

A RANDOMIZED CONTROLLED TRIAL OF MOTIVATIONAL INTERVIEWING  
FOR BINGE EATING

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## ABSTRACT

**Rationale:** Motivational Interviewing (MI) is a collaborative therapy that focuses on strengthening a person's internal motivation to change (Miller & Rollnick, 2002, 2012). Research suggests that MI may be helpful for treating binge eating; however, findings are limited and little is known about how MI for binge eating compares to active therapy controls. As such, the present study aimed to build on the current literature by comparing the efficacy of MI as a prelude to self-help treatment for binge eating to psychoeducation as a prelude to self-help treatment for binge eating. **Method:** Participants with full or subthreshold DSM-IV Binge Eating Disorder (BED) or nonpurging Bulimia Nervosa (BN-NP) were randomly assigned to receive either 60 minutes of MI followed by an unguided cognitive behavioural self-help manual ( $n = 24$ ) or 60 minutes of psychoeducation followed by an unguided cognitive behavioural self-help manual ( $n = 21$ ). Questionnaires were completed immediately before and after the treatment session, as well as at 1 month and 4 months post-session. Changes in readiness to change, confidence in ability to control binge eating, binge eating frequency and severity, eating disorder behaviours and attitudes, self-esteem, and depression were examined. **Results:** Findings revealed that MI significantly increased readiness to change and confidence in ability to control binge eating, whereas psychoeducation did not. Participants in the MI condition reported a significantly stronger therapeutic alliance than did participants in the psychoeducation condition. No group differences were found when changes in eating disorder and associated symptoms were examined; both groups showed significant overall improvements in eating disorder symptoms, binge eating frequency and severity,

and self-esteem. **Conclusions:** MI offers benefits for increasing motivation, self-efficacy, and therapeutic alliance in treating individuals with clinically significant binge eating problems. However, it is not a uniquely effective treatment approach for reducing binge eating and other eating disorder symptoms.

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## LIST OF ABBREVIATIONS

AN:	Anorexia Nervosa
ANCOVA:	Analysis of Covariance
ANOVA:	Analysis of Variance
BDI-II:	Beck Depression Inventory - II
BMI:	Body Mass Index (kg/m <sup>2</sup> )
BED:	Binge Eating Disorder
BES:	Binge Eating Scale
BN:	Bulimia Nervosa
BN-NP:	Bulimia Nervosa, Nonpurging Subtype
BN-P:	Bulimia Nervosa, Purging Subtype
CBT:	Cognitive Behavioural Therapy
DBT:	Dialectical Behavioural Therapy
ED:	Eating Disorder
EDE-Q:	Eating Disorder Examination – Questionnaire Version
EDNOS:	Eating Disorder Not Otherwise Specified
IPT:	Interpersonal Psychotherapy
MET:	Motivational Enhancement Therapy (an approach based on MI techniques that also includes feedback based on other assessment techniques)
MI:	Motivational Interviewing
RCT:	Randomized Controlled Trial
RSES:	Rosenberg Self-Esteem Scale
SCID-I:	Structured Clinical Interview for DSM-IV Axis I Disorders
URICA:	University of Rhode Island Stages of Change Assessment Scale
WAI-S:	Working Alliance Inventory – Short Form
WEL:	Weight Efficacy Lifestyle Questionnaire

## **Introduction**

Motivational Interviewing (MI) is a type of collaborative psychotherapy that focuses on resolving ambivalence and enhancing internal motivation to change through the use of empathy and directive techniques (Miller & Rollnick, 2002, 2012). Although MI was originally developed for use with people with substance use disorders, it has recently been applied to many other health-related and psychological disorders as a means of enhancing treatment adherence and efficacy, as well as increasing motivation and readiness to change (Arkowitz & Westra, 2009). Preliminary findings suggest that MI may be particularly helpful for treating eating disorders (EDs), as individuals with an ED tend to be difficult to treat because of their ambivalence about treatment and low motivation to change; however, findings thus far are limited and further research is warranted (Dray & Wade, 2012; Knowles, Anohkina, & Serpell, 2013; MacDonald, Hibbs, Corfield, & Treasure, 2012).

The present study aimed to add to the literature by examining MI as treatment for individuals with an ED, specifically for individuals who binge eat. Prior to discussing the present study, the clinical features of binge eating, treatment for individuals with binge eating problems, and the core principles of MI will be described followed by a summary of the research examining MI for EDs with a focus on MI as treatment for binge eating, in particular for individuals with Binge Eating Disorder (BED).

## **Binge Eating and Eating Disorders**

Before exploring the role that MI may play in the treatment of binge eating, it is important to understand the clinical features of binge eating and how binge eating fits within the context of EDs. Binge eating is defined as eating, in a discrete period of time, an amount of food that is larger than what most people would eat in a similar period of time under similar circumstances along with a subjective sense of lack of control over eating during the episode (American Psychiatric Association, 1994). There are two ED diagnoses in which recurrent binge eating is a key feature: Bulimia Nervosa (BN) and Binge Eating Disorder (BED).

BN is characterized by regular episodes of binge eating and the use of subsequent inappropriate compensatory behaviours intended to prevent weight gain, including self-induced vomiting, misuse of laxatives, fasting, and excessive exercise. In order to receive a diagnosis of BN, the individual's sense of self-worth must also be overly influenced by body weight and shape and he or she may not additionally have a diagnosis of Anorexia Nervosa (AN; American Psychiatric Association, 1994). According to the *Diagnostic and Statistical Manual of Mental Disorders, 4th edition* (DSM-IV; American Psychiatric Association, 1994), in order to receive a diagnosis of BN, binge eating must occur on average at least twice per week for a minimum of 3 months. However, recent research indicates there are few meaningful clinical differences between individuals who binge eat once versus twice per week (Wilfley, Bishop, Wilson, & Agras, 2007; Wilson & Sysko, 2009). As such, in the now current *Diagnostic and Statistical Manual of Mental Disorders, 5th edition* (DSM-5; American Psychiatric Association, 2013) the

binge eating frequency criterion has been reduced to once per week to account for these findings.

In the DSM-IV, BN is divided into two subtypes: Bulimia Nervosa Purging Subtype (BN-P) and Bulimia Nervosa Nonpurging Subtype (BN-NP). Both subtypes involve recurrent episodes of binge eating and subsequent use of inappropriate compensatory behaviours. The difference between the two subtypes is that individuals with a diagnosis of BN-NP rely solely on nonpurging compensatory behaviours (i.e., excessive exercise and/or fasting) and do not engage in any purging compensatory behaviours (i.e., self-induced vomiting, laxative misuse, diuretics, and/or enemas). Individuals with a diagnosis of BN-P, on the other hand, may use purging compensatory behaviours as well as nonpurging compensatory behaviours. The most common compensatory behaviour is self-induced vomiting, with over 80% of individuals with BN who present for treatment reporting the use of this behaviour (American Psychiatric Association, 1994).

Overall, the prevalence rate of BN has been estimated to be approximately 1% to 4% (American Psychiatric Association, 1994). In clinical and community samples the majority of individuals with BN are female (American Psychiatric Association, 1994). BN is further associated with a number of negative symptoms and comorbid disorders, including depression, low self-esteem, and substance abuse or dependence (American Psychiatric Association, 1994).

BED is characterized by regular binge eating episodes without the regular use of inappropriate compensatory behaviours. The diagnostic criteria for BED also include

marked distress over binge eating and three or more of the following indicators of a sense of loss of control over eating during binges: “eating much more rapidly than normal, eating until feeling uncomfortably full, eating large amounts of food when not feeling physically hungry, eating alone because of feeling embarrassed by how much one is eating, and feeling disgusted with oneself, depressed, or very guilty afterwards” (American Psychiatric Association, 1994, p. 787). Unlike BN, BED appears to be fairly equally prevalent among both men and women (Hudson, Hiripi, Pope, & Kessler, 2007) and is not uncommon among ethnic minorities (Wilson, Grilo, & Vitousek, 2007). The prevalence rate of BED is estimated to be approximately 2% to 5% in the general population (Dingemans, Bruna, & van Furth, 2002; Hudson et al., 2007), but is higher among obese individuals, with approximately 50% of individuals seeking treatment for BED considered to be obese (Dingemans et al., 2002). In addition, prevalence estimates of BED are much higher among individuals seeking treatment for weight loss, as compared to those in the general population (Stice, 1999). Individuals with BED have been found to have higher lifetime prevalence rates of panic disorder, borderline personality disorder, and major depressive disorder in comparison to individuals who do not meet diagnostic criteria for BED (Dingemans et al., 2002). BED is also associated with low self-esteem and diminished quality of life (Wilfley et al., 2000).

BED was included in the DSM-IV as a provisional ED diagnosis within the diagnostic category of Eating Disorder Not Otherwise Specified (EDNOS). However, findings from several studies suggested that BED can be reliably differentiated from other EDs and thus warranted its own unique diagnosis (e.g., Wilfley, et al., 2007;

Striegel-Moore & Franko, 2008; Wonderlich et al., 2009). Consequently, BED was included as an official ED diagnosis in the DSM-5 (American Psychiatric Association, 2013). Proposed binge eating frequency criteria was also changed from two days per week for a minimum period of 6 months to once per week for a minimum period of 3 months, as research findings revealed minimal evidence for the validity or utility of the DSM-IV binge eating frequency criterion (Wilson & Sysko, 2009).

Research examining differences between BN and BED suggests that these disorders exist on a continuum of severity, with BN-P as the most severe, BN-NP as moderately severe, and BED as least severe in terms of ED symptomology (Hay & Fairburn, 1998; Núñez-Navarro et al., 2011). Comparisons of individuals with BED and individuals with BN-P have found that individuals with BED report significantly less psychological distress, better social adjustment, and less comorbid psychopathology than do individuals with BN-P (Hay & Fairburn, 1998). When individuals with BED and BN-NP have been compared, few clinical differences have been noted. Individuals with BN-NP and BED have been found to be comparable in terms of social adjustment, general psychopathology, and self-esteem (Hay & Fairburn, 1998), as well as age of disorder onset, history of weight cycling, functional impairment due to weight and eating problems, comorbid substance abuse and depression, and weight and shape concerns (Ramacciotti et al., 2005). Differences between the two groups include a more extensive family and personal history of obesity, higher BMI, and slightly older age in individuals with BED versus individuals with BN-NP (Ramacciotti et al., 2005; Santonastaso,

Ferrara, & Favaro, 1999; Striegel-Moore et al., 2001; Núñez-Navarro et al., 2011), as well as less temporal stability in BED versus BN-NP (Hay & Fairburn, 1998).

In sum, the EDs are a collection of DSM diagnoses and their subtypes that can contain some overlapping symptoms of disordered eating, such as binge eating. BED is a relatively new diagnosis and shares several clinical features with BN-NP. The core feature of both disorders is recurrent and frequent episodes of uncontrollable eating of large amounts of food (i.e., binge eating). Binge eating has many adverse effects on the individual, both physical and emotional.

### **Psychological Interventions for Binge Eating**

According to the National Institute for Clinical Excellence (NICE; 2004) guidelines, cognitive behavioural therapy (CBT) is currently considered the most effective established treatment approach for both BN and BED. CBT for either BN or BED generally consists of psychoeducation about the nature and causes of binge eating, and the introduction and implementation of cognitive and behavioural strategies designed to reduce binge eating, compensatory behaviours (if they occur), and associated symptoms. Manualized CBT has been found to result in abstinence from binge eating in approximately 50% of all patients with BED, along with improvements in other ED behaviours, attitudes, and associated symptoms (e.g., depression), with the exception of weight loss (Wilson, 2011). Controlled outcome studies examining CBT for BN have found that CBT leads to significant reductions in frequency of binge eating episodes (75% reductions across studies) and compensatory behaviours (78% reductions across studies), as well as increases in self-esteem among individuals with BN (Anderson &

Maloney, 2001). Therapeutic gains made as a result of CBT have also been found to be relatively long lasting, at least through 12 months post-treatment (Wilfley et al., 2002). As an alternative to CBT, interpersonal psychotherapy (IPT) has been found to be an effective therapeutic approach for treating binge eating. IPT for binge eating generally addresses social and interpersonal conflicts and deficits, with a focus on the individual's current relationships. IPT for binge eating has demonstrated short and long-term outcomes comparable to those from CBT (Wilfley et al., 2002), although IPT for BN may take somewhat longer to obtain outcomes similar to CBT for BN (NICE, 2004). There is also emerging evidence to suggest that modified dialectical behavioural therapy (DBT), which targets negative emotions and focuses on increasing emotion regulation skills, holds promise as a treatment for both BED (Telch, Agras, & Linehan, 2001; Safer, Robinson, & Jo, 2010) and BN (Safer, Telch, & Agras, 2001).

Although these treatment approaches may be reasonably effective for treating binge eating, they may also be costly, time consuming, unavailable, or more intensive than necessary for many individuals (Wilson, Vitousek, & Loeb, 2000). As such, briefer, more independent interventions may be helpful for many individuals with binge eating problems as a first attempt at treatment (Wilson et al., 2000). Indeed, a stepped care approach to treatment, in which treatment approaches are attempted sequentially, has been recommended (NICE, 2004; Wilson et al., 2000). In a stepped care approach to treatment, attempts at treatment begin with the least costly, least intensive treatment, such as self-help or psychoeducation, and then move on to more intensive treatments for individuals who do not respond positively to less intensive approaches.

Self-help for binge eating has been examined in various formats, including unguided (pure) self-help, partially guided self-help, and fully guided self-help, with CBT-based self-help manuals most commonly studied (Sysko & Walsh, 2008). Although findings suggest that guided self-help may be the most effective form of delivering self-help treatment for individuals with binge eating problems, there is evidence that even unguided self-help methods may be helpful for reducing binge eating (Grilo, 2007). Furthermore, unguided self-help for binge eating is inexpensive and easily disseminated. In a randomized controlled trial (RCT) examining the efficacy of self-help for women with BED performed by Carter and Fairburn (1998), participants were randomly assigned to participate in one of three treatment conditions: guided self-help using Fairburn's (1995) *Overcoming Binge Eating* manual, pure self-help using Fairburn's (1995) manual, or a waiting-list control condition. Findings revealed that the two self-help interventions led to significant reductions in binge eating. The abstinence rates for pure self-help and guided self-help were 43% and 50% respectively. Peterson and colleagues (1998) also compared different methods of self-help for BED. In their study, 61 women with BED were randomly assigned to one of four groups: a waiting list control condition, a therapist-led group CBT program, a guided self-help group CBT program, or a pure self-help group CBT program. At study completion, all three treatments resulted in significant improvements in comparison to the waiting list control and did not differ from one another. At 12-month follow-up, 25% of participants in the therapist-led group CBT condition, 25% of participants in the pure self-help condition, and 54% of participants in the guided self-help condition no longer met criteria for BED. Similarly, Loeb, Wilson,

Gilbert, and Labouvie (2000) compared the use of guided and unguided self-help manuals for binge eating in a RCT with female binge eaters, 83% of whom met the diagnostic criteria for BED. Over the 3 months of the study, both self-help groups experienced significant reductions in binge eating frequency, shape and weight concerns, other ED symptoms, and general psychopathology. Binge eating remission rates were 30% and 50% for pure self-help and guided self-help respectively. In another clinical trial, Peterson, Mitchell, Crow, Crosby, and Wonderlich (2009) randomly assigned 259 individuals with BED to participate in one of four conditions: a therapist-led group treatment program, a therapist-assisted group treatment program, pure self-help, or a waiting list condition. At the end of treatment, binge eating abstinence rates of the therapist-led (51.7%) and the therapist-assisted (33.3%) conditions were higher than the abstinence rates in the pure self-help (17.9%) and waiting list (10.1%) conditions; however, no between-group differences in abstinence rates were observed at follow-up. Findings of studies examining the effectiveness of self-help for BN have also demonstrated that self-help is effective for reducing binge eating in individuals with BN (Sysko & Walsh, 2007). For example, in a RCT performed by Carter and colleagues (2003), 85 women with BN were randomly assigned to receive one of two self-help manuals delivered in an unguided format or to a waiting list control condition. One of the self-help manuals was a CBT manual that specifically targeted BN symptoms and the other self-help manual focused on assertiveness (i.e., non-specific self-help). At post-treatment testing 8 weeks later, participants in both self-help groups displayed a significant reduction in bingeing and purging behaviours, whereas participants in the

waiting list control condition did not show any improvements in these areas. Overall, findings of studies examining self-help as treatment for binge eating indicate that self-help is associated with significant improvements in comparison to a waiting list control and is a valuable, inexpensive, first step in treating binge eating in individuals with BED or BN.

Psychoeducation is another brief and effective means of treating individuals with binge eating problems. It is less costly than individual therapy and can be led by non-specialists who have received appropriate training (Wilson et al., 2000). It can also be delivered in a group or individual format. In one RCT examining the effectiveness of psychoeducation for treating individuals with BN, Davis, Olmsted, and Rocket (1990) compared five 90-minute group psychoeducation sessions to 19 sessions of individual CBT to a waiting list control. Findings revealed that psychoeducation led to significantly greater improvements than the waiting-list control, but was somewhat less effective than individual CBT overall (Davis et al., 1990). In another clinical trial evaluating psychoeducation for binge eating, Peterson and colleagues (1998) compared three different formats of psychoeducation followed by a group discussion to a waiting list control for individuals with BED. Study results showed that all three psychoeducational treatments were superior to the waiting list control condition and did not differ from one another in terms of outcome. Binge eating abstinence rates for the three psychoeducation groups at the end of the study ranged from 69% to 87% (Peterson et al., 1998). Findings of these studies thus indicate that psychoeducation has promise as a less intensive treatment approach for individuals with binge eating problems.

Despite these encouraging findings, a significant number of individuals who participate in any type of treatment for binge eating drop out of treatment early or continue to binge eat (Wilfley et al., 2002). Results of a recent meta-analysis found that the mean treatment drop out rate was 23.9% for individuals receiving any type of psychotherapeutic treatment for EDs in contrast to the significantly lower treatment drop out rates of 17.4% for individuals receiving treatment for depression and 16.2% for individuals receiving treatment for anxiety disorders (Swift & Greenberg, 2012). Other reviews examining treatment drop out have yielded even higher drop out rates of 29% to 73% for individuals receiving outpatient ED treatment (Fassino, Pierò, Tomba, & Abbate-Daga, 2009). When drop out rates for individuals with BED only are examined, treatment drop out rate has been found to be approximately 20% (Wonderlich, de Zwaan, Mitchell, Peterson, & Crow, 2003). Given the high treatment drop out rates among individuals with EDs, as well as the consequences of not completing treatment (e.g., worsening of symptoms, disinterest in future attempts at treatment), it is important to identify and target factors that are associated with treatment drop out when working with clients with EDs.

One such factor that may be related to treatment drop out is motivation and readiness for change (Geller & Dunn, 2011). Specifically, it has been suggested that if the intervention approach and client readiness do not match, damage will be done to the therapeutic alliance, which will result in treatment ineffectiveness or early drop out (Miller & Rollnick, 2002). As Kaplan, Olmsted, Carter, and Woodside (2001) point out, if a patient is unmotivated to change his or her eating behaviour, a treatment approach

focused on active behavioural change is unsuitable and may in fact inhibit the client's own intrinsic desire for change. Consequently, an exploration of alternative treatment approaches or adjuncts to treatment that will enhance treatment adherence and motivation to change is required.

### **Motivational Interviewing**

MI is a collaborative, client-centered treatment approach that aims to reduce ambivalence about behaviour change and increase an individual's intrinsic motivation to change (Miller & Rollnick, 2002, 2012). MI was originally developed by Dr. William Miller (1983) within the field of addictions to help increase motivation to recover from substance abuse, which has high rates of relapse as compared to other mental health issues. Dr. Miller and his colleague Dr. Steven Rollnick further developed the approach and in 2002 and 2012 updated versions of their MI treatment manual were published. Since its inception, MI has been used for a variety of behaviours, ranging from health-related behaviours to psychological disorders, and has been used for a wide range of demographic groups (Miller & Rollnick, 2002).

The increase in research in MI coincided with the introduction of the Transtheoretical Model (TTM) of Change (Prochaska, DiClemente, & Norcross, 1992), which provides a theoretical framework for understanding how clients present for treatment at varying levels of readiness for change. In the TTM, individuals are believed to cycle through five stages of change, although not necessarily in a linear order. The five stages of change are precontemplation, contemplation, preparation, action, and maintenance. In the precontemplation stage, individuals do not see their behaviour as a

problem and do not intend to change. In the contemplation stage, individuals are aware that a problem exists and are seriously considering taking steps towards to change, but have not yet taken action. In the preparation stage, individuals are intending to take action in the near future. In the action stage, individuals are working to modify their behaviour or environment to conquer their problem. In the maintenance stage, individuals are working to maintain established gains and prevent relapse. Although both MI and the TTM regard ambivalence as common and normal, MI is not based on the TTM (Miller & Rollnick, 2009). The TTM is a framework for understanding different stages of change, whereas MI is a therapeutic approach designed to enhance motivation by resolving ambivalence in the direction of change (Miller & Rollnick, 2009).

The goal of MI is to increase readiness for change by focusing on the client's personal goals and values rather than by coercing clients to change. In MI, the therapist works with the client's ambivalence by helping the client to examine the pros and cons of behaviour change versus staying the same, normalizing feelings of ambivalence, and helping the client understand how his or her behaviour fits with their broader goals and values. As an attempt is made to develop discrepancy between values and behaviours with the goal of eliciting motivation to change, Miller (1983) has suggested that MI is connected to Cognitive Dissonance Theory (Festinger, 1954). Cognitive Dissonance Theory posits that feelings of discomfort or dissonance are felt when an individual's attitudes, beliefs, and behaviours conflict. In order to reduce this feeling of discomfort, the individual is then motivated to alter his or her behaviours or beliefs so that they are more closely aligned, thus promoting change. MI has also been linked by Miller (1983)

to Self-Perception Theory (Bem, 1967). Self-Perception Theory proposes that individuals develop their beliefs and attitudes by observing their own behaviour and inferring what attitudes may have caused this behaviour to occur. In MI, clients argue for change and provide rationale for changing. In line with Self-Perception theory, when clients hear themselves argue for change, they then seek to merge their attitudes and behaviour in the direction of change.

