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# Implicit and Explicit Attitudes toward Physical Appearance among Recurrent and Non-Binge Eating College Women

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**IMPLICIT AND EXPLICIT ATTITUDES TOWARD  
PHYSICAL APPEARANCE AMONG RECURRENT AND  
NON-BINGE EATING COLLEGE WOMEN**

**by**

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DISSERTATION

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ABSTRACT

Research has found that among individuals who binge eat, overvaluation of body weight/shape and internalization of a thin ideal are associated with higher levels of distress and functional impairment. These findings suggest implicit attitudes and beliefs may play an important role in understanding the complex relations between one's cognitions and subsequent eating behavior; however, much of the research on binge eating has relied on explicit self-report measures which may not accurately reflect the way individuals automatically process body weight/shape information or the meaning one has associated with these characteristics. The present study sought to address this gap in the literature by examining implicit and explicit attitudes toward fatness and thinness among recurrent and non-binge eating college women (N = 52). Implicit attitudes were assessed via the Implicit Relational Assessment Procedure (IRAP) using stimuli developed from previous research in disordered eating populations (Parling et al., 2012).

Explicit attitudes and psychological characteristics were assessed through self-report measures. All women demonstrated significant implicit pro-thin attitudes toward self and others, regardless of binge eating status, which may be indicative of shared learning history and cultural context promoting a thin ideal. Neither group demonstrated significant implicit anti-fat attitudes. In fact, non-binge eating women demonstrated significant implicit *pro-fat* attitudes across three of the four IRAP preparations. Between-group differences were significant only for implicit attitudes toward others. Implicit attitudes were not significantly associated with explicit attitudes or psychological characteristics and did not significantly improve prediction of binge eating status or disordered eating behavior (all  $p > .05$ ). There were discrepancies between implicit and explicit attitudes for both recurrent and non-binge eating women, but not in the hypothesized direction. Results emphasize the complexity of attitudes and difficulties surrounding the assessment of stigmatized behavior. Possible interpretations of these findings and future research directions are discussed.

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## Chapter 1

### Introduction

Binge eating (BE) has been defined in the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5; American Psychiatric Association, 2013) as the consumption of an excessive amount of food within a finite period of time accompanied by a loss of control and marked distress. Compared to non-binge eating controls, recurrent binge eating has been associated with lower quality of life, impaired functioning, psychological comorbidities, higher body weight, and related cardiovascular and metabolic medical problems (de Zwaan, 2001; Striegel-Moore et al., 2000; Wilfley, Wilson, & Agras, 2003). Binge eating behavior has typically been studied in the context of Binge Eating Disorder (BED), the most common eating disorder diagnosis, thought to affect an estimated 30-40% of adults seeking treatment for weight loss (Striegel-Moore & Franko, 2003), with a lifetime incidence of up to 3.5% of adult women and 2% of adult men (Smink, Van Hoeken, & Hoek, 2012).

The prevalence of subthreshold binge eating (i.e., not meeting full criteria for a DSM diagnosis) is likely even higher: in a sample of over 45,000 overweight and obese U.S. military Veterans, 78% reporting binge eating at least two to three times per week (Higgins et al., 2013). Importantly, multiple studies suggest the distinction between clinical and subthreshold or subjective binge eating pertains only to the frequency of the behavior and *not* the level of distress experienced (Colles, Dixon, & O'brien, 2008; Crow, Stewart Agras, Halmi, Mitchell, & Kraemer, 2002; Latner, Hildebrandt, Rosewall, Chisholm, & Hayashi, 2007; Mond, Hay, Rodgers, & Owen, 2007; Niego, Pratt, & Agras, 1997; Peterson et al., 2010; Pratt, Niego, & Agras, 1998; Striegel-Moore et al., 2000; Stunkard & Allison, 2003). Further, epidemiological research indicates the

prevalence of binge eating (both clinical and subthreshold) has increased in recent decades alongside rates of obesity, making this behavior a matter of clinical importance (Striegel-Moore, 1995).

Although the problems associated with binge eating have been well established, our understanding of the behavior remains limited. Research has identified a number of associated psychological characteristics (see Table 1), which have led to the development of multiple theoretical models of binge eating. These models have attempted to explain complex relations between an individual's cognitions and subsequent eating behavior, yet to date remain quite poor at predicting future episodes of binge eating (Pennesi & Wade, 2016). As such, researchers continue to pursue a better understanding of factors contributing to the development and maintenance of binge eating, with the goal of using this information to improve the effectiveness and efficiency of treatment.

One notably consistent finding across this literature is that binge eaters with extreme concerns about their weight and/or body shape tend to experience the greatest amount of distress and functional impairment (Goldschmidt et al., 2010; Grilo et al., 2008; Grilo, Masheb, & White, 2010; Grilo, White, Gueorguieva, Wilson, & Masheb, 2013; Hrabosky, Masheb, White, & Grilo, 2007; Mond et al., 2007; Ojserkis, Sysko, Goldfein, & Devlin, 2012). While not a diagnostic requirement for BED (Grilo, 2013), the overvaluation of body weight and shape is conceptualized as part of the fundamental "core psychopathology" in the cognitive behavioral and transdiagnostic models of eating disorders (Cooper & Fairburn, 1993; Fairburn, Cooper, & Shafran, 2003). Specifically, these theories propose that when individuals are overly concerned about body shape/weight, they are more likely to integrate that information into how they view

themselves and perceive the world around them (Vitousek & Hollon, 1990; Williamson, Muller, Reas, & Thaw, 1999; Williamson, White, York-Crowe, & Stewart, 2004). This preoccupation with thinness and/or fear of fatness (Williamson et al., 1999) leads to cognitive biases which influence attention and memory and may thereby contribute to the development and/or maintenance of disordered eating behaviors, including binge eating (Engel et al., 2006; Fairburn, Shafran, & Cooper, 1999; Lee & Shafran, 2004; Stice & Shaw, 2002; Williamson et al., 1999). Though causality has yet to be clearly established, substantial research has demonstrated selective attention and biased recall of body weight/shape information among individuals with eating disorders and those with elevated concerns about their own body shape/weight (Aspen, Darcy, & Lock, 2013; Blechert, Ansorge, & Tuschen-Caffier, 2010; Faunce, 2002; Johansson, Ghaderi, & Andersson, 2005; Elke Smeets, Jansen, & Roefs, 2011; E. Smeets, Roefs, Van Furth, & Jansen, 2008; Elke Smeets, Tiggemann, et al., 2011; Treat, Viken, Kruschke, & McFall, 2010).

An individual's own attitudes and beliefs are also proposed to play a significant role in the development and maintenance of disordered eating behavior (Hughes, Hamill, van Gerko, Lockwood, & Waller, 2006; Waller, 2002; Waller, Ohanian, Meyer, & Osman, 2000). The internalization of a thin ideal, in particular, has been associated with negative affect, body dissatisfaction, and disordered eating behavior, and is thought to be closely related to the overvaluation of body weight/shape (Ahern & Hetherington, 2006; Homan, 2010; Juarascio et al., 2011; Stice, 2002; Thompson & Stice, 2001).

Theoretically, the more an individual "buys into" socially prescribed definitions of attractiveness (as a result of social reinforcement from family, friends, peers, and the

media), the more likely s/he is to experience negative affect, body dissatisfaction, and engage in behaviors trying to achieve this ideal (Thompson & Stice, 2001). For instance, individuals may engage in dietary restriction in efforts to lose weight, which then “sets the stage” for an episode of binge eating as the body attempts to respond to caloric deprivation. Internalized attitudes and corresponding beliefs about physical appearance (particularly thinness and fatness) may also add to the overvaluation of body weight/shape and, as such, may further contribute to the development and/or maintenance of disordered eating behavior. Taken together, these findings suggest that internalized, or implicit, attitudes and beliefs toward physical appearance may be important factors to consider among those who binge eat.

### **A Role for Implicit Measures**

Early research on attitudes and beliefs relied heavily on the use of self-report measures to assess these concepts explicitly. While a mainstay in psychological research, responses on self-report measures are deliberate and controlled and may therefore be influenced, intentionally or unintentionally, by self-presentation biases (impression management, adherence to social norms, etc.) and varying degrees of self-examination (Greenwald et al., 2002). Within the context of disordered eating, participants may either not be aware of their own beliefs or may make efforts to suppress them. As such, explicit measures may not be able to capture the automaticity involved in the processing of body weight and shape information or the meaning one has associated with these characteristics (Tiggemann, Hargreaves, Polivy, & McFarlane, 2004). These automatic associations, or implicit attitudes, reflect an individual’s learning history and shape their thoughts, feelings, or actions toward social objects (Greenwald & Banaji, 1995). Implicit

and explicit attitudes may be additive (each accounting for a unique portion of the variance in behavior), multiplicative (in that they interact with one another to influence behavior), or discrepant with one another, depending on content and context (Perugini, 2005). Accordingly, the study of implicit attitudes may help address the limitations of self-report measures and allow research to better understand complex behavior, such as binge eating.

Implicit attitudes are assessed indirectly by examining the speed and accuracy in which participants are able to categorize words or images in accordance with provided instructions. Response times are anticipated to be faster when classification is congruent with one's pre-existing beliefs and slower when contradicting those beliefs. Prior research suggests implicit and explicit attitudes are most likely to be discrepant for stigmatized behaviors, such as smoking or holding stereotypes (Rudman, Greenwald, & McGhee, 2001; Swanson, Swanson, & Greenwald, 2001; Teachman & Brownell, 2001; Teachman, Gapsinski, Brownell, Rawlins, & Jeyaram, 2003; Vartanian, Herman, & Polivy, 2005). When implicit and explicit attitudes are discrepant, implicit attitudes tend to be better predictors of non-verbal and spontaneous actions, while explicit attitudes tend to be better predictors of purposeful behavior (Asendorpf, Banse, & Mücke, 2002; Bennett & Cooper, 1999; Devine, Plant, Amodio, Harmon-Jones, & Vance, 2002; Dovidio, Kawakami, & Gaertner, 2002; Egloff & Schmukle, 2002; Fazio, 1990; Perugini, 2005). Applying these findings to eating behavior, it is proposed that episodes of binge eating are impulsive responses and may therefore be better predicted by implicit attitudes, while explicit attitudes may better predict planned and purposeful eating behavior, such as dieting following an episode of binge eating.



## Methods of Studying Implicit Attitudes

### Implicit Association Test (IAT)

Perhaps the most widely known and commonly used measure of implicit attitudes is the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998). The IAT is a computer task which aims to assess the strength of automatic associations between pairs of attitude objects and evaluative attributes. The task consists of stimuli from two target categories (e.g., self and other) and two evaluative attribute categories (e.g., pleasant and unpleasant). Categories are paired and assigned to two response keys (e.g., press the “d” key if the stimuli is either self or pleasant, press the “k” key if stimuli is either other or unpleasant), with category pairings and key assignments changing across blocks. The underlying assumption is that response times will be faster when categorizing a pair of stimuli consistent with an association already in memory than with an association that is inconsistent with memory (Greenwald et al., 1998). Differences in response latency to particular pairings of concept and attribute compared to another set of pairings provides an index of relative strength of the association between the first and second pairings, known as the IAT-D score (Lane, Banaji, Nosek, & Greenwald, 2007). The IAT has been used to assess implicit attitudes in a variety of content areas, having demonstrated widespread implicit biases toward age (Jelenec & Steffens, 2002; Kite, Wagner, & Nelson, 2002), race (Dovidio et al., 2002; Greenwald et al., 1998; McConnell & Leibold, 2001; Nosek, Banaji, & Greenwald, 2002), gender (Jelenec & Steffens, 2002; Rudman et al., 2001), sexual orientation (Jellison, McConnell, & Gabriel, 2004; Rowatt et al., 2006; Steffens & Buchner, 2003), religious affiliation (Rowatt, Franklin, & Cotton, 2005;

Rowatt et al., 2006), and weight (Brochu & Morrison, 2007; Schwartz, Vartanian, Nosek, & Brownell, 2006; Teachman & Brownell, 2001; Teachman et al., 2003).

Psychometric properties of the IAT are satisfactory overall but vary significantly depending on topic area. The IAT is generally more reliable than evaluative priming tasks (Goodall, 2011), having demonstrated acceptable internal consistency with Cronbach's alpha ranging from .70 to .90 (Nosek, 2007). Test-retest reliability varies depending on the time elapsed and specific stimuli used, but is typically less acceptable (Lane et al., 2007). IAT-D effect sizes vary depending on the subject area and type of stimuli used, and have ranged from .34 to 1.35 (Nosek, Greenwald, & Banaji, 2005). Studies have also demonstrated acceptable concurrent validity (Nosek, 2007) and discriminant validity (Gawronski, 2002). Evidence for the predictive validity of the IAT is mixed, however, with Greenwald and colleagues' (2009) meta-analysis reporting that the average predictive validity of the IAT is lower than the average for self-report measures within the same studies ( $r = .27$  versus  $r = .36$ ).

A number of criticisms of the IAT have also been discussed in the literature, including the presence of significant order effects, susceptibility to context and content which can bias responses, and salience asymmetry, where responses may be more a product of salience than actual associations in memory (Brunel, Tietje, & Greenwald, 2004; Golijani-Moghaddam, Hart, & Dawson, 2013). Perhaps even more limiting is that the IAT is able to provide only a measure of relative strength of association, an "implicit preference" or comparative attitude rather than the ability to measure implicit attitudes to individual stimuli (De Houwer, 2002). In the case of attitudes toward body weight/shape, for example, a strong IAT effect may indicate attitudes not apparent on explicit measures,

but the IAT cannot assess whether the effect is in the form of a pro-thin or anti-fat bias, or the relative strength of these specific attitudes (Nolan, Murphy, & Barnes-Holmes, 2013).

### **Implicit Relational Assessment Procedure (IRAP)**

The Implicit Relational Assessment Procedure (Barnes-Holmes et al., 2006) is procedurally similar to the IAT, but approaches the study of implicit attitudes using relational frame theory (RFT). Rather than focusing on “associations in memory,” RFT is a behavior-analytic approach which emphasizes an individual’s history of deriving specific relations between stimuli and the contexts controlling behavior (Golijani-Moghaddam et al., 2013). Participants are shown pairs of stimuli and asked to make a relational statement (e.g., true or false) which is either consistent or inconsistent with their own learning history. As with the IAT, it is assumed that individuals have faster response times when pairings are consistent with their own learning history. However, because these relations do not have to be associative, the IRAP is able to study more complex relations (e.g., hierarchical, temporal, oppositional, deictic, etc.) among stimuli with greater sensitivity and specificity (Golijani-Moghaddam et al., 2013; Hussey, Thompson, McEntegart, Barnes-Holmes, & Barnes-Holmes, 2015; Vahey, Nicholson, & Barnes-Holmes, 2015). Accordingly, the IRAP is able to measure implicit attitudes in terms of propositions rather than associations (Gawronski & De Houwer, 2014). This data is recorded as time from the onset of stimuli to the response consistent with provided instructions. The difference in mean reaction time between consistent and inconsistent block pairs divided by the total standard deviation provides a measure of the strength of the IRAP effect similar to Cohen’s  $d$  and is known as the  $D$ -IRAP score.  $D$ -IRAP scores

can be calculated for each distinct trial type separately or combined to form a compound *D-IRAP* score.

Though differing in theoretical perspective and intent on measuring slightly different things, the IRAP is often moderately correlated with the IAT (Barnes-Holmes, Barnes-Holmes, Stewart, & Boles, 2010). Unlike the IAT, however, the IRAP is typically not significantly correlated with explicit measures (Power, Barnes-Holmes, Barnes-Holmes, & Stewart, 2009). The IRAP has demonstrated acceptable internal consistency, concurrent validity, and discriminant reliability, comparable to other implicit measures (Golijani-Moghaddam et al., 2013). Predictive validity also varies depending on the content area, but has been shown to be marginally better than the IAT at predicting pro-thin (positive view of thinness) and anti-fat (negative view of fatness) bias (Roddy, Stewart, & Barnes-Holmes, 2010).

### **Implicit Attitudes in Disordered Eating**

The presence of implicit pro-thin and anti-fat attitudes has been well-established across a number of non-clinical Western samples (Brewis & Wutich, 2012; Brochu & Morrison, 2007; Carels et al., 2010; Expósito, López, & Valverde, 2015; Moussally, Billieux, Mobbs, Rothen, & Van der Linden, 2015; Nolan et al., 2013; O'Brien, Hunter, Halberstadt, & Anderson, 2007; Schwartz et al., 2006; Teachman & Brownell, 2001; Teachman et al., 2003). However, much of this research has focused on demonstrating weight bias in the general population; few studies have examined implicit attitudes toward body weight/shape in the context of those with disordered eating. Thus far, implicit studies in eating disorder research have utilized these methods to assess information often closely guarded in this population (e.g., striving for emaciation) and

examine how implicit representations (such as a fondness for calorically dense foods) may contribute to the development and/or maintenance of problematic eating behavior (Moussally et al., 2015). To date, less than a handful of studies have examined the role of implicit pro-thin or anti-fat attitudes within the context of eating disorders, and thus far only in the context of anorexia nervosa (e.g., Cserjési et al., 2010; Parling, Cernvall, Stewart, Barnes-Holmes, & Ghaderi, 2012).

