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POTENTIAL MODERATORS OF THE RELATIONSHIP BETWEEN DIETARY RESTRAINT AND BINGE EATING: AFFECT INTENSITY, BODY SHAME, AND COPING STYLES

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ABSTRACT

POTENTIAL MODERATORS OF THE RELATIONSHIP BETWEEN DIETARY RESTRAINT AND BINGE EATING: AFFFECT INTENTISY, BODY SHAME, AND COPING STYLES

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The purpose of this study was to examine whether affect intensity, body shame, emotion-focused coping, and avoidance focused coping moderate the relationship between dietary restraint and binge eating. A secondary purpose was to investigate whether these moderators would differentially impact the restraint-binge relationship when restraint was defined as either chronic or current dieting. Participants were 139 undergraduate women from a large mid-western university who completed a set of self-report measures of the variables under study, including measures of chronic and current restraint. Because the two measures of restraint were highly correlated they were combined to form a single index of restraint. Hierarchical regression was used to analyze the data in terms of main effects and interaction effects. None of the proposed hypotheses about moderation were supported. Affect intensity was found to predict binge eating. Body shame was found to mediate (rather than moderate) the relationship between restraint and binge eating. Though positively correlated with binge eating, emotion-focused coping did not predict binge eating in the model tests, and avoidance focused coping was not related to binge eating. Implications these findings have for practice and future research were discussed.

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INTRODUCTION

Binge eating is a serious concern for many women, and it is particularly prevalent on college campuses. Much of what is known about the etiology of binge eating behavior has been gleaned from studies of individuals with diagnosable eating disorders, namely bulimia nervosa and binge eating disorder. Bulimia nervosa is found in 1-3% of adolescent women (APA, 1994), with slightly higher rates reported on college campuses (Katzman, Wolchik, & Braver, 1984). Binge eating disorder occurs in approximately 2% of the general population and approximately 3% of college women (Spitzer et al., 1992). Less is known about individuals who binge, but do not meet DSM-IV criteria for a clinical eating disorder. Failure to consider a full range of binge eating behavior may be due in part to the apparent "normalcy" of such behavior. Societal pressure to achieve and maintain a thin physique has created a condition wherein normal eating (eating in response to physiological hunger and satiety cues) may no longer represent typical eating behavior (Polivy & Herman, 1987). In fact, Mintz and Betz (1988) found that 61% of a sample of college women reported engaging in some type of subclinical disordered eating behavior, whereas only 33% met the criteria for normal eaters. Estimates of the prevalence of subclinical binge eating among the general population range from 5.6% to 45% (Bruce & Agras, 1992; Crowther, Post, & Zaynor, 1985; Kinzl, Traweger, Refalt, Mangweth, & Biebl, 1999; Schott & Stunkard, 1987). Regarding binge eating among college women, Koszewski, Newell, and Higgens (1990) found that one quarter of the female undergraduates they surveyed believed their eating was out of control. Others have suggested that incidents of binge eating among college women may be higher than 50% (Katzman et al., 1984, Spitzer et al., 1992). Clearly, binge eating is not uncommon

behavior for many college women, but subclinical levels of binge eating have not be thoroughly addressed in the literature.

High incidents of binge eating among college women may be partially explained by high rates of dietary restraint in this population. Research suggests that efforts to restrict one's eating to maintain or lose weight contributes to or intensifies binge eating behavior (Polivy & Herman, 1993). For example, in response to stress, women who restrain their eating tend to overeat, whereas women who do not restrain their eating tend to suppress their eating (Greeno & Wing, 1994). College campuses can amplify women's stress by emphasizing perfection, competition, motivation, and attractiveness (Brouwer, 1988). Furthermore, the stressful and semiclosed nature of the college environment may exacerbate societal pressures to be thin and motivate use of a range of dieting behavior (Striegel-Moore, Silberstein, & Rodin, 1986). Mintz and Betz (1988) found that 82% of the undergraduate women they surveyed reported using one or more dieting behaviors at least daily, and 33% reported using more serious forms of weight control, like vomiting or use of laxatives, at least once a month.

Although dietary restraint is frequently cited as a strong predictor for binge eating, it is clear that not all women who diet binge eat. Westenhoefer (1991) found that individuals who restrained their eating fell into two groups, those who were prone to disinhibited eating and those who were not. Lowe (1993) suggested that chronic and current dieting behavior differentially affect binge eating. Chronic dieting is characterized by a history of concern with dieting and restricted food intake, and with weight fluctuation. Current dieting describes whether a person is currently engaging in behavior aimed at restricting caloric intake for the purpose of reducing or maintaining

their weight. Lowe argued that chronic dieting increases vulnerability to binge eating, whereas current dieting suppresses binge eating behavior. These studies suggest that the relationship between dietary restraint and binge eating is complex and may vary among individuals. Surprisingly research examining individual differences in the restraint-binge eating relationship has been limited. Few studies have examined variables that may moderate this relationship. Given the complex and paradoxical nature of binge eating it is important to discover how individual antecedents interact to predict varying levels of this behavior. Identifying factors that may potentiate the relationship between dietary restraint and binge eating would help clarify which dieters are at the greatest risk for engaging in binge eating. This would also contribute to developing more effective treatment and prevention programs, as interventions could be designed to address those unique factors that contribute to binge eating among restrained eaters. Weight loss programs for obese individuals might yield better results if the relationship between restraint and binge eating is better understood. Not only is binge eating particularly high among individuals seeking weight loss treatment (30%, Spitzer et al. 1992), but individuals who binge eat do not respond well to weight loss programs (Marcus, 1993). It might be important for weight loss programs, which must employ some form of restrained eating, to help participants deal with factors that put them at greater risk for binging.

In addition to dietary restraint, experiencing negative affect is frequently cited as a precursor to binge eating (McManus & Waller, 1995). Many women report binge eating during times when they feel angry, depressed, anxious, lonely, or bored (e.g., Kenardy, Arnow, & Agras, 1996). Additionally, negative affect appears to moderate the restraint-binge eating relationship (Stice, Akutagawa, Gaggar, & Agras, 2000). This relationship is

stronger for those who experience greater negative affect. Consequently, it seems likely that other individual difference variables that influence how one experiences and copes with negative emotions would also affect the restraint-binge eating relationship. Three factors that have received limited attention in the literature are affect intensity, body shame, and coping style.