MI emphasizes empathy and collaboration but it differs from client- or person-centered therapy in that it is goal-oriented and utilizes directive techniques, such as eliciting and listening for change talk. Fittingly, MI has been described as “client-centered therapy with a twist” (Arkowitz & Miller, 2008, p. 4). MI can be thought of as made up of two components, the first being the specific counselling style utilized in MI, also known as the MI “spirit” (i.e., partnership, acceptance, compassion, and evocation), which closely aligns with Carl Rogers’ (1959) core conditions for promoting positive change, and the other being the goal-oriented, technical components of MI (Miller & Rollnick, 2012).

In MI, it is acknowledged that many clients who seek therapy are ambivalent about change. Accordingly, ambivalence about change is viewed as normal and behaviours such as not adhering to treatment or not following through with commitment to change are seen as signs of ambivalence. In addition, MI views behaviour change as something that can occur naturally but is strongly influenced by interpersonal factors. As a reflection of these assumptions, MI works with four basic guiding principles for therapists practicing MI: (1) express empathy by approaching the client and the interview

with a non-judgmental attitude, (2) help the client to understand the discrepancy between their personal values and current behaviours; (3) “roll with resistance” by discussing resistant behaviour with an attitude of curiosity and respecting both sides of the client’s ambivalence, and (4) support the client’s sense of self-efficacy or confidence in his or her ability to change (Miller & Rollnick, 2002). The four key processes involved in effective MI are engaging the client in a collaborative therapeutic relationship, focusing the conversation on the problem behaviour and change, evoking the client’s own personal motivations for change, and planning for change if and when the client is ready (Miller & Rollnick, 2012). Therapist skills that are utilized in MI include the use of open-ended questions, affirming the client’s strengths and skills, summarizing information the client has provided, reflective listening, and evoking and reinforcing change talk (Miller & Rollnick, 2012).

MI is typically delivered as a short-term intervention (Hettinga et al., 2005) and may be used on its own as a stand-alone treatment, as a prelude or adjunct to other treatment approaches, or may be combined with other therapies (Arkowitz & Miller, 2008). Although MI may be used in a variety of ways, it is most commonly delivered as a prelude to other treatments or integrated into assessment (Arkowitz & Westra, 2009; Westra, Aviram, & Doell, 2011). Indeed, as Westra and colleagues (2011) argue, MI may appeal to researchers and clinicians not only because it addresses common problems that occur within psychotherapy (i.e., ambivalence and lack of engagement in treatment), but also because it can complement rather than replace existing treatments.

## **Efficacy of Motivational Interviewing**

MI has received a great deal of attention in the literature in the past 10 years and several meta-analyses have now examined the efficacy of MI. The results suggest that MI is helpful for reducing symptoms and increasing readiness to change for a wide variety of populations and across a range of demographic groups (Burke, Arkowitz, & Menchola, 2003; Hettema, Steele, & Miller, 2005; Lundahl, Kunz, Brownell, Tollefson, & Burke, 2010; Rubak, Sandboek, Lauritzen, & Christensen, 2005). Research suggests that MI is most effective when it is implemented as a prelude to other established treatments (Burke et al., 2003; Hettema et al., 2005; Lundahl & Burke, 2009; Lundahl et al., 2010; Westra et al., 2011). This may be because the increases in intrinsic motivation that result from MI maximize the impact of other traditional therapies.

In one of the first meta-analyses examining the efficacy of MI, Burke and colleagues (2003) found that the most widely used approach to delivering MI was an adaptation of MI, called motivational enhancement therapy (MET). In MET, the client completes a variety of assessment measures during the course of therapy and is given feedback about his or her results, in addition to the other, standard MI strategies. The researchers further noted that at time of their analysis no studies had examined the efficacy of MI in its pure form (i.e., MI without the addition of any action-oriented strategies or feedback); all studies were conducted using adaptations of MI. Findings of the meta-analysis revealed a medium effect size for adaptations of MI as treatment for drug addiction and for the promotion of healthy eating behaviours and a small to medium effect size in studies on alcohol abuse. The researchers concluded that the MI

interventions were equivalently effective in comparison to other established treatments and were more effective than no treatment or placebo treatment for problems involving substance use or diet and exercise. In addition, the authors noted that the effects of MI appear to be long lasting and do not decrease substantially over time (Burke et al., 2003).

Results of subsequent meta-analyses have revealed similar findings (e.g., Hettema et al., 2005; Lundahl et al., 2010; Rubak et al., 2005). Hettema and colleagues (2005) found that the effects of MI persist over time only when MI is used as a prelude to or in conjunction with other treatment approaches; when used as stand-alone treatment, the results of MI tend to weaken over time. Studies examining the efficacy of MI have yielded moderate effect sizes when MI was compared to another active treatment approach and large effect sizes when it was compared to no treatment or to a waiting list control condition (Hettema et al., 2005, Lundahl et al., 2010).

Overall, meta-analyses conducted to date suggest that MI is substantially more effective than no treatment at all and is at least as effective as other treatment approaches, even those that are designed to take place over a greater number of sessions. In addition, the research suggests that MI is best utilized as an adjunct or prelude to other types of established treatment. It appears that MI does not have to be delivered in its pure form to be effective. Modified versions of MI have been shown to be effective for decreasing substance abuse and increasing healthy eating habits.

### **Motivational Interviewing and Eating Disorders**

Although MI was originally developed for substance abuse and dependence, in recent years there has been a growing interest in using MI for treating various other

psychological disorders (Arkowitz & Miller, 2008). One population with which MI has been of particular interest is within the field of EDs. Interest in the use of MI for treating clients with EDs has grown because these individuals tend to be difficult to treat in large part because of their ambivalence about treatment and low motivation to change (Casasnovas et al., 2007; Geller & Dunn, 2011; Vitousek, Watson, & Wilson, 1998). Although MI shows promise as a useful treatment approach for working with individuals with an ED, studies directly examining the efficacy of MI for EDs are limited and study designs and procedures have varied widely, thus making comparative analysis challenging (Dray & Wade, 2012; Knowles et al., 2013; MacDonald et al., 2012).

Thus far, 11 empirical studies have been published examining the use of MI or adaptations of MI for the treatment of an ED (Cassin, von Ranson, Heng, Brar, & Wojitowitz, 2008; Dean, Touyz, Rieger, & Thornton, 2008; Dunn, Neighbours, & Larimer, 2006; Feld, Woodside, Kaplan, Olmsted, & Carter, 2001; Geller, Brown, & Srikameswaran, 2011; George, Thornton, Touyz, Waller, & Beumont, 2004; Gowers & Smyth, 2004; Katzman et al., 2010; Treasure et al., 1999; Wade, Frayne, Edwards, Robertson, & Gilchrest, 2009; Willinge, Touyz, & Thornton, 2010). Study designs have included different variations on MI, including MET, MI as a brief stand-alone intervention, a motivational interview based on MI principles, and MI or MET as an adjunct to either self-help or individual or group CBT. As the previous studies of interest were all based on the principles of MI, in this paper they will be referred to simply as “MI”.

Of these published studies, two studies focused on individuals with AN only (Gowers & Smyth, 2004; Wade et al., 2009), one study looked at individuals with BN only (Treasure et al., 1999), and one study examined individuals with BED only (Cassin et al., 2008). The remainder of the studies used samples with mixed ED diagnoses (Dean et al., 2008; Dunn et al., 2006; Feld et al., 2001; Geller et al., 2011; George et al., 2004; Katzman et al., 2010; Willenge et al., 2010). Of these 11 studies, seven included a control or comparison group, most commonly a no treatment or waiting list control group (Cassin et al., 2008; Dunn et al., 2006; Geller et al., 2011; Katzman et al., 2010; Treasure et al., 1999; Wade et al., 2009).

Overall, findings of these studies suggest that there is potential for using MI as a treatment for individuals with EDs, particularly with respect to increasing readiness and motivation to change and reducing ambivalence about treatment. The majority of studies have found that participants who received some form of MI displayed significant increases in their readiness to change, motivation, and/or self-efficacy (Cassin et al., 2008; Dean et al., 2008; Dunn et al., 2006; Feld et al., 2001; George et al., 2004; Gowers & Smyth, 2004; Wade et al., 2009; Willenge et al., 2010). However, when examining the effect that MI has on ED attitudes and behaviours, as well as common comorbidities associated with disordered eating (e.g., depression, low self-esteem), the previous findings are mixed. Cassin et al. (2008) found that MI as a prelude to unguided self-help led to a greater reduction in ED symptoms than did unguided self-help alone for individuals with BED, yet other studies that utilized a control or comparison group did not find similar effects (e.g., Dunn et al., 2006). There is also mixed evidence regarding

the efficacy of MI for increasing engagement in treatment. For example, findings of Wade and colleagues' (2009) clinical trial showed that participants with AN who were assigned to receive four sessions of MI in addition to treatment as usual were less likely to drop out of treatment than participants who were assigned to treatment as usual alone. Conversely, Katzman and colleagues' (2010) found no differences in drop out rates among participants with mixed ED diagnoses who were assigned to receive four individual sessions of MI followed by eight sessions of either individual or group CBT or four individual sessions of CBT followed by eight sessions of group CBT. Similarly, Dunn et al. (2006) found that participants with full or subthreshold BED or BN who received a single session of MI followed by a self-help manual were no more likely to complete the study than participants who were given a self-help manual alone. Given the diversity of study design, variety of adaptations of motivational approaches utilized, and differing participant populations in the range of studies examining MI for EDs, these mixed findings are perhaps not surprising.

Taking the literature findings as a whole, recent systematic reviews examining the MI for ED literature by MacDonald et al. (2012) and Knowles et al. (2013) suggest that MI and its adaptations may increase motivational outcomes in community samples with EDs, but evidence is less convincing for clinic or hospital-based samples. Support appears to be strongest for using MI as treatment for binge eating, although there is also minimal evidence supporting the use of MI for reducing compensatory behaviours (Knowles et al., 2013). No evidence to date suggests that MI is effective for reducing restricting behaviours; however, studies examining this behaviour in the context of MI

are very limited (Knowles et al., 2013). Findings indicate that MI may be best used as a pretreatment to behaviour change-oriented treatment programs (e.g., CBT) and for enhancing motivation and readiness to change (MacDonald et al., 2012). In addition, MI appears to lead to the greatest improvements when added to self-help treatment approaches rather than to more intensive treatment programs (Knowles et al., 2013).

### **Motivational Interviewing for Binge Eating Disorder**

Although some research suggests that individuals with AN are more resistant to change than individuals with other types of EDs, such as BN and BED (Blake, Turnbull, & Treasure, 1997), other studies have not found a difference in level of motivation to change among individuals with different ED diagnoses (Hasler, Delsignore, Milos, Budson, & Schnyder, 2004). In addition, MI has been considered to be appropriate for individuals with all types of EDs because the behaviours involved in EDs (e.g., food restriction, binge eating) have both subjectively positive and negative consequences associated with them and thus individuals with all types of EDs may be ambivalent about change (Treasure & Schmidt, 2001).

The research to date provides evidence as to why MI might be an especially helpful treatment for binge eating. First, although it is commonly assumed that individuals who binge eat are only distressed by their binge eating and are therefore highly motivated to change (e.g., Blake et al., 1997), binge eating may actually serve an important psychological function (Heatherton & Baumeister, 1991; Wedig & Nock, 2010) and thus individuals who binge eat may be reluctant to give up this behaviour. For example, Wedig and Nock (2010) noted that many individuals who binge eat say that binge eating

helps them to temporarily forget about their negative mood, momentarily relieves anxiety and stress, helps them to get attention, and helps them avoid doing things that they do not want to do. In addition, Davis and Carter (2009) have suggested that many individuals with BED feel that food is the only enjoyable thing in their lives. Heatherton and Baumeister (1991) have further proposed that binge eating serves as a means to escape from negative self-awareness. Contrasted with these subjectively positive experiences are the more obvious negative consequences of binge eating, such as weight gain and increased negative mood following a binge (Wegner et al., 2002; Stein et al., 2007). As a result of this conflict between the positive and negative aspects of binge eating, individuals who binge eat are often ambivalent about giving up binge eating.

Another reason that MI may be particularly well suited for use with individuals who struggle with binge eating is that many people who binge eat may desire change and want to stop, but they may lack confidence in their ability to do so (Treasure & Schmidt, 2001). In this case, MI would still be an appropriate treatment approach. As Miller and Rollnick (2002) point out, MI is designed to increase readiness to change and readiness involves not only willingness to change, but also confidence in one's ability to change. In addition, it is important to distinguish between motivation to change the overall problem (i.e., motivation to stop binge eating) and motivation to partake in the steps necessary to successfully change (Arkowitz & Miller, 2008). Individuals with BED or BN might be motivated to stop bingeing, but they may not be motivated to follow through with treatment. MI would also be helpful in this case.

In sum, MI may be a helpful treatment for individuals who binge eat because they tend to be ambivalent about giving up their binge eating behaviour, as this behaviour often serves both subjectively positive and negative functions in their lives. In addition, MI may be an appropriate treatment approach for binge eating because it is intended to increase motivation to change, an important component of which is confidence in one's abilities to change, and individuals who binge eat may lack the feelings of self-efficacy or confidence necessary for change.

To date, only two studies have evaluated the efficacy of MI for individuals with BED (Cassin et al., 2008; Dunn et al., 2006). In Dunn, Neighbors, and Larimer's (2006) study, they examined the efficacy of a single session of MET for increasing readiness to change, decreasing binge eating, and improving compliance with a CBT self-help manual. In their study, 90 adults with full or subthreshold BN or BED were randomly assigned to participate in either one session of MET followed by a CBT self-help manual or the CBT self-help manual alone. Findings revealed that the MET pre-treatment intervention resulted in increased readiness to change binge eating in comparison to the self-help only condition. In addition, although no differences were found between the groups in ED behaviours or attitudes at follow-up testing, a significantly greater proportion of participants were abstinent from binge eating at 4 months post-session in the MET condition (24.4%) in comparison to those in the self-help only condition (8.9%). In Cassin and colleagues' (2008) RCT, 108 women from the community who met DSM-IV diagnostic criteria for BED were randomly assigned to receive either one session of a manual-based adaptation of MI followed by a CBT-based self-help manual or a CBT-

based self-help manual alone. Findings revealed that participants in the MI condition displayed significantly greater confidence in their ability to control their binge eating immediately following the intervention session than did participants in the self-help condition. MI participants further showed greater improvements in binge eating, mood, self-esteem, and general quality of life 4 months post-intervention. In addition, a greater proportion of participants in the MI condition (in comparison to participants in the self-help condition) were abstinent from binge eating (27.8% vs. 11.1%) and no longer met DSM-IV binge frequency criteria (87.0% vs. 57.4%) at the final 4-month follow-up. Although the implications of these findings are limited due to the small number of studies that have been performed, these results provide good indication that MI may be an effective approach for treating individuals with BED, particularly with respect to increasing self-efficacy and readiness for change.

### **Study Rationale and Aims**

The present study aimed to build on current research examining MI as treatment for clinically significant binge eating problems. Previous studies have demonstrated that MI leads to significant improvements in readiness to change (Cassin et al., 2008; Dunn et al., 2006) and ED behaviours and associated symptoms (Cassin et al., 2008) when used as a prelude to self-help treatment for individuals with BED. However, these studies have only compared MI as a prelude to self-help treatment to self-help alone. It is unclear whether there is something specific about MI that makes it an effective prelude to treatment or whether there are other nonspecific factors that lead to improved benefits; for example, time with a therapist, an increased sense of accountability, or talking aloud

about binge eating. As such, it is important to examine how MI for BED compares to an active therapy control group.

The major objective of this study was to compare the efficacy of a single 60-minute session of MI followed by an unguided CBT self-help manual to a single 60-minute session of psychoeducation followed by an unguided CBT self-help manual for increasing readiness to change, eating self-efficacy, and treatment adherence, and reducing binge eating frequency and associated symptoms (i.e., depression, low self-esteem) in individuals with clinically significant binge eating problems. The comparison group of psychoeducation was chosen because psychoeducation has been found to be an effective therapeutic approach for treating binge eating and is often used as the first step in a stepped care treatment approach (Wilson et al., 2000). The decision to use MI as a precursor to treatment rather than as a stand-alone treatment was based on research that suggests that MI is most effective when used in conjunction with other treatments (e.g., Hettrema et al., 2005). A CBT-based self-help manual was selected as the method of treatment instead of a more intensive form of treatment (e.g., individual CBT) because research suggests that self-help is a useful treatment approach for many individuals with binge eating problems (e.g., Carter & Fairburn, 1998; Carter et al., 2003) and because self-help is easily accessible and cost-effective, thus increasing the external applicability of this study.

### **Hypotheses**

1. As MI is intended to increase motivation to change (Miller & Rollnick, 2002, 2012), it was hypothesized that a single session of MI would

increase readiness to change to a greater extent than would a single session of psychoeducation.

2. One of the main objectives of MI is to increase self-efficacy (Miller & Rollnick, 2002, 2012). As such, it was hypothesized that a single session of MI would increase self-efficacy to a greater extent than would a single session of psychoeducation.
3. Given that a large component of MI involves helping the client to feel accepted and understood (Miller & Rollnick 2002, 2012), it was predicted that participants in the MI condition would report a stronger therapeutic alliance than would participants in the psychoeducation condition.
4. Based on the positive findings of previous studies comparing MI + self-help for BED to self-help alone (Cassin et al., 2008), it was hypothesized that MI + self-help would result in a greater reduction in ED symptoms, binge eating severity, and binge frequency than would psychoeducation + self-help.
5. Previous research has demonstrated that reductions in binge eating are associated with improvements in comorbid functioning (Hilbert et al., 2012). Therefore it was hypothesized that MI + self-help would result in greater improvements in self-esteem and depression than would psychoeducation + self-help.

6. Given that MI is designed to promote internal drive for change (Miller & Rollnick, 2002, 2012), it was predicted that a single session of MI would increase participants' desire to take action regarding their binge eating behaviour and therefore increase their use of a subsequently administered self-help manual to a greater extent than would a single session of psychoeducation.

## **Method**

### **Participants**

Participants were recruited through fliers posted in the Greater Toronto Area and on York University campus, online on various local ED support and resource centre websites (e.g., National Eating Disorder Information Centre [NEDIC]), and through the York University Undergraduate Research Participant Pool (URPP). In order to participate in the study, participants were required to meet full or subthreshold DSM-IV diagnostic criteria for BED or BN-NP. In the current study, "subthreshold" was defined as at least one episode of binge eating per week for a minimum of three months. The reason that this was not considered "full threshold" in all cases was due to recent changes to the DSM. The decision was made to include individuals with BN-NP in this study in addition to individuals with BED in order to increase sample size and because of research suggesting that BED and BN-NP are similar in terms of pathology and associated clinical features (Hay & Fairburn, 1998; Núñez-Navarro et al., 2011; Striegel-Moore et al., 2001; van Hoeken, Veling, Sinke, Mitchell, & Hoek, 2009). Individuals with BN-P were not

included in this study because of research that suggests that individuals with BN-P are clinically different from individuals with BED, particularly in terms of symptom severity and comorbid psychopathology (Hay & Fairburn, 1998). In addition, the purpose of this study was to examine the efficacy of MI for treating problems with binge eating only; compensatory behaviours were not a focus of treatment. If individuals with BN-P were included, the lack of emphasis on compensatory behaviours may have been problematic given the severe medical consequences associated with purging compensatory behaviours.

Participants were excluded from participating in the study if they were under 18 years of age, met criteria for substance abuse, had been diagnosed with diabetes, were currently pregnant, were not proficient in English (and thus could not adequately understand and follow the treatment manual), expressed active suicidal ideation, were taking an inconsistent dose of psychiatric medication or had been using psychiatric medication for less than 3 months, and/or met criteria for another ED (i.e., AN or BN-P).

Of the 326 women and men who expressed interest in participating in the study, 47 participants were randomly assigned to either the MI or psychoeducation condition, stratifying for current involvement in psychotherapy, after determining that they met study inclusion criteria. Randomization tables were generated by an independent researcher in the ED field with expertise in statistical methods (Dr. Ross Crosby). Participants were masked to treatment assignment until after completion of the baseline assessment measures. Following study completion, one participant from the psychoeducation group and one participant from the MI group were removed as outliers

based on length of treatment session (session length = 27.03 minutes and 83.07 minutes respectively), which brought the total number of participants to 45 (psychoeducation  $n = 21$ ; MI  $n = 24$ ). See Figure 1.

The MI and psychoeducation groups did not differ significantly from one another in terms of ethnicity, age, BMI, duration of illness, diagnosis, or current participation in psychotherapy. The majority of participants were Caucasian (77.8%) and female (95.6%), mean age was 24.88 years ( $SD = 6.91$  years), mean BMI was 27.06 ( $SD = 6.54$ ), and mean duration of illness was 8.01 years ( $SD = 6.88$  years). Four participants (8.9%) were participating in psychotherapy or were on a waiting list to receive therapy at the time of screening (three participants in the MI condition and one participant in the psychoeducation condition). Approximately 73% of participants ( $n = 33$ ) met full ( $n = 16$ ) or subthreshold ( $n = 17$ ) criteria for BED and the remaining 27% ( $n = 12$ ) met full ( $n = 8$ ) or subthreshold ( $n = 4$ ) criteria for BN-NP.

## Measures

Internal consistency for all measures was calculated using Chronbach's alpha ( $\alpha$ ). Following George and Mallery's (2005) rule of thumb for qualifying the strength of Chronbach's  $\alpha$ ,  $\alpha$  levels  $> .9$  were deemed to be excellent,  $> .8$  good,  $> .7$  acceptable,  $> .6$  questionable,  $> .5$  poor, and  $< .5$  unacceptable. Table 1 provides a timeline indicating when measures were administered during the study.

**Prescreen questionnaire.** In this self-report questionnaire, participants were asked to provide demographic information and answer questions related to inclusion and exclusion criteria, including past or present substance abuse, diabetes diagnoses, current

pregnancy status, English language proficiency, current psychiatric medication use and length of time on medication, current participation in psychotherapy, and frequency of binge eating and compensatory behaviours over the previous 3 months. This questionnaire was completed online on a secure website by all interested participants prior to participation as a preliminary means of determining whether study eligibility criteria were met. See Appendix A.