Only one study has used the IRAP to compare pro-thin and anti-fat attitudes among females with disordered eating (anorexia nervosa) and controls. Participants in this research completed a total of four IRAP preparations assessing implicit attitudes in relation to self and others as well as with regard to striving for thinness and avoidance of fatness (Parling et al., 2012). Although the sample size in this study was small (N = 17 in each group), both the disordered eating and control groups demonstrated a significant pro-thin attitude toward self, with a significantly stronger anti-fat attitude toward self among individuals with anorexia nervosa compared to controls. There were no significant differences between groups for pro-thin or anti-fat attitudes toward others. These findings suggest internalization of a thin ideal was common among all women, even those who did not exhibit disordered eating behavior. For both groups, implicit striving for thinness was stronger than avoidance of fatness. Women with anorexia nervosa demonstrated anti-fat and pro-thin attitudes which tended to be stronger than controls but did not reach statistical significance. Implicit and explicit attitudes were significantly correlated for the statement “I must not be fat” among those with anorexia nervosa only. The authors propose these findings provide evidence of the overvaluation of body weight/shape and

call for further research in this area to examine the extent to which these attitudes correspond with eating disordered behavior.

### **Current Study**

The current research sought to further this area of study by attempting to better understand binge eating behavior and related attitudes in a diverse college sample. Study 1 contained a series of online self-report questionnaires to assess the prevalence of binge eating behaviors and related psychological characteristics among college undergraduates. This data was also used to identify participants for a follow-up study extending the research published by Parling et al. (2012) to study binge eating behavior. Study 2 examined implicit and explicit attitudes toward physical appearance (fatness and thinness) among recurrent binge eating (averaging at least one episode per week) and non-binge eating college women. Both studies were approved by the Institutional Review Board at the University of New Mexico (UNM). Specific aims and hypotheses are discussed below.

### **Aims and Hypotheses**

#### **Study 1 - Online Screening**

**Specific aim 1.** To examine the range of binge eating behavior among UNM undergraduate students and identify female participants for a follow-up study (Study 2) based on self-reported binge eating status. Female participants were eligible for the follow-up study if they report either recurrent binge eating, averaging at least one episode per week, or no binge eating behavior over the last month.

**Hypothesis 1a.** Based on previous research, it was expected that at least 25% of the college sample would report at least one recent episode of binge eating behavior (including subjective and subthreshold binge eating).

**Hypothesis 1b.** Consistent with prior studies, it was expected that there would be a greater prevalence of subjective binge eating behavior compared to objective binge eating as assessed by the Questionnaire on Eating and Weight Patterns-5 (QEWP-5; Yanovski, Marcus, Wadden, & Walsh, 2015).

## **Study 2 – Implicit and Explicit Attitudes**

**Specific aim 1.** To examine bivariate correlations among study measures for the entire study sample and by binge eating status.

**Hypothesis 1.** Correlations were expected to be consistent with prior research, with binge eating behavior associated with higher levels of negative urgency, alexithymia, depression, generalized anxiety, experiential avoidance, internalization of a thin ideal, and perceived societal pressure to adhere to that ideal.

**Specific aim 2.** To examine discrepancies between implicit and explicit attitudes toward physical appearance (fatness and thinness) among college women who endorsed recurrent binge eating (averaging at least one episode per week) compared to those who reported no binge eating behavior over the last month.

**Hypothesis 2a.** It was hypothesized that women who reported recurrent binge eating would exhibit discrepancies between implicit and explicit attitudes toward physical appearance.

**Hypothesis 2b.** Discrepancies between implicit and explicit attitudes toward physical appearance were also expected among participants with significant levels of depression and anxiety, regardless of binge eating status.

**Specific aim 3.** To examine psychological correlates of implicit pro-thin and anti-fat attitudes among binge eating and non-binge eating college women.

**Hypothesis 3.** It was anticipated that both the weight concern and shape concern subscales of the Eating Disorders Examination-Questionnaire (Fairburn & Beglin, 1994) would be significantly and positively correlated with implicit pro-thin and anti-fat attitudes, such that women with higher levels of weight and shape concern demonstrated stronger pro-thin and anti-fat bias (i.e., higher *D-IRAP* scores) toward self and others.

**Specific aim 4.** To examine how well study variables, including implicit and explicit attitudes, predict current binge eating status.

**Hypothesis 4.** It was hypothesized that implicit attitudes would account for a significant and unique portion of the variance in predicting current binge eating status in a hierarchical logistic regression model, adding to the predictive validity of self-reported explicit attitudes and correlates of binge eating identified in previous research.



## Chapter 2

### Method

#### Participants

**Study 1.** Undergraduates enrolled at the University of New Mexico were recruited for participation through the psychology department's online research participant pool. Participants who were at least 18 years of age, able to read and understand written English, and not currently pregnant (as this may reflect a change from normal eating behavior) were eligible to complete the online screening questionnaires for Study 1. All 1,494 participants who completed the questionnaires were offered research credit as compensation for their time. The primary purpose of this study was to identify women who reported either recurrent binge eating (averaging at least one episode per week) or no binge eating behavior over the last month to form a recruitment pool for Study 2. The decision to include males and females of all racial and ethnic backgrounds was made to allow for the contribution of normative data for a diverse college population on the Questionnaire on Eating and Weight Patterns-5 (QEWP-5; Yanovski et al., 2015) and for future analyses to explore gender differences among psychological correlates and predictors of binge eating behavior.

**Study 2.** Participants were recruited from a subsample of women from Study 1 who reported interest in a follow-up study and reported either recurrent binge eating episodes (averaging at least once per week) or no binge eating behavior over the last month. A flow chart detailing participant recruitment is shown in Figure 1. The primary aim of this study was to examine differences in implicit attitudes toward physical appearance among college women based on current reported binge eating status. The

decision to restrict Study 2 to females was based on previous research indicating gender-based differences in binge eating (Barry, Grilo, & Masheb, 2002; Chao, Grilo, & Sinha, 2016; Phillips, Kelly-Weeder, & Farrell, 2016; Striegel-Moore et al., 2009; Tanofsky, Wilfley, Spurrell, Welch, & Brownell, 1997; Weltzin et al., 2005) and adult body dissatisfaction (Conner, Johnson, & Grogan, 2004; Furnham, Badmin, & Sneade, 2002; McCabe & Ricciardelli, 2004; Neighbors & Sobal, 2007). This study was completed by a total of 52 college women, 18 who reported an average of at least one episode of binge eating per week, and 34 who endorsed no binge eating behavior during the preceding month. All Study 2 participants were given the option of receiving either additional research credit or a \$20 retail gift card for their time. Assuming an effect size of .45 based on a meta-analysis of clinically-focused IRAP studies and a correlation of .5 among repeated measures, the sample size of 18 in the experimental group allowed for a power of .62 to detect between group differences.

### **Procedure**

Informed consent and participation for Study 1 occurred entirely online. All Study 2 participants attended an in-person session in which informed consent was obtained prior to completion of additional questionnaires and the IRAP computer task. Height and weight were then measured in a private location by the author at the end of Study 2.

## Chapter 3

### Study 1

#### Measures

**Questionnaire on Eating and Weight Patterns-5 (QEWP-5;** Yanovski et al., 2015). The QEWP-5 (Appendix A) is an updated 26-item version of the revised QEWP (QEWP-R; Spitzer et al., 1992) which reflects changes made to the diagnostic criteria for BED in the fifth edition of the Diagnostic and Statistical Manual (DSM-5; American Psychiatric Association, 2013). The QEWP-5 includes questions assessing both objective binge eating (consumption of an unambiguously large amount of food in a discrete period of time, given the circumstances) and subjective binge eating (loss of control over eating without consumption of an objectively large amount of food), as research suggests loss of control tends to be more strongly related to subsequent distress than the quantity of food consumed. Previous versions of the QEWP have been identified as an effective screening instrument, with increased sensitivity but lower specificity than interview measures for BED (Yanovski et al., 2015). Cronbach's alpha for items assessing objective and subjective binge eating on the QEWP-5 (excluding duration and compensatory behaviors) was .76 in this sample.

**Eating Disorder Examination – Questionnaire (EDE-Q;** Fairburn & Beglin, 1994). The EDE-Q (Appendix B) contains 36 items derived from the Eating Disorder Examination clinical interview assessing eating disorder attitudes and behaviors over the last 28 days. The EDE-Q has the ability to distinguish eating disorder cases from non-cases, with acceptable internal consistency and test-retest reliability for objective binge eating (Berg, Peterson, Frazier, & Crow, 2012). The EDE-Q is considered the gold

standard self-report measure for eating disorder assessment and has established norms for college populations. Prior studies report the prevalence of any objective binge eating ranging from 21.3% to 28.4% among college women and 24.2 to 25% among college men, with regular objective binge eating reported in 6.4-14.2% of college women and 7.9-12.8% of college men (Lavender, De Young, & Anderson, 2010; Luce, Crowther, & Pole, 2008; Quick & Byrd-Bredbenner, 2013). Cronbach's alpha for the EDE-Q total score in this sample was .87.

**UPPS-P Impulsive Behavior Scale** (UPPS-P Negative Urgency Subscale; Lynam, Smith, Whiteside, & Cyders, 2006). The UPPS-P Negative Urgency subscale (Appendix C) contains 12 items assessing an individual's tendency to respond impulsively to negative emotions. The negative urgency subscale has shown acceptable internal consistency (Racine et al., 2013), convergent and divergent validity (Smith et al., 2007), and good test-retest reliability in college students (Anestis, Smith, Fink, & Joiner, 2009). Previous research suggests negative urgency may independently predict (Fischer, Peterson, & McCarthy, 2013) or mediate binge eating behavior (Fink, Anestis, Selby, & Joiner, 2010). Cronbach's alpha for the UPPS-P negative urgency subscale was .92 in this sample.

**Toronto Alexithymia Scale – 20** (TAS-20; Bagby, Parker, & Taylor, 1994). The TAS-20 (Appendix D) uses 20 items scored on a 5-point Likert scale to assess an individual's difficulty identifying and describing their own feelings. The measure has acceptable internal consistency and test-retest reliability in undergraduate college students (Bagby et al., 1994). Previous research has found a higher prevalence of alexithymia in people with BED compared to those without an eating disorder (de Zwaan

et al., 1995; Pinaquy, Chabrol, Simon, Louvet, & Barbe, 2003). Alexithymia has also been found to moderate the relationship between food consumption and subsequent distress (van Strien & Ouwens, 2007), and predict severity of binge eating (Engstrom, Paterson, Doherty, Trabulsi, & Speer, 2003). Cronbach's alpha for the TAS-20 in this sample was .90.

**Acceptance and Action Questionnaire-II** (AAQ-II; Bond et al., 2011). The AAQ-II (Appendix E) is a 7-item measure of experiential avoidance, with higher scores indicating greater levels of psychological inflexibility. The AAQ-II has demonstrated acceptable structure, reliability, and validity (Bond et al., 2011). Experiential avoidance has shown to be a strong predictor of depression, anxiety, and stress (Hayes, Wilson, Gifford, Follette, & Strosahl, 1996). Binge eating has also been conceptualized as a form of avoidant behavior, serving to temporarily reduce negative thoughts or feelings. Preliminary data supports this relation, with experiential avoidance predicting baseline level of binge eating behavior (Lillis, Hayes, & Levin, 2011) and mediating the relation between negative affect and binge eating (Kingston, Clarke, & Remington, 2010). Cronbach's alpha for the AAQ-II was .91 in this sample.

**British Columbia Major Depression Inventory** (BCMDI; Iverson & Remick, 2004). The BCMDI (Appendix F) is a 20-item measure of depression based on criteria for major depressive disorder (MDD) in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR; American Psychiatric Association, 2000). The measure has been shown to have acceptable psychometric properties along with good sensitivity and specificity for a diagnosis of MDD (Iverson & Remick, 2004). Negative affect, including depression, is frequently cited in the literature as an antecedent to episodes of binge eating (Heatherton & Baumeister, 1991; Pagoto et al., 2007; Wolff,

Crosby, Roberts, & Wittrock, 2000). Cronbach's alpha for the BCMDI in this sample was .95.

**General Anxiety Disorder – 7 Item Scale (GAD-7;** Spitzer, Kroenke, Williams, & Löwe, 2006). The GAD-7 (Appendix G) contains seven items which assess symptoms of generalized anxiety disorder over the last two weeks. The measure serves as a screening and severity measure for generalized anxiety and has acceptable operating characteristics for panic disorder, social anxiety disorder, and posttraumatic stress disorder (Spitzer et al., 2006). Anxiety is another form of negative affect often cited as a precursor to binge eating behavior (Pike et al., 2006; Schlundt & Johnson, 1990; Stickney, Miltenberger, & Wolff, 1999). Cronbach's alpha for the GAD-7 was .93 in this sample.

### **Analytical Plan & Statistical Methods**

Characteristics of binge eating behavior reported among UNM students were examined using descriptive statistics. In light of previously discussed findings in the literature suggesting subjective and subthreshold binge eating are associated with similar distress and disability as BED, prevalence of binge eating behavior was examined using both of the objective binge eating items on the EDE-Q (items 13 and 14) as well as measures of objective (items 13, 14, and 15) and subjective binge eating (items 39 and 40) on the QEWP-5. Participants whose responses across these items were consistent (i.e., reported either no binge eating behavior or an average of at least one binge eating episode per week on both measures) were deemed eligible for participation in Study 2. Response data for items on the QEWP-5 are presented as there are currently no published

norms for this measure. A chi-square analysis examined whether the prevalence of recent binge eating behavior differs between the EDE-Q and QEWP-5.

## Results

The online screening study was completed by a total of 1,494 undergraduate participants. Participant characteristics are shown in Table 2. This sample was primarily female (71.6%), with a mean age of 20.7 ( $SD = 5.15$ ). The majority were White (67.0%) and/or Hispanic (51.8%), followed by “another unspecified race” (20.9%), American Indian/Alaska Native (8.1%), Asian (8.1%), African American (5.2%), and Pacific Islander (0.8%). Mean BMI based on self-reported height and weight was 24.23 ( $SD = 5.09$ ). Approximately one quarter of participants (24.7%) reporting they were currently dieting to control their weight and 3.5% indicated they had previously been diagnosed or treated for an eating disorder. Only 9 individuals (0.6%) reported they were currently in treatment for an eating disorder.

**Reported prevalence of binge eating.** Descriptive information for all Study 1 measures are presented in Tables 3-5. A 2x2 Pearson’s chi-square test examined classification of current binge eating status based on items assessing objective binge eating (OBE) on the EDE-Q and QEWP-5. As shown in Table 6, there was a significant difference in group classification between measures,  $X^2(1) = 321.12, p < .001$ , with OBE reported by 26.6% of participants on the EDE-Q compared to 13.6% on the QEWP-5. As hypothesized, the prevalence of subjective binge eating (SBE, 19.2%) was greater than the prevalence of OBE (13.6%) on the QEWP-5. Prevalence of *any* binge eating behavior on the QEWP-5 was 25.4%, still slightly below the prevalence of OBE on the EDE-Q (see Table 7). Binge eating status was discrepant across the EDE-Q and QEWP-5 for 402

of the 1,069 females (37.6%) who completed the study. Only participants whose responses were consistent across measures (either no binge eating in the last month or reporting an average of at least one binge eating episode per week) were deemed eligible for Study 2.

### **Study 1 Results Summary**

The initial screening study examined a range of eating behaviors and associated psychological variables and was used to identify women who reported either binge eating an average of at least once per week or reported no binge eating behavior over the last month. Differences in the reported prevalence of objective binge eating across measures was unexpected and worthy of further examination. The EDE-Q is considered the gold standard for assessing eating pathology, whereas the QEWP-5 is a newer screening measure for BED based on DSM-5 criteria which assesses objective and subjective binge eating and related distress separately. Reported prevalence of objective binge eating as measured by the EDE-Q in this sample (26.6%) was consistent with previous findings and reported college norms. As the QEWP-5 was developed for screening purposes, it was anticipated this measure had prioritized sensitivity over specificity and would accordingly suggest a higher prevalence of objective binge eating than the EDE-Q. Surprisingly, prevalence of objective binge eating was significantly *lower* on the QEWP-5 compared to the EDE-Q. As all participants completed the QEWP-5 prior to the EDE-Q, it is possible that the order of instrument presentation may have impacted responses. It should be noted, however, that these assessments go about assessing binge eating in different ways. Specifically, the QEWP-5 requires a binary yes/no response as to whether an individual has consumed an unusually large amount of food in a short period of time



over the last month, with follow-up questions assessing details only to those who respond “yes” to the original question. Conversely, the EDE-Q asks how frequently an individual has eaten an unusually large amount of food over the last month with a separate follow-up question asking how many of these times were accompanied by a sense of having lost control over eating. It is also possible that this subtle shift in language functioned to normalize the behavior, thereby increasing the likelihood of obtaining an honest response.

Consistent with previous literature and expectations, there was a greater prevalence of subjective (19.2%) compared to objective binge eating (13.6%) on the QEWP-5. Data from this study further indicates that subjective and objective binge eating were not mutually exclusive, with some participants reporting both “forms” of binge eating within the past month. As research has demonstrated comparable distress between subjective and objective binge eating, it may be beneficial to reconsider the utility of focusing on the form of binge eating rather than the function of this behavior for both diagnostic and treatment purposes. It is also interesting to note that the reported prevalence for *any* binge eating on the QEWP-5 (25.4%) was quite comparable to the prevalence of objective binge eating on the EDE-Q, although the EDE-Q was not designed to capture subjective binge eating episodes. Overall, these findings suggest a need for additional research to examine whether the observed discrepancies between measures may indicate problems with these assessment tools or are a function of this study sample.