Affect intensity refers to the intensity with which one typically experiences both pleasant and aversive emotions (Larsen & Diener, 1987). Research suggests that binge eating episodes tend to occur when emotional distress is heightened (e.g., Wolff, Crosby, Roberts, & Wittrock, 2000). Herman and Polivy (1980) argued that efforts to lose weight could be stressful for many women. Thus, individual differences in affect intensity may explain some of the variation in the restraint-binge eating relationship. Body shame is described as feeling shame when one's body does not conform to cultural standards for physical appearance (McKinley & Hyde, 1996). There is evidence suggesting that higher levels of body shame may be associated with binge eating behavior (Chervinko, 2000) and dietary restraint (Fredrickson, Roberts, Noll, Quinn, & Twenge, 1998), yet no study has examined whether body shame moderates the relationship between restraint and binge eating. Finally, coping behavior affects how one manages stress. Poor coping contributes to binge eating behavior, and binge eating may be considered a coping response in and of itself. Individuals vary in their preferred means of coping (cf, Carver, Scheier, & Weintraub, 1989). Variability in coping style may influence which restrained eaters are at greater risk for binge eating; however, there has been no direct test of this hypothesis. The purpose of this study is to investigate the effect of affect intensity, body shame, and coping styles on the relationship between dietary restraint and binge eating. A

full range of binge eating behavior will be assessed to address gaps in the literature on subclinical levels of binge eating.

CHAPTER 1: LITERATURE REVIEW

Definition of Binge Eating

The term "binge eating" was introduced over 40 years ago (Stunkard, 1959), yet it has only been in the past two decades that research on binge eating has truly burgeoned. Binge eating is defined in the DSM-IV as the consumption of a large quantity of food in a discrete period of time accompanied by a sense of lack of control over eating (American Psychiatric Association [APA], 1994). Additional symptoms associated with binge eating include secretive or isolated eating, rapid consumption of food to the point of being uncomfortably full, nonhungry eating, and feeling disgusted, distressed, or guilty after eating (APA, 1994). Recent investigations have called into question some aspects of the DSM-IV definition of binge eating, particularly the criteria that a binge consists of a large quantity of food. Several studies suggest that quantity of food consumption is not associated with significant differences in eating pathology or other psychopathology (Hay, Fairburn, & Doll, 1996; Jansen, van den Hout, & Greiz, 1990; Pratt, Niego, & Agras, 1998; Tobin, Griffing, & Griffing, 1997). Furthermore, when women with binge eating disorder were asked to give their criteria for labeling an eating episode a binge, less than half (43%) listed eating a large amount of food (Telch, Pratt, & Niego, 1998). The results of this study suggest that some of the consequences of binge eating may have more to do with experiencing a lack of control over eating than the actual amount eaten.

Consequences of Binge Eating

Binge eating is the defining symptom of the proposed diagnosis binge eating disorder (BED), and when accompanied by compensatory behaviors (e.g., purging and

laxative use) may lead to bulimia nervosa (BN). Severity of binge eating is associated with degree of obesity, and individuals who binge eat tend to fare more poorly in weight loss treatment than those who do not binge eat (Marcus, 1993). Binge eating can also reinforce dysfunctional assumptions about food, shape, and weight and contribute to impaired social functioning (McManus & Waller, 1995). Several researchers have found a higher lifetime occurrence of depression among binge eaters (Grilo, 2002; Marcus, 1993; Striegel-Moore et al., 2000; Telch & Stice, 1998), and binge episodes are often followed by feelings of guilt, shame, helplessness, failure, and poor self-esteem (Waller, 2002). Finally, binge eaters are more likely to endorse symptoms of psychiatric distress than individuals who do not binge eat (Striegel-Moore et al., 2000; Telch & Stice, 1998).

Like many psychologically and physically unhealthy behaviors, the causes of binge eating are puzzling. Researchers have questioned what motivates a person to engage in behavior that seems to have such negative consequences. Several factors have been implicated as antecedents to binge eating (for review, see Fairburn & Brownell, 2002). However, as McManus and Waller (1995) point out, knowledge about the risk factors of binge eating is of limited clinical use unless these factors can be integrated into a model that has greater power to explain binge eating. It is likely that there are many different pathways to binge eating. Discovering how individual antecedents may interact to predict binge eating will strengthen our understanding of potential causes and lead to more effective treatment and intervention.

Dietary Restraint

Polivy and Herman (1993) assert that "it seems to be generally agreed that dieting either contributes to, or at the very least exacerbates, binge eating" (p. 194). A review of

the literature on dietary restraint and binge eating seems to support this conclusion. In a sample of women with bulimia nervosa, 81% reported that the age of onset of dieting preceded binge eating (Bulik, Sullivan, Carter, & Joyce, 1997). Several studies have found that women with bulimia nervosa score higher on a measure of restraint than did controls (Jansen, van den Hout, & Griez, 1990; Johnson, Corrigan, Crusco, & Schulundt, 1986; Rudderman & Besbeas, 1992; Stice, Ziemba, Margolis, & Flick, 1996). Hawkins & Clement (1980) found a strong positive correlation between degree of dietary restraint and binge eating severity among college women.

Studies of obese individuals with clinical and subclinical levels of BED also demonstrate a relationship between dietary restraint and binge eating. Binge eaters are more likely to be classified as restrained eaters (Bruce & Agras, 1992). They also report more frequent episodes of weight cycling (Spitzer, et al., 1992; Yanovski & Sebring, 1994) and yo-yo dieting (Wilson, Nonas, & Rosenblum, 1993). Four studies found that an earlier age of onset of dieting was associated with greater binge eating among obese individuals (de Zwaan, et al., 1994; de Zwaan, Nutzinger, & Schoenbect, 1992; Kuehnel & Wadden, 1994; Spitzer, et al., 1993).

Though there appears to be considerable research documenting the relationship between restraint and binge eating, different opinions exist about how to define and measure restraint. These differences complicate the picture of how and why restraint relates to binge eating. Two models that have most frequently been used to define restraint and explain its relationship to binge eating are restraint theory (Herman & Polivy, 1980; 1984) and the three factor model (Lowe, 1993). Restraint theory defines restrained eaters as individuals who constantly worry about what they eat and struggle to

resist food. Another term used to describe these individuals is "chronic dieters." The three factor model suggests that restraint consists of three factors that independently relate to eating behavior, including binge eating. Each model is described more fully in the following sections.