**Structured Clinical Interview for DSM-IV Axis I Disorders (SCID-I; First, Spitzer, Gibbon, & Williams, 1996).** The SCID-I is a semi-structured clinical interview that assesses whether individuals meet diagnostic criteria for specific Axis I diagnoses based on DSM-IV criteria (American Psychological Association, 1994). For the purposes of this study, the ED section of the SCID-I was administered with binge eating frequency criteria modified to once per week for 3 months to reflect the findings of recent research, which indicates there are few meaningful clinical differences between individuals who binge eat once versus twice per week (Wilfley et al., 2007; Wilson & Sysko, 2009), and the recent changes to the DSM (American Psychiatric Association, 2013). The interview was administered via telephone and following completion of the online prescreen questionnaire in order to confirm eligibility to participate. The ED section of the SCID-I has been found to be adequately reliable (Lobbestael, Leurgans, & Arntz, 2011). See Appendix B.

**Eating Disorder Examination Questionnaire (EDE-Q; Fairburn & Beglin, 1994).** The EDE-Q is a 41-item self-report measure based on the clinician administered Eating Disorder Examination (Fairburn & Cooper, 1993). It is used to assess disordered

eating behaviour and contains four subscales (dietary restraint, eating concern, shape concern, and weight concern), which can be combined into one global (i.e., total) score. It has been shown to have good internal consistency and test-retest reliability (Berg, Peterson, Frazier, & Crow, 2012). Equivalency has been demonstrated between the interview and questionnaire versions (Carter, Aimé, & Mills, 2001). In this study internal consistency varied between subscales, but was acceptable overall, with Cronbach's  $\alpha$  levels ranging from .75 to .79 on the restraint subscale, .66 to .82 on the eating concern subscale, .68 to .78 on the weight concern subscale, .87 to .92 on the shape concern subscale, and .93 on the global score across all three testing time points (i.e., baseline, 1-month, and 4-month follow-ups). The EDE-Q was used in this study to assess severity of ED behaviours and beliefs, as well as binge eating frequency at baseline and 1 month and 4 months post-intervention. See Appendix C.

**Binge Eating Scale (BES; Gormally, Black, Daston, & Rardin, 1982).** The BES is a 16-item self-report measure of binge eating severity that evaluates the presence of behaviours and beliefs associated with recurrent binge eating. Each item includes a number of differently weighted statements from which participants select the statement that best describes their behaviours and attitudes regarding binge eating and eating behaviours. Total possible scores range from 0 to 46, with higher scores indicating greater binge eating severity. The BES has been found to have good test-retest reliability (Timmerman, 1999) and internal consistency (Gormally et al., 1982). In this study, Cronbach's  $\alpha$  ranged from .73 to .89 across time points indicating acceptable to good

internal consistency. The BES was used in this study to assess binge eating severity at baseline and 1 month and 4 months post-intervention. See Appendix D.

**University of Rhode Island Stages of Change Assessment Scale (URICA; DiClemente & Hughes, 1990).** The URICA is a 32-item self-report measure that contains four continuous subscales assessing what stage of change (or stages of change) an individual is at currently out of four possible stages of change (precontemplation, contemplation, action, and/or maintenance) based on Prochaska's Transtheoretical Model of change (Prochaska, et al., 1992). For each item, participants are asked to report on a 5-point scale how much they agree or disagree with statements related to a problem behaviour (*1* = strongly disagree to *5* = strongly agree). In the present study, binge eating was identified as the problem behaviour to be evaluated. Each subscale of the URICA contains eight items and answers are summed to provide total subscale scores. A 'readiness to change' composite score can then be calculated by subtracting precontemplation scores from the sum of the contemplation, action, and maintenance subscale scores. The readiness composite score can range from -16 to 112, with higher scores indicating greater readiness to change. DiClemente and colleagues (2004) maintain that the readiness composite score should be used to predict treatment outcomes prior to treatment, whereas the action and maintenance subscale scores should be used to assess progress during treatment or long-term outcomes once treatment is complete. The URICA has been used to assess readiness for change for a variety of problem behaviours and has been found to have good internal consistency (Napper et al., 2008). Internal consistency was found to be good overall in this study as well, with coefficient alpha

levels ranging from .79 to .88 on the four subscales and .83 on the ‘readiness to change’ composite. In this study, the URICA was administered at baseline and immediately following the MI or psychoeducation session in order to assess readiness to change. As the intention was to measure readiness to change prior to treatment (i.e., prior to distribution of the self-help manual), the readiness composite was used as the main outcome measure for analyses examining readiness to change in this study. See Appendix E.

**Motivational rulers.** Participants provided ratings of their motivation to stop binge eating by rating the following three statements on an 11-point scale ( $0 = not\ at\ all$  to  $10 = extremely$ ): (1) “It is IMPORTANT for me to stop binge eating” (2) “I COULD stop binge eating” and (3) “I am TRYING to stop binge eating.” Typically this scale is used as a technique within motivational interviewing to examine readiness to change and encourage change talk (Miller & Rollnick, 2002). It was additionally used in this study as a supplementary means of assessing participants’ motivation to change their binge eating behaviour at baseline and immediately following the intervention session. See Appendix F.

**Weight Efficacy Lifestyle Questionnaire (WEL; Clark, Abrams, Niaura, Eaton, & Rossi, 1991).** The WEL is a 20-item self-report questionnaire that examines one’s “eating self-efficacy” – in other words, one’s perceived confidence in their ability to control their eating behaviour in five different situations (in the presence of negative emotions, when food is available, under social pressure, when in physical discomfort, and in the presence of positive emotions). Each situation corresponds to a different subscale

and scores can be combined to create a total score. Items are rated on a 10-point scale (*0 = not at all confident to 9 = very confident*) and each subscale is made up of five items. Subscale scores range from 0 to 45 and total scores range from 0 to 180, with higher scores indicating greater perceived eating self-efficacy. The WEL has been found to have good reliability and internal consistency (Clark et al., 1991). In this study, alpha levels ranged from .55 to .74 on the five subscales and .88 on the total scale. Participants completed the WEL at baseline and immediately following the intervention session to assess changes in eating self-efficacy. See Appendix G.

**Working Alliance Inventory – Short Form (WAI- S; Horvath & Greenberg, 1989).** The WAI-S is a 12-item self-report questionnaire that is completed by therapists and clients as a measure of the therapeutic alliance. There are three subscales: Goals, Bond, and Tasks. The Goals subscale measures the degree to which a client and therapist agree on the objectives of treatment. The Bond subscale measures the extent to which the client and therapist feel mutually respected and accepted by one another. The Tasks subscale measures the extent to which a client and therapist agree on the acts necessary to achieve the client’s goals. Each WAI-S subscale is scored on a 7-point Likert-type scale ranging from *1 = never* to *7 = always*. Subscale scores range from 4 to 28 and can be summed to obtain a total score, which ranges from 12 to 84, with higher scores reflecting a stronger therapeutic alliance. Two versions of the WAI-S are available: a client version and a therapist version. Since the focus in this study was on client-perceived therapeutic alliance, only the client version of the WAI-S was utilized in the present study. Good internal consistency has been noted for this version of the WAI-S (Hanson, Curry, &

Bandalos, 2002). In the present study, internal consistency ranged from acceptable to excellent (bond  $\alpha = .76$ , task  $\alpha = .85$ , goals  $\alpha = .89$ , total score  $\alpha = .92$ ). Participants completed the WAI immediately following the intervention session to examine participant reported therapeutic alliance. See Appendix H.

**Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965).** The RSES is a self-report measure of general feelings of self-worth comprised of 10 statements expressing general self-related feelings (e.g., “On the whole, I am satisfied with myself”). For each item, participants report how much they agree or disagree with the statement on a 4-point scale ( $0 = strongly disagree$  to  $3 = strongly agree$ ). Total scores can range from 0 to 40, with higher scores indicating higher self-esteem. The RSES is one of the most widely used measures of self-esteem and has demonstrated satisfactory reliability and validity (Blascovich & Tomaka, 1991). In this study, internal consistency was excellent (Cronbach’s  $\alpha$  range = .90 to .93). The RSES was used in this study to examine self-esteem at baseline and 1 month and 4 months post-intervention. See Appendix I.

**Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996).** The BDI-II is a 21-item self-report instrument designed to assess the existence and severity of symptoms of depression. Participants are asked to report how they have been feeling over the previous 2 weeks by choosing from a series of statements for each item. Each statement is then scored on a scale of 0 to 3, with higher total scores indicative of more severe depressive symptoms. The BDI-II has been found to have good test re-test reliability and good internal consistency (Beck, Steer, Ball, & Ranieri, 1996). Internal consistency was also found to be good in this study (Cronbach’s  $\alpha$  range = .80 to .82). In

this study, the BDI-II was administered at baseline and 1 month and 4 months post-intervention to assess depression. See Appendix J.

**Treatment manual use.** In order to examine the extent to which participants read and utilized the treatment manual, participants were asked the following two questions: (1) “How much time did you spend reading/using the treatment manual?” and (2) “How many chapters of the treatment manual did you read?” For each question, participants were presented with multiple options and asked to select the answer that best fit with their experience. Responses were then entered on a 5 point-scale ranging from 0 to 4. Participants answered these questions at the 1 and 4 month follow-up testing. See Appendix K.

## **Interventions**

**Motivational Interviewing.** Miller & Rollnick’s (2002) motivational interviewing handbook, Bewell-Weiss’ (2009) motivational interviewing for EDs treatment manual, and lecture slides and handouts from a motivational interviewing workshop led by Drs. William Miller and Theresa Moyers (2011) were consulted to create the protocol for the MI session. No explicit treatment manual was created for this study, as the explicit manualization of the approach runs somewhat counter to the spirit of MI. Indeed, some research suggests that MI treatment trials that rely on MI manuals are associated with poorer treatment outcome than MI treatment trials that do not rely on manuals (Hettinga et al., 2005). Amrhein, Miller, Yahne, Palmer, and Fulcher (2003) suggest that this may be because manuals may force therapists to push their clients in the direction of change whether or not the client is ready for change. However, as it was

important to strive for consistency between the MI sessions for the purposes of this study, a general protocol or guideline for therapy was developed.

The objectives of the MI protocol were to encourage the participant to examine both the positive and negatives consequences of their binge eating behaviour and reduce ambivalence about change. The protocol was semi-structured, such that certain questions were asked of all participants but follow-up questions and reflections were adapted to the participants' answers. Throughout the intervention, consistent with the spirit of MI, the therapist expressed acceptance, empathy, and non-judgment. The MI protocol additionally included the following elements: introduction to the treatment approach, a written decisional balance examining the pros and cons of continuing to binge eat versus making a change, exploration of ambivalence and motivation to change, exploration of values and beliefs and how they fit (or do not fit) with binge eating, motivational rulers assessing readiness to change, examination of the client's strengths to bolster confidence and self-efficacy, and treatment planning (only if the client displayed significant change talk). See Appendix L for the complete MI protocol utilized in this study.

**Psychoeducation.** Protocol for the psychoeducation session was created based on Part One of Dr. Christopher Fairburn's (1995) CBT-based binge eating treatment manual, *Overcoming Binge Eating*. In the session, the therapist first explained the treatment approach and then presented information to the client about what defines binge eating, how binge eating fits within the context of EDs, psychological and social problems associated with binge eating, physical problems associated with binge eating, the CBT model of binge eating and the different possible pathways by which binge eating

problems develop, the theory that binge eating is an addiction, and a review of efficacious treatment approaches for binge eating. Throughout the session, the therapist checked in with the client to ensure that the information was understood and asked the client if he or she required any additional clarification or further information. In addition, the client was encouraged to ask questions throughout the session. See Appendix M for the complete psychoeducation protocol utilized in this study.

**Self-help treatment manual.** Fairburn's (1995) *Overcoming Binge Eating Manual* was used as the treatment manual in this study and was distributed to all participants in both treatment conditions immediately following their respective intervention sessions. The manual is divided into two sections. The first section provides information about binge eating and rationale for the self-help program. The second section contains the self-help program, which includes techniques such as self-monitoring, stimulus control, problem solving, and relapse prevention. This manual has been used in a number of treatment studies and has been shown to be effective for reducing binge eating frequency, concerns about weight and shape, and improving overall functioning (Grilo, 2007).

## **Procedure**

By means of study fliers and online advertisements, interested participants were directed to a secure website to complete the prescreen questionnaire to provisionally determine whether they met inclusion criteria for participation in the study. Individuals who met inclusion criteria based on the prescreen questionnaire were then contacted by the researcher via telephone to complete the SCID-I (First et al., 1996) ED section to

assess whether diagnostic criteria were met for full or subthreshold BED or BN-NP. Participants were also screened for suicidal ideation during this phone call. If a participant endorsed current suicidal ideation, he or she was excluded from the study and was provided with contact information for the Toronto Crisis Line and the York University Psychology Clinic (YUPC). Participants who met full or subthreshold DSM-IV criteria for BED or BN-NP on the basis of the SCID-I ED section and who did not express suicidal ideation were then invited to the laboratory individually to participate in the study.

After arriving at the laboratory, participants were asked to read and complete a written consent form (see Appendix N). Following completion of the consent form, participants were randomly assigned to receive either 60 minutes of psychoeducation about binge eating or 60 minutes of MI related to binge eating. Participants then completed measures assessing ED symptomology and binge eating severity (EDE-Q, BES), depression (BDI-II), self-esteem (RSES), motivation to change (URICA, motivational rulers), and eating self-efficacy (WEL) on a secure computer in the laboratory.

After completing these questionnaires, participants took part in an individual session of the intervention to which they were assigned (MI or psychoeducation). Two participants (one from each treatment group) were removed from further analyses as outliers based on their length of treatment session (see Participants). After removal, the mean duration of the treatment session was 55.76 minutes ( $SD = 7.03$ ) for participants in the MI group and 49.73 minutes ( $SD = 7.03$ ) for participants in the psychoeducation

group and were not statistically significantly different. The first author of this study (a senior-level Ph.D. Clinical Psychology student) conducted all therapy sessions in order to control for potential discrepancies in findings due to therapist characteristics. In preparation for the therapy sessions, she completed a doctoral-level course in ED assessment and treatment, participated in a multiday MI training workshop led by Dr. William Miller, attended additional MI training workshops complete with video observation, didactic training, and role play, and participated in a 600-hour clinical practicum at a hospital-based ED treatment program (Toronto General Hospital Eating Disorder Program). To ensure that the treatment protocols were closely followed in both conditions and that MI sessions were sufficiently representative of MI, two registered clinical psychologists (Drs. Jennifer Mills and Henny Westra) selected and reviewed a random selection of audiotaped sessions and provided clinical supervision at various points throughout the study.

After completing the individual treatment session, participants were given copies of the CBT self-help manual, and were instructed to read as much or as little of the manual as they desired. Participants were not told that they had to read and follow the entire manual in order to preserve the spirit of MI in the MI condition and to maintain consistency across conditions in the psychoeducation condition. Participants then completed measures examining therapeutic alliance (WAI-S), motivation to change (URICA, motivational rulers), and eating self-efficacy (WEL) on a computer in the laboratory and were informed they would be contacted via email 1 and 4 months later to complete additional questionnaires for follow-up.

Approximately 1 and 4 months following the session, participants were contacted by the researcher via email to complete follow-up questionnaires online on a secure website in order to examine changes in disordered eating behaviours (EDE-Q), binge eating frequency and severity (EDE-Q, BES), depression (BDI-II), and self-esteem (RSES), as well as utilization of the self-help manual (treatment manual use questions). See Table 1. Online administration of the follow-up measures was used in order to minimize participation attrition.

### **Data Analytic Plan**

**Hypotheses 1 and 2.** To examine whether MI increased participants' readiness to change and eating self-efficacy from pre- to post-session to a greater extent than did psychoeducation, 2 (group: MI vs. psychoeducation) x 2 (time: baseline, post-session) repeated measures analysis of variance (ANOVA) were performed comparing changes on the URICA readiness composite and WEL respectively.

**Hypothesis 3.** To examine whether participants in the MI condition reported a stronger therapeutic alliance than did participants in the psychoeducation condition, an independent *t* test was performed comparing the two groups on post-session WAI-S scores.

**Hypotheses 4 and 5.** To examine group differences in changes from baseline to follow-up testing, 2 (group: MI vs. psychoeducation) x 3 (time: baseline, 1 month, 4 month) repeated measures ANOVAs were performed comparing the two groups on changes in ED symptomology (EDE-Q), binge eating severity and frequency (BES, number of objective binges in the past month as identified on the EDE-Q), depression

(BDI-II), and self-esteem (RSES) over time. To examine group differences in percentage of participants who were abstinent from binge eating at follow-up, chi-square analyses were performed.

**Hypothesis 6.** To compare the groups on changes in treatment manual use over time, 2 (group: MI vs. psychoeducation) x 2 (time: 1 month and 4 months) repeated measures ANOVAs were performed with treatment manual use measured by number of chapters of manual read and amount of time spent using the manual.

Participants without an observed outcome were excluded from analyses (i.e., “complete case” analyses were performed rather than intent-to-treat analyses). This meant that for analyses examining changes from pre- to post-session, all participants were included, as no participants dropped out from pre- to post-session. However, when changes from baseline to follow-up were examined, only participants who completed measures at all time points (baseline, 1-month, 4-months) were included in analyses. Although this method reduces sample size and may therefore reduce statistical power, the alternative option of imputing missing outcome data by estimating outcomes from previous testing points has also been strongly criticized and may introduce bias (Streiner, 2008). Entering missing outcome data from previous time points would have been particularly problematic in the present study given that the majority of participants who dropped out of this study did so prior to 1-month testing and the only available outcome data for these participants was their baseline data, which was collected prior to the intervention and thus did not accurately reflect the effects of treatment (see Attrition and Randomization below). In addition, due to recent criticisms of potential biases

introduced by intent-to-treat analysis, the Consolidated Standards of Reporting Trials (CONSORT) Group, which provides information and guidance for reporting RCTs, recently dropped their request for intent-to-treat analysis in their guidelines in favour of a clear description of who was included in each analysis (Schulz, Altman, & Moher, 2010).

## **Results**

### **Statistical Assumptions and Missing Data**

All statistical assumptions were tested. The assumption of normality was violated for number of objective binge eating episodes. To adjust for this, scores were transformed using a logarithmic transformation and all analyses were run with and without the transformation and then compared. Since the findings revealed no major differences between the two sets of analyses, analyses involving the original, non-transformed data were reported to aid in the interpretability of findings. The assumption of sphericity was violated for repeated measures ANOVAs examining changes on the EDE weight concerns subscale, number of binge eating episodes, and BES total scores. To account for this, Greenhouse-Geisser corrections were used when examining and reporting analyses related to these variables. The Greenhouse-Geisser correction adjusts the degrees of freedom in the ANOVA test to account for sphericity and produce a more accurate significance ( $p$ ) value (Greenhouse & Geisser, 1959).

A missing values analysis was performed to examine the pattern of missing data. Examination revealed that the majority of missing data was due to attrition (see below). The remaining missing data accounted for less than 5% of the data and were found to be

missing at random. Missing data were subsequently dealt with using proration when at least 75% of items were complete. That is, for participants who responded to at least 75% of items on a given scale or subscale, total scores were computed across their observed scores and then rescaled according to the number of individual items completed (van Ginkel, Sijtsma, van der Ark, & Vermunt, 2010). This procedure is frequently practiced in ED research (Bohn & Fairburn, 2008; von Ranson, Klump, Iacono, & McGue, 2005). The 75% criterion was based on an amalgamation of the decision rules of several commonly used ED scales (e.g., Bohn & Fairburn, 2008).

### **Attrition and Randomization**

At each follow-up testing, participants were contacted via email to complete the online screening questionnaires. Participants who did not respond to the initial request were contacted via email a maximum of four times in total with three days between each email before they were deemed lost to follow-up. All participants who did not complete follow-up questionnaires were considered lost to follow-up. That is, all participants who dropped out of the study failed to complete follow-up questionnaires after four requests and none of these participants contacted the researcher to withdraw for any reason.

Seven participants (15.56%) did not complete the 1-month follow-up testing: three participants from the psychoeducation group (14.29%) and four participants from the MI group (16.67%), which constituted a non-significant difference between groups,  $\chi^2 = .05, p = .83$ . An additional two participants from the psychoeducation group and one participant from the MI group did not complete the 4-month follow-up testing, for a total of ten participants (22.22%) who did not complete the 4-month follow-up testing:

five participants from the psychoeducation group (23.81%) and five participants from the MI group (20.83%), which constituted a non-significant difference between groups,  $\chi^2 = .06, p = .81$ . See Figure 1. There were no significant differences between completers and non-completers on any baseline or demographic characteristics ( $p > .01$  for all variables). Therefore, drop outs appeared to be random.

Despite randomization, comparison of treatment groups at baseline revealed that the MI group had significantly lower contemplation scores ( $p < .05$ ), lower maintenance scores ( $p < .05$ ), lower self-esteem ( $p < .01$ ) and higher depression ( $p < .01$ ) at baseline than did the psychoeducation group. When groups are not equivalent at pretest, those pretest scores can be used as a covariate to adjust each case's score on the post-test by differences on the pretest (Tabachnick & Fidell, 2007). As such, in the current study baseline scores on contemplation, maintenance, self-esteem, and depression were used as respective covariates only in analyses in which changes on these variables were of interest as outcomes. See Table 2.

**Hypothesis 1: MI will increase readiness to change to a greater extent than will psychoeducation.**

A repeated measures ANOVA was conducted to investigate changes in readiness to change as measured by the URICA readiness composite, which taps into the multidimensional nature of motivation, with time (pre- and post-session) as the within subjects factor and treatment condition as the between subjects factor. Findings revealed a main effect for time,  $F(1, 43) = 16.31, p < .001, \eta_p^2 = 0.28$ . This finding was qualified

by a significant Group x Time interaction,  $F(1, 43) = 5.59, p = .02, \eta_p^2 = 0.12$ . Post hoc tests indicated that participants who received the MI session showed a significant increase in readiness to change binge eating from pre- to post-session,  $t(23) = -4.11, p < .001, d = 0.61$ , whereas no significant change occurred for participants who received the psychoeducation session,  $t(20) = -1.41, p = .17, d = 0.17$ . See Figure 2 and Table 3.