## Chapter 4

### Study 2

#### Measures

**QEWP-5 & EDE-Q.** Both measures of disordered eating were re-administered to verify current binge eating status at the time of participation in Study 2. Cronbach's alpha for QEWP-5 items assessing objective and subjective binge eating (excluding duration and compensatory behaviors) was .52 in this sample. Cronbach's alpha for the EDE-Q in this sample was .89.

**Sociocultural Attitudes Towards Appearance Questionnaire-4 (SATAQ-4;** Schaefer et al., 2015). The SATAQ-4 (Appendix H) is a 22-item measure which assesses the internalization of an ideal physical appearance (thin or muscular) along with perceived pressure from family, peers, and the media to attain that appearance. The SATAQ-4 has demonstrated good reliability and convergent validity with other measures of body image, disordered eating, and self-esteem in women. Cronbach's alpha for the SATAQ in this sample was .89.

**Modified Values Inventory** (McCracken & Yang, 2006). The Chronic Pain Values Inventory (CPVI) is a 12-item measure designed to assess the importance and perceived success in each of the following areas: family, intimate relations, friends, work, health, and growth/learning. The measure was modified for the current study by removing all references to chronic pain (Appendix I). Participants were asked to rate how important their personal values were in each area using a Likert scale where zero is not at all important and five is extremely important. Using the same rating scale, participants were then asked to rate how successful they have been in living in accordance with their

values in each domain over the last two weeks. Previous research has demonstrated good internal consistency, concurrent validity, and utility of the CPVI in predicting daily functioning among chronic pain patients (McCracken & Yang, 2006). In the present study, it was hypothesized that binge eating severity would be associated with greater discrepancy between values importance and success. Cronbach's alpha for the modified values inventory was .77 in this sample.

**Explicit Attitudes.** Explicit attitudes toward body shape were assessed using statements paired with eight double-anchored visual analogue scales (Appendix J). Participants were asked to indicate the strength of their current attitude/belief for each of the following statements: 1) "it's good/bad if I am fat," 2) "it's good/bad if I am thin," 3) "it's good/bad if others are fat," 4) "it's good/bad if others are thin," 5) "I do/don't want to be fat," 6) "I do/don't want to be thin," 7) "I can/must not be fat," and 8) "I can/must not be thin." Responses were transformed into scores indicating strength and direction of attitudes ranging from -5 to 5. These items were selected because they have previously been paired with the selected IRAP stimuli to compare attitudes toward body shape among individuals with anorexia nervosa and non-clinical controls (Parling et al., 2012).

**Attentional Variables.** A series of seven items assessing characteristics thought to potentially affect IRAP performance were assessed using double anchored visual analog scales (Appendix K). For each item, participants were asked to indicate which number best indicates where they currently fall with respect to the following opposing states: distracted/attentive, fatigued/well-rested, hungry/satiated, bored/interested, stressed/relaxed, not anxious/very anxious, and not depressed/very depressed. Scores ranged from -5 to 5, indicating the strength and direction of each endorsed state. These

items were also included in previous research as a means of controlling for potential confounding effects (Parling et al., 2012).

**Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2006).**

The IRAP is a computerized response compatibility task based on relational frame theory (RFT; Hayes, Barnes-Holmes, & Roche, 2001) which assesses the strength of an individual's learning history for specific relational responses. Participants were shown pairs of stimuli (a target word and a sample word) and instructed to make a relational response (i.e., true or false) that was either consistent or inconsistent with their own pre-existing verbal relations or beliefs. Instructions directed participants to respond as quickly as possible without making mistakes. The duration from the onset of a trial until the correct classification occurs was recorded as the participant's reaction time. Under pressure for both speed and accuracy, average response latencies were assumed to be shorter for trials consistent with one's own beliefs and longer for trials which were inconsistent. The difference in response latency between consistent and inconsistent trials provided an index of the strength of the verbal or relational responses being assessed, a *D-IRAP* score, calculated for each trial type and as a total score for each preparation. To increase the likelihood of obtaining meaningful data (by ensuring responses are spontaneous rather than deliberate), it has been recommended that participants complete practice trial blocks with at least 75% accuracy and that only test trials under 2,000 milliseconds be included in analyses (Barnes-Holmes, Murphy, Barnes-Holmes, & Stewart, 2011).

The IRAP for the present study (Appendix L) was derived from the software originally developed by Barnes-Holmes et al. (2006) and based off of IRAP preparations

previously used to examine pro-thin and anti-fat attitudes in individuals with anorexia nervosa (Parling et al., 2012), containing target words (thin, small, slender, underweight, skinny, fat, large, chubby, overweight, plump, obese) developed for research for detecting cognitive biases in eating disorders (Cassin & von Ranson, 2005). These target words have previously been used to demonstrate differences among individuals with anorexia nervosa compared to controls (Parling et al., 2012).

Participants in the current study completed two practice blocks followed by six test blocks, each containing 24 trials. For each trial, participants were shown a sample word at the top of the screen, a target word in the middle of the screen, and two response options at the bottom (See Appendix L). Prior to each block, instructions were given on how to respond to the next set of trials (either “respond as if thin words are good and fat words are bad,” or “respond as if fat words are good and thin words are bad”), with immediate feedback given for incorrect or delayed responses via the presentation of a red “X” or the phrase “too slow,” respectively. Rules for responding alternated between blocks and were counterbalanced across participants (3 consistent trials, 3 inconsistent trials). Each IRAP preparation contains four trial types, each assessing a different attitude: pro-thin (e.g., “I want to be thin”), anti-fat (e.g., “I must not be fat”), pro-fat (e.g., “I want to be fat”), and anti-thin (e.g., “I must not be thin”). Unlike relational measures such as the IAT, the IRAP allows for the assessment of each of these attitudes independently. A total of four preparations were given: implicit attitudes toward self, implicit attitudes toward others, striving for thinness, and avoidance of fatness (Parling et al., 2012). Order of these preparations were counterbalanced across participants. All participants completed the task on IBM computers in Logan Hall and were given

adequate space to allow for privacy and minimize distractions. Data for test blocks failing to meet accuracy criteria (>75%) were excluded at the block level consistent with the recommendations of Nicholson and Barnes-Holmes (2012): failure to meet criteria for either block in a test pair resulted in the exclusion of data from that block, if data was excluded for more than a single block pair for a participant, all data for that IRAP preparation was excluded from analyses. Only test blocks meeting the accuracy requirement (>75%) were used in data analyses.

**Anthropomorphic Measurements.** Current literature suggests self-reported height and weight are frequently inaccurate (Bowman & DeLucia, 1992; Engstrom et al., 2003). To improve the precision of BMI calculations and subsequent analyses, the height and weight of all participants were assessed privately following completion of Study 2 measures.

### **Analytical Plan and Statistical Methods**

Current binge eating status was verified through re-administration of the EDE-Q and QEWP-5, with all subsequent analyses performed using participants most recently reported data. Pearson's  $r$  was used to examine bivariate correlations among study variables by group and for the entire sample.

Implicit attitudes from the IRAP procedure, recorded as response latencies, were transformed into *D*-IRAP scores by adapting procedures described in Dawson et al. (2009). Positive *D*-IRAP scores indicate a pro-thin or anti-fat bias (i.e., thin is good, fat is bad), while negative scores indicate an anti-thin or pro-fat bias (i.e., thin is bad, fat is good). Planned one-sample *t*-tests were used to determine if *D*-IRAP scores for each of the trial-types for both groups significantly differed from zero, with effect sizes

calculated using Cohen's *d*. A series of 2 x 4 mixed repeated measures ANOVAs were conducted using current binge eating status as the between-participants variable and IRAP trial type as the repeated measure to test for group differences in implicit attitudes. Finally, a hierarchical logistical regression model was constructed to determine how well psychological factors (step 1), explicit attitudes (added in step 2), and implicit attitudes (added in step 3), predicted current binge eating status. All analyses were performed in SPSS, version 20.

## Results

Characteristics of the 52 women who completed Study 2 are shown in Table 2. Recurrent binge eating women (N = 18) reported greater eating pathology (total EDE-Q score), alexithymia, experiential avoidance, and perceived family pressure regarding appearance (all  $p < .01$ ) than non-binge-eating women (N = 34). There were no significant group differences in age, BMI (reported or measured), depression, anxiety, discrepancy between values importance and success, thin ideal internalization, muscular ideal internalization, perceived pressure regarding appearance from friends or media, or attentional variables (all  $p > .05$ ). Descriptive information for Study 2 measures are shown in Table 8.

**Bivariate correlations.** Bivariate correlations among study measures are listed in Tables 9 through 14. Significant bivariate correlations among study measures ranged from .36 to .77 for the entire study sample. Consistent with prior research, eating pathology (EDE-Q total score) was significantly correlated with negative urgency ( $r = .47$ ), alexithymia ( $r = .36$ ), experiential avoidance ( $r = .40$ ), and the explicit attitude “I want to be thin” ( $r = .43$ ). In contrast to previous findings, eating pathology was not

significantly correlated with depression or anxiety. Internalization of a thin ideal as measured by the SATAQ-4 was significantly correlated with all but two explicit attitudes (“it’s good if others are fat,” and “I want to be fat”), with  $r$  ranging from .38 to .59. Perceived media pressure was significantly associated with explicit attitudes striving for thinness (“it’s good if I am thin,” “I want to be thin,” “I can be thin,”) with  $r$  ranging from .40 to .47. The explicit attitude “I must not be fat” was also significantly correlated with negative urgency ( $r = .43$ ), alexithymia ( $r = .40$ ), and experiential avoidance ( $r = .37$ ). Recurrent binge eating women reported stronger explicit pro-thin/anti-fat attitudes than controls, although this difference was only statistically significant for the item “I must not be fat.” While implicit attitudes ( $D$ -IRAP scores) were not significantly associated with any other study variables, this finding is consistent with previous research suggesting implicit attitudes may differ from self-report data, particularly when the behavior in question is stigmatized.

**Explicit attitudes.** Table 15 shows mean explicit attitudes and attentional ratings by current binge eating status. Planned one sample  $t$ -tests showed explicit attitudes corresponding with the self and other IRAP significantly differed from zero such that both groups demonstrated a significant pro-thin and anti-fat bias toward self but not others ( $p < .001$ ). This bias was descriptively greater among women with recurrent binge eating, although the difference was not statistically significant. On items corresponding with the striving for thinness IRAP, both groups demonstrated a significant explicit anti-fat attitude (“I don’t want to be fat”), whereas the explicit pro-thin attitude (“I want to be thin”) did not statistically differ from zero. Similarly, items corresponding with the avoidance of fatness IRAP indicated an explicit anti-fat attitude among both groups, with



women who binge eat reporting stronger agreement with the statement “I must not be fat,”  $F(1,50) = 8.73, p < .01$ . There were no other significant differences between groups on explicit attitudes.

**Implicit attitudes.** Implicit attitudes were calculated as *D-IRAP* scores and are displayed by trial type for each of the four preparations used in Table 16. Positive scores indicate pro-thin or anti-fat bias, while negative scores indicate pro-fat or anti-thin bias, depending on trial type. Overall attitudes (total *D-IRAP* scores) indicated a pro-thin bias among women in both groups, although the strength, direction, and significance of implicit attitudes varied by trial type.

*Attitudes toward self.* Planned one sample t-tests showed an implicit pro-thin attitude among women in both groups which statistically differed from zero for the “me thin good” trial type. Non-binge eating women also demonstrated a pro-fat attitude toward self on the “me fat good” trial type. *D-IRAP* scores on the remaining two trial types and overall attitudes were positive, suggesting the presence of pro-thin and anti-fat attitudes, but were not statistically significant. There were no differences between groups by trial type or for overall score in implicit attitudes toward self (all  $p > .05$ ).

*Attitudes toward others.* Women in both groups demonstrated significant pro-thin attitudes toward others on the “others thin good” trial type and for overall attitude towards others (total others *D-IRAP* score). There was also a significant difference between groups in overall attitude toward others, such that recurrent binge eating women demonstrated a stronger pro-thin bias than controls,  $F(1, 43) = 8.28, p < .01$ ). Attitudes on other trial types were not statistically significant, with no other significant group differences in implicit attitudes toward others (all  $p > .05$ ).

*Striving for thinness.* Women in both groups exhibited significant pro-thin attitudes on the “I want to be thin” trial type as well as pro-fat attitudes on the “I want to be fat” trial type. The remaining two trial types and overall attitudes striving for thinness (total thin *D*-IRAP scores) did not statistically differ from zero for either group. No significant differences in implicit attitudes toward striving for thinness were observed between groups (all  $p > .05$ ).

*Avoidance of fatness.* Women in both groups demonstrated a significant pro-thin attitude for the “I can be thin” trial type. A pro-fat attitude for the “I can be fat” trial type was significant only among non-binge eating women. The remaining two trial types and overall avoidance of fatness attitude (total fat *D*-IRAP scores) trended toward pro-thin and anti-fat attitudes but did not statistically differ from zero for either group. No significant differences in implicit attitudes toward avoidance of fatness were observed between groups (all  $p > .05$ ).

**Attitudes and body weight/shape concern.** Body Weight Concern and Body Shape Concern subscales of the EDE-Q were significantly correlated with two explicit measures of pro-thin/anti-fat attitudes corresponding with the IRAP trial type “I want to be thin,” ( $r = .50$  and  $r = .43$ , respectively, both  $p < .01$ ), and for the IRAP trial type “I must not be fat,” ( $r = .55$  and  $r = .45$ , respectively, both  $p < .01$ ). No other explicit measures were significantly correlated with body weight or shape concern. Body Weight Concern and Body Shape Concern were also not significantly correlated with any total implicit attitude measure (*D*-IRAP scores). When examining associations by IRAP trial type, only one correlation was significant, such that women who scored higher on body

weight concern had stronger implicit pro-thin/anti-fat bias for the “others fat bad” trial type ( $r = .39, p < .01$ ).

**Attitudes and emotional distress.** Attitudes were also examined by level of emotional distress as shown in Tables 17 and 18. Clinically significant levels of anxiety and depression were reported by 17 women; 8 of whom were also currently binge eating. Responses indicated an overall pattern of explicit pro-thin and anti-fat attitudes, although the magnitude and direction of these attitudes varied by trial type on implicit measures. Total *D-IRAP* scores were positive suggesting a pro-thin and anti-fat bias that significantly differed from zero on three preparations (self, other, and avoidance of fatness) among women with minimal emotional distress only. There were no significant group differences in implicit or explicit attitudes by level of emotional distress.

**Predicting current binge eating status.** A hierarchical logistic regression model was constructed to examine whether study variables could predict current binge eating status, as shown in Table 19. Psychological variables associated with binge eating in the literature, including negative urgency, alexithymia, depression, anxiety, and experiential avoidance were added in step one. This model correctly classified 78.0% of cases, with non-significance on the Hosmer and Lemeshow goodness of fit test indicating an acceptable fitting model,  $X^2(9) = 9.73, p = .28$ . Step two added explicit attitudes toward self and others, and correctly classified 87.8% of cases, with non-significance on Hosmer and Lemeshow goodness of fit test also indicating an acceptable fitting model,  $X^2(8) = 11.41, p = .18$ . Implicit attitudes toward self and others which significantly differed from zero were added in step three. This final model had a significant Hosmer and Lemeshow goodness of fit statistic,  $X^2(8) = 1.68, p = .99$ , indicating an acceptable fitting model,

correctly classifying 90.2% of cases. Although fit for the final model was acceptable, the addition of implicit attitudes added little to the overall additional variance, above and beyond variance accounted for by psychological distress and explicit attitudes towards self and others. Further, no factors significantly contributed to the model, making OR statistics uninterpretable. Accordingly, while the addition of implicit attitudes resulted in an acceptable model, the additional variance accounted for by the inclusion of implicit attitudes appears to violate the principle of parsimony.

Recognizing that disordered eating behavior is better captured on a spectrum than a binary status, an additional exploratory analysis was performed using the same predictor variables in a hierarchical multiple regression model to predict eating pathology more broadly (total EDE-Q score). Summary information for this analysis is listed in Table 20. The model containing negative urgency, alexithymia, depression, anxiety, and experiential avoidance in step one accounted for 28% of the variability in total EDE-Q score. The addition of explicit attitudes toward self and others in step two explained an additional 20% of the variance and this change in  $R^2$  was significant,  $F(4, 31) = 3.04, p = .03$ . The final addition of total implicit attitudes toward self and others did not produce a significant change in  $R^2, F(3, 28) = 1.21, p = .32$ , suggesting that the inclusion of implicit attitudes does not significantly improve prediction of disordered eating behavior.

### **Study 2 Results Summary**

As hypothesized, binge eating behavior was significantly associated with greater levels of negative urgency, alexithymia, experiential avoidance, and internalization of a thin ideal. In contrast to previous research, binge eating was not significantly correlated with measures of depression or anxiety. Overall results suggest women held both explicit and implicit pro-thin attitudes, regardless of current binge eating status. The variability in

the strength and significance of implicit attitudes across trial types and IRAP preparations suggest attitudes toward physical appearance are complex and contextual. Discrepancies between implicit and explicit attitudes were present among both recurrent binge eating women and controls and are described below.

Explicit pro-thin attitudes were reported by both groups of women toward self but not others. Overall implicit attitudes toward self (total self *D*-IRAP score) trended toward pro-thin and anti-fat attitudes, but did not significantly differ from zero for either group. Implicit pro-thin attitudes toward self were only significant for the trial type “me thin good.” Contrary to explicit attitudes, non-binge eating women also endorsed an implicit pro-fat attitude toward self which was significant for the “me fat good” trial type. Explicit attitudes toward others were not statistically significant for either group, although both groups demonstrated significant pro-thin attitudes on implicit measures for the “others thin good” trial type and overall implicit attitudes toward others. As previously noted, there was a significant difference between groups, such that recurrent binge eating women demonstrated stronger implicit pro-thin attitudes.