Restraint Theory

Restraint theory is based on Nisbett's (1972) set point theory, which says that many psychological and behavioral characteristics of obese individuals are the result of attempts to achieve a weight below one's natural set point. Nisbett argued that the hypothalamus is programmed or "set" to defend a weight level that is a function of the number of fat cells one has, which is essentially fixed and stable once one reaches adulthood. According to Nisbett, obese individuals have a higher baseline level of fat cells, which is determined by genetic inheritance and possibly early overfeeding. Thus, when an individual is obese, the hypothalamus works to maintain a higher weight. Dieting reduces the size, but not the number, of fat cells leaving these cells depleted. Consequently, attempts to suppress one's weight below their set point activates hypothalamic defenses, like increased preferences for sweets and reduced metabolism, which replete fat cells and help the body return to its biologically determined set point.

Herman and Polivy (Herman & Mack, 1975; Herman & Polivy, 1975, 1980) built on set point theory and suggested that the effects of trying to achieve and maintain a weight below one's natural set point should also apply to normal-weight individuals. Some normal weight individuals may actually be biologically programmed to be heavier, yet employ a set of cognitive rules to limit eating and maintain a weight more consistent with societal ideals. Herman and Mack (1975) developed the Restraint Scale (later

revised by Herman and Polivy, 1980) to assess cognitive processes related to dieting and weight concern. In a series of studies, these researchers (Herman & Mack, 1975; Herman & Polivy, 1975; Polivy, 1976) found that when cognitive processes were interrupted, restrained eaters indulged and often exceeded their underlying hunger. In one study it was observed that restrained eaters ate more after consuming a high-calorie preload (1-2 milkshakes) than unrestrained eaters (Herman & Mack, 1975).

Using an experimental design framed as a taste test, Herman and Mack (1975) had participants consume a preload of 0, 1, or 2 milkshakes prior to tasting and rating three ice cream flavors. During the "tasting" phase of the experiment, participants were allowed to eat as much ice cream as they wanted. Herman and Mack observed that in the 0-milkshake group restrained eaters ate less ice cream than unrestrained eaters, but in the 2-milkshake group the restrained eaters ate considerably more ice cream than the unrestrained eaters. The latter finding runs counter to what one would expect from a dieter, as these individuals appeared to be counter-regulating their intake. To explain this counter-regulation effect Herman and Mack postulated that the 2-milkshake preload forced the restrained eaters to break their diets, leaving them with little reason to maintain the cognitive discipline needed to further restrict their eating.

Polivy (1976) later discovered that actual consumption of a high-calorie preload is not required to elicit a counter-regulatory effect in restrained eaters. Indeed, the *perception* of having consumed a high-calorie preload is enough to induce overeating in restrained eaters. This study used the same design as the Herman and Mack (1975) study, except participant beliefs about the caloric content of the milkshake preload and the actual caloric content were manipulated. The results showed that restrained eaters who

were told that they had consumed a high-calorie milkshake later consumed more ice cream than those who were led to believe the milkshakes were low-calorie. This effect was found to be independent of the actual caloric content of the milkshakes. Other studies support the conclusion that beliefs about excessive caloric consumption are more influential than actual caloric intake in producing the counter-regulatory effect (Spencer & Fremouw, 1979; Woody, Constanzo, Liefer, & Conger, 1981).

Exposure to emotionally distressing stimuli can also produce a counter-regulatory effect in restrained eaters. This effect has been found when restrained eaters are anxious (Herman & Polivy, 1975), depressed (Baucom & Aiken, 1981; Polivy & Herman, 1976), lonely (Meyer & Waller, 1999; Rotenberg & Flood, 1999), or exposed to ego threatening stimuli (Heatherton, Herman, & Polivy, 1991; Heatherton, Polivy, Herman, & Baumeister, 1993 ; Kisler & Corcoran, 1997). It is believed that distressing emotions disrupt the cognitive control that restrained eaters exert over their eating, leaving them vulnerable to disinhibited eating.

As Herman and Polivy (1980) developed restraint theory they moved away from Nisbett's (1972) physiological explanation of counter-regulation, instead favoring a cognitive explanation. They stated:

> Restraint, as we measure it, is defined more in terms of effort expended toward weight suppression than in terms of achieved success. We thus cannot argue conclusively, with Nisbett, that it is necessarily being below set-point that produces the stress effects; it may well be that the *effort* to lose weight, successful or not, is itself a stressor. (p. 223)

The emphasis on a cognitive explanation for counter-regulation was later expressed in the boundary model for the regulation of eating (Herman & Polivy, 1984).

The boundary model provides a way of thinking about two types of influences on eating behavior: physiological factors and non-physiological factors (Herman & Polivy, 1984). Examples of physiological factors include hunger pains or a sense of fullness. Examples of non-physiological factors include eating because other people are eating or restricting one's eating based on cognitive rules about consumption. Herman and Polivy argue that in eating, consumption is regulated so that an individual stays within the boundaries of hunger and satiety and avoids aversive physiological consequences. This area between hunger and satiety is called the zone of indifference, and it is here that non-physiological factors are more likely to influence one's eating behavior (e.g., If I eat something now I won't be hungry later). According to Herman and Polivy, the zone of indifference is larger for restrained than unrestrained eaters. This means that the boundaries at which restrained eaters experience (or allow themselves to experience) the aversive physiological effects of hunger and satiety are pushed further apart. Restrained eaters appear to go longer without food before admitting they are hungry and they seem to be able to consume more food before showing signs of physical discomfort. Herman and Polivy maintain that this phenomenon occurs because restrained eaters allow cognitive rules about eating to overrule physiological pressures and, over time, restrained eaters seem to lose sensitivity to the biological effects of hunger and satiety, which causes these boundaries to widen.

To explain counter-regulatory eating in restrained eaters, Herman and Polivy (1984) suggested that within the zone of indifference, dieters impose an additional

boundary, termed the diet boundary. This boundary is maintained entirely by cognitive rules about one's quota for consumption on a given occasion. To achieve weight loss goals, the diet boundary must be well below the satiety boundary. When the diet boundary has been transgressed (or has been perceived to be transgressed) restrained eaters conclude that there is no immediate point to further regulation since the purpose of such restraint has already been violated. Thus when given an opportunity to eat freely after the diet boundary has already been crossed, restrained eaters consume more food because there is no reason not to (the purpose for restraint has been temporarily lost) and because it takes more food to reach the point where physiological pressures associated with satiety begin to inhibit eating. Herman and Polivy characterized this phenomenon as the "what-the-hell effect" (150-151).