As an exploratory analysis, individual subscale scores of the URICA were also examined to assess changes in readiness to change. Repeated measures ANOVAs with time (pre- and post-session) as the within subjects factor and treatment condition as the between subjects factor were used to investigate changes in precontemplation and action subscale scores over time. Changes in contemplation and maintenance subscale scores over time could not be adequately examined given the baseline group differences on these variables (see Attrition and Randomization). As such, ANCOVAs using contemplation and maintenance baseline scores as covariates were used to examine group post-session differences for these subscales. Findings indicated significant main effects of time on the precontemplation,  $F(1, 43) = 17.36, p < .001, \eta_p^2 = 0.29$ , and action subscales,  $F(1, 43) = 43.48, p < .001, \eta_p^2 = 0.50$ , indicating that across groups participants showed an overall increase in the belief that their binge eating behaviour was not a problem and an increase in reported engagement in behaviours aimed at changing binge eating from pre- to post-session. No significant Group x Time interactions were found for the repeated measures ANOVAs examining changes in precontemplation and action. Findings of the ANCOVAs examining differences in post-session contemplation and maintenance subscale scores between groups revealed no significant differences

between the groups on either of these subscales, indicating no post-session group differences in problem awareness or maintenance of behaviour change. See Table 3.

As another exploratory analysis, changes in motivational ruler scores over time were examined using repeated measures ANOVAs with time (pre- and post-session) as the within subjects factor and treatment condition as the between subjects factor. Findings revealed significant main effects of time on two of the motivational ruler items, “I COULD stop binge eating,”  $F(1, 43) = 18.29, p < .001, \eta_p^2 = 0.30$ , and “I am TRYING to stop binge eating,”  $F(1, 43) = 6.04, p = .02, \eta_p^2 = 0.12$ , indicating that across groups participants showed an increase in the belief that they could stop binge eating and were working towards stopping binge eating. No significant main effect of time was found for the “it is IMPORTANT to stop binge eating” ruler. No Group x Time interactions were found for any of the motivational rulers. See Table 3.

**Hypothesis 2: MI will increase eating self-efficacy to a greater extent than will psychoeducation.**

Repeated measures ANOVAs were conducted to investigate changes in eating self-efficacy (i.e., confidence in ability to control one’s eating) with time (pre- and post-session) as the within subjects factor and treatment condition as the between subjects factor. Eating self-efficacy was examined using the WEL total and subscale scores. A main effect for time was found for overall eating self-efficacy (WEL total score),  $F(1, 43) = 9.19, p = .004, \eta_p^2 = 0.18$ . A significant Group x Time interaction was also found for eating self-efficacy total scores,  $F(1, 43) = 6.87, p = .01, \eta_p^2 = 0.14$ . Post hoc simple

effects tests revealed that participants in the MI condition displayed a significant increase in eating self-efficacy from pre- to post-session,  $t(20) = -4.03, p = .001, d = 0.75$ , whereas no significant change in eating self-efficacy occurred for participants in the psychoeducation condition,  $t(20) = -0.29, p = .78, d = 0.05$ . See Figure 3 and Table 3.

Examination of changes in confidence in ability to control binge eating in specific situations as measured by the subscales of the WEL revealed main effects of time for the Availability subscale,  $F(1, 43) = 5.79, p = .02, \eta_p^2 = 0.12$ , Social Pressure subscale,  $F(1, 43) = 12.78, p = .001, \eta_p^2 = 0.23$ , and Positive Activities subscale,  $F(1, 43) = 35.73, p < .001, \eta_p^2 = 0.45$ , indicating an overall increase across groups in eating self-efficacy when food is available, when undergoing social pressure to eat, and when experiencing positive emotions respectively. Results also indicated significant Group x Time interaction for the Social Pressure subscale,  $F(1, 43) = 4.39, p = .04, \eta_p^2 = 0.09$ . Follow-up simple effects tests indicated that participants in the MI condition showed a significant increase in their confidence in their ability to resist eating when under social pressure from pre- to post-session,  $t(23) = -4.13, p < .001, d = 0.72$ , whereas no significant change was found for participants in the psychoeducation condition,  $t(20) = -1.02, p = .23, d = 0.17$ . A significant Group x Time interaction was further found for the Positive Activities subscale,  $F(1, 43) = 22.16, p < .001, \eta_p^2 = 0.34$ . Post hoc tests revealed that participants in the MI condition reported a significant increase in their belief that they could resist eating when engaging in positive activities from pre- to post-session,  $t(23) = -6.65, p < .001, d = 0.92$ , whereas no significant change occurred for participants in the psychoeducation condition,  $t(20) = -1.16, p = .26, d = 0.11$ . No significant Group x Time

interactions were found for any of the other subscales of the URICA (i.e., Availability, Negative Emotions, and Physical Discomfort subscales). See Table 3.

**Hypothesis 3: Participants in the MI condition will report a stronger therapeutic alliance than will participants in the psychoeducation condition.**

Differences between the treatment groups on client perceived therapeutic alliance were examined using an independent  $t$  test, with treatment condition as the independent variable and WAI-S post-session scores as the dependent variable. A significant difference was found between the groups,  $t(43) = -2.96, p = .005, d = 0.88$ . Participants in the MI condition reported a significantly greater therapeutic alliance than did participants in the psychoeducation condition. See Table 4.

Examination of differences between the two groups on subscales of the WAI-S showed that participants in the MI group reported significantly stronger agreement with the therapist about the tasks needed to achieve their goals (Tasks subscale),  $t(43) = -2.68, p = .010, d = 0.80$ , and the objectives of treatment (Goals subscale),  $t(43) = -4.62, p < .001, d = 1.37$  than did participants in the psychoeducation group. No significant difference was found between the groups on perceived feelings of acceptance and trust in the therapeutic relationship (Bond subscale). See Table 4.

**Hypothesis 4: MI + self-help will result in greater reductions in eating disorder symptoms, binge eating frequency, and binge eating severity than will psychoeducation + self-help.**

Repeated measures ANOVAs were conducted to examine changes in ED symptoms over time as assessed by the EDE-Q global and subscales, with time (baseline,

1 month, 4 months) as the within subjects factor and treatment condition as the between subjects factor. Results showed a significant main effect of time on the EDE-Q global score,  $F(2, 64) = 12.23, p < .001, \eta_p^2 = 0.28$ , indicating an overall decrease in global ED behaviours and attitudes over time across both treatment groups. Post hoc tests revealed that significant changes occurred between baseline and 1 month,  $F(1, 32) = 18.99, p < .001, \eta_p^2 = 0.37$ , and baseline and 4 months,  $F(1, 32) = 15.62, p < .001, \eta_p^2 = 0.33$ . No significant change occurred between 1 month and 4 months. No significant Group x Time interaction was found for the global EDE-Q score. See Table 5.

Analyses examining EDE-Q subscales revealed significant main effects of time on all subscales. Specifically, findings showed a significant overall reduction in dietary restraint,  $F(2, 64) = 7.22, p = .002, \eta_p^2 = 0.19$ , with post hoc tests indicating that the reduction in dietary restraint across groups occurred between baseline and 1 month,  $F(1, 31) = 12.82, p = .001, \eta_p^2 = 0.29$ . No significant changes were found between baseline and 4 months or 1 and 4 months. An overall reduction in eating concerns was also found,  $F(2, 64) = 9.07, p < .001, \eta_p^2 = 0.22$ . Post hoc tests revealed that a significant change occurred between baseline and 1 month,  $F(1, 32) = 11.24, p = .002, \eta_p^2 = 0.26$ , and baseline and 4 months,  $F(1, 32) = 15.77, p < .001, \eta_p^2 = 0.33$ . No significant changes were found between 1 month and 4 months. Results additionally revealed a significant reduction in weight concerns across groups,  $F(1.67, 53.42) = 10.89, p < .001, \eta_p^2 = 0.25$ . Post hoc tests indicated that significant changes occurred between baseline and 1 month,  $F(1, 32) = 12.68, p = .001, \eta_p^2 = 0.28$ , and baseline and 4 months,  $F(1, 32) = 14.16, p = .001, \eta_p^2 = 0.31$ . No significant changes occurred between 1 and 4 months. Finally,

results indicated that there was an overall reduction in shape concerns over time,  $F(2, 64) = 7.91, p = .001, \eta_p^2 = 0.20$ , with post hoc tests demonstrating that the significant changes occurred between baseline and 1 month,  $F(1, 32) = 10.23, p = .003, \eta_p^2 = 0.24$ , and baseline and 4 months,  $F(1, 32) = 11.42, p = .002, \eta_p^2 = 0.26$ . No significant changes in shape concerns occurred between 1 and 4 months. No significant Group x Time interactions were found on any of the EDE-Q subscales. See Table 5.

A repeated measures ANOVA was conducted to examine changes in binge eating frequency over time as assessed by number of objective binge eating episodes in the past month, with time (baseline, 1 month, 4 months) as the within subjects factor and treatment condition as the between subjects factor. Findings revealed a significant main effect of time on binge eating frequency,  $F(1.69, 54.15) = 8.44, p = .001, \eta_p^2 = 0.21$ , indicating an overall reduction in number of binge eating episodes across groups. Post hoc tests showed that significant changes occurred between baseline and 1 month,  $F(1, 32) = 18.82, p < .001, \eta_p^2 = 0.37$ , and baseline and 4 months,  $F(1, 32) = 7.34, p = .01, \eta_p^2 = 0.19$ . No significant changes occurred between 1 and 4 months. No significant Group x Time interaction was found. See Table 5.

A repeated measures ANOVA was conducted to examine changes in binge eating severity over time as assessed by the BES, with time (baseline, 1 month, 4 months) as the within subjects factor and treatment condition as the between subjects factor. Findings revealed a significant overall reduction in binge eating severity over time across groups,  $F(1.69, 54.15) = 8.44, p = .001, \eta_p^2 = 0.43$ . Post hoc tests indicated that significant reductions occurred between baseline and 1 month,  $F(1, 32) = 45.59, p < .001, \eta_p^2 =$

0.59, and baseline and 4 months,  $F(1, 32) = 31.39, p < .001, \eta_p^2 = 0.50$ . No significant change occurred between 1 month and 4 months. No significant Group x Time interaction was found. See Table 5.

Chi-square analyses were performed to examine group differences in percentage of participants who were abstinent from binge eating at 1 month and 4 months post-session. As 25% of the contingency table cells had expected frequencies of less than 5 and chi-square tests are deemed inappropriate if more than 20% of cells have expected frequencies less than 5 (Yates, Moore, & McCabe, 1999), Fisher's exact test was used in place of Pearson's chi-square. Findings revealed that the percentage of participants who were abstinent from binge eating did not differ between groups at the 1-month follow-up ( $p = .38$ ). However, at the 4-month follow-up, although differences between the groups were still not statistically significant ( $p = .06$ ), they were clinically significant. At the 4-month follow-up 12.5% of participants in the psychoeducation condition were abstinent from binge eating in comparison to 42.1% of participants in the MI condition, a difference of almost four times.

**Hypothesis 5: MI + self-help will result in greater improvements in depression and self-esteem than will psychoeducation + self-help.**

To examine changes in depression, a 2 (group: MI vs. psychoeducation) x 2 (time: 1 month, 4 months) repeated measures ANCOVA with baseline depression scores used as a covariate was performed. Baseline scores were used as a covariate to account for baseline differences between the treatment groups on depression, as mentioned

previously. Depression was assessed using the BDI-II. No significant Group x Time interaction or main effect of time was found. See Table 5.

To examine changes in self-esteem, a 2 (group: MI vs. psychoeducation) x 2 (time: 1 month, 4 months) repeated measures ANCOVA with baseline self-esteem scores used as a covariate was performed. Baseline scores were used as a covariate to account for baseline differences between the treatment groups on self-esteem, as mentioned previously. Self-esteem was examined using the RSES. Findings revealed a significant increase in self-esteem over time across the groups,  $F(1, 31) = 5.43, p = .03, \eta_p^2 = 0.15$ . No significant Group x Time interaction was found. See Table 4 for descriptive statistics by group at all of the time points. See Table 5.

**Hypothesis 6: MI will lead to greater use of the treatment manual than will psychoeducation.**

To examine whether MI resulted in greater use of the treatment manual than did psychoeducation, 2 (group: MI vs. psychoeducation) x 2 (time: 1 month, 4 month) repeated measures ANOVAs were performed examining the number of chapters of the treatment manual participants read and amount of time spent reading the manual respectively. Findings revealed that the overall number of chapters read increased from 1 month to 4 months,  $F(1, 32) = 9.43, p = .004, \eta_p^2 = 0.23$ ; however, no significant group differences were found. No significant main or interaction effects were found when reading time was examined. See Table 5.

## Discussion

This study compared two brief 60-minute interventions (MI vs. Psychoeducation) as a prelude to self-help CBT for binge eating. The results showed that MI significantly increased readiness to change and confidence in ability to control binge eating, whereas psychoeducation did not. In addition, participants in the MI condition reported a significantly stronger therapeutic alliance than did participants in the psychoeducation condition. In spite of these findings, no group differences were identified when changes in eating disorder behaviours and associated symptoms were examined; both groups showed equivalent and significant overall improvements in eating disorder symptoms, binge eating frequency and severity, and self-esteem. Findings thus indicate that MI is not uniquely effective for reducing binge eating and other eating disorder symptoms.

Results of this study showed that MI led to significant increases in readiness to change and confidence in ability to control binge eating, whereas psychoeducation did not result in significant increases in these areas. Interestingly, findings revealed significant group differences in readiness to change only when the readiness composite measure of the URICA was examined; when changes in individual stages of change or motivational rulers were examined, no significant group differences were found. These differences in outcome may have resulted because the readiness composite score provides a multifaceted measure of readiness to change, which accounts for the possibility of individuals being in multiple stages of change at one time (DiClemente & Hughes, 1990). The subscales of the URICA and motivational ruler items, on the other hand, measure scores on only one stage or individual component of readiness at a time. The readiness

composite is also intended to predict outcomes prior to treatment (DiClemente et al., 2004), whereas the other measures are not. Findings that readiness to change and self-efficacy increased only for participants in the MI condition are consistent with previous research examining the use of MI for EDs (Cassin et al., 2008; Dean et al., 2008; Dunn et al., 2006; Feld et al., 2001; George et al., 2004; Gowers & Smyth, 2004; Wade et al., 2009; Willinge et al., 2010). However, this study is unique in that it is the first known study to examine how MI as a prelude to self-help for binge eating compares to an active therapy control as a prelude to self-help for binge eating. The differences between treatment groups in readiness to change and eating self-efficacy are noteworthy given that both treatment approaches aim to increase clients' desire for change; MI through examination of a client's internal motivations, beliefs, and values, and psychoeducation through providing information and increasing a client's understanding about the causes and consequences of binge eating. The findings of this study indicate that a strength of MI is its ability to enhance motivation to change and increase self-confidence.

Furthermore, results suggest that MI is superior to psychoeducation in this regard.

MI participants in this study also reported a significantly stronger therapeutic alliance than did participants in the psychoeducation condition, although reported alliance was strong in both groups. Further examination of group differences in therapeutic alliance revealed that participants in both conditions felt understood and accepted by the therapist, but participants in the MI condition reported significantly greater agreement with the therapist about the goals of treatment and the intervention approaches that should be utilized. This may be because the psychoeducation session was designed to

provide information in a neutral manner and no attempt was made to tailor information to the individual client whereas, in the MI condition, participants were invited to talk about their own experiences with binge eating and what strategies they thought might work best for them. It is possible that if the psychoeducation session was more individually tailored, therapeutic alliance could have been improved and differences between the two conditions may not have been evident. Nevertheless, a strong therapeutic alliance is an important component in treatment engagement and outcome in working with individuals with EDs (Geller, Williams, & Srikameswaran, 2001) and this study provides evidence that MI is a good approach for developing a strong therapeutic alliance with clients with binge eating problems.

When symptom change was examined, contrary to expectations, no significant group differences were found for changes in any ED or associated symptoms. Participants in both groups showed significant, but equivalent, improvements in overall ED symptoms, weight concerns, shape concerns, binge eating severity, number of objective binge eating episodes, and self-esteem over time. As such, findings of this study indicate that MI is not distinctly effective for reducing ED symptoms in individuals who binge eat. It is possible that no group differences in ED and associated symptoms were found because of the brief course of treatment. If participants had received a greater number of sessions, perhaps group differences in long-term outcomes would have resulted. The sample size of this study was also fairly small. If sample size were larger, it is possible that a significant difference between the groups would have resulted due to increased power to detect significant findings. Alternatively, it may be that expressed

readiness to change does not directly translate into actual behaviour change. Instead, readiness may be only one component of change and may differ from intention to change. In fact, Waller (2012) has argued that verbal expressions of motivation are not a good indicator of intention to change and are better thought of as proposals or “manifestos” for change. In line with this argument, findings regarding whether motivation to change leads to symptom change in individuals with eating disorders have been mixed (Dray & Wade, 2012).

Results of this study related to symptom change contrast with findings by Cassin et al. (2008), who found that MI + self-help led to a greater reduction in ED symptoms than did self-help alone. Results of this study are more comparable to findings by Dunn et al. (2006), who found no group differences in reductions in binge eating (although the researchers in this study did note a significant group difference in abstinence from binge eating at 4-months). In comparing these findings it is important to note that the present study used an active therapy control group of psychoeducation rather than a self-help only condition as was the case in the other two studies. In addition, the results of this study are consistent with other existing studies that have compared MI to an active therapy comparison group (e.g., Katzman et al., 2010; Treasure et al., 1999).

Comparing results of this study to the other two known MI for BED intervention studies (Cassin et al., 2008; Dunn et al., 2006) was challenging given the dissimilarities in study design. For example, Dunn and colleagues’ (2006) study examined changes in binge eating by looking at number of binges per week on average, Cassin and colleagues’ (2008) study looked at binge days per month, and this study looked at changes in number

of binge eating episodes in the previous month. In addition, the length of time of therapy sessions differed between the three studies from 45 minutes (Dunn et al., 2006) to 90 minutes (Cassin et al., 2008), with this study falling somewhere in between with a session length of approximately 60 minutes. Furthermore, Dunn et al. (2006) included participants with full and subthreshold BED, and BN, Cassin et al. (2008) examined participants with full BED only, and the present study assessed participants with full and subthreshold BED and BN-NP only. These differences in study design and participant makeup could explain some of the dissimilarities in findings and make it difficult to draw conclusions.

Although no group differences were found in this study in regard to changes in ED and associated symptoms over time, differences between the groups in abstinence from binge eating at final follow-up were clinically (although not statistically) significant ( $p = .06$ ); at 4-month follow-up 12.5% of participants in the psychoeducation condition were abstinent from binge eating in comparison to 42.1% of participants in the MI condition. The abstinence rates of participants in the MI condition in the present study are higher than the 24 % found by Dunn et al. (2006) and 28% found by Cassin et al. (2008) but are comparable to the average abstinence rates of 33% to 62% reported in other BED treatment studies (Wonderlich et al., 2003).

Finally, this study did not find any significant group differences in engagement in treatment; when the two treatment groups were compared, no differences were found in amount of treatment manual chapters read, time spent reading the treatment manual, or attrition rates. It was difficult to measure use of the treatment manual given that no

standard engagement in treatment measure exists for this manual. Instead, this study relied on asking participants how much of the manual they had read and how much time they had spent reading the manual. Actual engagement with the manual may therefore not be accurately reflected.

In regard to attrition rate, the drop out rate of 22% in this study was somewhat higher than that found in some studies examining MI for ED (e.g., 13% reported by Cassin et al., 2008) but compared favourable to that found by other MI for ED studies, in which drop out rates ranged from 30% to 34% (e.g., Dunn et al., 2006, Feld et al., 2001; Treasure et al., 1999). It was also on par with the average BED treatment drop out rate of 20% (Wonderlich et al., 2003). This suggests that participants in this study were reasonably motivated to continue with the study (and thus it can be inferred, continue with treatment), but given that no group differences were noted, it appears that MI did not offer any additional benefits for increasing engagement with treatment. Although some studies have found that MI increases engagement in treatment (Gowers & Smyth, 2004; Feld et al., 2001; Wade et al., 2009), others have found that MI is no better than other approaches at retraining participants in treatment (Katzman et al., 2010; Dunn et al., 2006). Further research investigating the impact of MI on treatment engagement and commitment to treatment is warranted.

### **Strengths of the Present Study**

This study has significant strengths. First, an RCT design was employed in the present study. RCTs are considered to be the ‘gold standard’ for evaluating and comparing treatment approaches because randomization increases the likelihood that

baseline differences are equalized between the groups and changes due to extraneous factors are controlled for (Mulder, Frampton, Joyce, & Porter, 2003). This study also included the utilization of an active therapy comparison group. Previous studies examining the use of MI for BED (Dunn et al., 2006; Cassin et al., 2008) did not include an active therapy control group and thus it was unclear if differences between control and MI groups were due to therapist contact or to the direct impact of MI. This study builds on findings of previous research by providing evidence that it is not simply therapist contact that leads to improvements in outcomes when MI is used as treatment for individuals with BED. Furthermore, men and women were recruited from the community and few participants were excluded on the basis of comorbid diagnoses or current involvement in treatment. Findings of this study are thus generalizable to community samples and a range of individuals with binge eating problems. In addition, the therapeutic interventions utilized in this study were brief, relatively inexpensive, and could be conducted by non-specialists who had received appropriate training. The procedure utilized in the present study could thus be easily and effectively put into practice.

### **Limitations of the Present Study**

Although this study has important strengths, it is not without its limitations. First, a relatively small sample size was used in this study ( $N = 45$ ), which may have provided insufficient power to detect significant interactions or comparisons between time points. Although sample size was small, it was comparable to numerous other studies examining MI for ED (e.g., Dean et al., 2008; Feld et al., 2001; Gowers & Smyth, 2004; Wade et al.,

2009; Willinge et al., 2010). However, according to Cohen (1992), a minimum of 64 participants per group is required to detect a medium difference between two groups. Unfortunately a sample size this large was not feasible given time (4-month follow-up) and financial constraints. Second, this study relied on only one 60-minute intervention session. Although it is still not known exactly what an optimal ‘dose’ of MI would be (see Hettema et al., 2005), it is possible that including multiple treatment sessions or sessions longer in length would have altered the findings. Perhaps if participants in both conditions received multiple sessions, a greater number of significant differences between the groups would have been found. Third, treatment outcomes were measured by self-report questionnaires, which are subject to self-report bias. Participants may have inaccurately reported their symptoms either unwittingly or for impression management and thus actual symptoms may differ somewhat from what was reported by reported. However, given randomization, these differences should not differ between groups. In addition, if clinical interviews were used instead of relying on self-report questionnaires, responses would also be subject to self-report bias. Interviews are also time consuming for both participants and researchers. Self-report measures reduce participant burden, which is particularly important when symptom measurements are frequent as was the case in the present study. Although we have no evidence that participants were not forthright in their responses that remains a possibility, as is the case in all self-report research. Fourth, all therapy sessions were conducted by a single Ph.D. level student therapist. Although the therapist attended an intensive 2-day MI workshop led by Dr. William Miller (one of the creators of MI), obtained didactic and clinical training in the

assessment and treatment of EDs, and received ongoing clinical supervision from experts in the areas of MI and EDs respectively, her experience with MI was limited and grew throughout the study. In addition, the therapist was not blind to study hypotheses; while she worked to ensure equivalent treatment of participants in both treatment conditions, allegiance effects remain a possibility. Fifth, this study did not include a “no treatment” or waiting list control condition. However, the main objective of this study was to examine how different additives to self-help for binge eating compare, not how MI compares to no treatment, since research has already demonstrated that MI + self-help is more effective than self-help alone for binge eating problems (Cassin et al., 2008; Dunn et al., 2006). Even so, although control group outcomes may be extrapolated from previous studies, the findings of this study cannot equivocally rule out the possibility of regression to the mean or spontaneous remission, as there is some evidence that some individuals with BED show a reduction in symptoms or even recover without treatment (Fairburn, Cooper, Doll, Norman, & O’Connor, 2000). On the other hand, a recent prospective study on the natural course of eating pathology in female university students found no evidence of spontaneous remission of disordered eating behaviours and attitudes across years in university (Mills, Polivy, McFarlane, & Crosby, 2012). Those data support the view that EDs may be an especially stubborn form of psychopathology.