Explicit attitudes corresponding with the striving for thinness IRAP found a significant anti-fat attitude among women in both groups. Implicit attitudes demonstrated significant effects for trial types phrased in the affirmative, such that both groups of women endorsed a pro-thin attitude for the trial type “I want to be thin” as well as a pro-fat attitude for the trial type “I want to be fat.” Overall implicit attitudes on striving for thinness were not significant for either group.

Both groups of women endorsed significant explicit anti-fat attitudes on items corresponding with the avoidance of fatness IRAP, while an explicit pro-thin attitude was

only significantly different from zero among non-binge eating women. As with the striving for thinness IRAP, only implicit attitudes associated with trial types phrased in the affirmative statistically differed from zero: significant implicit pro-thin attitudes for the “I can be thin” trial type were endorsed by both groups, implicit pro-fat attitudes on the “I can be fat” trial type were significant only for non-binge eating women. Overall implicit attitudes on avoidance of fatness were not significant for either group.

The final analyses in this study examined whether implicit attitudes improved models predicting binge eating status. Although the final hierarchical logistic regression model indicated acceptable fit and correctly classified 90.2% cases, this was only a marginal improvement from the previous step using psychological correlates of binge eating and explicit attitudes. Further, none of the factors significantly contributed to the final model. Given the interest in predicting behavior with as few variables as possible (i.e., the principle of parsimony), the addition of implicit attitudes did not indicate an improvement from previous models. This effect was more pronounced in hierarchical multiple regression model predicting disordered eating more broadly (e.g., total EDE-Q score), in which the addition of implicit attitudes did not result in a significant change in the variance accounted for by the previous step ( $p = .32$ ).

## Chapter 5

### Overall Discussion

The first study examined binge eating behavior and related psychological factors among college students while screening for women eligible for a follow-up study assessing implicit and explicit attitudes toward physical appearance. The prevalence of binge eating as measured by the EDE-Q in this sample (26.6%) was consistent with previous studies among college students. Subjective binge eating was more frequently reported (19.2%) than objective binge eating (13.6%) on the QEWP-5, also as anticipated. However, there was an unexpected discrepancy between responses on the EDE-Q and QEWP-5, such that the prevalence of objective binge eating on the EDE-Q was higher than the prevalence of *any* binge eating behavior (subjective or objective) on the QEWP-5, a measure developed for screening purposes. This discrepancy may exemplify one of the limitations in using self-report measures to assess behaviors frequently associated with guilt and shame. It may also highlight a potentially unique role for implicit measures in clarifying the complex relations among factors contributing to binge eating.

The second study sought to test a current gap in the literature by examining implicit and explicit attitudes toward appearance (fatness/thinness) among recurrent and non-binge eating college women using the IRAP preparations developed by Parling et al. (2012). One of the primary advantages of using the IRAP over other implicit measures (such as the IAT) is the ability to examine implicit attitudes independently rather than in relative terms. For example, pro-thin attitudes on the IRAP (e.g., a positive *D*-IRAP score on a pro-thin trial type such as “I want to be thin”) do not assume the presence of a coexisting anti-fat attitude. Thus, each IRAP preparation contained four trial types

assessing a different attitudinal component: pro-thin, anti-fat, pro-fat, and anti-thin.

Overall total scores for each preparation were also examined in the current study, though it should be noted most IRAP research analyzes data by trial type to more accurately reflect complex attitudes.

The current study found significant pro-thin attitudes among all women, regardless of binge eating status, on all IRAP preparations. Previous research by Parling et al. (2012) found significant anti-fat attitudes toward self and on the striving for thinness preparation (with stronger anti-fat attitudes among women with anorexia nervosa), while no significant anti-fat attitudes were exhibited in the current study. Conversely, significant *pro-fat* attitudes were present on the self, striving for thinness, and avoidance of fatness IRAP preparations. Effect sizes in the present study tended to be smaller than those reported by Parling and colleagues, with the exception of a large significant group difference in overall pro-thin attitudes toward others ( $d = .85$ ).

The presence of implicit pro-thin attitudes, even among women without disordered eating behavior, has been proposed as evidence of a shared learning history in which cultural context promotes a thin ideal (Roddy et al., 2010). It is worth noting, however, that *no* implicit attitudes in this study were significantly correlated with internalization of a thin ideal as measured by the SATAQ-4. In fact, implicit attitudes were unrelated to all other study variables at both the group and sample level. This lack of association may be attributable to the differences between implicit and explicit measures, as previous research notes implicit attitudes regarding stigmatized behavior are less likely to be related to explicit measures. Individuals who binge eat are often



stigmatized as having greater personal responsibility compared to other those with other eating disorders such as anorexia nervosa or bulimia nervosa (Ebnetter & Latner, 2013).

It is also interesting to note the absence of any significant implicit anti-fat attitudes in this study, as these attitudes were endorsed on explicit measures by both groups. While one might reasonably expect stronger anti-fat attitudes among women with anorexia nervosa, other research has demonstrated anti-fat attitudes among those who binge eat as well (Magallares, Jauregui-Lobera, Ruiz-Prieto, & Santed, 2013). On the contrary, implicit *pro-fat* attitudes were found on all IRAP preparations except toward others, though it should be noted these implicit *pro-fat* attitudes were significant for non-binge eating women only.

Notably, only trial types that were phrased in the affirmative were significantly different from zero in the current study. It is possible that participants responded faster to trial types which were framed positively (e.g., “I want to be thin,” “I can be fat”) rather than negatively (e.g., “I *don't* want to be thin,” “I *must not* be fat”). Positive framing bias has previously been raised as a potential limitation of the IRAP procedure which may inadvertently skew attitudinal results (O'Shea, Watson, & Brown, 2016). At present, it remains unclear whether these findings are a function of small sample size and limited statistical power, accurately reflecting differences in women across studies, or may represent a true limitation of the IRAP. However, it is worth noting that anti-fat attitudes were also not significant for the two trial types in which framing was simplified (e.g., “me fat bad,” and “others fat bad”).

The purpose of the current research was to examine implicit attitudes toward fatness and thinness among college women to better understand relations between

cognitions/attitudes and binge eating behavior. While contrary to the original hypothesis, it is perhaps not surprising that implicit attitudes failed to significantly add to models predicting explicitly self-reported behavior. It remains possible that implicit attitudes may contribute to the prediction of actual binge eating episodes, which was not assessed in the current study. It is also possible that there may be important differences among individuals which were effectively washed out at the group level due to the types of analyses performed in this study. Overall, these findings indicate that implicit attitudes toward fatness and thinness are complex, and may not be well-suited for analyses combined with explicit self-report measures.

Results from this study also have potential implications for treatment of binge eating. For example, the presence of implicit pro-thin attitudes among all women suggests that it is possible to hold these beliefs, even if discrepant with explicit attitudes, without engaging in disordered eating behavior. The gold standard psychological treatment for binge eating is CBT (and variants), which often include trying to change one's cognitions toward body weight and shape. It is interesting, then, to consider the extent to which this focus represents a necessary and/or sufficient part of treatment, or if there might be other ways to more efficiently produce behavior change.

### **Limitations**

The decision to limit Study 2 to women only was made for feasibility purposes (e.g., sample size and homogeneity), as prior research has identified gender differences in binge eating. This represents a significant limitation to this study, as binge eating is not unique to females. As males and minorities are frequently underrepresented in eating disorder research, additional study of these populations is still needed.

It should be noted that while the sample size of this study was larger than what was used by Parling et al. (2012), power to detect differences between groups was still limited by the relatively smaller number of women who reported recurrent binge eating. As such, the analyses performed are best considered exploratory and should be interpreted with caution. Relatedly, the decision to analyze implicit attitudes in the current study as *D*-IRAP scores was based on sample size and the desire to compare results with similar studies (e.g., Parling et al 2012). It is worth noting, however, that the use of alternative analytical methods, such as multilevel modeling (MLM) of raw latency data, may better be able to capture individual differences in relational networks (Ferguson, Moghaddam, & Bibby, 2007). Future research is likely to require larger sample sizes to confirm the validity of current findings.

Figure 1

*Study Design Flowchart*

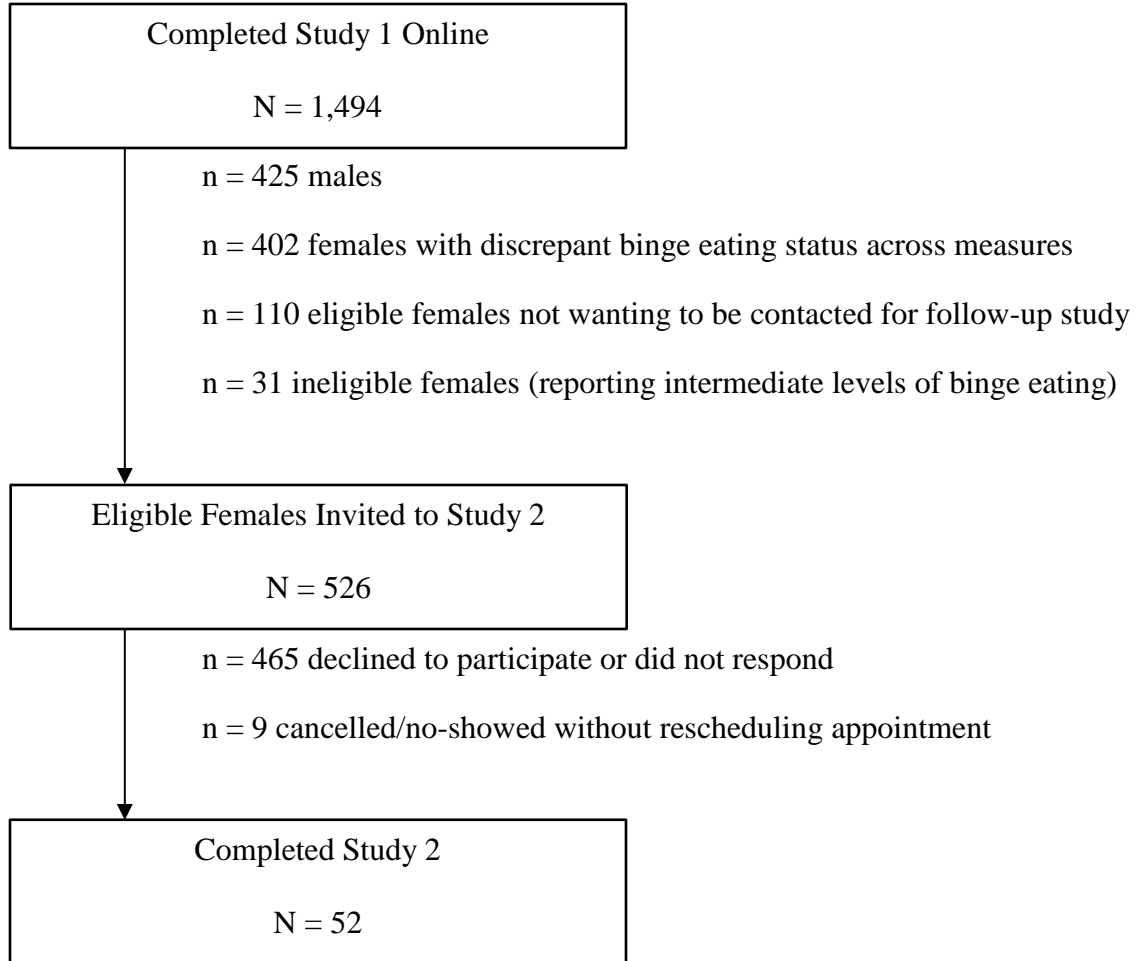


Table 1

*Summary of Primary Constructs Associated with Eating Disorders*

Constructs	Independent Variables
Negative affect	Depression, anxiety, affective states
Emotion regulation difficulties	Mood intolerance, emotional distress, dysphoria, emotional dysregulation, emotional avoidance, emotional eating, poor psychological well-being, affective instability, affective lability
Cognitive factors	Negative self-belief, negative automatic thoughts, permissive thoughts, maladaptive cognitions, pro-anorectic beliefs, negative beliefs about eating, positive beliefs about eating, expectancies
Self-esteem deficits	Low self-esteem, low self-efficacy, ineffectiveness, poor self-concept, aversive self-awareness
Perfectionism	Cognitive rigidity
Preoccupation with weight & shape	Weight and shape concern, body dissatisfaction, body shame, appearance anxiety, body-image disturbance
Thin-ideal internalization	Endorsement of the thin-ideal
Dieting	Dietary restraint, unhealthy weight control behaviors
Interpersonal issues	Interpersonal problems, family functioning, social dependency, family connectedness, response from close others
External pressure	Pressure to be thin, pressure to diet, media, parental, & peer influences, family-peer weight norms & teasing
Social comparison	Appearance comparison
Social support	Perceived unconditional acceptance, body acceptance by others
Self-surveillance	Poor interoceptive awareness
Urgency	Trait urgency, trait impulsivity, novelty seeking, reward sensitivity, rash-spontaneous impulsiveness, food-related impulsivity, disinhibition

Table 1 (cont.)

*Summary of Primary Constructs Associated with Eating Disorders*

Constructs	Independent Variables
Self-objectification	Body-surveillance
Biogenetic predisposition	Family history
Developmental factors	Early trauma, early negative experiences, attachment
BMI	Weight, weight fluctuation

*Note.* Adapted from “A Systematic Review of the Existing Models of Disordered Eating: Do they Inform the Development of Effective Interventions?” by J.-L. Pennesi and T. D. Wade, 2016, *Clinical Psychology Review*, 43, p. 184. Copyright 2015 by Elsevier, Ltd.

Table 2

*Participant Characteristics*

	Study 1 Total Sample (N = 1494)	Study 2 Controls (N = 34)	Study 2 Binge Eaters (N = 18)
Sex			
Male	425 (28.4%)	---	---
Female	1069 (71.6%)	34 (100%)	18 (100%)
Age	M = 20.7 (SD = 5.15)	M = 22.03 (SD = 6.47)	M = 19.94 (SD = 2.49)
Race/Ethnicity			
White	1001 (67.0%)	21 (61.8%)	14 (77.8%)
Hispanic	774 (51.8%)	15 (44.1%)	9 (50.0%)
African American	78 (5.2%)	1 (2.9%)	1 (5.6%)
AI/AN	121 (8.1%)	3 (8.8%)	3 (16.7%)
Asian	121 (8.1%)	3 (8.8%)	1 (5.6%)
Pacific Islander	12 (0.8%)	1 (2.9%)	1 (5.6%)
Other	312 (20.9%)	6 (17.6%)	2 (11.1%)
BMI	M = 24.23 (SD = 5.09)	M = 23.21 (SD = 5.72)	M = 23.87 (SD = 5.80)
Currently Dieting	369 (24.7%)	5 (14.7%)	8 (44.4%)
History of ED	52 (3.5%)	1 (2.9%)	2 (11.1%)
Current ED Treatment	9 (0.6%)	0	0

*Note.* ED = any self-reported Eating Disorder

Table 3

*Study 1 Descriptive Data*

	Study 1 Total Sample (N = 1494)	Study 2 Controls (N = 34)	Study 2 Binge Eaters (N = 18)
<b>QEWP-5</b>			
Objective Binge Eating	N = 202 (13.5%)	---	11 (61.1%)
< 1 episode/week	89 (6.0%)		2 (11.1%)
1 episode/week	47 (3.1%)		3 (16.7%)
2-3 episodes/week	47 (3.1%)		4 (22.2%)
4+ episodes/week	19 (1.2%)		2 (11.1%)
Subjective Binge Eating	277 (18.5%)	---	11 (61.1%)
< 1 episode/week	138 (9.2%)		1 (5.6%)
1 episode/week	50 (3.3%)		0 (0%)
2-3 episodes/week	72 (4.8%)		6 (33.3%)
4+ episodes/week	28 (1.9%)		4 (36.4%)
<b>EDE-Q</b>	<b>M (SD)</b>	<b>M (SD)</b>	<b>M (SD)</b>
Restraint	1.23 (1.31)	0.85 (0.97)	2.33 (1.61)
Eating Concern	0.75 (1.05)	0.57 (0.70)	2.46 (1.81)
Shape Concern	2.45 (1.74)	1.86 (1.16)	3.15 (1.02)
Weight Concern	2.10 (1.67)	1.63 (1.10)	2.44 (1.05)
Global Score	1.63 (1.27)	1.23 (0.78)	2.60 (1.12)
Negative Urgency (UPPS-P)	2.20 (0.66)	2.14 (0.65)	3.01 (0.56)
Alexithymia (TAS-20)	51.19 (11.44)	49.42 (12.33)	62.89 (12.19)
Depression (BCMDI)	19.96 (15.82)	21.85 (16.91)	31.35 (17.58)
Anxiety (GAD-7)	7.23 (5.61)	7.38 (6.02)	9.72 (6.94)
Avoidance (AAQ-2)	21.69 (8.92)	22.47 (8.03)	29.0 (9.50)

*Note.* QEWP-5 = Questionnaire on Eating and Weight Patterns-5, EDE-Q = Eating Disorder Examination-Questionnaire