In sum, restraint theory was developed to explain disinhibited eating behavior among dieters. Restraint theory holds that to reduce or maintain weight, restrained eaters employ a set of cognitive rules about eating, and over time, become less sensitive to physiological cues for hunger and satiety. When their cognitive rules for eating are disrupted via a food preload or emotional distress restrained eaters overeat. Restraint theory appears to be a useful model for understanding binge eating (for review, see Ruderman, 1986). However, it has been criticized for equating concern for dieting and weight fluctuation with current dieting status (Lowe, 1993).

Criticisms of Restraint Theory

Lowe (1993) argued that although dieting and restraint are often used interchangeably in the literature, these constructs are not synonymous. Observing that restraint theory is based solely on studies using Herman and Polivy's (1980) Restraint

Scale, Lowe cited other studies (e.g., Jansen, Oosterlaan, Merckelbach, & van den Hout, 1988; Lowe & Maycock, 1988; Wardle & Beals, 1987) that used different measures of restraint and failed to produce the same counter-regulation effect described by Herman and Polivy. The measures used in the latter studies (the Cognitive Restraint Scale of the Three Factor Eating Questionnaire [TFEQ-CR] also called the Eating Inventory [EI], Stunkard & Messick, 1985) and the Restrained Eating Scale of the Dutch Eating Behavior Questionnaire [DEBQ-RES], Van Strien, Frijters, Bergers, & Defare, 1986) differed from the Restraint Scale in two ways. First, they did not assess episodes of overeating and weight fluctuation. The Restraint Scale has a weight fluctuation subscale. Second, they assessed specific cognitive and behavioral dieting strategies. The Restraint Scale assesses concern for dieting, but not the specific mechanisms used to restrict caloric intake. These discrepancies led Lowe to speculate whether restraint is a homogeneous construct.

In a test of restraint theory, scores on Herman and Polivy's (1980) Restraint Scale and assessment of current dieting status yielded three groups: restrained dieters, restrained nondieters, and unrestrained nondieters (Lowe, Whitlow, & Bellwoar, 1991). Thus, although individuals who were currently on a diet to lose weight were also identified as restrained eaters (as assessed by the Restraint Scale) not all restrained eaters were currently dieting. Using the methodology of Herman and Mack (1975) to assess the effects of dieting and restraint on counter-regulation, Lowe et al. found that current dieting status moderated the effect of restraint on food consumption. Restrained dieters ate more ice cream than restrained nondieters in the no preload condition and they ate less ice cream than the restrained nondieters following a preload. The behavior of the

restrained nondieters reflected the counter-regulation effect described by Herman and Polivy (1980), but the behavior of the restrained dieters ran counter to this, leading Lowe et al. to conclude that current dieting and restraint (defined as chronic dieting) differentially affect eating behavior. The results of this study were later integrated into Lowe's (1993) three-factor model of dieting behavior.

The Three-Factor Model

The three-factor model of dieting behavior says that dieting consists of three factors that independently and differentially affect eating behavior. The first factor, frequency of past dieting and overeating, describes a relatively stable pattern of cycling between periods of dieting and overeating, and may be similar to the construct measured by Herman and Polivy's (1980) Revised Restraint Scale. Individuals falling into this category have a history of unsuccessful dieting and may be described as chronic dieters. The second factor, current dieting, refers to current efforts to restrict one's intake to lose or maintain weight. The TFEQ-CR and the DEBQ-RES may tap into this factor by asking respondents to describe current eating behavior. The third factor, weight suppression, describes individuals who have successfully lost weight and maintained the loss for at least one year.

Using a large, community-based sample, French & Jeffery (1996) found support for Lowe's three-factor model. Each of the three factors – current dieting, dieting history, and weight suppression – were differentially related to weight concerns and dieting practices. However, this study did not investigate the association between the three factors and problematic eating behaviors such as binge eating. Nevertheless, the independent associations between the three factors and specific weight loss practices

were clear, suggesting that restraint (chronic dieting) and current dieting are not synonymous constructs.

Identifying that chronic dieting and current dieting differentially affect eating behavior leads to the question of how and why this occurs. Lowe (1993) agreed with Herman and Polivy's (1980, 1984) assertion that frequent cycles of dieting and overeating may make an individual vulnerable to binge eating by weakening sensitivity to internal cues for hunger and satiety. However, he disagreed with their contention that binge eating results from a disruption of a cognitive diet boundary, as one would only expect current dieters to impose this boundary and they do not seem to counter-regulate as chronic dieters do. Furthermore, Jansen, Merckelbach, Oosterlaan, Tuiten, and van den Hout (1988) found that cognitions (assessed by recording "self-talk" and endorsement of 25 disinhibitory thoughts) did not mediate the relationship of restraint-preload interaction and overeating. However, they also noted that the participants might not have verbalized all of the things they were thinking to themselves.

In the study by Lowe et al. (1991), when restrained dieters were not exposed to a disinhibitory stimulus (defined as a milkshake preload) they ate more during the ice cream taste test than restrained nondieters and nondieters. The opposite occurred when restrained dieters were exposed to a disinhibitory stimulus. They ate less during the taste test than restrained nondieters and nondieters. These results suggest that current dieters are more vulnerable to overeating in situations where disinhibitory triggers (e.g., high-calorie preloads, negative emotions) are not present, and are more vigilant about maintaining their diets in the presence of stimuli that clearly poses a risk for overeating (Lowe, 1993). It is possible that current dieters are more sensitive to situations that pose

obvious threats to their dietary vigilance and actively employ cognitive and behavioral strategies to resist temptation, but they are less effective in resisting mere presence of palatable food. For example, dieters might have a plan for dealing with boredom, because that is a situation that frequently poses a threat to dietary vigilance, but they might not have a plan to cope with someone simply presenting them with appealing food.

At first glance, assumptions about the effects of current and chronic dieting on eating behavior seem contradictory. On one hand, current dieting seems to protect an individual from disinhibited eating, whereas chronic dieting increases vulnerability to disinhibition. Yet, chronic dieters, by definition, had to have been current dieters at one point, and most current dieters also have a history of chronic dieting. How does it happen that past dieting produces disinhibited eating but current dieting does not? Acknowledging the seemingly contradictory nature of these conclusions, Lowe (1993) suggests that most dieters succeed in the short run, but ultimately fail in the long run. The tendency for most diets to fail has been documented in the literature (Stunkard & Penick, 1979; Wilson & Brownell, 1980). When individuals are currently on a diet they may be temporarily successful at resisting temptations to overindulge, however, as dieting progresses, most individuals may find it increasingly difficult to cope with threats to their dietary restraint, and eventually break their diets. Going off one's diet likely increases the need for subsequent dieting, and the cycle begins again. Lowe argues that with each unsuccessful attempt to diet vulnerability to disinhibition increases, yet susceptibility to disinhibition may decrease somewhat each time a new diet is started.