### **Future Research**

Findings of this study suggest that MI is effective at increasing readiness to change, improving self-efficacy, and promoting a positive therapeutic alliance, but it is not uniquely effective for reducing binge eating. Nevertheless, further clinical trials are

necessary as research examining the efficacy of MI for treating ED is still in its infancy. In the present study, as well as in previous studies examining MI for BED, only one session of MI was provided. Future researchers examining MI for binge eating should investigate whether increasing the number of sessions improves treatment outcomes. Previous researchers have examined the use of multiple MI sessions for other ED diagnoses (e.g., Treasure et al., 1999), but to date no studies have examined the use of multiple MI sessions for individuals with BED. It is thus unknown whether adding additional sessions of MI would enhance treatment effects for individuals with BED or what the optimal number of sessions of MI is for this population. Additional MI sessions could be added sequentially as a longer prelude to treatment, as a stand-alone treatment, or future researchers could investigate the influence of MI at different points in treatment, perhaps as a prelude to treatment and at several points during the course of treatment, for example when adherence or engagement issues arise.

Future researchers could also build on the findings of this study by examining how MI and psychoeducation compare as adjuncts to more intensive empirically supported treatment approaches for binge eating, such as individual CBT. It may be that when MI is used a prelude to more intensive treatments (as opposed to a self-guided self-help manual as was the case in this study), results may be more pronounced. Indeed, previous meta-analyses (Hettema et al., 2005) indicate that large effect sizes result when MI is used in this manner. However, other researchers have found that MI exerts a larger effect when it is added to less intensive “weaker” treatment approaches than when it is added to “stronger” forms of treatments (Knowles et al., 2013).

The present study added to previous research examining the use of MI for binge eating by comparing MI to an active therapy control (psychoeducation). While this is a step forward in the MI for BED treatment literature, it is still unknown how MI for individuals with BED compares to alternative treatment approaches aside from psychoeducation. Future researchers may build on the findings of this study by comparing MI for binge eating to other treatment approaches, such as CBT or IPT.

Finally, future researchers should explore how individual differences influence MI outcomes. Findings of studies examining how individual differences in motivation or stage of change interact with MI have been mixed; some studies have shown that MI is most effective for individuals who are lower in readiness to change, whereas other studies have not revealed similar findings (Knowles et al., 2013). Future researchers could thus further examine this relationship to investigate for whom MI is most beneficial. Alternatively, future researchers could examine how other individual differences may impact treatment efficacy or participant engagement in treatment. For example, individuals who are high in information seeking and/or lack knowledge about the causes and consequences of binge eating may benefit more from psychoeducation than from MI. Individuals who are knowledgeable about binge eating and low in motivation to change, on the other hand, may benefit more from MI than psychoeducation.

## **Conclusions**

Interest in the use of MI as treatment for EDs has grown because individuals with an ED tend to be ambivalent about treatment and lack motivation to change (Vitousek et al., 1998; Casasnovas et al., 2007). This study adds to the literature examining MI as

treatment for EDs, specifically for individuals who binge eat. Findings indicated that MI is an effective treatment approach for increasing readiness to change and self-efficacy, as well as strengthening therapeutic alliance in working with individuals with binge eating problems. However, findings also indicated that MI does not offer any unique benefit in reducing binge eating. Future research should build on the findings of this study by examining how MI compares to other therapeutic approaches aside from psychoeducation, for whom MI is most helpful, and when it may be appropriate to use MI in treatment.

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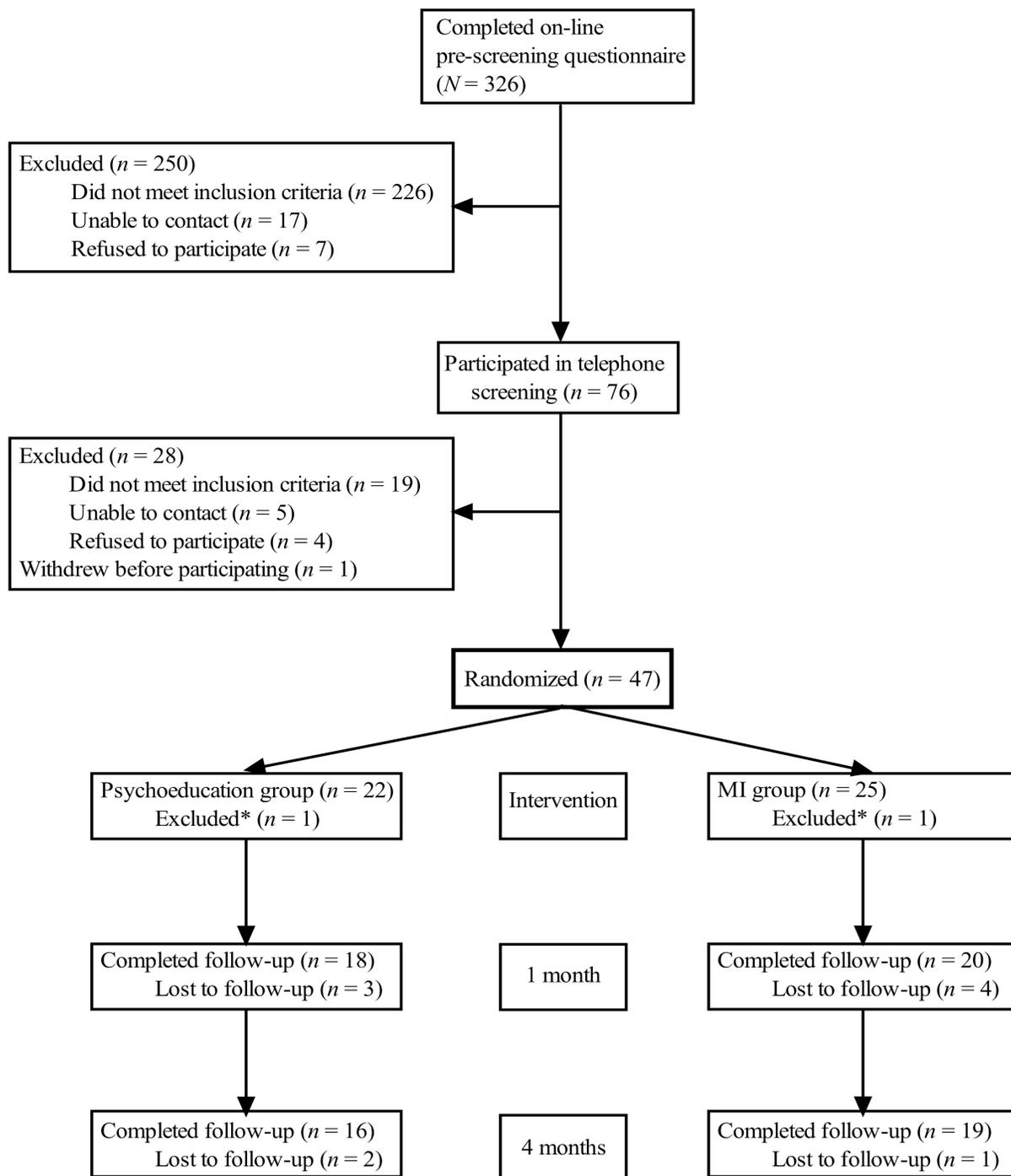
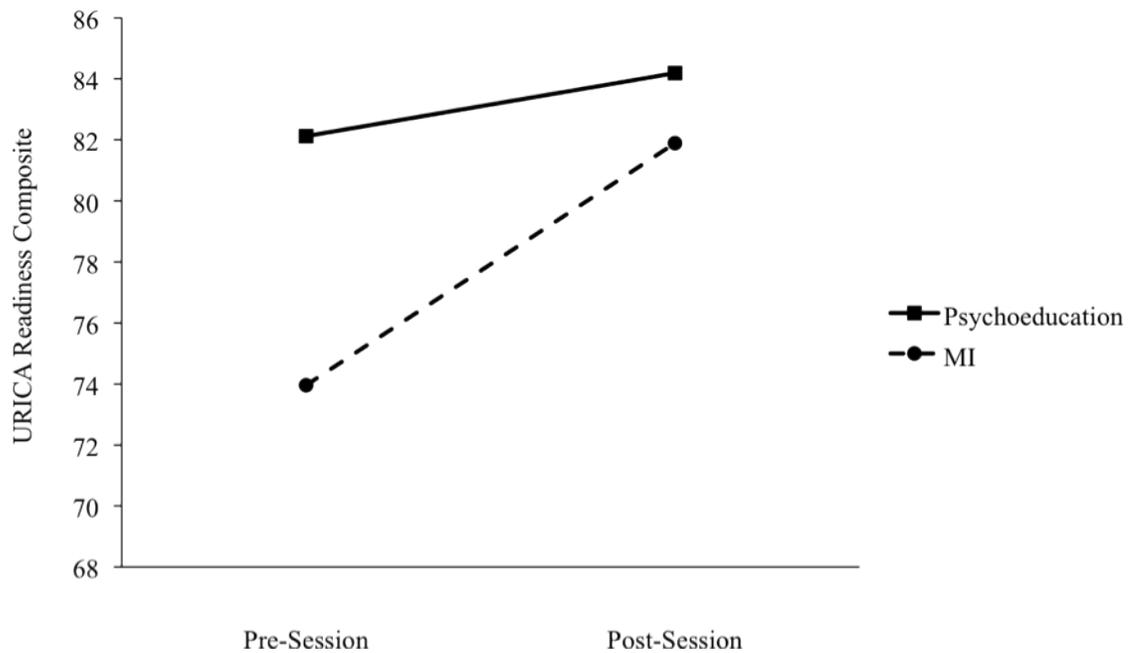
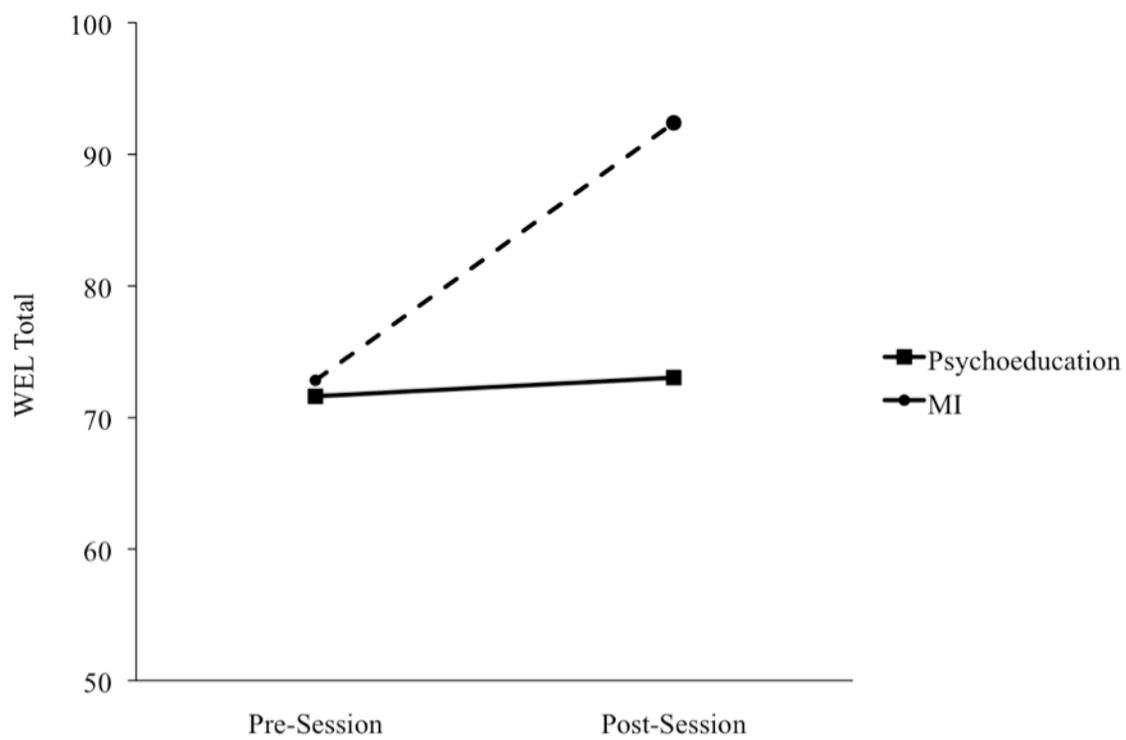


Figure 1. Summary of participant flow. MI = Motivational Interviewing. \*Excluded as an outlier due to session length.



*Figure 2.* Changes in readiness to change by treatment group. MI = Motivational Interviewing, URICA Readiness Composite = (URICA Contemplation subscale + URICA Action subscale + URICA Maintenance subscale) - URICA Precontemplation subscale.



*Figure 3.* Changes in eating self-efficacy by treatment group. MI = Motivational Interviewing, WEL = Weight Efficacy Lifestyle Questionnaire.

Table 1

*Timing of assessments and interventions*

Measures/Interventions			Intervention			Follow-up	
	Online	Telephone	session			(months)	
	Prescreen	Screen	pre	treat	post	1	4
Prescreen questionnaire	X						
SCID-I ED Module		X					
EDE-Q			X			X	X
BES			X			X	X
Motivational rulers			X		X		
URICA			X		X		
WEL			X		X		
RSES			X			X	X
BDI-II			X			X	X
MI or Psychoed.				X			
WAI-S					X		
Manual use questions						X	X

SCID-I ED Module = Structured Clinical Interview for DSM-IV Axis I Disorders Eating Disorder Module, EDE-Q = Eating Disorder Examination Questionnaire, BES = Binge Eating Scale, URICA = University of Rhode Island Stages of Change Assessment Scale, WEL = Weight Efficacy Lifestyle Questionnaire, RSES = Rosenberg Self-Esteem Scale, BDI-II = Beck Depression Inventory-II, WAI-S = Working Alliance Inventory – Short Form, Psychoed. = Psychoeducation, MI = Motivational Interviewing.

Table 2

*Comparison of treatment groups on all baseline variables*

Variables	Psychoed.	MI	<i>t</i> (43)	Cohen's <i>d</i>
	( <i>N</i> = 21)	( <i>N</i> = 24)		
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )		
Binges/ past month	11.86 (9.16)	7.54 (5.20)	1.91	0.58
EDE-Q				
Dietary Restraint	2.55 (1.37)	2.73 (1.49)	-0.42	0.13
Eating Concerns	2.90 (1.21)	2.40 (1.15)	1.43	0.42
Weight Concerns	3.73 (1.05)	3.69 (1.60)	0.10	0.03
Shape Concerns	4.27 (1.12)	4.43 (1.64)	-0.37	0.11
Global	3.48 (0.90)	3.46 (1.35)	0.07	0.02
BES	27.67 (5.86)	28.75 (6.07)	-0.61	0.18
Motivational Rulers				
Important to Change	9.67 (0.73)	9.04 (1.73)	1.54	0.47
Could Change	6.57 (1.86)	6.63 (3.06)	-0.70	0.02
Trying to Change	7.43 (2.75)	7.83 (2.44)	-0.52	0.15
URICA				
Precontemplation	11.10 (3.08)	12.67 (4.10)	-1.43	0.43
Contemplation	36.33 (2.96)	33.50 (4.16)	2.60*	0.78

Action	28.91 (6.04)	28.88 (5.82)	0.02	0.06
Maintenance	27.97 (5.40)	24.25 (6.07)	2.16*	0.64
Readiness Composite	82.12 (13.53)	73.96 (14.83)	1.92	0.58
WEL				
Negative Emotions	9.81 (6.39)	9.92 (7.34)	-0.05	0.02
Food Availability	11.05 (5.34)	12.42 (5.93)	-0.81	0.24
Social Pressure	15.11 (8.20)	15.88 (7.61)	-0.32	0.10
Physical Discomfort	17.43 (6.66)	18.75 (7.04)	-0.64	0.19
Positive Activities	18.29 (7.38)	15.88 (7.33)	1.10	0.33
Total	71.62 (28.18)	72.83 (25.80)	-1.51	0.05
RSES	18.71 (5.16)	13.55 (4.51)	3.59**	1.06
BDI-II	18.40 (8.77)	26.43 (9.19)	-2.99**	0.89

\*  $p < .05$ , \*\*  $p < .01$

Psychoed. = Psychoeducation, BMI = Body Mass Index ( $\text{kg}/\text{m}^2$ ), EDE-Q = Eating Disorder Examination Questionnaire, BES = Binge Eating Scale, URICA = University of Rhode Island Stages of Change Assessment Scale, WEL = Weight Efficacy Lifestyle Questionnaire, RSES = Rosenberg Self-Esteem Scale, BDI-II = Beck Depression Inventory-II.

Table 3

*Means and standard deviations by group for variables assessed pre- and post-session*

	Psychoed. baseline (N = 21)	MI baseline (N = 24)	Psychoed. post-session (N = 21)	MI post- session (N = 24)
Variables	M (SD)	M (SD)	M (SD)	M (SD)
URICA				
Precontemplation††	11.10 (3.08)	12.67 (4.10)	13.52 (2.82)	14.44 (2.97)
Contemplation	36.33 (2.96)	33.50 (4.16)	36.24 (3.36)	35.13 (2.92)
Action††	28.91 (6.04)	28.88 (5.82)	32.76 (3.22)	32.96 (4.07)
Maintenance	27.97 (5.40)	24.25 (6.07)	28.71 (4.53)	28.25 (5.09)
Readiness	82.12	73.96	84.19	81.89
Composite*††	(13.53)	(14.82)	(10.27)	(10.78)
Motivational Rulers				
Important to Change	9.67 (0.73)	9.04 (1.73)	9.67 (0.97)	9.25 (1.29)

Could Change††	6.57	6.63	7.76	7.92
	(1.86)	(3.06)	(1.41)	(2.39)
Trying to Change†	7.43	7.83	8.10	8.42
	(2.75)	(2.44)	(2.26)	(2.19)
WEL				
Negative Emotions	9.81	9.92	8.81	12.42
	(6.39)	(7.34)	(4.91)	(5.44)
Food Availability†	11.05	12.42	11.57	15.67
	(5.34)	(5.93)	(4.75)	(4.73)
Social Pressure*††	15.11	15.88	16.52	21.29
	(8.20)	(7.61)	(8.33)	(7.40)
Physical	17.43	18.75	16.14	20.56
Discomfort	(6.66)	(7.04)	(6.38)	(5.68)
Positive	18.29	15.88	19.06	22.42
Activities**††	(7.38)	(7.33)	(7.28)	(6.88)
Total*††	71.62	72.83	73.04	92.39
	(28.18)	(25.80)	(27.12)	(26.07)

\*  $p < .05$ , \*\*  $p < .01$  significant group x time interaction

†  $p < .05$  ††  $p < .01$  significant main effect of time

Psychoed. = Psychoeducation, MI = Motivational Interviewing, WEL = Weight Efficacy Lifestyle Questionnaire, URICA = University of Rhode Island Stages of Change Assessment Scale.

Table 4

*Means and standard deviations by group for therapeutic alliance post-session*

	Psychoed. post-session ( <i>N</i> = 21)	MI post-session ( <i>N</i> = 24)
Variables	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
WAI-S		
Bond	15.38 (2.65)	15.25 (2.86)
Tasks*	12.00 (3.23)	14.75 (3.61)
Goals**	9.14 (4.49)	14.50 (3.26)
Total**	36.52 (9.20)	44.48 (8.82)

\*  $p < .05$ , \*\*  $p < .01$

WAI-S = Working Alliance Inventory – Short Form, Psychoed. = Psychoeducation, MI = Motivational Interviewing.

Table 5

*Means and standard by group for variables measured at baseline, 1 month, and 4 months*

	Psychoed. baseline ( <i>N</i> = 24)	MI baseline ( <i>N</i> = 21)	Psychoed. 1-month ( <i>N</i> = 18)	MI 1- month ( <i>N</i> = 20)	Psychoed. 4-months ( <i>N</i> = 16)	MI 4- months ( <i>N</i> = 19)
Variables	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )
Binges/ past month <sup>††</sup>	11.86 (9.16)	7.54 (5.20)	5.06 (5.35)	3.30 (3.96)	4.16 (3.86)	5.47 (7.87)
EDE-Q						
Dietary	2.55	2.73	1.82	2.04	1.76	2.37
Restraint <sup>††</sup>	(1.37)	(1.49)	(0.99)	(1.37)	(1.67)	(1.48)
Eating	2.90	2.40	1.95	1.89	1.88	1.56
Concerns <sup>††</sup>	(1.21)	(1.15)	(1.08)	(1.35)	(1.25)	(1.32)
Weight	3.73	3.69	2.93	3.27	2.79	2.97
Concerns <sup>††</sup>	(1.05)	(1.60)	(1.13)	(1.19)	(1.28)	(1.32)
Shape	4.27	4.43	3.53	3.78	3.38	3.64
Concerns <sup>††</sup>	(1.12)	(1.64)	(1.43)	(1.32)	(1.62)	(1.52)
Global <sup>††</sup>	3.48 (0.90)	3.46 (1.35)	2.68 (1.03)	2.88 (1.09)	2.58 (1.23)	2.77 (1.22)
BES <sup>††</sup>	27.67	28.75	20.10	20.73	19.00	17.32

	(5.86)	(6.07)	(7.73)	(7.20)	(7.97)	(9.51)
BDI-II	18.40	26.43	15.10	15.75	12.33	12.33
	(8.77)	(9.19)	(8.18)	(9.09)	(9.34)	(8.07)
RSES†	18.71	13.55	17.78	15.92	19.69	17.00
	(5.16)	(4.51)	(6.43)	(5.57)	(6.57)	(4.40)
Manual Use						
Chapters	—	—	2.78	2.70	3.06	3.32
read			(1.17)	(0.98)	(1.18)	(1.30)
Time spent	—	—	2.00	2.30	1.94	2.74
reading			(0.69)	(0.98)	(1.06)	(1.33)

†  $p < .05$  ††  $p < .01$  significant main effect of time

*Note:* RSES and BDI-II scores differed significantly between groups at baseline. As such, baseline RSES and BDI-II scores were used as respective covariates in analyses in which these variables were of interest as outcomes. Therefore, identified changes over time on these variables are between 1 and 4 months only.