Table 4

*QEW-5 Objective Binge Eating Data (Study 1)*

	Total Sample N = 1494	Males N = 425	Females N = 1069
Objective Binge Eating (OBE)	N = 202	N = 42	N = 160
<1 episode/week	89 (44.1%)	16 (38.1%)	73 (45.6%)
1 episode/week	47 (23.3%)	8 (19.0%)	39 (24.4%)
2-3 episodes/week	47 (23.3%)	14 (33.3%)	33 (20.6%)
4+ episodes/week	19 (9.4%)	4 (9.6%)	15 (9.4%)
Time of OBE			
8am to 12 noon	4 (2.0%)	2 (5.0%)	2 (1.3%)
12 noon to 4 pm	38 (19.0%)	8 (20.0%)	30 (18.8%)
4pm to 8pm	79 (39.5%)	13 (32.5%)	66 (41.3%)
8pm to 12 midnight	64 (32.0%)	13 (32.5%)	51 (31.9%)
12 midnight to 8am	15 (7.5%)	4 (10.0%)	11 (6.9%)
During OBE, eating more rapidly than normal	149 (73.8%)	26 (61.9%)	123 (76.9%)
During OBE, eating until uncomfortably full	178 (87.7%)	34 (81.0%)	144 (89.4%)
During OBE, eating while not physically hungry	158 (78.2%)	26 (61.9%)	132 (82.5%)
During OBE, eating alone due to embarrassment	74 (36.5%)	10 (23.8%)	64 (39.8%)
Feeling disgusted, guilty, or depressed after OBE	162 (80.2%)	26 (61.9%)	136 (85.0%)
Compensatory Vomiting	27 (13.4%)	2 (4.7%)	25 (15.6%)
Compensatory Laxative Use	20 (9.9%)	2 (4.7%)	18 (11.3%)
Compensatory Diuretic Use	6 (3.0%)	2 (4.7%)	4 (2.5%)
Compensatory Fasting	52 (25.7%)	11 (25.6%)	41 (25.8%)
Compensatory Exercise	59 (29.2%)	15 (35.7%)	44 (27.5%)
Compensatory Diet Pill Use	9 (4.4%)	2 (4.7%)	7 (4.4%)
OBE Duration (M, SD in hours)	1.44 (1.27)	1.54 (2.14)	1.42 (0.91)
Hours since eaten prior to OBE	4.21 (5.05)	4.79 (4.75)	4.06 (5.13)
How upset by OBE	2.35 (1.30)	1.60 (1.40)	2.55 (1.20)

Table 5

*QEWP-5 Subjective Binge Eating Data (Study 1)*

	Total Sample N = 1494	Males N = 425	Females N = 1069
Subjective Binge Eating (SBE)	N = 277	N = 45	N = 243
SBE Frequency			
<1 episode/week	138 (47.9%)	20 (44.4%)	118 (48.6%)
1 episode/week	50 (17.4%)	8 (17.8%)	42 (17.3%)
2-3 episodes/week	72 (25.0%)	10 (22.2%)	62 (25.5%)
4+ episodes/week	28 (9.7%)	7 (15.5%)	21 (8.6%)
Time of SBE			
8am to 12 noon	17 (6.0%)	3 (6.8%)	14 (5.9%)
12 noon to 4 pm	75 (26.7%)	7 (15.9%)	68 (28.7%)
4pm to 8pm	101 (35.9%)	16 (36.4%)	85 (35.9%)
8pm to 12 midnight	80 (28.5%)	14 (31.8%)	66 (27.8%)
12 midnight to 8am	8 (2.8%)	4 (9.1%)	4 (1.7%)
During SBE, eating more rapidly than normal	156 (54.5%)	28 (63.6%)	128 (52.9%)
During SBE, eating until uncomfortably full	186 (65.5%)	25 (56.8%)	161 (67.1%)
During SBE, eating while not physically hungry	176 (62.2%)	18 (41.9%)	158 (65.8%)
During SBE, eating alone due to embarrassment	73 (25.7%)	7 (16.3%)	66 (27.4%)
Feeling disgusted, guilty, or depressed after SBE	195 (68.9%)	20 (46.5%)	175 (72.9%)
	M (SD)	M (SD)	M (SD)
SBE Duration (in hours)	1.43 (1.91)	1.35 (1.51)	1.45 (1.98)
H since last eaten	3.84 (3.53)	4.13 (2.59)	3.78 (3.68)
How upset by SBE	1.91 (1.23)	1.42 (1.27)	2.0 (1.20)
Importance of weight/shape	1.92 (0.85)	1.57 (0.86)	2.01 (0.82)

Table 6

*Chi Square Classifications for Objective Binge Eating on the EDE-Q and QEWP-5*

QEWP-5 Classification			
	No Objective Binge Eating	Objective Binge Eating	Total
EDE-Q Classification			
No Objective Binge Eating	1052	44	1096
Objective Binge Eating	239	159	398
Total	1291	203	1494

Table 7

*Chi Square Classifications for Objective and Any Binge Eating EDE-Q and QEWP-5*

	QEWP-5 Classification		Total
	No Binge Eating	Any Binge Eating	
<b>EDE-Q Classification</b>			
No Objective Binge Eating	974	122	1096
Objective Binge Eating	140	258	398
<b>Total</b>	<b>1114</b>	<b>380</b>	<b>1494</b>

Table 8

*Study 2 Descriptive Data*

	Study 2 Controls (N = 34)	Study 2 Binge Eaters (N = 18)
<b>QEWP-5</b>		
Objective Binge Eating	---	N = 14 (77.8%)
< 1 episode/week		4 (22.2%)
1 episode/week		4 (22.2%)
2-3 episodes/week		5 (27.8%)
4+ episodes/week		1 (5.6%)
Subjective Binge Eating	---	N = 18 (100%)
< 1 episode/week		5 (27.8%)
1 episode/week		3 (16.7%)
2-3 episodes/week		5 (27.8%)
4+ episodes/week		5 (27.8%)
<b>EDE-Q</b>	<b>M (SD)</b>	<b>M (SD)</b>
Restraint	0.96 (1.19)	2.26 (1.69)
Eating Concern	0.64 (0.72)	2.03 (1.45)
Shape Concern	1.72 (1.06)	2.81 (0.97)
Weight Concern	1.35 (0.94)	2.23 (1.16)
Global Score	1.17 (0.83)	2.33 (1.08)
<b>SATAQ-4</b>		
Internalization - Thin	16.56 (4.11)	17.78 (3.80)
Internalization - Muscular	15.03 (4.64)	15.89 (5.41)
Pressure – Family	7.94 (3.51)	12.39 (4.97)
Pressure – Peers	8.38 (4.05)	10.56 (4.22)
Pressure – Media	15.06 (4.82)	17.33 (3.12)
<b>Modified Values Inventory</b>		
Success	2.95 (0.96)	2.81 (0.67)
Discrepancy	1.12 (0.80)	1.45 (0.87)

Table 9

*Bivariate Correlations among Study Measures (N = 52)*

	Restraint	Eating concern	Shape concern	Weight concern	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success
Eating concern	.75*	--														
Shape concern	.65*	.63*	--													
Weight concern	.61*	.51*	.80*	--												
EDE-Q Total	.89*	.85*	.88*	.83*	--											
Neg. Urgency	.34	.47*	.51*	.33	.47*	--										
Alexithymia	.17	.32	.38*	.43*	.36*	.58*	--									
Depression	.20	.31	.34	.34	.34	.43*	.61*	--								
Anxiety	.17	.34	.32	.32	.33	.47*	.50*	.75*	--							
Avoidance	.20	.39	.42	.41*	.40*	.58*	.74*	.77*	.77*	--						
Thin ideal	.46*	.38*	.55*	.45*	.53*	.40*	.34	.34	.26	.32	--					
Muscular ideal	.10	-.08	.24	.26	.14	.21	.38*	.30	.36*	.35	.36*	--				
Family Pressure	.36*	.59*	.47*	.26	.49*	.47*	.35	.15	.17	.31	.26	-.12	--			
Peer Pressure	.04	.14	.27	.21	.18	.39*	.50*	.40*	.49*	.44*	.12	.29	.41*	--		
Media Pressure	.27	.22	.30	.16	.28	.45*	.25	.23	.28	.19	.55*	.32	.29	.50*	--	
Values Success	-.14	-.25	-.29	-.24	-.26	-.50*	-.36*	-.40*	-.38*	-.49*	-.23	-.01	-.48*	-.35	-.14	--
Values Discrepancy	.09	.24	.30	.11	.21	.54*	.27	.41*	.37*	.47*	.16	.10	.48*	.21	.09	-.76*

\*p &lt; .001

Table 10

*Bivariate Correlations for Study Measures with Explicit Attitudes (N = 52)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Attentiveness	-.30	-.30	-.36*	-.60*	-.51*	-.48*	-.18	-.05	-.27	-.36*	-.09	.53*	-.48*
Well-rested	-.22	-.21	-.35	-.43*	-.41*	-.37*	-.08	-.04	-.25	-.12	.01	.44*	-.38*
Satiated	.01	.05	-.07	-.23	-.14	-.14	.07	-.07	.27	.01	.02	-.18	.14
Interested	.05	-.28	-.21	-.26	-.41*	-.27	-.07	-.05	-.16	-.40*	-.25	.34	-.35
Relaxed	-.30	-.18	-.41*	-.31	-.46*	-.38*	-.16	-.56*	-.26	-.37*	-.24	.28	-.28
Anxious	.32	.17	.26	-.47*	.53*	.40*	.11	.30	.18	.41*	.22	-.30	.37*
Depressed	.40*	.01	.35	.53*	.49*	.46*	.21	.23	.21	.17	-.03	-.40*	.24
Good if I am fat	-.28	-.12	-.07	-.21	-.25	-.28	-.47*	-.20	-.13	.12	-.23	.05	-.12
Good if I am thin	.29	.20	.05	.06	.06	.11	.54*	.14	.22	.13	.42*	-.28	.20
Good if others are fat	.05	-.19	.09	.12	.07	.03	.06	.15	-.13	.12	-.05	.21	-.29
Good if others are thin	.05	.19	-.06	-.06	-.01	-.05	.38*	.04	.17	.05	.17	-.18	.25
I do want to be fat	-.29	.07	-.03	.03	.02	-.07	-.26	-.12	-.10	-.01	-.05	-.17	.11
I do want to be thin	.43*	.18	.11	.12	.09	.07	.59*	.22	.25	.13	.40*	.04	-.01
I must not be fat	.57*	.43*	.40*	.26	.24	.37*	.52*	.11	.35	.12	.30	-.22	.23
I must not be thin	-.20	-.18	.03	-.06	.01	.09	-.50*	-.23	.02	-.15	-.47*	-.15	.11

\*p &lt; .001

Table 11

*Bivariate Correlations for Study Measures with Implicit Attitudes (N = 52)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Me fat bad	-.02	-.10	.12	-.17	-.21	.02	-.04	-.04	.09	.09	-.03	.13	-.27
Me fat good	.12	.08	.19	.05	.05	.02	.12	.16	.01	.16	-.04	.09	.05
Me thin good	.01	.28	-.03	-.01	.06	.10	-.01	-.09	.11	-.01	-.04	-.26	.28
Me thin bad	.08	.09	.07	-.11	-.13	.04	-.04	.04	-.02	.10	-.10	-.15	.11
Others fat bad	.32	.40	.15	.16	.20	.31	.19	.04	.27	.09	.09	-.28	.22
Others fat good	.11	.21	.03	-.06	.01	.09	-.04	-.09	.17	-.06	-.03	-.01	.03
Others thin good	.11	-.02	.04	.11	.09	.17	-.23	-.20	.24	-.04	-.11	-.25	.27
Others thin bad	-.10	.20	.17	-.04	.01	.05	-.20	-.19	.16	.19	.06	-.09	.17
I don't want to be fat	.05	.19	-.07	-.01	.11	.03	.07	.07	.01	-.05	.10	-.19	.24
I want to be fat	.09	.09	.21	.01	.01	.08	-.07	.14	-.06	.21	.15	-.01	-.05
I want to be thin	-.14	.07	-.02	.20	.11	.13	.14	-.06	-.17	-.01	-.08	-.15	.17
I don't want to be thin	-.13	-.13	-.21	-.20	-.22	-.21	-.06	.02	-.17	-.16	-.19	.19	-.15
I must not be fat	-.09	.10	.01	-.08	.02	.02	-.08	.01	.03	-.04	.06	-.05	-.14
I can be fat	.14	.22	.04	-.17	-.07	.03	.04	-.05	.03	-.15	.03	.24	-.20
I can be thin	-.12	.04	-.13	-.03	.13	.03	-.17	-.06	-.10	.02	-.06	.01	.03
I must not be thin	.04	.03	-.05	-.09	-.07	.03	.02	-.14	.09	-.08	-.08	-.26	.17



Table 11 (cont.)

*Bivariate Correlations for Study Measures with Implicit Attitudes (N = 52)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Self total	.07	.16	.13	-.09	-.09	.08	.01	.02	.08	.12	-.10	-.10	.08
Others total	.21	.37	.17	.09	.15	.28	-.11	-.18	.38	.07	.01	-.29	.31
Thin total	-.04	.10	-.03	-.01	.01	.01	.03	.09	-.17	.01	.01	-.07	.09
Fat total	-.01	.15	-.06	-.15	-.01	.05	-.08	-.20	.03	-.10	-.02	-.05	-.05

Table 12

*Bivariate Correlations for Study Measures by Binge Eating Status*

	Restraint	Eating concern	Shape concern	Weight concern	EDE-Q Total	Neg. Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Restraint	-	.58*	.62*	.58*	.84*	.08	.09	.14	.27	.26	.49*	.34	.15	-.09	.13	-.10	.22
Eating concern	.79*	--	.72*	.45*	.78*	.20	.25	.28	.43	.38	.62*	.15	.46*	.13	.24	-.23	.25
Shape concern	.53	.39	--	.80*	.92*	.31	.31	.26	.35	.47*	.57*	.34	.25	.13	.13	-.30	.34
Weight concern	.49	.37	.73*	--	.84*	.24	.30	.14	.23	.42	.49*	.35	-.01	-.10	-.01	-.23	.24
EDE-Q Total	.91*	.83*	.76*	.75*	--	.24	.27	.24	.37	.44*	.63*	.36	.23	.01	.14	-.24	.31
Neg. Urgency	.20	.28	.35	-.05	.24	--	.65*	.42	.55*	.62*	.50*	.29	.25	.32	.48*	-.61*	.54*
Alexithymia	-.21	-.06	.00	.32	-.01	-.08	--	.48*	.38	.69*	.29	.21	.25	.37	.24	-.42	.29
Depression	.06	.17	.23	.45	.26	.22	.75*	--	.68*	.72*	.32	.12	.01	.17	.20	-.35	.41
Anxiety	-.06	.21	.13	.34	.17	.31	.67*	.84*	--	.74*	.32	.38	.04	.39	.38	-.32	.34
Avoidance	-.15	.16	.04	.19	.05	.28	.71*	.82*	.81*	--	.39	.37	.08	.31	.23	-.48*	.46*
Thin ideal	.40	.14	.51	.36	.41	.15	.33	.34	.10	.11	--	.33	.35	.01	.50*	-.34	.37
Muscular ideal	-.23	-.41	.04	.11	-.19	-.01	.71*	.53	.31	.29	.42	--	-.19	.11	.35	.03	.13
Family Pressure	.26	.46	.45	.22	.41	.34	.05	.08	.16	.29	.04	-.16	--	.45*	.39	-.48*	.44*
Peer Pressure	-.05	-.10	.29	.46	.13	.20	.60*	.67*	.58	.52	.25	.53	.21	--	.57*	-.34	.14
Media Pressure	.35	-.05	.53	.28	.31	.05	-.07	.15	-.07	-.18	.68*	.27	-.17	.24	--	-.22	.15
Values Success	-.18	-.40	-.28	-.27	-.32	-.49	-.27	-.55	-.51	-.59*	.11	-.09	-.65*	-.39	.25	--	-.81*
Values Discrep.	-.25	.11	.04	-.25	-.12	.56	.05	.31	.35	.41	-.33	.03	.46	.24	-.24	-.71*	--

Note. \* $p < .001$ . Values below the diagonal are for binge eaters (N=18), values above the diagonal are for non-binge eaters (N=34).

Table 13

*Bivariate Correlations with Attitudinal Variables among Non-Binge Eating Women (N = 34)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Explicit Attitudes													
Attentiveness	-.38	-.30	-.45*	-.62*	-.46*	-.58*	-.29	.04	-.34	-.30	-.16	.48*	-.40
Well-rested	-.38	-.41	-.53*	-.50*	-.41	-.49*	-.30	-.02	-.42	-.24	-.14	-.50*	-.40
Satiated	-.17	.15	-.05	-.37	-.24	-.32	.08	.06	.13	-.10	.14	-.07	.08
Interested	-.10	-.42	-.33	-.39	-.46*	-.44*	-.27	-.06	-.36	-.59*	-.47*	.45*	-.38
Relaxed	-.37	-.17	-.28	-.14	-.49*	-.35	-.13	-.35	-.33	-.35	-.23	.28	-.22
Anxious	.54*	.24	.34	.39	.57*	.48*	.22	.26	.23	.38	.27	-.22	.25
Depressed	.52*	.06	.26	.47*	.47*	.50*	.19	.12	.22	.06	-.08	-.39	.35
Good if I am fat	-.47*	-.07	-.01	-.11	-.27	-.17	-.56*	-.33	-.07	.19	-.22	-.02	-.05
Good if I am thin	.40	.32	-.10	-.09	.04	-.02	.55*	.14	.38	.08	.43	-.42	.40
Good if others are fat	.22	-.19	.01	.23	.27	.17	-.15	-.02	-.08	.08	-.16	.12	-.08
Good if others are thin	.10	.26	-.07	-.22	-.11	-.09	.37	-.03	.48*	-.07	.13	-.24	.30
I do want to be fat	-.32	.30	.13	.14	.12	.05	-.25	-.16	.01	.10	.01	-.20	.16
I do want to be thin	.44*	.09	-.03	-.07	-.01	-.15	.52*	.25	.21	.02	.37	.13	.01
I must not be fat	.63*	.32	.45*	.25	.26	.40	.64*	.23	.31	.08	.22	-.25	.23
I must not be thin	-.18	-.15	.06	.03	.05	.17	-.41	-.19	.01	-.03	-.40	-.14	.07

Table 13 (cont.)