Restraint theory and the three factor model offer two ways of thinking about restraint and binge eating. Evidence that concern for dieting and weight fluctuation

predict disinhibition has been well documented (for review, see Ruderman, 1986), and frequent cycles of dieting and overeating have been incorporated into Lowe's (1993) three factor model. However, the relationship between current dieting and binge eating may not be so clear. Though Lowe presents evidence to suggest that current dieting is not associated with disinhibited eating, others have found that the relationship may be more complex.

One study found that a lack of correlation between restraint and disinhibition (as measured by the Cognitive Restraint and Disinhibition scales of the Three Factor Eating Questionnaire [TFEQ-CR and TFEQ-D]) was misleading (Williams, Michela, Contento, Gladis, & Pierce, 1996). These researchers found that body mass (BMI) moderated the relationship between restraint and disinhibition. BMI is an index of a person's weight relative to their height, and it is used to assess adiposity and obesity. For individuals with a higher BMI, the relationship between restraint and disinhibition was negative, but for individuals with a lower BMI, the relationship between restraint and disinhibition was positive. In other words, for those individuals who were fatter, high restraint was associated with low disinhibition, and for thinner individuals high restraint was associated with high disinhibition. If one assumes that the TFEQ-CR does indeed identify successful dieters, then it would seem that some "successful" dieters are not really so successful. In addition to BMI, the types of strategies employed by dieters may also affect their vulnerability to disinhibition.

Also using the TFEQ-CR and TFEQ-D, Westenhoefer (1991) found a negative relationship between restraint and disinhibition. However, analysis of the relationship of each item on the TFEQ-CR to total score on the TFEQ-D found that certain items on the

TFEQ-CR were characteristic of low disinhibition, whereas other items were characteristic of high disinhibition. Westenhoefer labeled each set of items "rigid control" and "flexible control" and concluded that each set represented a different approach to restraint. Rigid control is characterized by dichotomized "all or none" thinking about dieting. Individuals using this strategy are more apt to count calories, avoid certain foods, and experience feelings of guilt about overeating. Rigid control is associated with high disinhibition and self-reported binge eating. Flexible control, on the other hand, is associated with a more graduated approach to restraint. Individuals using this strategy are more likely to take smaller portions, eat slowly, and cognitively control stopping of eating to restrain their intake. Individuals adopting this strategy scored lower on the TFEQ-D and reported fewer problems with binge eating. Westenhoefer, Stunkard, and Pudel (1999) extended the results of this study and found that counter-regulation occurred in individuals scoring high on rigid control but not in individuals scoring high on flexible control. Rigid control but not flexible control has also been correlated with symptoms of bulimia and weight instability (Shearin, Russ, Hull, Clarkin, & Smith, 1994). Taken together, these studies suggest that current dieting may predict binge eating, but only for individuals applying rigid rules and strategies to restrain eating.

Polivy and Herman's (1993) assertion that "dieting either contributes to, or at the very least exacerbates binge eating" (p. 194) appears to be supported by the literature. However, dieting is not a homogeneous construct, and no single instrument seems to adequately capture the full range of cognitions and behaviors associated with dieting. The RS does a better job of tapping into chronic dieting, whereas the TFEQ-CR is more likely to identify current dieters. Although both aspects of dieting are relevant to understanding

the development and maintenance of binge eating, they seem to have different effects on binging behavior. Furthermore, not all dieters (chronic or current) binge eat. Research has demonstrated that certain factors, like BMI (Williams et al., 1996) and the type of dieting strategies used to restrain eating (Westenhoefer, 1991) moderate the relationship between dieting and binge eating. Identifying other variables that moderate this relationship, and clarifying whether these moderators operate differently if one is a chronic dieter or a current dieter will aid in answering the question of which dieters are at greater risk for binge eating. Three variables that may moderate the relationship of restraint to binge eating are affect intensity, body shame, and coping. These factors are examined more closely in the following sections and their relevance as potential moderators is addressed.

Binge Eating and Negative Affect

Negative affect has frequently been cited as a precursor to binge eating episodes (Grilo, Shiffman, & Carter-Campbell, 1994; Meyer & Waller, 1999; Rotenberg & Flood, 1999; Stickney, Miltenberger, & Wolfe, 1999, Telch & Agras, 1996). For example, Grilo et al. (1994) reported that, in a sample of normal-weight, non-purging binge eaters, 84% of the women cited negative affect as a trigger to binge eating. More specifically, it has been suggested that one function of binge eating is to escape or avoid negative affect. Using self-monitoring reports, Stickney et al. (1999) found 45% of a sample of college women meeting DSM-IV criteria for BED cited relief from negative feelings as the most salient function of binge eating episodes. Additionally, Kenardy et al. (1996) suggested that binge eating may represent a trade off in which a "highly aversive emotional state is exchanged for a less aversive state" (p. 839). In this study, obese binge eaters rated certain emotions as more distressing and less tolerable than other emotions. The emotions

that were more easily tolerated were ones that are usually experienced after a binge (i.e., guilt), whereas the less tolerable emotions (i.e., depression and anxiety) are generally experienced prior to a binge.