Psychoed. = Psychoeducation, MI = Motivational Interviewing, EDE-Q = Eating Disorder Examination Questionnaire, BES = Binge Eating Scale, RSES = Rosenberg Self-Esteem Scale, BDI-II = Beck Depression Inventory-II

### Appendix A: Prescreen Questionnaire

Please take five minutes to complete the following questions to help us determine whether you are eligible to participate in this study.

1. Are you male or female?

Male     Female

2. Are you 18 years of age or older?

Yes     No

3. How old are you? (Please write your age in years) \_\_\_\_\_

4. Are you pregnant?

Yes     No     Not applicable

5. What is your current weight in pounds? \_\_\_\_\_

6. How tall are you? \_\_\_\_\_

7. Do you often eat, within any 2-hour period, what most people would regard as an unusually large amount of food?

Yes     No (skip to question 10)

8. During these times, do you often feel that you can't control what or how much you are eating?

Yes     No (skip to question 10)

9. If you answered "Yes" to BOTH questions 7 and 8, has this been at least as often as ONCE A WEEK for the LAST 3 MONTHS, on average?

Yes     No

10. Have you ever done either of the following in order to avoid gaining weight? Please check all that apply.

Made yourself vomit?

Took more than twice the recommended dose of laxatives?

None of the above (skip to question 13)

11. Have you engaged in either of these behaviours to avoid weight gain in the LAST 3 MONTHS?

Yes     No

12. On average, have you engaged in either of these behaviours as often as ONCE A

WEEK over the LAST 3 MONTHS?

Yes     No

13. Have you ever done either of the following in order to avoid gaining weight? Please check all that apply.

Fasted – not eaten anything at all for at least 12 waking hours?

Exercised intensely for more than an hour specifically to avoid gaining weight after binge eating?

None of the above (skip to question 16)

14. Have you engaged in either of these behaviours to avoid weight gain in the LAST 3 MONTHS?

Yes     No

15. On average, have you engaged in either of these behaviours as often as ONCE A WEEK over the LAST 3 MONTHS?

Yes     No

16. Have you ever been diagnosed with any form of Diabetes?

Yes     No

17. Are you currently taking any psychiatric medication (e.g., antidepressants)?

Yes     No (skip to question 19)

18. Please specify which medication you are on and how long you have been on the same type and dose of medication. \_\_\_\_\_

19. Are you currently receiving individual or group psychotherapy?

Yes     No

20. Do you ever drink alcohol (including beer or wine)?

Yes     No (skip to question 21)

20. Has any of the following happened to you MORE THAN ONCE in the LAST 6 MONTHS? Please check all that apply.

You drank alcohol even though a doctor suggested that you stop drinking because of a problem with your health

You drank alcohol or were high from alcohol while you were working, going to school, or taking care of other responsibilities

You missed or were late for work, school, or other activities because you were drinking or hung over

None of the above

21. Do you ever use drugs recreationally?

Yes       No (skip to question 23)

22. Has either of the following happened to you MORE THAN ONCE in the LAST 6 MONTHS? Please check all that apply.

You took drugs and/or were high while you were working, going to school, or taking care of other responsibilities

You missed or were late for work, school, or other activities because you were taking drugs or high

None of the above

23. Please provide us with the following contact information so we can let you know whether you are eligible to participate in this study. Please note that if you choose not to provide this information we will be unable to contact you and you will not be able to participate in the study.

First name: \_\_\_\_\_

E-mail address: \_\_\_\_\_

Phone number at which you would like us to call you: \_\_\_\_\_

Is it okay to leave a message at the phone number you provided?  Yes     No

## Appendix B: Structured Clinical Interview for DSM-IV Axis I Diagnoses (SCID-I):

### Eating Disorder Section

#### ANOREXIA NERVOSA

Now I would like to ask you some questions about your eating habits and your weight. Have you ever had a time when you weighed much less than other people thought you ought to weigh?

If Yes: Why was that? How much did you weigh? How old were you then? How tall were you?

At that time, were you very afraid that you could become fat?

At your lowest weight, did you still feel too fat or that part of your body was still too fat

If no: Did you need to be very thin in order to feel good about yourself?

If no and low weight is medically serious: When you were that thin, did anybody tell you that it could be dangerous to your health to be that thin? (What did you think?)

For females: Before this time, were you having your periods? Did they stop? (For how long?)

(Do you have eating binges in which you eat a lot of food in a short period of time and feel that your eating is out control?) (How often?)

During the past month have you had (symptoms of anorexia nervosa)?

How old were you when you started having (symptoms of anorexia nervosa)?

#### BULIMIA NERVOSA

Have you often had times when your eating was out of control? Tell me about those times.

If unclear: During these times, do you often eat within any 2 hour period what most people would regard as an unusually large amount of food? Tell me about that.

Did you do anything to counteract the effects of eating that much? (Like making yourself vomit, taking laxatives, enemas or water pills, strict dieting or fasting, or exercising a lot?)

How often were you eating that much (and compensatory behaviour)? (At least twice a week for at least 3 months?)

Were your body shape and weight among the most important things that affected how you felt about yourself?

During the past month, have you had (symptoms of bulimia nervosa)?

How old were you when you first started having (symptoms of bulimia nervosa)?

#### BINGE EATING DISORDER

During these binges...

- ...did you eat much more rapidly than normal?
- ...eat until you felt uncomfortably full?
- ...eat large amounts of food when you didn't feel physically hungry?
- ...eat alone because you were embarrassed by how much you were eating?
- ...feel disgusted with yourself, depressed, or very guilty after overeating?

Was it upsetting to you that you couldn't stop eating or control what or how much you were eating?

If unknown: How often did you binge? (For how long?) (At least 2 days a week for at least 6 months?)

### Appendix C: Eating Disorders Examination Questionnaire (EDE-Q)

The following questions are concerned with the PAST FOUR WEEKS ONLY (28 days). Please read each question carefully and choose the appropriate response. Please answer ALL the questions.

ON HOW MANY DAYS OUT OF THE PAST 28 DAYS...

1. Have you been deliberately TRYING to limit the amount of food you eat to influence your weight or shape?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

2. Have you gone for long periods of time (8 hours or more) without eating anything in order to influence your shape or weight?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

3. Have you TRIED to avoid eating foods that you like in order to influence your shape or weight?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

4. Have you TRIED to follow definite rules regarding your eating in order to influence your shape or weight; for example, a calorie limit, a set amount of food, or rules about what or when you should eat?

- No days
- 1-5 days
- 6-12 days

- 13-15 days
- 16-22 days
- 23-27 days
- Every day

5. Have you wanted your stomach to be empty?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

6. Has thinking about food or its calorie content made it much more difficult to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

7. Have you been afraid of losing control over eating?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

8. Have you had episodes of binge eating?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

9. Have you eaten in secret? (Do not count binges.)

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

10. Have you definitely wanted your stomach to be flat?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

11. Has thinking about shape or weight made it more difficult to concentrate on things you are interested in; for example, read, watch TV, or follow a conversation?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

12. Have you had a definite fear that you might gain weight or become fat?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

13. Have you felt fat?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

14. Have you had a strong desire to lose weight?

- No days
- 1-5 days
- 6-12 days
- 13-15 days
- 16-22 days
- 23-27 days
- Every day

OVER THE PAST FOUR WEEKS (28 DAYS)

15. On what proportion of times that you have eaten have you felt guilty because of the effect on your shape or weight? (Do not count binges.)

- None of the times
- A few of the times
- Less than half the times
- Half the times
- More than half the times
- Most of the time
- Every time

16. Over the past four weeks (28 days), have there been any times when you have felt that you have eaten what other people would regard as an unusually large amount of food given the circumstances?

- No       Yes

17. How many such episodes have you had over the past four weeks? (Please write the appropriate number) \_\_\_\_\_

18. During how many of these episodes of overeating did you have a sense of having lost control over your eating? (Please write the appropriate number) \_\_\_\_\_

19. Have you had other episodes of eating in which you have had a sense of having lost control and eaten too much, but have NOT eaten an unusually large amount of food given the circumstances?

- No       Yes

20. How many such episodes have you had over the past four weeks? (Please write the appropriate number) \_\_\_\_\_

21. Over the past four weeks have you made yourself sick (vomited) as a means of controlling your weight or shape?

- No       Yes

22. How many times have you done this over the past four weeks? (Please write the appropriate number) \_\_\_\_\_

23. Have you taken laxatives as a means of controlling your shape or weight?

No       Yes

24. How many times have you done this over the past four weeks? (Please write the appropriate number) \_\_\_\_\_

25. Have you taken diuretics (water tablets) as a means of controlling your shape or weight?

No       Yes

26. How many times have you done this in the past four weeks? (Please write the appropriate number) \_\_\_\_\_

27. Have you exercised HARD as a means of controlling your shape or weight?

No       Yes

28. How many times have you done this over the past four weeks? (Please write the appropriate number) \_\_\_\_\_

OVER THE PAST FOUR WEEKS (28 DAYS)...

(Please choose the number which best describes your behaviour)

29. Has your weight influenced how you think about (judge) yourself as a person?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

30. Has your shape influenced how you think about (judge) yourself as a person?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

31. How much would it upset you if you had to weigh yourself once a week for the next four weeks?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

32. How dissatisfied have you felt about your weight?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

33. How dissatisfied have you felt about your shape?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

34. How concerned have you been about other people seeing you eat?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

35. How uncomfortable have you felt seeing your body; for example, in the mirror, in shop window reflections, while undressing, or taking a bath or shower?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

36. How uncomfortable have you felt about others seeing your body; for example, in communal changing rooms, when swimming, or wearing tight clothes?

0       1       2       3       4       5       6  
Not at all                      Slightly                      Moderately                      Markedly

### Appendix D: Binge Eating Scale (BES)

Below are groups of numbered statements. Read all the statements in each group and mark on this sheet the one that best describes the way you feel about the problems you have controlling your eating behaviour.

1.

- I don't feel self-conscious about my weight or body size when I am with others.
- I feel concerned about how I look to others, but it normally does not make me feel disappointed with myself.
- I do get self-conscious about my appearance and weight, which makes me feel disappointed in myself.
- I feel very self-conscious about my weight and frequently, I feel intense shame and disgust for myself. I try to avoid social contacts because of my self-consciousness.

2.

- I don't have any difficulty eating slowly in the proper manner.
- Although I seem to "gobble down" foods, I don't end up feeling stuffed because of eating too much.
- At times, I tend to eat quickly and then, I feel uncomfortably full afterwards.
- I have the habit of bolting down my food, without really chewing it. When this happens I usually feel uncomfortably stuffed because I've eaten too much.

3.

- I feel capable to control my eating urges when I want to.
- I feel like I have failed to control my eating urges more than the average person.
- I feel utterly helpless when it comes to feeling in control of my eating urges.
- Because I feel so helpless about controlling my eating, I have become very desperate about trying to get in control.

4.

- I don't have the habit of eating when I'm bored
- I sometimes eat when I'm bored, but often I'm able to "get busy" and get my mind off food.
- I have a regular habit of eating when I'm bored, but occasionally, I can use some other activity to get my mind off eating.
- I have a strong habit of eating when I'm bored. Nothing seems to help me break the habit.

5.

- I'm usually physically hungry when I eat something.
- Occasionally, I eat something on impulse even though I really am not hungry.

I have the regular habit of eating foods, that I might not really enjoy, to satisfy a hungry feeling even though physically, I don't need the food.

Even though I'm not physically hungry, I get a hungry feeling in my mouth that only seems to be satisfied when I eat a food, like a sandwich, that fills my mouth. Sometimes, when I eat the food to satisfy my moth hunger, I then spit the food out so I won't gain weight.

6.

I don't feel any guilt or self-hate after I overeat

After I overeat, occasionally I feel guilt or self-hate.

Almost all the time I experience strong guilt or self-hate after I overeat.

7.

I don't lose total control of my eating when dieting even after periods when I overeat.

Sometimes when I eat a "forbidden food" on a diet, I feel like I "blew it" and eat even more.

Frequently, I have the habit of saying to myself, "I've blown it now, why not go all the way" when I overeat on a diet. When that happens I eat even more.

I have a regular habit of starting strict diets for myself, but I break the diets by going on an eating binge. My life seems to be either a "feast" or "famine".

8.

I rarely eat so much food that I feel uncomfortably stuffed afterwards.

Usually about once a month, I eat such a quantity of food, I end up feeling very stuffed.

I have regular periods during the month when I eat large amounts of food, either at mealtimes or at snacks.

I eat so much food that I regularly feel quite uncomfortable after eating and sometimes a bit nauseous.

9.

My level of caloric intake does not go up very high or down very low on a regular basis.

Sometimes after I overeat, I will try to reduce my caloric intake to almost nothing to compensate for the excess calories I've eaten.

I have a regular habit of overeating during the night. It seems that my routine is not to be hungry in the morning but overeat in the evening.

In my adult years, I have had week-long periods where I practically starve myself. This follows periods when I overeat. It seems I live a life of either "feast" or "famine".

10.

I usually am able to stop eating when I want to. I know when "enough is enough".

Every so often, I experience a compulsion to eat which I can't seem to control.

Frequently, I experience strong urges to eat which I seem unable to control, but at other times I can control my eating urges.

I feel incapable of controlling urges to eat. I have a fear of not being able to stop eating voluntarily.

11.

I don't have any problem stopping eating when I feel full.

I usually can stop eating when I feel full but occasionally overeat leaving me feeling uncomfortably stuffed.

I have a problem stopping eating once I start and usually I feel uncomfortably stuffed after I eat a meal.

Because I have a problem not being able to stop eating when I want, I sometimes have to induce vomiting to relieve my stuffed feeling.

12.

I seem to eat just as much when I'm with others (family, social gatherings) as when I'm by myself.

Sometimes, when I'm with other persons, I don't eat as much as I want to eat because I'm self-conscious about my eating.

Frequently, I eat only a small amount of food when others are present, because I'm very embarrassed about my eating.

I feel so ashamed about overeating that I pick times to overeat when I know no one will see me. I feel like a "closet eater".

13.

I eat three meals a day with only an occasional between meal snack.

I eat 3 meals a day, but I also normally snack between meals.

When I am snacking heavily, I get in the habit of skipping regular meals.

There are regular periods when I seem to be continually eating, with no planned meals.

14.

I don't think much about trying to control unwanted food urges

At least some of the time, I feel my thoughts are preoccupied with trying to control my eating urges.

I feel that frequently I spend too much time thinking about how much I ate or about trying not to eat anymore.

It seems to me that most of my waking hours are preoccupied by thoughts about eating OR not eating. I feel like I'm constantly struggling not to eat.

15.

I don't think about food a great deal.

I have strong cravings for food but they last only for brief periods of time.

I have days when I can't seem to think about anything else but food.

Most of my days seem to be preoccupied with thoughts about food. I feel like I live to eat.

16.

I usually know whether or not I'm physically hungry. I take the right portion of food to satisfy me.

Occasionally, I feel uncertain about knowing whether or not I'm physically hungry. At these times it's hard to know how much food I should take to satisfy me.

Even though I might know how many calories I should eat, I don't have any idea what is a "normal" amount of food for me.

### Appendix E: University of Rhode Island Change Assessment Scale (URICA)

Please indicate the extent to which you tend to AGREE or DISAGREE with each statement. In each case, make your choice in terms of how you feel RIGHT NOW, not what you have felt in the past or would like to feel. There are FIVE possible responses to each of the questionnaire items. Please write down the number that best describes how much you agree or disagree with each statement

---

1= strongly agree  
 2=disagree  
 3= undecided  
 4= agree  
 5= strongly agree

---

1. As far as I am concerned, I do not have any binge eating problems that need changing  
 \_\_\_\_\_
2. I think I might be ready for some self-improvements in my binge eating \_\_\_\_
3. I am doing something about the binge eating problem that has been bothering me  
 \_\_\_\_\_
4. It might be worthwhile to work on my binge eating problem \_\_\_\_\_
5. I am not the problem one. It does not make much sense for me to be here \_\_\_\_
6. It worries me that I might slip back on a binge eating problem I have already change,  
 so I am hear to seek help \_\_\_\_
7. I am finally doing something to work on my binge eating problem \_\_\_\_
8. I have been thinking that I might want to change my binge eating problem \_\_\_\_
9. I have been successful in working on my binge eating problem, but I am not sure I  
 can keep up the effort on my own \_\_\_\_
10. At times my binge eating problem is difficult, but I am working on it \_\_\_\_

11. Working on my binge eating problem is pretty much a waste of time for me because it does not have anything to do with me \_\_\_\_
12. I am working on my binge eating problem in order to better understand myself \_\_\_\_
13. I guess I have a binge eating problem, but there is nothing that I really need to change \_\_\_\_
14. I am really working hard to change my binge eating problem \_\_\_\_
15. I have a binge eating problem and I really think I should work on it \_\_\_\_
16. I am not following through with the changes I have already made as well as I had hoped and I am working to prevent a relapse of my binge eating problem \_\_\_\_
17. Even though I am not always successful in changing, I am at least working on my binge eating problem \_\_\_\_
18. I thought once I had resolved my binge eating problem, I would be free of it, but sometimes I find myself still struggling with it \_\_\_\_
19. I wish I had more ideas on how to solve my binge eating problem \_\_\_\_
20. I have started working on my binge eating problem, but I would like some help \_\_\_\_
21. Maybe someone will be able to help me with my binge eating problem \_\_\_\_
22. I may need a boost right now to help me maintain the changes I have already made in my binge eating problem \_\_\_\_
23. I may be a part of my binge eating problem, but I do not really think I am \_\_\_\_
24. I hope that someone will have some good advice for me about controlling my binge eating \_\_\_\_

25. Anyone can talk about changing their binge eating; I am actually doing something about it \_\_\_
26. All this talk about psychology is boring. Why can't people just forget about their binge eating problems \_\_\_
27. I am working to prevent myself from having a relapse of my binge eating problem \_\_\_
28. It is frustrating, but I feel I might be having a recurrence of the binge eating problem I thought I had resolved \_\_\_
29. I have worries about my binge eating, but so does the next person. Why spend time thinking about it? \_\_\_
30. I am actively working on my binge eating problem \_\_\_
31. I would rather cope with my binge eating problem than try to change it \_\_\_
32. After all I have done to try to change my binge eating problem, every now and then it comes back to haunt me \_\_\_

### Appendix F: Motivational Rulers

Please rate the extent to which the following items are true for you on a scale from 0 to 10, where 0 = NOT AT ALL TRUE FOR ME and 10 = COMPLETELY TRUE FOR ME. In each case, make your choice in terms of how you feel right now, not how you have felt in the past or would like to feel.

1. It is IMPORTANT for me to stop binge eating.

0    1    2    3    4    5    6    7    8    9    10

2. I COULD stop binge eating.

0    1    2    3    4    5    6    7    8    9    10

3. I am TRYING to stop binge eating

0    1    2    3    4    5    6    7    8    9    10

### Appendix G: Weight Efficacy Lifestyle Questionnaire (WEL)

**Instructions:** Read each situation listed below and decide how confident you are that you will be able to resist binge eating in each of the different situations. On a scale from 0 (not at all confident) to 9 (very confident), choose ONE number that reflects how confident you feel RIGHT NOT about be able to successfully resist the desire to binge eat. Write this number next to each item.

---

Not at all confident that you can  
resist the desire to binge eat

Very confident that you can  
resist the desire to binge eat

0      1      2      3      4      5      6      7      8      9

---

1. I can resist eating when I am anxious (nervous) \_\_\_\_
2. I can control my eating on the weekends \_\_\_\_
3. I can resist eating even when I have to say “no” to others \_\_\_\_
4. I can resist eating when I am watching TV \_\_\_\_
5. I can resist eating when I feel physically run down \_\_\_\_
6. I can resist eating when I am depressed (or down) \_\_\_\_
7. I can resist eating when there are many different kinds of food available \_\_\_\_
8. I can resist eating even when I feel it is impolite to refuse a second helping \_\_\_\_
9. I can resist eating when I have a headache \_\_\_\_
10. I can resist eating when I am reading \_\_\_\_
11. I can resist eating when I am angry (or irritable) \_\_\_\_
12. I can resist eating even when I am at a party \_\_\_\_
13. I can resist eating even when others are pressuring me to eat \_\_\_\_
14. I can resist eating when I am in pain \_\_\_\_

15. I can resist eating just before going to bed \_\_\_\_
16. I can resist eating when I have experience failure \_\_\_\_
17. I can resist eating even when high-calorie foods are available \_\_\_\_
18. I can resist eating even when I think others will be upset if I don't eat \_\_\_\_
19. I can resist eating when I feel uncomfortable \_\_\_\_
20. I can resist eating when I am happy \_\_\_\_

## Appendix H: Working Alliance Inventory – Short Form (WAI-S)

Below is a series of statements about experiences people might have with their therapy or therapist. Some items refer directly to the therapist in this study with an underlined space- as you read the sentences, mentally insert the name of your therapist in place of each \_\_\_\_\_ in the text. For each statement, please take your time to consider your own experience in this study and then check the appropriate box.

IMPORTANT: The rating scale is not the same for all statements. Please read carefully!

1. As a result of the session I am clearer as to how I might be able to change.

- Seldom
- Sometimes
- Fairly often
- Very often
- Always

2. What I did in the therapy session gave me a new way of looking at my problem.

- Seldom
- Sometimes
- Fairly often
- Very often
- Always

3. I believe \_\_\_\_\_ likes me

- Always
- Very often
- Fairly often
- Sometimes
- Seldom

4. \_\_\_\_\_ and I collaborate on setting goals for my therapy.