Bivariate Correlations with Attitudinal Variables among Non-Binge Eating Women (N = 34)

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Implicit Attitudes													
Self total	-.07	.20	.19	-.19	-.12	-.04	.01	.23	-.08	.13	-.12	-.04	.06
Others total	-.23	.25	.05	.02	.13	.16	-.15	-.09	-.06	-.01	-.10	-.24	.13
Thin total	-.19	.19	.02	-.21	-.05	-.04	-.06	-.02	.02	-.06	-.14	-.11	.20
Fat total	-.21	.20	-.02	-.23	-.10	-.06	-.17	.12	-.07	-.13	-.06	-.02	-.04

Note: \*p < .001. While not shown, there were no significant correlations for implicit attitudes at the level of individual trial types.

Table 14

*Bivariate Correlations with Attitudinal Variables among Recurrent Binge Eating Women (N = 18)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Explicit Attitudes													
Attentiveness	-.30	-.54	-.30	-.58	-.60*	-.41	.03	-.19	-.25	-.49	.12	.68*	-.62*
Well-rested	-.22	-.15	-.31	-.39	-.47	-.35	.27	-.09	-.23	.01	.29	.39	-.42
Satiated	.34	.17	.01	-.01	.01	.13	.10	-.19	.60*	.22	-.15	-.45	.27
Interested	.22	-.27	-.14	.02	-.34	-.06	.40	-.06	-.01	-.08	.44	-.01	-.38
Relaxed	-.07	.06	-.59	-.56	-.38	-.33	-.14	-.64*	-.04	-.34	-.13	.27	-.32
Anxious	.25	.19	.31	.66*	.52	.40	-.05	.37	.24	.54	.21	-.55	.59
Depressed	.39	-.12	.67*	.70*	.55	.48	.27	.45	.25	.39	.11	-.42	.01
Good if I am fat	.05	-.02	.01	-.30	-.17	-.34	-.26	.01	-.08	.13	-.17	.20	-.17
Good if I am thin	.01	-.26	.13	.28	-.01	.21	.48	.11	-.12	.12	.34	.15	-.25
Good if others are fat	-.06	-.22	.34	-.01	-.11	-.11	.47	.40	-.17	.25	.31	.45	-.60*
Good if others are thin	.08	.34	.06	.35	.18	-.10	.47	.19	-.17	.35	.40	-.01	.21
I do want to be fat	.14	.15	-.08	-.14	-.18	-.19	-.26	.07	-.01	-.17	-.05	-.14	.20
I do want to be thin	.39	.11	.20	.37	.15	.28	.71*	.14	.20	.22	.42	-.16	-.14
I must not be fat	.14	.04	-.48	-.09	-.04	-.10	-.03	-.45	-.01	-.21	.27	-.02	-.01
I must not be thin	-.27	-.29	.01	-.22	-.03	-.01	-.69*	-.29	.05	-.34	-.77*	-.20	.18

Table 14 (cont.)

*Bivariate Correlations with Attitudinal Variables among Recurrent Binge Eating Women (N = 18)*

	EDE-Q Total	Negative Urgency	Alexithymia	Depression	Anxiety	Avoidance	Thin Ideal	Muscular Ideal	Family Pressure	Peer Pressure	Media Pressure	Values Success	Values Discrepancy
Implicit Attitudes													
Self total	.23	-.06	-.04	.03	-.07	.21	.01	-.33	.23	.08	-.10	-.23	.09
Others total	.21	.13	-.04	-.05	.04	.22	-.15	-.34	.60	-.02	-.11	-.45	.42
Thin total	.15	.11	-.05	.32	.09	.10	.17	.21	-.33	.12	.30	-.01	-.01
Fat total	.33	.17	-.12	.08	.17	.26	.14	-.50	.20	-.05	.12	-.14	-.05

Note: \* $p < .001$ . While not shown, there were no significant correlations for implicit attitudes at the level of individual trial types.

Table 15

*Explicit Attitudes by Binge Eating Status*

	Study 2 Non-Binge Eating Women (N = 34)	Study 2 Recurrent Binge Eating Women (N = 18)
Attitudes Toward Appearance	M (SD)	M (SD)
It's good if I am fat	-2.69 (1.88) *	-3.31 (2.20) *
It's good if I am thin	1.44 (2.28) *	2.17 (2.12) *
It's good if others are fat	-0.62 (1.26)	-0.78 (1.44)
It's good if others are thin	0.97 (1.66)	0.78 (1.40)
I want to be fat	-4.43 (1.03) *	-4.83 (0.38) *
I want to be thin	1.62 (3.01)	2.64 (3.01)
I must not be fat †	1.81 (2.70) *	3.78 (1.10) *
I must not be thin	-2.06 (2.47) *	-2.14 (2.82)
Attentional Variables		
Attentiveness	2.07 (2.36)	2.00 (2.47)
Well-rested	-0.09 (2.98)	0.47 (3.55)
Satiated	0.72 (2.70)	0.06 (3.78)
Interested	1.41 (2.32)	1.72 (1.90)
Relaxed	-0.38 (3.21)	-1.56 (3.13)
Anxious	-0.15 (2.90)	-0.50 (3.42)
Depressed	-1.40 (3.14)	-1.31 (2.74)

*Note.* Scales range from -5 to 5. \*One sample t-test significantly difference from zero,  $p < .001$ . †Indicates significant difference between groups,  $p < .005$ .

Table 16

*Implicit Attitudes (D-IRAP Scores) by Binge Eating Status*

	Study 2	Study 2	Between Groups		
	Non-Binge Eating Women M (SD)	Recurrent Binge Eating Women M (SD)	F	p	d
Self	N = 29	N = 17			
Me fat bad	0.02 (0.41)	0.08 (0.37)	0.25	.62	.16
Me fat good	-0.28 (0.39) *	-0.23 (0.36)	0.19	.67	.14
Me thin good	0.57 (0.50) *	0.58 (0.44) *	0.01	.92	.03
Me thin bad	0.22 (0.45)	0.24 (0.46)	0.02	.89	.04
Self Total	0.13 (0.28)	0.17 (0.27)	0.19	.67	.13
Others	N = 30	N = 15			
Others fat bad	-0.11 (0.44)	0.08 (0.47)	1.81	.19	.42
Others fat good	-0.15 (0.40)	0.14 (0.36)	5.30	.03	.74
Others thin good	0.46 (0.42) *	0.69 (0.32) *	3.62	.06	.63
Others thin bad	0.17 (0.35)	0.24 (0.43)	0.31	.58	.17
Others Total	0.09 (0.18) *	0.29 (0.27) *	8.28	< .01	.85
Thin	N = 30	N = 17			
I don't want to be fat	-0.03 (0.38)	0.05 (0.48)	0.43	.52	.19
I want to be fat	-0.46 (0.45) *	-0.43 (0.39) *	0.04	.85	.06
I want to be thin	0.53 (0.35) *	0.40 (0.37) *	1.34	.25	.35
I don't want to be thin	0.18 (0.41)	0.10 (0.37)	0.42	.52	.20
Thin Total	0.05 (0.21)	0.03 (0.28)	0.11	.74	.10
Fat	N = 32	N = 18			
I must not be fat	0.16 (0.48)	0.14 (0.45)	0.02	.90	.04
I can be fat	-0.32 (0.42) *	-0.17 (0.39)	1.70	.20	.39
I can be thin	0.48 (0.44) *	0.43 (0.34) *	0.15	.70	.12
I must not be thin	0.30 (0.54)	0.17 (0.45)	0.80	.37	.27
Fat Total	0.15 (0.28)	0.14 (0.25)	0.02	.90	.04

*Note.* \*One sample t-test significantly difference from zero,  $p < .001$ . N indicates participants meeting criteria for analyses (75% response accuracy). Positive scores indicate pro-thin or anti-fat bias, negative scores indicate anti-thin or pro-fat bias.



Table 17

*Explicit Attitudes by Emotional Distress*

	Study 2 Minimal Distress (N = 35)	Study 2 Depression + Anxiety (N = 17)
<b>Attitudes Toward Appearance</b>		
It's good if I am fat	-2.77 (1.84) *	-3.18 (2.32) *
It's good if I am thin	1.53 (2.18) *	2.03 (2.37)
It's good if others are fat	-0.69 (1.35)	-0.65 (1.27)
It's good if others are thin	0.89 (1.59)	0.94 (1.56)
I want to be fat	-4.64 (0.78) *	-4.42 (1.06) *
I want to be thin	1.73 (3.26)	2.47 (2.45) *
I must not be fat	2.47 (2.69) *	2.53 (1.98) *
I must not be thin	-1.97 (2.47) *	-2.32 (2.83)
<b>Attentional Variables</b>		
Attentiveness	2.73 (1.98) *	0.65 (2.57)
Well-rested	0.87 (3.22)	-1.47 (2.45)
Satiated	0.59 (3.06)	0.29 (3.26)
Interested	2.20 (2.04) *	0.12 (1.76)
Relaxed	0.04 (3.14)	-2.50 (2.67) *
Anxious	-1.07 (3.04)	1.38 (2.42)
Depressed	-2.14 (3.00) *	0.24 (2.26)

Note. \*One sample t-test significantly difference from zero,  $p < .001$ .

Table 18

*Implicit Attitudes by Emotional Distress (D-IRAP Scores)*

	Study 2 Minimal Distress M (SD)	Study 2 Depression + Anxiety M (SD)	Between Groups		
			F	p	d
Self	N=32	N=14			
Me fat bad	0.10 (0.38)	-0.09 (0.42)	2.25	.14	0.47
Me fat good	-0.27 (0.38) *	-0.26 (0.36)	0.01	.97	0.01
Me thin good	0.54 (0.45) *	0.64 (0.54) *	0.48	.49	0.21
Me thin bad	0.31 (0.43) *	0.03 (0.43)	4.10	.05	0.65
Total	0.17 (0.27) *	0.08 (0.28)	1.06	.31	0.33
Other	N=32	N=13			
Others fat bad	-0.09 (0.41)	0.08 (0.55)	1.46	.23	0.37
Others fat good	-0.03 (0.44)	-0.11 (0.35)	0.43	.52	0.23
Others thin good	0.54 (0.41) *	0.53 (0.40) *	0.01	.96	0.02
Others thin bad	0.20 (0.35)	0.18 (0.45)	0.03	.87	0.05
Total	0.15 (0.22) *	0.17 (0.27)	0.04	.84	0.06
Thin	N=32	N = 15			
I don't want to be fat	-0.05 (0.44)	0.10 (0.35)	1.41	.24	0.39
I want to be fat	-0.43 (0.46) *	-0.50 (0.36) *	0.26	.62	0.16
I want to be thin	0.45 (0.35) *	0.54 (0.38) *	0.68	.41	0.26
I don't want to be thin	0.16 (0.39)	0.13 (0.42)	0.07	.79	0.08
Total	0.03 (0.21)	0.07 (0.28)	0.24	.62	0.15
Fat	N=34	N=16			
I must not be fat	0.18 (0.38)	0.09 (0.62)	0.37	.54	0.17
I can be fat	-0.20 (0.44)	-0.41 (0.33) *	2.85	.10	0.54
I can be thin	0.43 (0.45) *	0.53 (0.30) *	0.64	.43	0.26
I must not be thin	0.31 (0.50) *	0.14 (0.53)	1.11	.30	0.32
Total	0.18 (0.27) *	0.09 (0.28)	1.20	.28	0.33

*Note.* \*One sample t-test significantly difference from zero,  $p < .001$ . N indicates participants meeting criteria for analyses (75% response accuracy). Positive scores indicate pro-thin or anti-fat bias, negative scores indicate anti-thin or pro-fat bias.

Table 19

*Summary of Hierarchical Logistic Regression Model Predicting Binge Eating Status*

	Coefficient (B)	SE	Wald X <sup>2</sup>	p	OR
<b>Step 1</b>					
Negative urgency	8.60	6.14	1.96	.16	5430.21
Alexithymia	0.20	0.20	1.00	.32	1.22
Depression	-0.08	0.15	0.28	.60	0.92
Anxiety	0.11	0.26	0.18	.67	1.12
Avoidance	-0.35	0.59	0.36	.54	0.70
<b>Step 2</b>					
Good self fat	-0.80	1.10	0.53	.47	0.45
Good self thin	0.48	0.85	0.32	.57	1.62
Good others fat	-1.74	1.94	0.80	.37	0.18
Good others thin	-0.44	0.75	0.36	.55	0.64
<b>Step 3</b>					
Self: me thin good	-6.76	5.65	1.43	.23	0.01
Self: me fat good	5.39	4.28	1.59	.21	219.34
Others: others thin good	11.44	9.35	1.50	.22	93231.42

*Note.* Model constructed using only implicit attitudes significantly different from zero. Coefficients correspond with final model in step 3. OR = Odds ratio.

Table 20

*Summary of Hierarchical Multiple Regression Model Predicting EDE-Q Total Score*

	Unstandardized Coefficients		Standardized coefficients		R <sup>2</sup>	$\Delta R^2$	F	p
	B (SE)		Beta	p				
Step 1					.28	.28	2.66	.04
Negative urgency	0.64 (0.26)		0.45	.02				
Alexithymia	-0.02 (0.02)		-0.27	.28				
Depression	0.03 (0.02)		0.46	.13				
Anxiety	0.01 (0.04)		0.02	.93				
Avoidance	-0.03 (0.04)		-0.29	.43				
Step 2					.48	.33	3.17	<.01
Good self fat	-0.23 (0.10)		-0.42	.03				
Good self thin	0.08 (0.10)		0.16	.39				
Good others fat	0.05 (0.14)		0.06	.72				
Good others thin	-0.07 (0.12)		-0.10	.57				
Step 3					.54	.34	2.73	.01
Self: me thin good	-0.53 (0.34)		-0.24	.14				
Self: me fat good	0.62 (0.43)		0.23	.16				
Others thin good	0.47 (0.43)		0.19	.28				

*Note.* Model constructed using only implicit attitudes significantly different from zero. Coefficients correspond with the final model in step 3. SE = standard error of B.

## APPENDICES

### Appendix A: Questionnaire on Eating and Weight Patterns – 5

1. Age: \_\_\_ years
2. Sex:  
 male  
 female
3. If female, how many menstrual periods have you missed over the past 3-4 months?  
(Enter 0 if this does not apply to you.) \_\_\_\_\_
4. If female, have you been taking the "pill"?  
 N/A  
 No  
 Yes
5. Are you Latino, Hispanic, or of Spanish origin?  
 No  
 Yes  
 Decline to answer
6. Which of the following best describes you? (You may check more than one.)  
 African American/Black  
 American Indian/Native American/Alaska Native  
 Asian  
 Pacific Islander  
 White  
 Other \_\_\_\_\_
7. How tall are you? (Please enter both feet and inches.) \_\_\_ feet \_\_\_ inches
8. How much do you weigh now? (If you are unsure, please provide your best guess.)  
\_\_\_\_\_ pounds
9. What has been your highest adult weight ever? (If female, please enter your highest weight when not pregnant.) \_\_\_\_\_ pounds
10. Are you currently dieting to control your weight?  
 No  
 Yes  
 Decline to answer
11. Have you ever been diagnosed or treated for an eating disorder?  
 No

- Yes  
 Decline to answer
12. Are you currently receiving any kind of treatment for an eating disorder?  
 No  
 Yes  
 Decline to answer
13. During the past three months, did you ever eat, in a short period of time (for example, a two hour period), what most people would think was an unusually large amount of food?  
 No  
 Yes  
 Decline to answer
14. During the times when you ate an unusually large amount of food, did you ever feel you could not stop eating or control what or how much you were eating?  
 No  
 Yes  
 Decline to answer
15. During the past three months, how often, on average, did you have episodes like this - that is, eating large amounts of food plus the feeling that your eating was out of control? (There may have been some weeks when this did not happen -- just average those in.)  
 Less than 1 episode per week  
 1 episode per week  
 2-3 episodes per week  
 4-7 episodes per week  
 8-13 episodes per week  
 14 or more episodes per week  
 Decline to answer
16. During these episodes, did you usually experience... eating much more rapidly than normal?  
 No  
 Yes  
 Decline to answer
17. During these episodes, did you usually experience... eating until feeling uncomfortably full?  
 No  
 Yes  
 Decline to answer