Heatherton and Baumeister's (1991) escape theory proposes that binge eating is a motivated attempt to escape aversive self-awareness and emotional distress caused by repeated failure to live up to unrealistic expectations. They suggest that ego threats, which have the potential to damage one's self-esteem and self-concept, are particularly potent triggers for heightening aversive self-awareness and negative affect. Restrained eaters who are especially sensitive to external evaluation may be uniquely vulnerable to eating in response to an ego threat. Indeed, several studies have demonstrated that restrained eaters are apt to consume more after a failure experience, whereas unrestrained eaters tend to eat less (Heatherton, Herman, & Polivy, 1991; Heatherton, Polivy, Herman, & Baumeister, 1993; Kisler & Corcoran, 1997; Meyer & Waller, 1999; Waller & Mijatovich, 1998). Thus, it seems that binge eating is a way for some individuals to regulate aversive emotions. Moreover, this seems to be particularly true for restrained eaters, as numerous studies have demonstrated that negative mood inductions trigger disinhibited eating among restrained eaters, but not among non-restrained eaters (Greeno & Wing, 1994; Heatherton et al., 1993; Heatherton, Herman, & Polivy, 1991; Rotenberg & Flood, 1999), suggesting that negative affect may moderate the relationship between restraint and binge eating. In a direct test of this hypothesis, Stice et al. (2000) found that negative affect (measured by the sadness, guilt, hostility, and fear/anxiety subscales of the Positive and Negative Affect Schedule) does indeed moderate the relationship between dieting and binge eating. The relationship between restraint and binge eating

was stronger for individuals scoring higher on a measure of negative affect, suggesting that negative affect potentiates the relationship between restraint and binge eating. Although dieters who experience negative affect seem to have more problems with binge eating than those who do not, not all dieters experiencing negative affect binge eat. Consequently, there may be other emotion-related variables that moderate the relationship of restraint to binge eating.

Affect Intensity

Affect intensity is a dimension of temperament that describes the typical magnitude of an individual's emotional response to a given stimulus (Larsen & Diener, 1987). When presented with the same emotion-provoking stimulus, individuals high on affect intensity report stronger emotional responses than individuals low on this dimension, irrespective of the hedonic tone of the stimulus (Larsen, Diener, & Emmons, 1986). In other words, someone high on affect intensity will experience both positively-valenced and negatively-valenced emotions more intensely than someone low on affect intensity.

If binge eating is an attempt to regulate or escape negative affect, then it is likely that individuals high on affect intensity will be more vulnerable to this behavior. Greater emotional arousal suggests more motivation to reduce the intensity of negative affect. Indeed, affect intensity is positively related to maladaptive coping, particularly those strategies aimed at regulating emotions, such as venting or self-blame (Flett, Blankstein, & Obertynski, 1996). There is also evidence to suggest that individuals who binge eat experience stressors more intensely than individuals who do not binge eat. For example, Hansel and Wittrock (1997) found that binge eaters rated stress-inducing video and

anagram tasks as significantly more stressful than non-binge eaters did. The participants in this study were also asked to record the number of stressful events they experienced over the course of one week, and rate the impact of each event. Although there was no significant difference in the number of stressful events reported by binge eaters and non-binge eaters, there was a significant difference in the level of stress experienced by binge eaters compared to non-binge eaters. The binge eaters rated their stressors as being more impactful than the non-binge eaters did, suggesting that there was a difference in how intensely the bingers experienced stress. These results are supported by two other studies, which also found that binge eaters tend to rate stressful events as being more distressing than non-binge eaters do.

First, Wolff et al. (2000) asked binge eaters and non-binge eaters to record their stress, mood, and eating behavior over a 21-day period. Participants were asked to record the stressful events they experienced each day, and rate the impact of each event on a 7-point scale according to how stressful it was to them (i.e., 1 = "occurred but was not stressful" to 7 = "caused me to panic"). They also completed a mood measure each day and recorded their food consumption. The results of this study found a significant difference in the degree of stress experienced by binge eaters compared to non-binge eaters. However, unlike the binge eaters in the Hansel and Wittrock study, the binge eaters in this study also reported twice as many daily stressors than the non-binge eaters did. Interestingly, the binge eaters did not experience more stressful events on the days they binged, but the impact of those events was greater on binge days compared to non-binge days. These results suggest that binge eaters and non-binge eaters differ in the

magnitude with which they experience stressful events. Furthermore, it appears that binge eaters tend to binge when stressors are experienced more intensely.

Using a similar design, Crowther, Sanftner, and Bonifazi (2001) asked binge eaters and non-binge eaters to record daily hassles and eating behavior over a 2-week period. These researchers also found a significant difference in the degree of stress experienced by binge eaters compared to non-binge eaters. The binge eaters in this study did not experience more daily hassles than non-binge eaters did, but they rated their daily hassles as significantly more stressful than the non-binge eaters did. Although there have been mixed findings with regard to the number of stressors experienced by binge eaters compared to non-binge eaters, it is clear that binge eaters experience these events as being more stressful than non-binge eaters do. Inadequate coping resources provide one explanation for these results. Although it is true that perceived ability to cope with a stressor affects stress appraisal, it is also possible that differences in affect intensity affected how the participants in these studies rated the stress in their lives.

In a study investigating how differences in affect intensity affected emotional responses to emotion-provoking stimuli, Larsen et al. (1986) found that high-intense individuals responded to the same events with stronger affect than low-intense individuals. Thus, individuals high on affect intensity experience the stress in their lives more intensely than individuals low on affect intensity do. Given that binge eaters also seem to experience the stress in their lives more intensely than non-binge eaters do, it is possible that binge eaters may be higher on affect intensity than non-binge eaters are.

Research on the consequences of dieting has demonstrated that high concern with restraint is associated with irritability and moodiness (Hagan, Tomaka, & Moss, 2000)

social anxiety (Rosen, Gross, & Vara, 1987) and neuroticism (Ruderman & Grace, 1988). Thus, it is possible that dieters high on affect intensity are more deeply affected by these negative consequences and may be more motivated to reduce these feelings by binge eating. Furthermore, in a review of the literature on stress-induced eating, Greeno and Wing (1994) concluded that dietary restraint was the strongest predictor of stress-induced eating. Given that not all dieters eat in response to stress, it is possible that dieters high on affect intensity might be most likely to do so.

Individuals high on affect intensity also seem to experience more variability in their moods than individuals low on affect intensity do (Larsen, 1987). According to Larsen, high-intense individuals experience faster and more frequent changes in mood. Similarly, in a study of emotional reactivity and binge eating Lingswiler, Crowther, and Stephens (1987) found that although bingers and non-bingers did not significantly differ on overall anxiety and depression, bingers experienced greater variability in these emotions than non-bingers. Furthermore, anxiety and depression were most often associated with binge eating episodes. Together these findings provide further support for the hypothesis that affect intensity is related to binge eating, and that it may moderate the relationship between dietary restraint and binge eating.