- Seldom
- Sometimes
- Fairly often
- Very often
- Always

5. \_\_\_\_\_ and I respect each other.

- Always
- Very often
- Fairly often
- Sometimes

Seldom

6. \_\_\_\_\_ and I are working towards mutually agreed upon goals.

- Always
- Very often
- Fairly often
- Sometimes
- Seldom

7. I feel that \_\_\_\_\_ appreciates me.

- Always
- Very often
- Fairly often
- Sometimes
- Seldom

8. \_\_\_\_\_ and I agree on what is important for me to work on.

- Seldom
- Sometimes
- Fairly often
- Very often
- Always

9. I feel \_\_\_\_\_ cares about me even when I do things that she does not approve of.

- Always
- Very often
- Fairly often
- Sometimes
- Seldom

10. I feel that the things I do in therapy will help me to accomplish the changes that I want.

- Seldom
- Sometimes
- Fairly often
- Very often
- Always

11. \_\_\_\_\_ and I have established a good understanding of the kind of changes that would be good for me.

- Seldom
- Sometimes
- Fairly often
- Very often

Always

12. I believe that the way we are working with my problem is correct.

Always

Very often

Fairly often

Sometimes

Seldom

### Appendix I: Rosenberg Self-Esteem Scale (RSES)

Below is a list of statements dealing with your general feelings about yourself. If you strongly agree, circle SA. If you agree with the statement, circle A. If you disagree, circle D. If you strongly disagree, circle SD.

- |   |    |   |   |    |
|---|----|---|---|----|
| 1. On the whole, I am satisfied with myself.                                  | SA | A | D | SD |
| 2. At times, I think I am no good at all.                                     | SA | A | D | SD |
| 3. I feel that I have a number of good qualities.                             | SA | A | D | SD |
| 4. I am able to do things as well as most other people.                       | SA | A | D | SD |
| 5. I feel I do not have much to be proud of.                                  | SA | A | D | SD |
| 6. I certainly feel useless at times.   | SA | A | D | SD |
| 7. I feel that I'm a person of worth, at least on an equal plane with others. | SA | A | D | SD |
| 8. I wish I could have more respect for myself.                               | SA | A | D | SD |
| 9. All in all, I am inclined to feel that I am a failure.                     | SA | A | D | SD |
| 10. I take a positive attitude toward myself.                                 | SA | A | D | SD |

## Appendix J: Beck Depression Inventory – II (BDI-II)

This questionnaire consists of 21 groups of statements. Please read each group of statements carefully, and then pick out the ONE STATEMENT in each group that best describes the way you have been feeling during the PAST 2 WEEKS, INCLUDING TODAY. If several statements in the group seem to apply equally well, choose the highest number for that group. Be sure that you do not choose more than one statement for any group.

### 1. Sadness

- 0 - I do not feel sad
- 1 - I feel sad much of the time
- 2 - I am sad all the time
- 3 - I am so sad or unhappy that I can't stand it

### 2. Pessimism

- 0 - I am not discouraged about my future
- 1 - I feel more discouraged about my future than I used to be
- 2 - I do not expect things to work out for me
- 3 - I feel my future is hopeless and will only get worse

### 3. Past Failure

- 0 - I do not feel like a failure
- 1 - I have failed more than I should have
- 2 - As I look back, I see a lot of failures
- 3 - I feel I am a total failure as a person

### 4. Loss of Pleasure

- 0 - I get as much pleasure as I ever did from the things I enjoy
- 1 - I don't enjoy things as much as I used to
- 2 - I get very little pleasure from the things I used to enjoy
- 3 - I can't get any pleasure from the things I used to enjoy

### 5. Guilty Feelings

- 0 - I don't feel particularly guilty
- 1 - I feel guilty over many things I have done or should have done
- 2 - I feel quite guilty most of the time
- 3 - I feel guilty all of the time

### 6. Punishment Feelings

- 0 - I don't feel I am being punished
- 1 - I feel I may be punished
- 2 - I expect to be punished

3 - I feel I am being punished

7. Self-Dislike

0 - I feel the same about myself as ever

1 - I have lost confidence in myself

2 - I am disappointed in myself

3 - I dislike myself

8. Self-Criticalness

0 - I don't criticize or blame myself more than usual

1 - I am more critical of myself than I used to be

2 - I criticize myself for all of my faults

3 - I blame myself for everything bad that happens

9. Suicidal Thoughts or Wishes

0 - I don't have any thoughts of killing myself

1 - I have thoughts of killing myself, but I would not carry them out

2 - I would like to kill myself

3 - I would kill myself if I had the chance

10. Crying

0 - I don't cry anymore than I used to

1 - I cry more than I used to

2 - I cry over every little thing

3 - I feel like crying, but I can't

11. Agitation

0 - I am no more restless or wound up than usual

1 - I feel more restless or wound up than usual

2 - I am so restless or agitated that it's hard to stay still

3 - I am so restless or agitated that I have to keep moving or doing something

12. Loss of Interest

0 - I have not lost interest in other people or activities

1 - I am less interested in other people or things than before

2 - I have lost most of my interest in other people or things

3 - It's hard to get interested in anything

13. Indecisiveness

0 - I make decisions about as well as ever

1 - I find it more difficult to make decisions than usual

2 - I have much greater difficulty in making decisions than I used to

3 - I have trouble making any decisions

## 14. Worthlessness

- 0 - I do not feel I am worthless
- 1 - I don't consider myself as worthwhile and useful as I used to n
- 2 - I feel more worthless as compared to other people
- 3 - I feel utterly worthless

## 15. Loss of Energy

- 0 - I have as much energy as ever
- 1 - I have less energy than I used to have
- 2 - I don't have enough energy to do very much
- 3 - I don't have enough energy to do anything

## 16. Changes in Sleeping Pattern

- 0 - I have not experienced any change in my sleeping pattern n
- 1a - I sleep somewhat more than usual
- 1b - I sleep somewhat less than usual
- 2a - I sleep a lot more than usual
- 2b - I sleep a lot less than usual
- 3a - I sleep most of the day
- 3b- I wake up 1-2 hours early and can't get back to sleep

## 17. Irritability

- 0 - I am no more irritable than usual
- 1- I am more irritable than usual
- 2 - I am much more irritable than usual n
- 3 - I am irritable all the time

## 18. Changes in Appetite

- 0 - I have not experienced any change in my appetite
- 1a - My appetite is somewhat less than usual
- 1b - My appetite is somewhat greater than usual
- 2a - My appetite is much less than before
- 2b - My appetite is much greater than usual
- 3a - I have no appetite at all
- 3b - I crave food all the time

## 19. Concentration Difficulty

- 0 - I can concentrate as well as ever
- 1 - I can't concentrate as well as usual
- 2 - It's hard to keep my mind on anything for very long n
- 3 - I find I can't concentrate on anything

## 20. Tiredness or Fatigue

- 0 - I am no more tired or fatigued than usual

- 1 - I get more tired or fatigued more easily than usual
- 2 - I am too tired or fatigued to do a lot of the things I used to do
- 3 - I am too tired or fatigued to do most of the things I used to do

21. Loss of Interest in Sex

- 0 - I have not noticed any recent change in my interest in sex
- 1 - I am less interested in sex than I used to be
- 2 - I am much less interested in sex now
- 3 - I have lost interest in sex completely

### Appendix K: Treatment Manual Use Questions

1. How much time did you spend reading/using the treatment manual?

- < 1 hour
- 1 - 5 hours
- 5 - 10 hours
- 10 - 15 hours
- > 15 hours

2. How many chapters of the manual did you read?

- I didn't read any of the manual.
- I read less than half of the chapters in the manual.
- I read approximately half of the manual.
- I read more than half of the manual.
- I read all of the manual.

## **Appendix L: Motivational Interviewing for BED Protocol**

Miller & Rollnick's (2002) motivational interviewing handbook, Bewell-Weiss' (2009) motivational interviewing for eating disorders treatment manual, and lecture slides and handouts from a motivational interviewing workshop led by Miller and Moyers (2011) were consulted in the creation of the current protocol.

No explicit treatment manual was created for this study, as the explicit manualization of this approach runs somewhat counter to the spirit of MI. Indeed, some research suggests that MI treatment trials that rely on MI manuals are associated with poorer treatment outcome than MI treatment trials that do not rely on manuals (Hettema, Steele, & Miller, 2005). Amrhein, Miller, Yahne, Palmer, and Fulcher (2003) suggest that this may be because manuals may force therapists to push their clients in the direction of change whether or not the client is ready for change. However, as it was important to standardize the sessions for the purposes of this study, a general protocol or guideline for therapy was developed.

The following protocol is designed to take place after the client and therapist have reviewed the consent form and the client has completed the baseline measures. Throughout the session, the therapist will work with the client in a collaborative goal-directed manner and will attempt to elicit and respond to change talk using the methods outlined below.

### **Introducing the Treatment**

First, the therapist will briefly explain to the client the structure of the session in order to establish rapport and inform the client about how the session will work. The introduction will be very brief and will include the following points:

1. The therapist is not there to convince the client of anything, but rather to be there with the client and explore his or her thoughts about binge eating.
2. It is normal to feel two ways about a problem.
3. This session is not about making changes right now, but is about exploring why the client may want to or not want to change.

### **Exploration of Binge Eating/Motivation to Change**

The therapist will begin the session by using open-ended questions to get the client thinking about his or her binge eating and feelings about change. This questioning also serves to further develop rapport. Specifically, the therapist will ask the client, "What made you decide to participate in this study?"

*If the client expresses a desire or need to stop binge eating, the therapist will ask the client, "Why do you want to stop binge eating?" or "Why is it important for you to stop binge eating?" After listening to and reflecting the client's response, the therapist will then tell the client, "Before we talk about some of the not-so-good things about binge*

eating, what are some of the good things about binge eating? What do you get out of binge eating?” Once the client has provided some answers, the therapist will then ask, “What are some of the not-so-good things about binge eating?”

*If the client expresses that binge eating is not a problem*, the therapist will “come alongside” the client and explicitly join with the negative (status quo) side of ambivalence by reflecting or amplifying the client’s response, e.g., “Binge eating is so important to you that you won’t give it up, no matter what the cost.” Note: this may also be done at any point during the session in which resistance or discord occurs. The therapist will then ask the client what he or she likes about binge eating, followed by asking the client what some of the not-so-good things about binge eating might be.

### **Decisional Balance** (see Appendix L1)

After the client has identified both pros and cons to binge eating, the therapist will reflect this feeling of ambivalence to the client (e.g., “On one hand, you feel \_\_\_\_\_, and on the other you feel \_\_\_\_\_”). The therapist will then suggest to the client that they could better examine these pros and cons all at once by writing them down and will explain the decisional balance sheet, a technique that involves writing out on paper the pros and cons of changing as well as the pros and cons of staying the same (i.e., continuing to binge eat).

The client will then be given the decisional balance sheet from the manual created by Bewell-Weiss (2009) so the client can write down the ideas as the therapist and client discuss them. After the decisional balance has been completed, the therapist will ask the client how he or she found the task and whether anything interesting stands out as he or she looks over the answers. Each point will then be explored in more detail and the therapist will ask the client to provide examples of each identified pro or con.

### **Looking Back**

To begin to elicit change talk, the therapist will ask the client about a time before he or she began binge eating and describe how things were different.

### **Looking to the Future**

Next, the therapist will ask the client to imagine and describe what his or her life might be like five years in the future if things continue unchanged (e.g., “What would your life be like five years in the future if things stay the same and you decide not to stop binge eating?”). The therapist will then ask the client to consider what his or her life would be like five years in the future if he or she stopped binge eating (e.g., “If you were 100% successful in making changes in your binge eating, what would be different? How would you like your life to be five years from now?”)

### **Querying Extremes**

To encourage further change talk, the therapist will then ask the client, “What are the worst things that might happen if you don’t make this change?” What are the best things that might happen if you do make this change?”

### **Exploring Goals and Values**

The therapist and client will then work together to identify the client’s values to determine whether there are any discrepancies between his or her binge eating and the things that are important to him or her. This again serves to elicit further change talk. To do this, the therapist may ask the client, “What are the most important things to you?” or “What do you value most in life or want out of life?” The therapist will then encourage the client to elaborate on these values by asking open-ended questions and asking for examples or greater detail. Following this, the therapist will ask the client, “How does binge eating fit in with these goals and values?”

### **Change Rulers**

The therapist will then target the client’s beliefs about his or *need* to change, *desire* to change, and *confidence* in his or her abilities to change by asking the client three questions on a scale from 0-10: (1) How *important* is it for you to stop binge eating? (2) How much do you *want* to stop binge eating? (3) How *confident* are you that you could stop eating if you tried? The therapist may then ask for more detail on any of the responses. Following the suggestions outlined by Miller and Rollnick (2002), the therapist will not ask the client why he or she is not at a higher number, because this would encourage the client to talk about reasons why he or she does not want to change. Instead, the therapist will ask the client why he or she is not at a lower number. This will encourage the client to talk about reasons for changing. The therapist may then choose to ask the client, “What might happen to move you from a \_\_\_ to a higher number (for example, from a 4 to an 8)?” This again will encourage change talk in the client. The therapist will not ask the client how *ready* he or she is to change because this question tends to be confusing as it combines components of desire, ability, reasons, and need.

### **Increasing Confidence**

If the client is demonstrating increasing desire and need for change as indicated by increases in change talk, the therapist will then try and increase the client’s confidence by asking about the client’s personal strengths and supports. Specifically, as suggested by Miller & Rollnick (2002), the therapist will ask, “What is there about you, what strong points do you have, that could help you succeed in making this change?” In addition, or as an alternative if the client cannot think of any adjectives, the therapist may ask the client “What have you done successfully in the past that is like this in some way?” or “How do you think you could do this if you really wanted to succeed?” in order to further increase confidence talk.

### **Treatment Planning**

If the client displays a great deal of preparatory change talk (i.e., desire, ability, reasons, and need for change statements), the therapist will then attempt to elicit more

mobilizing change talk (i.e., committing, activating, and taking steps language) by asking the client how he or she might go about stopping binge eating or what he or she intends to do next. Through this, the client and therapist may then work together to explore possible ways that the client may stop binge eating. The client is also asked to think about concrete examples of things that will let her know that the plan is working, as well as potential obstacles and what to do if the plan isn't working.

### **Summarizing**

To conclude the session, the therapist will summarize to the client what they have discussed during the session with an emphasis on the change talk that the client expressed and an overview of the plan the client intends to follow through with if one was created. Summarizing statements may also be used throughout the session in order to collect material that has been offered, link something that has just been said with something discussed earlier, or transition to a new task.

### **Presenting the Manual**

In keeping with the MI spirit, the therapist will emphasize the client's autonomy when presenting the manual to the client. Specifically, the therapist will qualify that the manual is to be handed out as part of the study and explain that while other people who binge eat have found the manual to be helpful, only the client can know for sure if the manual will be helpful for him or her. For example, the therapist might say, "Everyone's different, but a lot of people who binge eat have found this manual to be helpful" or "I don't know if this will work for you, but many people who binge eat have found this manual to be very helpful".

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**Appendix L1: Decisional Balance Measure**

	Pros/Benefits	Cons/Costs
Making a Change		
Staying the Same		

## Appendix M: Psychoeducation Protocol

The following protocol is based on Part 1 of Fairburn's (1995) *Overcoming Binge Eating* self-help manual. The therapist will discuss the following information with the client and will check in with the client at the end of each section and at various point throughout the session to see if what has been said makes sense to the client and/or fits with his or her experience. In addition, the client will be encouraged to ask questions at any point in time.

### Introducing the Treatment

Thank you for agreeing to participate in this study. As you know, we are looking at binge eating and working to uncover ways to help people reduce or stop binge eating. For the time that we have together today, I am going to provide you with some information about binge eating- what it is, who binge eats, what are the causes and consequences of binge eating, and what are some options for treatment. At the end of our session, I will give you a manual designed to help people stop or cut down on binge eating.

If you have questions at any point during this session or if something doesn't make sense to you, please let me know. I will also keep checking in with you periodically to see how what I am saying fits with your knowledge and personal experience.

### What is Binge Eating?

To begin, I would like to talk about what we mean by binge eating. There are two main characteristics of an eating episode that make it considered a binge:

1. The amount of food eaten is large (in comparison to the amount of food most people would typically eat during the same amount of time under the same circumstances)
  2. There is a sense of a lack of control over eating during the episode
- This second point about the loss of control associated with binge eating is what differentiates binge eating from everyday overeating
  - While these are the main characteristics of a binge, other behaviours or feelings are typically associated with binge eating.
  - In particular, there are often feelings of disgust, guilt or embarrassment associated with bingeing- while the first moments of a binge can be enjoyable or comforting, these feelings typically don't last long and give way to feelings of disgust after the binge or even as the binge continues
  - For some people, rapid eating may also occur- many people say they eat quickly or mechanically and barely chew their food during their binges
  - Agitation is another common characteristic of binges. Some people say that pace while binge eating, or experience feelings of compulsion to eat or craving of a

binge. This can sometimes lead to taking food from others, stealing food from stores, or eating food that others may not normally eat, such as thrown in the garbage

- Another characteristic that is common during binge eating, are feelings of being “on autopilot” or in a trance, as if the behaviour is just automatic. Related to this, sometimes people will say that they watch TV or listen to loud music to distract themselves during a binge.
- Lastly, secretiveness is a common characteristic of binges. This may mean hiding binges from others by eating alone when no one is home or in a bedroom or bathroom or hiding the food that they are going to binge on.
- While these characteristics may be typical or common of many people’s binges, not every single one of them hold true for everyone who binge eats.
- In terms of how much food constitutes a binge, in order for an eating episode to be considered what we call an *objective* binge, it has to be more food than most people would eat in a similar situation. Sometimes people feel like they have had a binge in that they think that they have eaten a large amount of food and it feels out of control, but objectively someone else would not see what they ate as a large amount of food. This is an example of a *subjective* rather than *objective* binge. For example, someone may feel that eating 2 cookies is a binge because it feels like a lot of food to that individual and she felt out of control when she was eating them, but an outside observer would not consider that a larger amount of food than most people would typically eat so we would not consider it an objective binge.
- That being said, the amount of food eaten during a binge varies a great deal from person to person. Occasionally people describe eating 15 000 to 20 000 calories during a binge, but more often, the typical binge contains between 1 000 and 2 000 calories. About one quarter of people who binge eat describe eating more than 2 000 calories during a binge.
- As you can imagine, because of the amount of food eaten during a binge, binges can also be expensive and sometimes people have financial difficulties because of the cost of binge eating.
- In terms of the length of time that binges last, this also varies. For people who purge after their binges (by vomiting or using laxatives), their binges typically last about 1 hour. On the other hand, people who do not purge after bingeing typically (but not always) have longer binges, anywhere from twice as long to several hours.
- In regards to the types of foods that people who binge eat typically eat during a binge, this too differs from person to person. While this differs somewhat from person to person, what research has found is that for most people, binges involve foods the person is actively trying to avoid (e.g., desserts or sweets)
- When we think about what leads up to a binge, the research shows that many different things can trigger binges and these factors may differ from person to person. Some common or typical triggers of binges among people who binge eat are negative emotions or unpleasant feelings (e.g., tension, stress, loneliness,

feeling fat), gaining weight, breaking a dieting rule, unstructured time, being alone, PMS, and drinking alcohol.

- In considering the consequences or aftermath of binge eating, after a binge many people say they feel some temporary positive emotions like relief or comfort, but these quickly give way to negative feelings of guilt, shame, and disgust

### **Eating Disorders and Binge Eating**

- Now that we've covered what exactly binge eating is by definition, I want to talk a bit about when binge eating would be considered part of an eating disorder.
- There are three different types of eating disorders: Anorexia Nervosa, Bulimia Nervosa, and an Eating Disorder Not Otherwise Specified category for people whose symptoms do not fit the criteria for either anorexia or bulimia. Binge Eating Disorder fits into this category and I will tell you more about this disorder in just a moment.
- To be given a diagnosis of Anorexia Nervosa, there are two main conditions that must be met: (1) the individual is significantly underweight as a result of his or her own efforts. In this case, significantly underweight is generally considered to be below a body mass index of 18; (2) the individual is highly concerned about his or her weight and/or shape. About 1/3 of people with anorexia also may binge eat, but in this case, binges are typically subjective rather than objective in nature.
- Bulimia Nervosa is the second eating disorder I mentioned. To receive a diagnosis of bulimia, the person must have objective binges (like we discussed earlier) and they must occur frequently, which right now is defined as at least 2x/week, but this criteria will soon change to 1x/week because research has found that there is not a difference between people who binge eating 1x/week versus 2x/week. He or she must also regularly compensate for bingeing by vomiting, using laxatives, excessively exercising, or fasting for long periods of time. The person must also be excessively concerned with his or weight or shape. Lastly, to receive a diagnosis of bulimia, the person cannot also have a diagnosis of anorexia. That is, he or she cannot be significantly underweight.
- Binge Eating Disorder is the other eating disorder in which bingeing is also a main feature. Currently, it falls under the category of an Eating Disorder Not Otherwise Specified, but recent research has found that Binge Eating Disorder is a distinct disorder and is now being recognized by researchers and clinicians with its own diagnosis.
- People with Binge Eating Disorder have regular binges, but do not regularly use extreme methods such as vomiting to compensate for these binges. They are also distressed by this behaviour or find that it impairs their quality of life. Unlike for anorexia and bulimia, with binge eating disorder, men and women are close to equally affected, the age group appears to be broader, and ethnic minorities are more commonly affected.
- In terms of prevalence, the prevalence rate of BED is estimated to be approximately 3% in the community, but is higher among obese individuals and overweight individuals. However, it is a common misconception that *all* people

with binge eating disorder are overweight. About half of people with binge eating disorder are overweight and half are not. Research also suggests that prevalence estimates of BED are much higher among individuals seeking treatment for weight loss (i.e., BED is more common among people who are looking for ways to lose weight than those who are not actively seeking out weight loss treatments).

- I also want to point out here that although I mentioned that approximately 3% of people in the community have binge eating disorder, it is a bit tricky to pinpoint how many people binge eat because not everyone seeks help. There is a lot of shame and embarrassment around binge eating and many people worry about others finding out about this problem. People also commonly hope the problem will go away on its own or that their problem is not severe enough to warrant help or they do not deserve help or they should be able to control this somehow and should be able to stop on their own. There may also be financial barriers to getting help, for example it can be costly to see a psychologist for help. It can also be difficult for people to tell their family doctor about their binge eating because of shame or embarrassment, because they don't have a family doctor, or, if they do tell their doctor, their doctor may not be aware of the best treatment or even take the problem seriously.

