in the study was because I had somebody like that, that I could talk back and forth about, you know?
- like, fact of having like the [the therapist] there, that, that affect I wanted to make clear that it did, it did have an affect on the, the process I guess if you were, just looking at a medication only.

Appendix D: Summary of the RCT study

In the original RCT (Quilty et al., 2019), the inclusion criteria included females who met the DSM-5 criteria for BED, BMI ≥ 25, 18-50 years of age and were fluent in English. Participants were excluded if they were pregnant or lactating; underwent psychotherapy or behaviour treatment for eating and weight in the past month; used psychotropic or investigational medication changes during the past three months; current psychostimulant use or during the past six months to manage eating or weight; current mental disorder that required alternate treatment or impacted their ability to complete the research protocol; current or severe suicidality or homicidality; current uncontrolled medical conditions that affected weight or BED symptoms or that were contraindicated for MP; other serious illnesses or events during the past six months; history of seizures or tics in the past year; uncontrolled or clinically relevant heart conditions; and current medications that affected weight or were contraindicated for MP. Fifty-six pre-menopausal female participants between the ages of 19 and 51 years and with a BMI ≥ 25 were recruited; 51 were randomized to the study, 49 began treatment (n=22 in MP group, n=27 in CBT group) and 36 were study completers.

Participants were randomly assigned to one of two treatment conditions (CBT or MP). Patients in the CBT group received 12, 50-minute sessions of CBT using a treatment manual adapted from Fariburn, Marcus & Wilson (1993). The sessions were once a week for 12 weeks, which was divided into three phases: Phase 1 aimed to eliminate binge episodes and to introduce regular eating patterns; Phase 2 focused on reducing overall food consumption and remodelling of eating-related cognitions; and Phase 3 worked on preventing relapse. All CBT therapists were licenced psychologists or predoctoral residents trained by the "gatekeeper" therapist, who was an independent scientist at CAMH. Patients in the MP group had weekly appointments with the

study psychiatrist for the first four weeks, and then biweekly appointments for the last eight weeks, all of which lasted 20-30 minutes. They consumed an osmotic controlled-release oral delivery system methylphenidate (OROS-MP). Dosage started at 18mg/day and increased to a maximum of 72mg/day at week 4, in regular, 18mg increments per week, depending on the patient's tolerance and side effects. The MP used in the study delivered the active compound MP, rather than d-amphetamine (Ermer et al., 2010). The benefits were expected to persist for approximately 12.5 h (Armstrong et al., 2012), since it was an extended-release version of MP.

In addition, the psychiatrists provided general support and encouraged ongoing compliance to medication treatment using "Med-Plus" compliance enhancement strategies, which included: (1) research staff contacting patients for a brief check-in by phone before each appointment, during which they asked the patients how they were doing, encouraged them to come to the next appointment and to take their medication correctly; and (2) offering compliance therapy. The primary outcome measure was the frequency of objective binge episodes (OBE) per week. Secondary outcomes included binge eating severity (BES), eating disorder psychopathology based on the eating disorder examination (EDE), and BMI. Diagnostic assessments at the outset of treatment were not done blindly. However, outcomes assessments were conducted blindly, including the classification of objective binge episodes on the daily diaries.

The results indicated that both groups had comparable clinical outcomes with respect to decreasing objective binge episodes, binge eating severity, and eating disorder psychopathology (Quilty et al., 2019). Participants in both groups experienced fewer OBE's ($t(158)=7.53$) post-treatment, compared to baseline. There was no main effect of treatment condition or time x treatment condition interaction. The number of participants who did not experience a binge in the

last four weeks of treatment was not significantly different across treatment conditions (objective binge episode remission: 47% for MP and 60% for CBT, $\chi^2 = 0.62$, $p = 0.43$). There was a significant difference in BMI at Week 12 compared to Week 0 for the MP group, $t(49) = 5.18$, $p < 0.001$, but not for the CBT group $t(50) = 1.54$, $p = 0.13$. Furthermore, at Week 12, total BMI was significantly higher in the CBT group than the MP group, $t(47) = 2.73$, $p = 0.01$. The percent weight loss in the MP group was 4.4% compared to 0.0% in the CBT group, $t(47) = 4.14$, $p < 0.01$. Lastly, there was no significant change in the primary and secondary outcomes from week 12 to week 24 and no difference across treatment groups at week 24.