In sum, there is little question that negative affect is associated with binge eating. There is also evidence to suggest that negative affect moderates the relationship of restraint to binge eating (Stice et al., 2000). Affect intensity, a dimension of temperament that refers to the typical intensity of an individual's emotional response regardless of hedonic tone, may also moderate this relationship. Studies have shown that binge eaters tend to perceive daily hassles as being more stressful than non-bingers do. One reason for

this may be individual differences in affect intensity. Restrained eaters are already at risk of binge eating, particularly in response to distress. For restrained eaters who are also high on affect intensity, this risk may be amplified, suggesting that affect intensity moderates the relationship between restraint and binge eating. Another emotion-related variable that may moderate this relationship is body shame.

Body Shame

According to escape theory, negative affect arises when individuals encounter evidence to suggest that they do not measure up to high standards, particularly for body shape and size (Heatherton & Beaumeister, 1991). Thus, the role of ego threats is quite central to escape theory. Waller and Mijatovich (1998) provided support for the salience of preconscious ego threats in triggering overeating in a sample of non-eating disordered women with unhealthy eating attitudes. They found that women predisposed to unhealthy eating attitudes ate significantly more than women with healthy eating attitudes after exposure to a preconscious ego threat cue. Heatherton, Herman, and Polivy (1991) also found that ego threats (e.g., failure at an easy task) significantly increased eating among restrained eaters, but not unrestrained eaters in a sample of college women.

Given the salience of ego threats in triggering binge eating it is surprising that studies of the relationship of negative affect and binge eating have neglected the role of shame as a predisposing factor influencing binge eating behavior. As a self-based emotion, one would expect shameful feelings to be activated by certain ego threats. Restrained eaters who are particularly concerned about shape, size, and appearance might be uniquely vulnerable to ego threats. Though references to shame are common in discussions of binge eating, empirical evidence to support the association is limited

(Burney & Irwin, 2000; Sanftner, Barlow, Marschall, & Tangney, 1995; Sanftner & Crowther, 1998).

Shame arises from a negative evaluation of the self (Tangney, 1990; Tangney, Burggraf, & Wagner, 1995). "Following some transgression or failure, the entire self is painfully scrutinized and found lacking. With this painful self-scrutiny comes a sense of shrinking, a feeling of being small, and a sense of worthlessness and powerlessness" (Tangney et al., 1995, p. 344). Because shame is associated with being exposed to a real or perceived audience, shame incites a motivation to hide, disappear, or escape (Tangney et al., 1995). There is some evidence that shame is associated with eating disorder symptomatology, and, in particular, binge eating (Sanftner et al., 1995; Sanftner & Crowther, 1998). Treating shame as a state variable, Sanftner and Crowther (1998) compared the daily fluctuations of shame among women who binge and women who do not binge. Their results indicated that women who binge experienced greater variability in shame throughout the day and scored higher on a measure of state shame than women who do not binge. However, Sanftner and Crowther did not find support for their hypothesis that among women who binge, levels of shame would increase prior to binge eating episodes. One reason why they failed to find a significant relationship between shame and binge eating episodes may have been the large time lags between data collection points. At times, measures of state shame were completed over an hour before the binge episode, leaving considerable room for affect states to shift prior to a binge. Nevertheless, this study provides some evidence to suggest that the relationship of shame to binge eating warrants further investigation.

An earlier study by Sanftner et al. (1995) examined the relationship between shame-proneness and eating disorder symptomatology. Looking at shame as a dispositional variable, Sanftner et al. found shame-proneness to be positively correlated with several symptoms of eating disorders, including bulimia, drive for thinness, and body dissatisfaction. However, as Burney and Irwin (2000) noted, most of the correlations reported by Sanftner et al., although statistically significant, were below .30, suggesting that global shame-proneness may not play a clinically significant role in the development and maintenance of eating disorders. A more salient feature of restraint and binge eating may be body shame.

Body shame describes the experience of feeling shame when one's body does not conform to cultural standards for physical appearance (McKinley & Hyde, 1996). In our society, women are socialized to view themselves as objects (Fredrickson & Roberts, 1997). At a young age girls learn that their appearance greatly impacts how others treat them, which profoundly impacts their social and economic lives (Fredrickson & Roberts, 1997). Thus, it is not surprising that women learn to adopt a third-person view of themselves, focusing on how they look rather than on what they can do or how they feel. The media and other indicators of societal beliefs promote an idealized set of standards for women's bodies. Several theorists have argued that many women have a tendency to internalize these body standards (e.g., Fredrickson & Roberts, 1997; McKinley & Hyde, 1996; Sherwood & Neumark, 2001). When women perceive unrealistic standards to originate from within, they are more likely to believe that they can achieve an ideal body, despite evidence to the contrary (McKinley & Hyde, 1996). The combined effect of heightened awareness of appearance, internalized standards for an ideal physique, and

failure to reach those standards places women at an increased risk of experiencing shame about their bodies, and subsequently may lead to disordered eating (McKinley & Hyde, 1996; Noll & Fredrickson, 1998).

One outcome of shame is that it can motivate an individual to conform to societal standards, as such conformity removes the risk of exposure for being different or in some way unacceptable (Tangney et al., 1995). Experiencing body shame can motivate a woman to take steps to bring her body into alignment with societal ideals. The greater the body shame, the greater the effort to alter one's appearance. A few studies have found that severity of body shame is associated with dieting and other eating disorder symptomatology. McKinley and Hyde (1996) reported that body shame was positively correlated with symptoms of bulimia and with the Dieting Scale of the EAT-26 (Garner, Olmsted, Bohr, & Garfinkel, 1982), which measures pathological avoidance of fattening foods and preoccupation with weight and shape. Testing a mediational model wherein body shame was predicted to mediate the relationship between self-objectification and disordered eating, Noll and Fredrickson (1998) found that body shame accounted for almost 30% of the variance in bulimic symptoms in a sample of college women. Burney and Irwin (2000) also found that body shame explained a unique portion of the variance in scores on a measure of eating disorder symptomatology. Although body shame accounted for a small portion of the variance in eating disorder symptoms ($sr^2 = .018$), the direct relationship between body shame and eating disorder symptomatology was stronger ($r = .57$, $p < .001$). Finally, using an elegant experimental design, wherein body shame was manipulated by having participants try on a sweater or a swimsuit, Fredrickson et al. (1998) reported that the women who tried on a swimsuit experienced