### **Psychological and Social Problems Associated with Binge Eating**

- I would like to spend a few minutes now discussing some of the psychological and social problems that are associated with binge eating. Sometimes, a binge is just a binge and does not affect the person's quality of life or overall happiness. However, what is more often the case is that binge eating is associated with other problems.
- The problems associated with binge eating can often be cyclical; certain problems lead to binge eating which leads to more problems and then more binge eating and the cycle continues.
- One issue that is commonly associated with binge eating is dieting. Many people who binge eat also diet. Although dieting often occurs in response to binge eating, for most people who diet and binge eat, binge eating is also *caused* in part because of the dieting in that it makes people more vulnerable to binge eating, which I will discuss as we go on.
- Among people with BED, dieting tends to be intermittent rather than continuous, whereby people have periods of successful dieting followed by periods of overeating and bingeing. This often leads to body weight fluctuations.
- In terms of how people diet, people who diet may do so by avoiding eating entirely or fasting (although this is much more common among people with eating disorders than people who diet in the general population) or by restricting how much food they are eating by setting a limit of calories or grams of fat they can eat in a day to a very low amount or by avoiding certain foods (e.g., avoiding carbohydrates or sugar).

- Sometimes people may also say that they are not dieting, but instead trying to “eat healthy”. However, if the purpose of the change in eating is to alter your shape or weight that is considered dieting.
- The types of dieting that I mentioned here are some more extreme ways of dieting that have strict rules associated with them. What happens when you have these strict rules about dieting and what you can or cannot eat or have a very strict limit on how much you can eat, there is a high risk of breaking those rules because they are so extreme and difficult to follow. Once these rules are broken, which is not difficult to do as the rules are so strict to begin with, many people experience feelings of being a failure. These feelings about having “failed” their diet then lead people to experience more negative feelings about themselves and these negative emotions and negative self-thoughts can then lead to binge eating. In this sense, strict and extreme diets set people up to binge eat because they set impossibly high standards.
- Not only does strict dieting set people up to fail by setting unrealistic goals, but if dieting is extreme and strict strong physiological pressures to eat will kick in and this in turn can lead to overeating or bingeing.
- One of the most interesting facts about dieting is that it encourages overeating even in people who do not binge.
- While people with Bulimia Nervosa are more likely than people with Binge Eating Disorder to fall into this “all or nothing” trap of extreme dieting followed by binge eating, people with Binge Eating Disorder may follow this pattern as well.
- What is in fact more common among people with Binge Eating Disorder is a tendency to overeat in general by having large meals and many snacks.
- Most people who binge eat are highly concerned about their looks and their weight and feel that their self-confidence and self-worth are closely tied in with their appearance in general and their body shape or size in particular. While this extreme thinking is also more common among people with bulimia nervosa, people with binge eating disorder, particularly those who are overweight also tend to be concerned about their appearance and their weight. However, they tend to be somewhat more understanding of their weight and are less extreme in the value they place on their weight in terms of their self worth. Nevertheless, many people with binge eating disorder go to great lengths to prevent other people from seeing their body or seeing it themselves and some view their bodies with disgust or hatred.
- Perhaps one of the biggest problems associated with binge eating are mood and relationships. Changes in mood can occur as a result of binge eating, but also *cause* binge eating to occur. Many people who binge eat do so when they are anxious, depressed, lonely, or bored. While many people say that binge eating temporarily helps them to forget these feelings or at least avoid them for a short period of time, most people say then say that these feelings are amplified or worsened after they binge eat and new negative feelings come up, such as shame, guilt, and embarrassment

- Binge eating may have an effect on people's relationships. For example, many people who binge eat do so alone and hide this secret from their family and friends, which can then lead to greater feelings of isolation and loneliness.
- Certain personality traits or characteristics are also found in people who binge eat, in particular low self-esteem, perfectionism, all-or-nothing thinking (e.g., things are all good or all bad, they are in control or out of control, etc.), and impulsivity.

### **Physical Problems Associated with Binge Eating**

- We've just spent some time discussing a lot of the psychological and social problems associated with binge eating, but there are also physical problems associated with binge eating
- Binge eating has few immediate physical effects. The main physical effects are feelings of fullness, which can sometimes be intense and painful and may occasionally leave people feeling as though they can't breathe.
- One of the more long-term physical problems associated with binge eating is obesity or weight gain. What is interesting is that although it might seem that weight gain or obesity is a direct cause of binge eating, this relationship, like the one we discussed between dieting and binge eating, actually appears to be cyclical. That is, obesity may lead to dieting and negative feelings, which in turn may lead to binge eating and then to further weight gain or obesity, further dieting and negative emotions, and then further binge eating. (SHOW FIGURE OF CYCLE- See Appendix M1).
- There are also physical effects of dieting. Aside from the psychological consequences, such as always thinking about food and becoming preoccupied with thoughts of "forbidden foods", which research has shown tends to happen with people who diet, the physical effects of "yo-yo dieting" (i.e., going on and off diets) and associated weight fluctuations can lead to an increased risk of death cardiovascular disease.
- Dieting and weight loss can also affect hormones and menstrual cycle regularity in women
- In addition, dieting also disrupts certain physiological mechanisms that control eating. This is because the nutritional composition of food has an important influence on controlling appetite. For example, it is known that carbohydrates rapidly suppress hunger. If someone is avoiding eating foods carbohydrates, he or she is missing out on that natural appetite suppressant.
- Dieting also affects certain neurotransmitters in the brain, such as serotonin, which in turn affects mood.

### **What Causes Binge Eating?**

- By now you might be wondering what caused your binge eating problems in the first place or what causes binge eating disorder in general.
- The answer, as you may have guessed by now, is that it is complicated. There is no one single factor that causes some people to struggle with binge eating and

others to remain unaffected. What it does look like is that binge eating is the result of a range of physical, social, and psychological factors.

- In general, research suggests that there are 4 main pathways to developing binge eating problems. (SHOW PATHWAY FIGURES- See Appendix M2)
- 1) Dieting → Anorexia Nervosa → Binge Eating → Bulimia Nervosa
- 2) For people with binge eating disorder, particularly those who are overweight, many people describe having had a weight problem, often in childhood, before they began dieting. As opposed to pathway 1, these people describe various degrees of overweight or obesity before they began dieting. Obesity → Dieting → Binge Eating.
- 3) Others with binge eating disorder describe overeating from a very early age, often in childhood, which then led to dieting, which made their overeating worse. For them, the pathway looks like this: Overeating in childhood → Dieting → Binge Eating.
- 4) The fourth pathway does not involve dieting and is associated with impulsivity. In this pathway, people binge eat directly in response to negative emotions or tension. Tension/ Unpleasant or Negative Emotions → Binge Eating.
- While these four pathways are the most common, other pathways occur and any combination of these may be true for a given person.
- Another reason why determining the cause of binge eating is so difficult, is that the course of binge eating varies from person to person. For some people, binge eating is a short-lived problem and for others it is something they struggle with throughout their lives and for others still, binge eating may be something that comes and goes.
- There are, however, certain factors that put people at greater risk for developing binge eating disorder. These include social or societal factors (e.g., cultures that idealize extreme thinness increase risk of developing binge eating problems as does receiving critical weight-related comments from others such as friends and family members), obesity in childhood or adulthood, a history of eating problems or eating disorders in the family, a family history of psychological disorders (e.g., mood disorders or substance use), low self-esteem, perfectionism, negative feelings, and as we have discussed a lot already, dieting.
- Many of the factors I just mentioned, such as dieting, stress, negative feelings, low self-esteem, and perfectionism may also contribute to continued binge eating, that is they not only lead to binge eating in the first place, but maintain the cycle of binge eating.

### **Is Binge Eating an Addiction?**

- In the media, we often hear the terms “food addiction” or “compulsive overeating”, but I want to discuss for a minute how true these terms are. Can binge eating or overeating be an addiction?
- According to the theory that binge eating is an addiction, binge eating is the result of an underlying illness similar to alcohol or drug addiction

- Within this model, people who binge eat are thought to be biologically vulnerable to certain foods (typically sugar or carbohydrates) and as a result they become “addicted” to these foods
- According to this model, since the vulnerability to these foods is biologically based, people can never be fully “cured” of binge eating they just have to accept this and learn to live accordingly, the same way that alcoholics anonymous groups say that people who are alcoholics are always alcoholics.
- This is the model used by the group Overeaters Anonymous, which uses a 12-step program identical to the one used in AA, but targeted at binge eating rather than alcohol use.
- Looking more closely at the idea that binge eating is an addiction, there are some similarities between binge eating and addictions to drugs or alcohol: the individual has cravings or urges to perform the behaviour, there is a sense of loss of control over the behaviour, the individual becomes preoccupied with thoughts about performing the behaviour, the behaviour might be used to relieve tension, anxiety, or other negative feelings, people often deny the severity of the situation, there is a great deal of secrecy surrounding the behaviour, the behaviour persists in spite of the serious negative consequences on the individual’s life, and the person often tries to stop the behaviour many times but is unsuccessful.
- While these may seem like a lot of similarities, just because these similarities exist does not make alcohol or drug addictions and binge eating one and the same.
- There are also differences between binge eating and addiction
- For example, some people who binge eat are actively trying to control their eating through dieting and binge eating is distressing to them because it is something that they can’t control. This fear of not being control is not a key feature in substance abuse.
- With binge eating, there is also sometimes a fear of binge eating itself, whereby people are afraid that it will happen again. This isn’t the case with people who abuse alcohol or drugs. They do not show a fear of getting drunk or high.
- There is also no evidence to suggest that binge eating is the product of an underlying biological abnormality nor is there evidence that people can become “addicted” to certain types of food, at least in the technical sense of the word addiction.
- All this being said, binge eating does occur among people who do not diet intensively and binge eating in this case is often a way to cope with stress. In this sense, while it is questionable whether binge eating is an addiction, there does appear to be significant overlap between the factors driving or leading up to both binge eating and substance abuse, particularly for people who binge eat and do not diet and are not attempting to control or alter their shape or weight.

### **Treatment of Binge Eating Problems**

- We’ve talked a fair bit now about what we know about binge eating problems-how we define binge eating, psychological, social, and physical factors associated with binge eating, and who is more likely to be affected.

- I want to talk a little now about the different types of treatment for binge eating problems
- One form of treatment is hospitalization. This type of treatment is not the first or best option for most people with binge eating disorder. It is the most beneficial when people with binge eating problems are so depressed that they can't make use of any outpatient or self-help services, when people are suicidal and need the protection of the hospital for their own safety, when their physical health is cause for serious concern, sometimes when people are in the early stages of pregnancy and their eating habits are severely disturbed, and people whose eating problems have not been helped by other outpatient or self-help approaches in the past.
- Antidepressants have also been used for treating binge eating problems. Research has shown that antidepressants may help reduce the frequency of bingeing and vomiting if it occurs, improve mood and feelings of control over eating, and reduce preoccupation with eating. Antidepressants have also been found to be effective even if the individual is not depressed to begin with. On the downside, some antidepressants have had unwanted side effects and some people are reluctant to take antidepressants because they do not see drugs as an appropriate treatment for their problems. In addition, the positive effects that antidepressants have on reducing the frequency of binge eating have been found to decrease over time so that the frequency is decreased in the short term, but most people continue to binge eat and in the long term, frequency may increase again.
- For these reasons, many researchers and clinicians have turned to psychological approaches or psychotherapy to help treat people with binge eating problems
- Cognitive Behaviour Therapy is one type of psychotherapy that is often used to help people with binge eating problems. There has been extensive research on the use of cognitive behaviour therapy for treating binge eating and research has found it to be effective at reducing frequency of binges, improving mood and one's sense of control over eating, reducing concerns about shape and weight, and decreasing dieting. Unlike with antidepressants and binge eating, these changes also appear to endure over time. In this type of therapy, the focus is on the cognitive aspects of binge eating (e.g., concern about weight or shape, low self-esteem, all or nothing thinking) as well as the behavioural aspects (i.e., the eating behaviours themselves). Treatment with this type of therapy for binge eating problems typically involves monitoring and recording all food intake (including binges along with thoughts and feelings), introducing a regular pattern of eating, finding alternatives to binge eating, learning about binge eating, identifying the origins of the binge eating problem and the role it plays, identifying and changing problematic ways of thinking, reducing and then eliminating strict dieting, and developing skills to cope with difficulties that might otherwise trigger binges.
- Other psychological treatment approaches that may be used for treating binge eating disorder include behaviour therapy (which focuses solely on the behavioural aspects of binge eating- although research has found this to be not as effective as cognitive behavioural therapy for binge eating disorder), psychoeducation about binge eating (which involves getting information about

binge eating problems and treatment options, like we have been doing today), group therapy, and self-help treatment used individually or guided by a therapist among others.

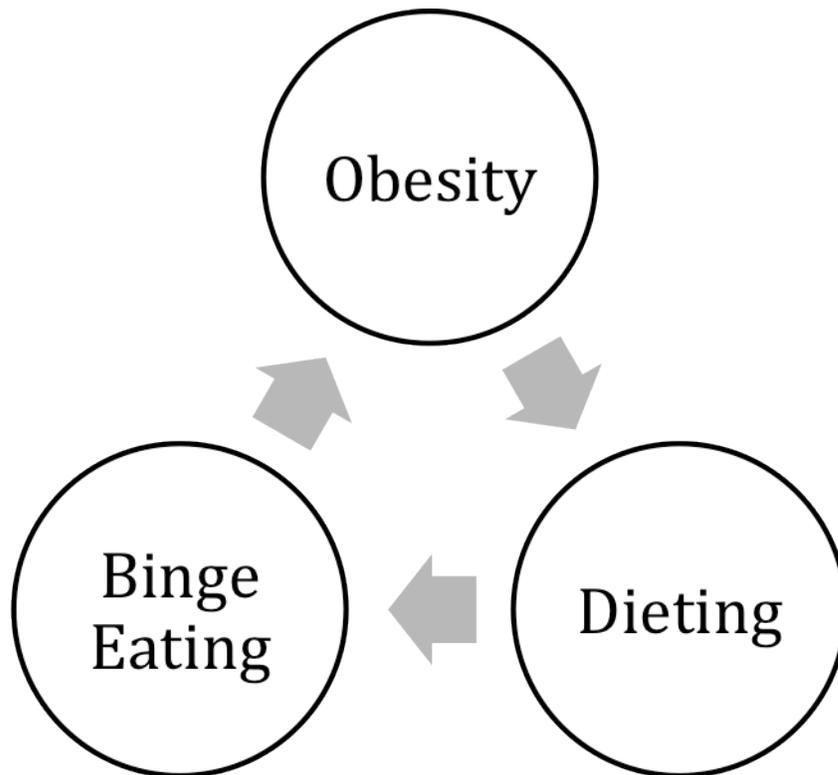
- The manual that you I will be giving you today at the end of our session as part of this study is a self-help manual that is guided by cognitive behavioural therapy principles and theory.

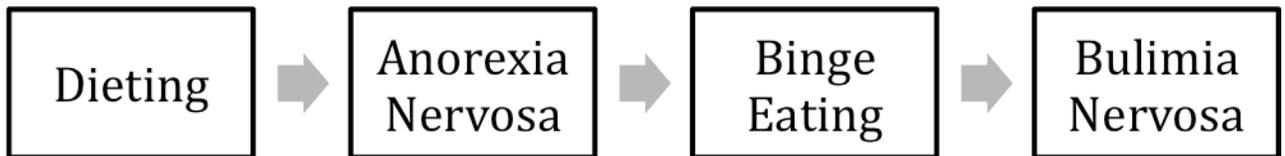
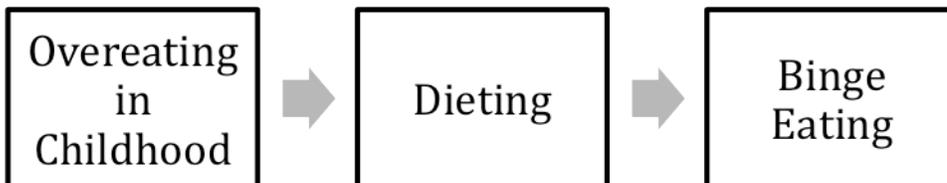
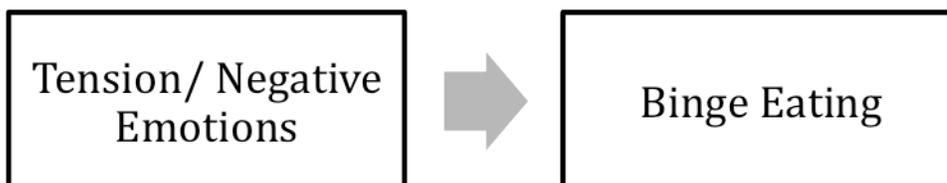
### **Conclusions**

- At this point, we've covered a lot of information. Is there anything that you have any questions about or would like some more clarification about? Was anything surprising to you or particularly interesting?
- END SESSION, DISTRIBUTE TREATMENT MANUAL, EXPLAIN REMAINDER OF STUDY

### **References**

Fairburn, C. G. (1995). *Overcoming Binge Eating*. New York, NY: The Guilford Press.

**Appendix M1: Binge Eating Cycle**

**Appendix M2: Binge Eating Pathways****Pathway 1.****Pathway 2.****Pathway 3.****Pathway 4.**

## Appendix N: Informed Consent Form

**Study Name:** Binge Eating Study

**Researchers:** *Rachel Vella-Zarb, M.A*  
*Principal Investigator*  
*Ph.D. Candidate Clinical Psychology, York University*  
[rachelvz@yorku.ca](mailto:rachelvz@yorku.ca)

*Jennifer Mills, Ph.D., C.Psych*  
*Associate Professor, Clinical Psychology, York University*  
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**Purpose of the Research:** The purpose of this study is to compare two different methods of preparing people to reduce or stop binge eating.

**What You Will Be Asked to Do in the Research:** In order to participate in this study you will need to answer some brief screening questions online on a secure website and participate in a 30-minute interview via telephone with the principal investigator. Once it is determined that you are eligible to participate in the study, you will be invited to come into the laboratory. At the laboratory, you will be asked to complete several questionnaires asking you about your mood and eating habits. For example, you may be asked how often you experience certain emotions or how you feel about eating in different situations, such as eating at a party or eating while watching TV. You will then be randomly assigned to participate in one of two different types of interviews that will last 90 minutes; one interview will focus on education about binge eating and the other will focus on motivation to change. After the interview session, you will be given a self-help manual for binge eating and will be instructed to read and follow the manual. Approximately 1 and 4 months later, you will be contacted via email and will be asked to answer questions online on a secure website about your eating and mood, as well as how you found the treatment manual. In total, your time commitment will be approximately 3 hours plus the amount of time it takes you to read and follow the self-help manual.

**Risks and Discomforts:** We do not foresee any risks from your participation in the research. You will however be asked to complete questionnaires and partake in an interview, both of which address sensitive and personal issues. They have the potential to be upsetting or distressing because you will be asked to reflect on your own mental health and eating habits. Should you feel distressed or upset at anytime, you are encouraged to discuss your concerns with the interviewer. You may also refuse to answer specific questions and may withdraw from the study at any time. You will further be provided with a list of community mental health services in case you are interested in receiving further therapeutic support.

**Benefits of the Research and Benefits to You:** The direct benefits of participating in this study include a free manual that is designed to help individuals cut down or stop binge eating. In addition, you will be given information regarding community mental health services. If you are an undergraduate student at York University enrolled in Introductory Psychology, you are also eligible to receive 2% credit in exchange for your initial participation in this study and 1% additional credit for completing the follow up testing online.

**Voluntary Participation:** Your participation in the study is completely voluntary and you may choose to stop participating at any time. Your decision not to volunteer will not influence the nature of your relationship with York University either now, or in the future.

**Withdrawal from the Study:** You can stop participating in the study at any time, for any reason, if you so decide. If you decide to stop participating, you will still be eligible to receive the promised course credit for agreeing to be in the project. Your decision to stop participating, or to refuse to answer particular questions, will not affect your relationship with the researchers or York University. In the event you withdraw from the study, all associated data collected will be immediately destroyed wherever possible.

**Confidentiality:** All information you supply during the research will be held in confidence and your name will not appear in any report or publication of the research. Data will be collected in the form of self-report questionnaires, written notes, and audiotapes. Your data will be safely stored in a locked facility and only research staff will have access to this information. The written data will be stored for three years after which time the written forms will be destroyed by shredding. All audiotapes will be erased immediately after they are reviewed by the research staff, within one year of your participation in the study. Confidentiality will be provided to the fullest extent possible by law. If the results of this study are reported, it will be in the form of a presentation or written publication and will discuss the data in general and will not include specific responses or details from any individual participant.

**Questions About the Research:** If you have questions about the research in general or about your role in the study, please feel free to contact me, Rachel Vella-Zarb (072J Behavioural Sciences Building, telephone: 416-736-5115 extension 40273, e-mail: rachelvz@yorku.ca), or my Graduate supervisor, Dr. Jennifer Mills, (241 Behavioural Sciences Building, telephone: 416-736-5115 extension 33153, e-mail: jsmills@yorku.ca). You may also contact my Graduate Program Director, Dr. Joel Goldberg (133a Behavioural Sciences Building, telephone: 416-736-2100 extension 20753, e-mail: jgoldber@yorku.ca). This research has been reviewed and approved by the Human Participants Review Sub-Committee, York University's Ethics Review Board and conforms to the standards of the Canadian Tri-Council Research Ethics guidelines. If you have any questions about this process, or about your rights as a participant in the study,

please contact the Sr. Manager & Policy Advisor for the Office of Research Ethics, 5th Floor, York Research Tower, York University (telephone 416-736-5914, e-mail ore@yorku.ca).

**Legal Rights and Signatures:**

I \_\_\_\_\_ consent to participate in the study, *Binge Eating Study*, conducted by Rachel Vella-Zarb and Dr. Jennifer Mills. I have understood the nature of this project and wish to participate. I am not waiving any of my legal rights by signing this form. My signature below indicates my consent.

\_\_\_\_\_  
Participant

\_\_\_\_\_  
Date

\_\_\_\_\_  
Principal Investigator

\_\_\_\_\_  
Date