Appendix E: Summary table of patient demographics

Participant	1	2	3	4	5	6	7	8
Group	MP	MP	MP	MP	MP	MP	MP	MP
Age	23	29	19	42	28	31	38	32
Race	W	W	O	B	W	W	O	O
BMI								
0 weeks	25.2	47.1	35.3	37.7	39.2	37.6	39.0	39.3
6 weeks	24.1	45.2	34.4	35.8	37.4	36.6	37.2	37.7
12 weeks	23.6	43.9	32.8	35.3	36.5	37.6	37.8	37.0
24 weeks	23.5	43.0	36.5	34.9	-	39.5	37.2	38.1
OBE								
0 weeks	1	2	3	5	3	1	0	1
6 weeks	0	0	0	0	0	0	1	0
12 weeks	0	0	1	0	0	0	0	0
24 weeks	0	1	5	0	-	0	0	0
BES								
0 weeks	26	36	29	30	33	31	36	37
6 weeks	27	9	28	0	15	6	20	5
12 weeks	24	15	28	0	14	6	30	26
24 weeks	19	22	40	5	-	10	19	21
EDE-Global								
0 weeks	4.11	4.05	3.63	3.86	3.57	3.09	2.85	3.69
6 weeks	3.62	1.99	3.96	1.63	3.04	2.27	1.89	1.91
12 weeks	3.78	2.16	3.74	0.78	2.36	1.84	2.34	1.47
24 weeks	2.28	1.59	4.51	0.89	-	0.92	1.61	2.48
EDE-R								
0 weeks	2.40	3.60	2.20	3.80	1.00	2.00	2.20	2.40
6 weeks	2.80	0.20	4.00	2.80	2.00	2.40	1.00	0.00
12 weeks	3.60	1.20	4.20	1.20	2.60	3.60	0.20	0.00
24 weeks	2.80	0.00	4.20	1.60	-	0.00	0.00	0.00
EDE-E								
0 weeks	3.60	3.00	3.40	2.60	1.60	1.20	3.00	2.60
6 weeks	2.80	1.00	2.80	0.00	0.60	0.00	0.80	0.60
12 weeks	2.60	0.60	0.40	0.00	0.20	0.20	1.20	1.20
24 weeks	0.20	0.40	2.60	0.00	-	0.20	0.40	2.00
EDE-W								
0 weeks	5.20	4.60	4.40	4.80	5.80	4.40	3.20	5.00
6 weeks	4.00	3.40	4.40	1.20	4.80	2.80	3.00	2.80
12 weeks	4.40	3.60	4.60	0.80	3.00	1.80	4.20	1.80
24 weeks	3.00	2.60	5.60	1.20	-	1.60	2.80	3.40
EDE-S								
0 weeks	5.25	5.00	4.50	4.25	5.88	4.75	3.00	4.75
6 weeks	4.88	3.38	4.63	2.50	4.75	3.88	2.75	4.25

12 weeks	4.50	3.25	5.75	1.13	3.63	1.75	3.75	2.88
24 weeks	3.13	3.38	5.63	0.75	-	1.88	3.25	4.50

Note: MP=methylphenidate, W=white, B=black, O=other, BMI=body mass index, OBE= objective binge episodes, BES=binge eating scale, EDE=eating disorder examination, EDE-R=eating disorder examination restraint, EDE-E=eating disorder examination eating, EDE-W=eating disorder examination weight, EDE-S=eating disorder examination shape

Participant	9	10	11	12	13	14	15
Group	CBT	CBT	CBT	CBT	CBT	CBT	CBT
Age	35	33	39	27	51	41	48
Race	W	W	W	O	W	W	W
BMI							
0 weeks	34.5	48.9	27.8	43.3	42.1	36.8	47.8
6 weeks	34.8	48.2	27.6	43.1	41.8	36.2	49.3
12 weeks	35.4	49.6	28.0	42.7	40.4	36.2	49.6
24 weeks	35.7	51.7	-	44.1	42.6	37.8	51.5
OBE							
0 weeks	2	5	1	6	0	3	2
6 weeks	0	2	0	2	0	0	1
12 weeks	0	0	0	0	0	1	0
24 weeks	0	0	-	1	0	0	1
BES							
0 weeks	25	23	37	35	34	26	40
6 weeks	21	22	31	18	26	14	24
12 weeks	21	20	29	14	12	12	18
24 weeks	14	22	-	21	11	22	23
EDE-Global							
0 weeks	3.68	2.79	4.57	2.74	5.09	1.63	4.61
6 weeks	3.49	3.19	4.59	3.84	1.81	0.80	3.94
12 weeks	3.11	2.56	4.49	2.09	1.50	0.71	2.49
24 weeks	2.21	2.36	-	3.22	0.52	1.49	2.69
EDE-R							
0 weeks	2.80	3.20	3.60	0.80	3.60	0.00	2.40
6 weeks	3.80	2.20	3.60	3.80	1.40	0.00	3.60
12 weeks	1.80	2.60	3.60	1.80	1.40	0.40	2.20
24 weeks	1.60	0.40	-	3.20	0.00	1.00	2.60
EDE-E							
0 weeks	1.80	2.20	3.40	1.20	6.00	1.60	5.80
6 weeks	1.60	2.20	5.20	3.00	2.00	0.60	1.60
12 weeks	2.20	1.00	2.60	0.60	1.60	0.40	1.40
24 weeks	0.60	2.40	-	1.60	0.40	1.60	0.80
EDE-W							
0 weeks	5.00	3.40	5.40	4.20	5.40	2.80	5.00
6 weeks	3.80	4.60	4.80	4.20	2.60	1.60	4.80
12 weeks	3.80	3.40	6.00	3.20	1.00	1.40	2.60

24 weeks	3.40	3.40	-	4.20	0.80	1.60	3.00
EDE-S							
0 weeks	5.13	2.38	5.88	4.75	5.38	2.13	5.25
6 weeks	4.75	3.75	4.75	4.38	1.25	1.00	5.75
12 weeks	4.63	3.25	5.75	2.75	2.00	0.63	3.75
24 weeks	3.25	3.25	-	3.88	0.88	1.75	4.38

Note: CBT=cognitive behavioural therapy, W=white, B=black, O=other, BMI=body mass index, OBE= objective binge episodes, BES=binge eating scale, EDE=eating disorder examination, EDE-R=eating disorder examination restraint, EDE-E=eating disorder examination eating, EDE-W=eating disorder examination weight, EDE-S=eating disorder examination shape