18. During these episodes, did you usually experience... eating large amounts of food when not feeling physically hungry?
- No
  - Yes
  - Decline to answer
19. During these episodes, did you usually experience... eating alone because of feeling embarrassed by how much you were eating?
- No
  - Yes
  - Decline to answer
20. During these episodes, did you usually experience... Feeling disgusted with yourself, depressed, or feeling very guilty afterward?
- No
  - Yes
  - Decline to answer
21. Think about a typical episode when you ate this way (that is, when you ate a large amount of food and felt your eating was out of control): What time of day did the episode start?
- 8am to 12 noon
  - 12 noon to 4 pm
  - 4 pm to 8 pm
  - 8 pm to 12 midnight
  - 12 midnight to 8 am
  - Decline to answer
22. Think about a typical episode when you ate this way (that is, when you ate a large amount of food and felt your eating was out of control): Approximately how long did this episode of eating last? \_\_\_\_\_ hours \_\_\_\_\_ minutes
23. As best as you can remember, please list everything you ate and drank during that episode. Please list the foods eaten and liquids consumed during the episode. Be specific - include brand names where possible, and amounts or portion sizes as best you can estimate.
24. At the time this episode started, how long had it been since you had previously finished eating a meal or snack? \_\_\_\_\_ hours \_\_\_\_\_ minutes
25. In general, during the past 3 months, how upset were you by these episodes (when you ate a large amount of food and felt your eating was out of control)?
- Not at all
  - Slightly
  - Moderately
  - Greatly

- Extremely
26. During the past 3 months, did you ever make yourself vomit in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
- No  
 Yes  
 Decline to answer
27. IF YES: How often, on average, did you make yourself vomit?
- N/A – I never made myself vomit  
 Less than 1 episode per week  
 1 episode per week  
 2-3 episodes per week  
 4-7 episodes per week  
 8-13 episodes per week  
 14 or more episodes per week
28. During the past 3 months, did you ever take more than the recommended dose of laxatives in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
- No  
 Yes  
 Decline to answer
29. IF YES: How often, on average, did you use laxatives?
- N/A – I never used laxatives  
 Less than 1 time per week  
 1 time per week  
 2-3 times per week  
 4-5 times per week  
 6-7 times per week  
 8 or more times per week
30. During the past three months, did you ever take more than the recommended dose of diuretics (water pills) in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
31. IF YES: How often, on average, did you use diuretics?
- N/A – I never used diuretics  
 Less than 1 time per week  
 1 time per week  
 2-3 times per week  
 4-5 times per week  
 6-7 times per week



- 8 or more times per week
32. During the past three months, did you ever fast – for example, not eat anything at all for at least 24 hours -- in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
- No  
 Yes  
 Decline to answer
33. IF YES: How often, on average, did you fast?
- N/A – I never fasted  
 Less than 1 day per week  
 1 day per week  
 2 days per week  
 3 days per week  
 4-5 days per week  
 More than 5 days per week
34. During the past three months, did you ever exercise excessively –for example, exercised even though it interfered with important activities or despite being injured – specifically in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
- No  
 Yes  
 Decline to answer
35. IF YES: How often, on average, did you exercise excessively?
- N/A – I never exercised excessively  
 Less than 1 time per week  
 1 time per week  
 2-3 times per week  
 4-7 times per week  
 8-13 times per week  
 14 or more times per week
36. During the past three months, did you ever take more than the recommended dose of a diet pill in order to avoid gaining weight after episodes of eating like you described (when you ate a large amount of food and felt your eating was out of control)?
- No  
 Yes  
 Decline to answer
37. IF YES: How often, on average, did you take diet pills?
- N/A – I never took diet pills

- Less than 1 time per week
  - 1 time per week
  - 2-3 times per week
  - 4-5 times per week
  - 6-7 times per week
  - 8 or more times per week
38. During the past three months, on average, how important has your weight or shape been in how you feel about or evaluate yourself as a person-- as compared to other aspects of your life, such as your performance at work or as a parent, or how you get along with other people?
- Weight and shape were not very important
  - Weight and shape played a part in how you felt about yourself
  - Weight and shape were among the main things that affected how you felt about yourself
  - Weight and shape were the most important things that affected how you felt about yourself
  - Decline to answer
39. During the past three months, did you ever have episodes during which you felt you could not stop eating or control what or how much you were eating but in which you did not consume what most people would think was an unusually large amount of food?
- No
  - Yes
  - Decline to answer
40. During the past three months how often did you have episodes like this -- the feeling that your eating was out of control, but you did not consume what most people would think was an unusually large amount of food? (There may have been some weeks when this did not happen --just average those in.)
- Less than 1 episode per week
  - 1 episode per week
  - 2-3 episodes per week
  - 4-7 episodes per week
  - 8-13 episodes per week
  - 14 or more episodes per week
41. During these episodes, did you usually experience... eating much more rapidly than normal?
- No
  - Yes
  - Decline to answer
42. During these episodes, did you usually experience... eating until feeling uncomfortably full?

- No
- Yes
- Decline to answer

43. During these episodes, did you usually experience... eating large amounts of food when not feeling physically hungry?

- No
- Yes
- Decline to answer

44. During these episodes, did you usually experience... eating alone because of feeling embarrassed by how much you were eating?

- No
- Yes
- Decline to answer

45. During these episodes, did you usually experience... Feeling disgusted with yourself, depressed, or feeling very guilty afterward?

- No
- Yes
- Decline to answer

46. Think about a typical episode when you ate this way (that is, when you felt you could not stop eating or control what or how much you were eating) but in which you did not consume an unusually large amount of food): What time of day did the episode start?

- 8am to 12 noon
- 12 noon to 4 pm
- 4 pm to 8 pm
- 8 pm to 12 midnight
- 12 midnight to 8 am
- Decline to answer

47. Think about a typical episode when you ate this way (that is, when you felt you could not stop eating or control what or how much you were eating) but in which you did not consume an unusually large amount of food): \_\_\_\_\_ hours \_\_\_\_\_ minutes

48. As best as you can remember, please list everything you ate and drank during that episode. Please list the foods eaten and liquids consumed during the episode. Be specific - include brand names where possible, and amounts or portion sizes as best you can estimate.

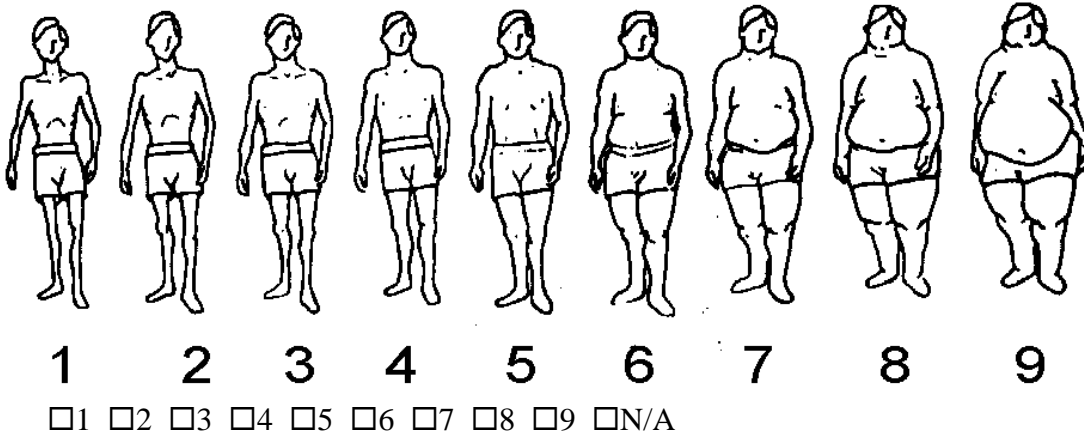
49. At the time this episode started, how long had it been since you had previously finished eating a meal or snack? \_\_\_\_\_ hours \_\_\_\_\_ minutes

50. In general, during the past 3 months, how upset were you by these episodes (that is, when you felt you could not stop eating or control what or how much you were eating but in which you did not consume an unusually large amount of food)?

- Not at all
- Slightly
- Moderately
- Greatly
- Extremely

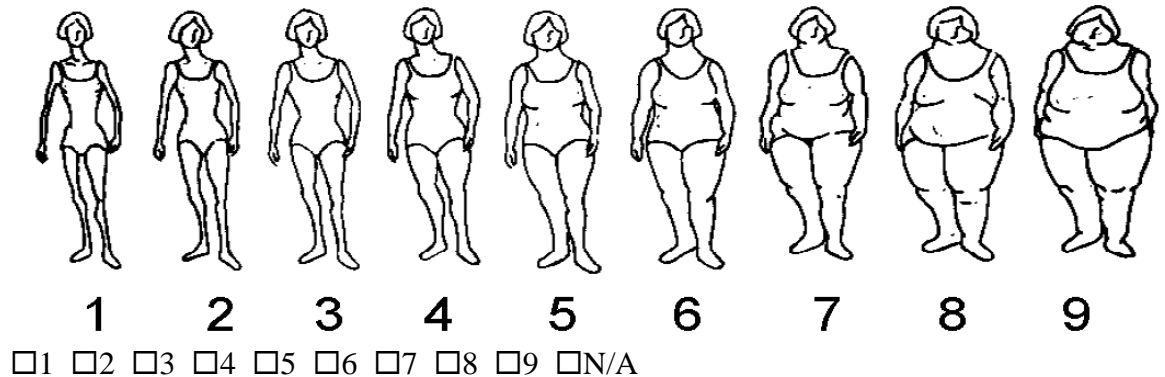
51. Please take a look at these silhouettes. Please select the number corresponding with the silhouette that most resembles the body build of your biological father at his heaviest. If you have no knowledge of your biological father or do not wish to answer this question, select N/A.

YOUR FATHER



52. Please take a look at these silhouettes. Please select the number corresponding with the silhouette that most resembles the body build of your biological mother at her heaviest. If you have no knowledge of your biological mother or do not wish to answer this question, select N/A.

YOUR MOTHER



## Appendix B: Eating Disorder Examination-Questionnaire

The following questions are concerned with the past four weeks (28 days) only. Please read each question carefully, and answer all the questions.

1. On how many of the past 28 days.... Have you been deliberately trying to limit the amount of food you eat to influence your shape or weight (whether or not you have succeeded)?
  - 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
  
2. On how many of the past 28 days.... Have you gone for long periods of time (8 waking hours or more) without eating anything at all in order to influence your shape or weight?
  - 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
  
3. On how many of the past 28 days.... Have you tried to exclude from your diet any foods that you like in order to influence your shape or weight (whether or not you have succeeded)?
  - 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
  
4. On how many of the past 28 days.... Have you tried to follow definite rules regarding your eating (for example, a calorie limit) in order to influence your shape or weight (whether or not you have succeeded)?
  - 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days

- 23-27 days  
 Every day
5. On how many of the past 28 days.... Have you had a definite desire to have an empty stomach with the aim of influencing your shape or weight?  
 0 days  
 1-5 days  
 6-12 days  
 13-15 days  
 16-22 days  
 23-27 days  
 Every day
6. On how many of the past 28 days.... Have you had a definite desire to have a totally flat stomach?  
 0 days  
 1-5 days  
 6-12 days  
 13-15 days  
 16-22 days  
 23-27 days  
 Every day
7. On how many of the past 28 days.... Has thinking about food, eating, or calories made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?  
 0 days  
 1-5 days  
 6-12 days  
 13-15 days  
 16-22 days  
 23-27 days  
 Every day
8. On how many of the past 28 days.... Has thinking about shape or weight made it very difficult to concentrate on things you are interested in (for example, working, following a conversation, or reading)?  
 0 days  
 1-5 days  
 6-12 days  
 13-15 days  
 16-22 days  
 23-27 days  
 Every day

9. On how many of the past 28 days.... Have you had a definite fear of losing control over eating?
- 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
10. On how many of the past 28 days.... Have you had a definite fear that you might gain weight?
- 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
11. On how many of the past 28 days.... Have you felt fat?
- 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
12. On how many of the past 28 days.... Have you had a strong desire to lose weight?
- 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
13. Over the past 28 days...How many times have you eaten what other people would regard as an unusually large amount of food (given the circumstances)? \_\_\_\_\_
14. Over the past 28 days...On how many of these times did you have a sense of having lost control over your eating (at the time that you were eating)? \_\_\_\_\_

15. Over the past 28 days...On how many DAYS have such episodes of overeating occurred (i.e., you have eaten an unusually large amount of food and have had a sense of loss of control at the time)? \_\_\_\_\_
16. Over the past 28 days... How many times have you made yourself sick (vomit) as a means of controlling your shape or weight? \_\_\_\_\_
17. Over the past 28 days... How many times have you taken laxatives as a means of controlling your shape or weight? \_\_\_\_\_
18. Over the past 28 days... How many times have you exercised in a "driven" or "compulsive" way as a means of controlling your weight, shape or amount of fat, or to burn off calories? \_\_\_\_\_

*For the following items, "binge eating" means eating what others would regard as an unusually large amount of food for the circumstances, accompanied by a sense of having lost control over eating.*

19. Over the past 28 days...On how many days have you eaten in secret (i.e. furtively)? ...do NOT count episodes of binge eating.
- 0 days
  - 1-5 days
  - 6-12 days
  - 13-15 days
  - 16-22 days
  - 23-27 days
  - Every day
20. What proportion of the times that you have eaten have you felt guilty (that you've done something wrong) because of its effect on your shape or weight? ...do NOT count episodes of binge eating.
- None of the times
  - A few of the times
  - Less than half
  - Half of the times
  - More than half
  - Most of the time
  - Every time
21. Over the past 28 days...How concerned have you been about other people seeing you eat? ...do NOT count episodes of binge eating.
- 0   1   2   3   4   5   6
- Not at all        Markedly



22. Over the past 28 days... Has your weight influenced how you think about (judge) yourself as a person?

0 1 2 3 4 5 6

Not at all        Markedly

23. Over the past 28 days... Has your shape influenced how you think about (judge) yourself as a person?

0 1 2 3 4 5 6

Not at all        Markedly

24. Over the past 28 days... How much would it have upset you if you had been asked to weigh yourself once a week (no more or less often) for the next four weeks?

0 1 2 3 4 5 6

Not at all        Markedly

25. Over the past 28 days... How dissatisfied have you been with your weight?

0 1 2 3 4 5 6

Not at all        Markedly

26. Over the past 28 days... How dissatisfied have you been with your shape?

0 1 2 3 4 5 6

Not at all        Markedly

27. Over the past 28 days... How uncomfortable have you felt seeing your body (for example, seeing your shape in the mirror, in a shop window reflection, while undressing, or taking a bath or shower)?

0 1 2 3 4 5 6

Not at all        Markedly

28. Over the past 28 days... How uncomfortable have you felt about others seeing your shape or figure (for example, in communal changing rooms, when swimming, or wearing tight clothes)?

0 1 2 3 4 5 6

Not at all        Markedly

## Appendix C: UPPS-P Negative Urgency Subscale

In this section you will read a series of statements that describe different ways people think and act. For each item, please indicate how much you agree or disagree with the statement.

1. I have trouble controlling my impulses.
  - Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
  
2. I have trouble resisting my cravings (for food, cigarettes, etc.).
  - Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
  
3. I often get involved in things I later wish I could get out of.
  - Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
  
4. When I feel bad, I will often do things I later regret in order to make myself feel better now.
  - Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
  
5. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.
  - Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
  
6. When I am upset I often act without thinking.
  - Agree strongly
  - Agree some

- Disagree some
  - Disagree strongly
  - Decline to answer
7. When I feel rejected, I will often say things that I later regret
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
8. It is hard for me to resist acting on my feelings.
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
9. I often make matters worse because I act without thinking when I am upset.
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
10. In the heat of an argument, I will often say things that I later regret.
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
11. I always keep my feelings under control
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer
12. Sometimes I do impulsive things that I later regret.
- Agree strongly
  - Agree some
  - Disagree some
  - Disagree strongly
  - Decline to answer

## Appendix D: Toronto Alexithymia Scale – 20

For the next set of questions, please indicate how much you agree or disagree with each statement. Select only one answer for each question.

1. I am often confused about what emotion I am feeling.
  - Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
  
2. It is difficult for me to find the right words for my feelings.
  - Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
  
3. I have physical sensations that even doctors don't understand.
  - Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
  
4. I am able to describe my feelings easily.
  - Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
  
5. I prefer to analyze problems rather than just describe them.
  - Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer

6. When I am upset, I don't know if I am sad, frightened, or angry.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
7. I find it hard to describe how I feel about people.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
8. I prefer to just let things happen rather than to understand why they turned out that way.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
9. I have feelings that I can't quite identify.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
10. Being in touch with emotions is essential.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
11. I am often puzzled by sensations in my body.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree

- Strongly agree
  - Decline to answer
12. People tell me to describe my feelings more.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
13. I don't know what's going on inside me.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
14. I often don't know why I am angry.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
15. I prefer talking to people about their daily activities rather than their feelings.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
16. I prefer to watch "light" entertainment shows rather than psychological dramas.
- Strongly disagree
  - Disagree
  - Neither disagree nor agree
  - Agree
  - Strongly agree
  - Decline to answer
17. It is difficult for me to reveal my innermost feelings, even to close friends.
- Strongly disagree
  - Disagree

- Neither disagree nor agree
- Agree
- Strongly agree
- Decline to answer

18. I can feel close to someone, even in moments of silence.

- Strongly disagree
- Disagree
- Neither disagree nor agree
- Agree
- Strongly agree
- Decline to answer

19. I find examination of my feelings useful in solving personal problems.

- Strongly disagree
- Disagree
- Neither disagree nor agree
- Agree
- Strongly agree
- Decline to answer

20. Looking for hidden meanings in movies or plays distracts from their enjoyment.

- Strongly disagree
- Disagree
- Neither disagree nor agree
- Agree
- Strongly agree
- Decline to answer

## Appendix E: Acceptance and Action Questionnaire – II

Next you will read another list of statements. Please rate how true each statement is for you.

1. My painful experiences and memories make it difficult for me to live a life that I would value.
  - Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer
  
2. I'm afraid of my feelings.
  - Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer
  
3. I worry about not being able to control my worries and feelings.
  - Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer
  
4. My painful memories prevent me from having a fulfilling life.
  - Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer



5. Emotions cause problems in my life.
- Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer
6. It seems like most people are handling their lives better than I am.
- Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer
7. Worries get in the way of my success.
- Never true
  - Very seldom true
  - Seldom true
  - Sometimes true
  - Frequently true
  - Almost always true
  - Always true
  - Decline to answer

## Appendix F: British Columbia Major Depression Inventory

The following items contain symptoms that you may have experienced. Consider your experience with these symptoms over the past two weeks, including today. Please rate each symptom on the provided severity scale.

1. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I feel sad, down in the dumps, or blue (nearly every day).
  - Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
  
2. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I lack interest in, or I do not enjoy, most activities (nearly every day)
  - Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
  
3. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have trouble falling asleep or staying asleep (nearly every day).
  - Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
  
4. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I sleep much more than in the past (nearly every day).
  - Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem

- Severe problem
  - Very severe problem
  - Decline to answer
5. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I feel restless and agitated (nearly every day)
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
6. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I feel slowed down (for example, I move slowly and think slowly). nearly every day.
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
7. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I lack interest in, or I do not enjoy, most activities (nearly every day).
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
8. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have a poor appetite (nearly every day).
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer

9. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have a greater appetite than in the past.
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
10. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have lost weight due to poor appetite (in the past 2 weeks).
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
11. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have gained weight due to greater appetite (in the past 2 weeks).
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
12. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I often feel worthless or useless.
- Not a problem
  - Very mild problem
  - Mild problem
  - Moderate problem
  - Severe problem
  - Very severe problem
  - Decline to answer
13. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I am burdened by guilt (e.g., I feel I have made many mistakes).
- Not a problem

- Very mild problem
- Mild problem
- Moderate problem
- Severe problem
- Very severe problem
- Decline to answer

14. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I have trouble concentrating, thinking, or solving problems (nearly every day).

- Not a problem
- Very mild problem
- Mild problem
- Moderate problem
- Severe problem
- Very severe problem
- Decline to answer

15. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I often think about dying (most days).

- Not a problem
- Very mild problem
- Mild problem
- Moderate problem
- Severe problem
- Very severe problem
- Decline to answer

16. Rate the severity of the following symptom based on your experience over the past two weeks, including today..... I think about killing myself.

- Not a problem
- Very mild problem
- Mild problem
- Moderate problem
- Severe problem
- Very severe problem
- Decline to answer

17. Using the scale below, rate the impact that any symptoms or problems have on your life.... Impact on my ability to be effective at work or in school.

- No impact on my day-to-day life
- Mild impact
- Moderate impact
- Severe impact
- Very severe impact on my day-to-day life
- N/A or decline to answer

18. Using the scale below, rate the impact that any symptoms or problems have on your life.... Impact on my family relationships and responsibilities.

- No impact on my day-to-day life
- Mild impact
- Moderate impact
- Severe impact
- Very severe impact on my day-to-day life
- N/A or decline to answer

19. Using the scale below, rate the impact that any symptoms or problems have on your life.... Impact on my social life and recreational activities

- No impact on my day-to-day life
- Mild impact
- Moderate impact
- Severe impact
- Very severe impact on my day-to-day life
- N/A or decline to answer

## Appendix G: Generalized Anxiety Disorder – 7 Item Scale

These last few questions ask how often some problems have been bothering you over the last two weeks.

1. Over the last two weeks, how often have you been bothered by.....Feeling nervous, anxious or on edge?
  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
  
2. Over the last two weeks, how often have you been bothered by.....Not being able to stop or control worrying?
  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
  
3. Over the last two weeks, how often have you been bothered by.....Worrying too much about different things?
  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
  
4. 4. Over the last two weeks, how often have you been bothered by.....Trouble relaxing?
  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
  
5. Over the last two weeks, how often have you been bothered by.....Being so restless that it is hard to sit still?
  - Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer

6. Over the last two weeks, how often have you been bothered by.....Becoming easily annoyed or irritated?
- Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
7. Over the last two weeks, how often have you been bothered by.....Feeling afraid as if something awful might happen?
- Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer
8. If you were bothered by any of these problems, how difficult have they made it for you to do your work, take care of things at home, or get along with other people?
- Not at all
  - Several days
  - More than half the days
  - Nearly every day
  - Decline to answer



## Appendix H: Sociocultural Attitudes Towards Appearance Questionnaire-4

Please read each of the following items carefully and indicate the number that best reflects your agreement with the statement.

Definitely disagree 1	Mostly disagree 2	Neither agree nor disagree 3	Mostly agree 4	Definitely agree 5
1. It is important for me to look athletic.			1	2 3 4 5
2. I think a lot about looking muscular.			1	2 3 4 5
3. I want my body to look very thin.			1	2 3 4 5
4. I want my body to look like it has little fat.			1	2 3 4 5
5. I think a lot about looking thin.			1	2 3 4 5
6. I spend a lot of time doing things to look more athletic.			1	2 3 4 5
7. I think a lot about looking athletic.			1	2 3 4 5
8. I want my body to look very lean.			1	2 3 4 5
9. I think a lot about having very little body fat.			1	2 3 4 5
10. I spend a lot of time doing things to look more muscular.			1	2 3 4 5
<u>Answer the following questions with relevance to your FAMILY</u> (include parents, brothers, sisters, relatives):				
11. I feel pressure from family members to look thinner.			1	2 3 4 5
12. I feel pressure from family members to improve my appearance.			1	2 3 4 5
13. Family members encourage me to decrease my level of body fat.			1	2 3 4 5
14. Family members encourage me to get in better shape.			1	2 3 4 5
<u>Answer the following questions with relevance to your PEERS</u> (include close friends, classmates, and other social contacts):				
15. My peers encourage me to get thinner.			1	2 3 4 5
16. I feel pressure from my peers to improve my appearance.			1	2 3 4 5
17. I feel pressure from my peers to look in better shape.			1	2 3 4 5
18. I get pressure from my peers to decrease my level of body fat.			1	2 3 4 5
<u>Answer the following questions with relevance to the MEDIA:</u> (include television, magazines, the internet, movies, billboards, and advertisements):				
19. I feel pressure from the media to look in better shape.			1	2 3 4 5
20. I feel pressure from the media to look thinner.			1	2 3 4 5
21. I feel pressure from the media to improve my appearance.			1	2 3 4 5
22. I feel pressure from the media to decrease my level of body fat.			1	2 3 4 5

## Appendix I: Modified Values Inventory

For each of the areas listed below, consider how you most want to live your life, then rate how IMPORTANT each domain is for you. This is not about how *well* you are doing in each area – it’s about *how important it is to you*.

Rate the importance you place in each domain using any number on the scale from 0 (not at all important) to 5 (extremely important). Each area need not be important to you – rate an area low if it’s not important to you personally.

0	1	2	3	4	5
Not at all important	Slightly important	Somewhat important	Moderately important	Very important	Extremely important

Consider each area according to your values – the important ways that you most want to live your life in each domain. **IMPORTANCE** of this domain to you

1. Family: Participation in your relationships with your parents, children, other close relatives, people you live with, or whoever is you “family” \_\_\_\_\_
2. Intimate relations: Being the kind of partner you want to be for your significant other or your closest partner in life \_\_\_\_\_
3. Friends: spending time with friends, doing what you need to maintain friendships, or providing help and support for others as a friend \_\_\_\_\_
4. Work: Engaging in whatever is your occupation, your job, volunteer work, community service, education, or your work around your home \_\_\_\_\_
5. Health: Keeping yourself fit, physically able, and healthy just as you would most want to do \_\_\_\_\_
6. Growth and learning: learning new skills or gaining knowledge, improving yourself as a person as you would most want \_\_\_\_\_

(Continued on next page)

In this section, we want you to look at how much SUCCESS you have had in living according to your values. For each of the areas listed below, consider again how you most want to live your life. Then, rate how SUCCESSFUL you have been living according to your values during the past two weeks.

These questions are NOT asking how successful you *want* to be, but *how successful you have been*. Rate your success using any number on the scale from 0 (not at all successful) to 5 (extremely successful).

0	1	2	3	4	5
Not at all successful	Slightly successful	Somewhat successful	Moderately successful	Very successful	Extremely successful

Consider each area according to your values – the important ways that you most want to live your life in each domain.

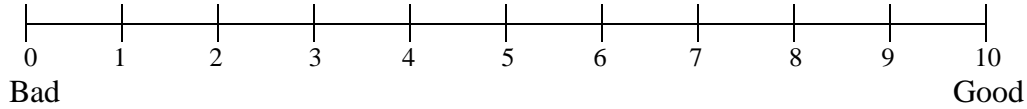
SUCCESS at living your values

1. Family: Participation in your relationships with your parents, children, other close relatives, people you live with, or whoever is your “family” \_\_\_\_\_
2. Intimate relations: Being the kind of partner you want to be for your significant other or your closest partner in life \_\_\_\_\_
3. Friends: spending time with friends, doing what you need to maintain friendships, or providing help and support for others as a friend \_\_\_\_\_
4. Work: Engaging in whatever is your occupation, your job, volunteer work, community service, education, or your work around your home \_\_\_\_\_
5. Health: Keeping yourself fit, physically able, and healthy just as you would most want to do \_\_\_\_\_
6. Growth and learning: learning new skills or gaining knowledge, improving yourself as a person as you would most want \_\_\_\_\_

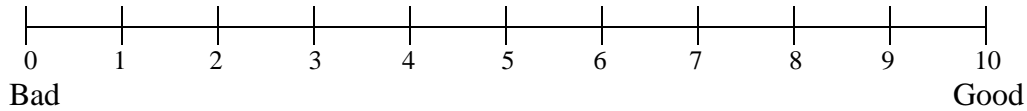
## Appendix J: Explicit Attitudes

Indicate how strongly you feel about each of the following statements on a scale from 0 to 10. If your response falls somewhere between two numbers, please indicate this by using a decimal (e.g., 5.5).

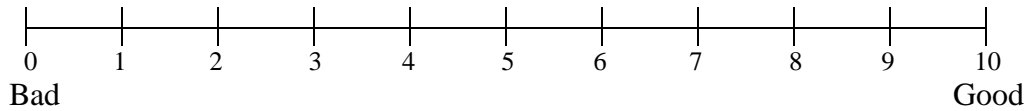
1. It's \_\_\_\_\_ if I am fat.



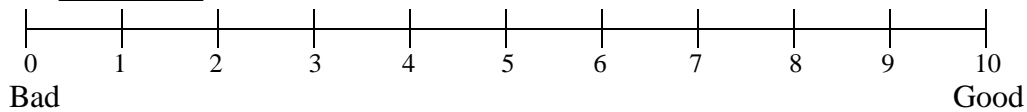
2. It's \_\_\_\_\_ if I am thin.



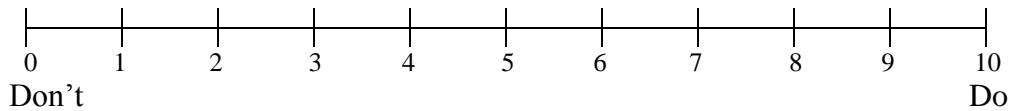
3. It's \_\_\_\_\_ if others are fat.



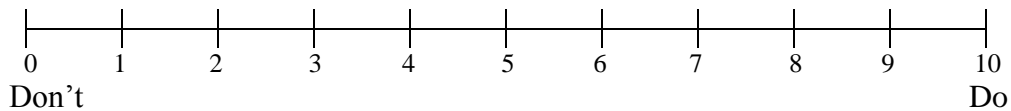
4. It's \_\_\_\_\_ if others are thin.



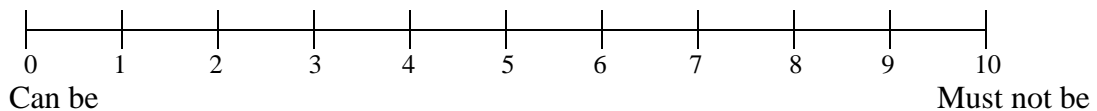
5. I \_\_\_\_\_ want to be fat.



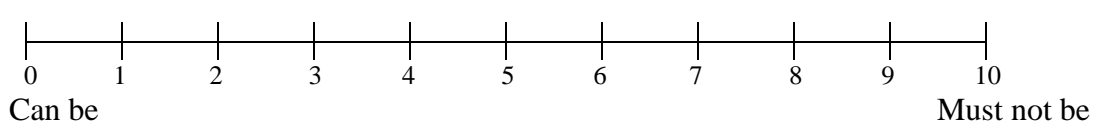
6. I \_\_\_\_\_ want to be thin.



7. I \_\_\_\_\_ fat.

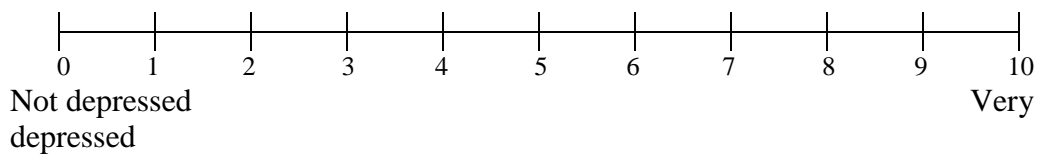
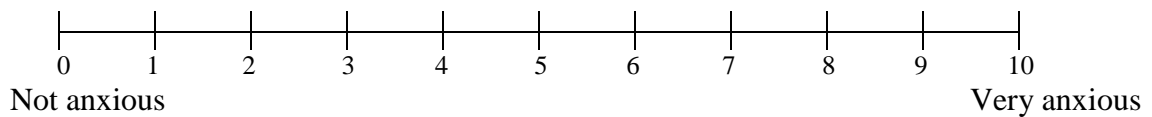
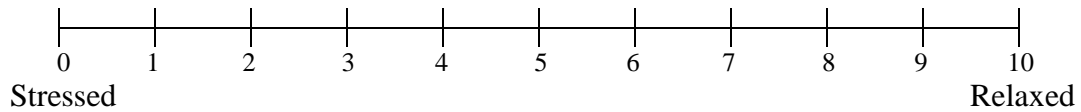
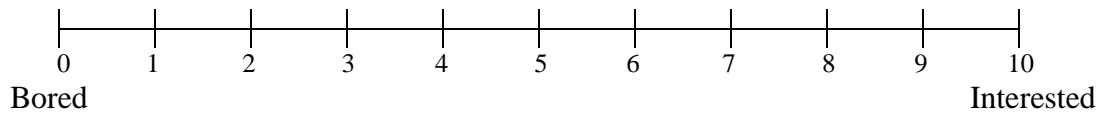
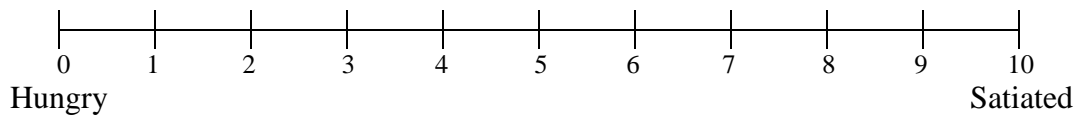
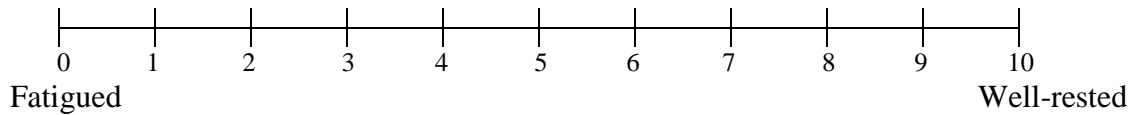
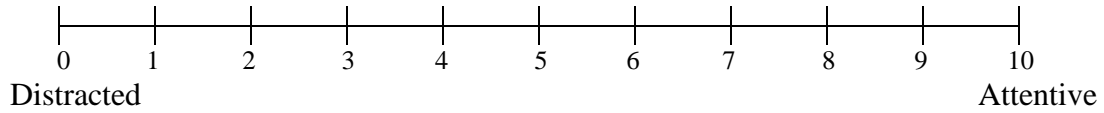


8. I \_\_\_\_\_ thin.



## Appendix K. Attentional Measures

Enter the number which best indicates how you currently feel on the scale below. If your response falls somewhere in between numbers, please indicate this by using a decimal (e.g., 5.5).



## Appendix L: IRAP Rules and Stimuli

Label	Self	Others	Thin	Fat
Sample	Good	Good	I want to be	I can be
	Bad	Bad	I don't want to be	I must not be
Target	Me <i>thin</i>	Others <i>thin</i>	<i>Thin</i>	<i>Thin</i>
	Me <i>fat</i>	Others <i>fat</i>	<i>Fat</i>	<i>Fat</i>
Response Option	True	True	True	True
	False	False	False	False

*Note.* Target thin words (thin, small, slender, underweight, skinny, slim) and target fat words (fat, large, chubby, overweight, plump, obese) from Cassin & von Ronson, 2005 as used in Parling, et al., 2012.

For each trial, a sample word appears on the top of the screen, a target word appears in the middle, and the response options appear at the bottom. One of two responding rules is given to participants before each block of trials, either requiring pro-thin/anti-fat responding or pro-fat/anti-thin responding.

Sample screens demonstrating the four trial types in the Self-IRAP

<p>Good Me thin</p> <p>TRUE FALSE</p>	<p>Bad Me fat</p> <p>TRUE FALSE</p>
<p>Good Me fat</p> <p>TRUE FALSE</p>	<p>Bad Me thin</p> <p>TRUE FALSE</p>

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