greater body shame and ate less food during a taste test than women who were asked to try on a sweater. These researchers concluded that heightened body shame is associated with more restraint over eating. Though the results of this study seem to suggest that body shame would not be associated with binge eating, as it motivated participants to eat less, not more, Chervinko (2002) found that body shame accounted for 50% of the variance in binge eating in a sample of college women. One difference between these two studies was how body shame was conceptualized and measured. Fredrickson et al. treated body shame as a state variable that can be triggered by certain situations that heighten awareness of one's appearance, whereas Chervinko treated body shame as a trait variable in which individuals may differ with regard to how chronically they experience shame about their bodies. Therefore, it is possible that in a state of heightened body shame, women restrain their eating, but over time, chronic body shame may become associated with binge eating. As women with greater body shame make more and more attempts to alter their appearance via restrained eating, the accumulated effects of chronic dieting will lead to binge eating. Additionally, women who adhere to rigid dieting strategies are more likely to binge eat than those who exert more flexible control over their eating (Westenhoefer et al., 1999). Given that body shame is associated with pathological eating behavior (i.e., McKinley & Hyde, 1996), it is possible that women with higher levels of body shame employ more rigid control over their eating, which then leads to binge eating. Thus, it is possible that the relationship between restraint and binge eating will be moderated by body shame, and that for women with higher levels of body shame, this relationship will be stronger.

Coping Styles

Research suggests that coping style may be associated with binge eating (Hansel & Wittrock, 1996; Paxton & Diggens, 1997; Wolff et al., 2000), and that coping behavior affects how dieters deal with relapse crises (Grilo, Shiffman, & Wing, 1989). However no study has explored how coping style affects the restraint-binge eating relationship. Coping may be defined as cognitive and behavioral efforts to manage or tolerate stress (Lazarus & Folkman, 1984). Coping is considered to be a particularly important factor mediating life stress and physical, psychological, and social well-being (Lazarus & Folkman, 1984). Coping affects how stressors are appraised and how individuals respond to a stressor (Lazarus & Folkman, 1984). Coping styles refer to preferred sets of coping strategies that are consistently applied to a range of situations and are stable over time (Carver et al., 1989). There is some debate about whether situational factors are more important than coping styles in determining how a person responds to a stressor (cf, Folkman & Lazarus, 1980, 1984); however, more recent evidence suggests that a person's coping style is quite consistent and stable over time and across circumstances (Carver et al., 1989; Endler & Parker, 1990, 1994).

Coping styles have been categorized in many different ways, but most experts agree with Lazarus and Folkman's (1984) hypothesis that coping strategies can be organized into two primary dimensions: problem-focused coping, which involves behaviors and/or cognitions aimed at altering a stressor, and emotion-focused coping, which entails reducing or regulating the emotional distress associated with a stressor. Other researchers have identified a third primary dimension of coping, avoidance-focused coping, which involves efforts to physically or mentally remove oneself from a stressor

(Billings & Moos, 1981; Carver et al., 1989; Endler & Parker, 1990, 1994). Individuals employing an avoidance-focused approach to coping might seek diversion by interacting with others or they might seek distraction by engaging in an alternate task (Endler & Parker, 1990, 1994).

Researchers have established that some women binge eat in response to stress, and this may be particularly true of restrained eaters (Greeno & Wing, 1994). It is also clear that one function of binge eating is coping with negative affect (see McManus & Waller, 1995). Consequently, it seems reasonable to assume that binge eaters and non-binge eaters differ in terms of coping style; however, there have only been a few studies investigating the relationship between binge eating and coping (Hansel & Wittrock, 1996; Paxton & Diggens, 1997; Wolff et al., 2000). Furthermore, studies have produced mixed results regarding the type of coping that may differentiate binge eaters and non-binge eaters.

There is some evidence to suggest that avoidance-focused coping is associated with eating pathology in general (Ghaderi & Scott, 2000; Koff & Sangani, 1997; Mayhew & Endelman, 1989), and binge eating in particular (Neckowitz & Morrison, 1991; Troop, Holbrey, Trowler, & Treasure, 1994; Wolff et al., 2000). For example, Wolff et al. (2000) found that binge eaters and non-binge eaters used a comparable number of coping strategies, except binge eaters reported using more avoidance coping than non-binge eaters. However, others have failed to find a relationship between avoidance-focused coping and binge eating or bulimia symptomatology (Janzen, Kelly, & Saklofske, 1992; Mayhew & Endelman, 1989). One explanation for the contradiction in findings is that avoidance coping and depression may be confounded. Depression is high

among binge eaters, and individuals with depression tend to use more avoidance coping. Indeed, although Paxton and Diggens (1997) found a relationship between avoidance-focused coping and binge eating, they also found that avoidance-focused coping was confounded with depression. In this study, avoidance coping did not explain any unique variance in binge eating after controlling for depression. On the other hand, Ghaderi and Scott (2000) found that women with current and past eating disorders used proportionally more avoidance coping than controls, even after controlling for depression. However, unlike Paxton and Diggens, Ghaderi and Scott did not focus exclusively on binge eating behavior. They used the EAT-2, which measures a range of eating disorder symptomatology. Differences in methodology and measurement make it difficult to compare the results of these studies, leaving several unanswered questions about the relationship of avoidance-focused coping and binge eating.

Emotion-focused coping has received less attention in the literature on coping and binge eating. This is surprising given that negative affect is an oft cited antecedent of binge eating, and one function of binge eating is to cope with negative emotions. If binge eating is used to regulate negative affect, thus it seems likely that binge eaters would use other emotion-focused coping strategies. Indeed, Janzen et al. (1992) found a relationship between emotion-focused coping and bulimic symptomatology, and Koff and Sangani (1997) reported that emotion-focused coping was associated with greater eating pathology and more negative body image. Thus, there is some evidence to suggest that binge eaters use more emotion-focused coping, but additional research is warranted.

Although restraint consistently predicts stress-induced eating (Greeno & Wing, 1994), relatively little research has been conducted on the relationship between coping

and restraint. Grillo et al. (1989) found that coping affected the outcome of relapse crises among dieters. Participants were asked to describe a situation in which they were tempted to overeat, but did not, and a situation in which they overate. They were also asked to describe how they coped with each situation. Coping responses were categorized into cognitive strategies (unobservable mental activities) and behavioral strategies (observable overt actions). The results indicated that cognitive and behavioral coping were associated with successfully overcoming a relapse crisis, and combining cognitive and behavioral strategies yielded the most positive outcome. Failure to employ either cognitive or behavior coping was associated with overeating. Unfortunately, these researchers did not distinguish between adaptive and maladaptive coping. It is not clear if the participants who overate did not cope at all or used less effective strategies. It is interesting to note that situations in which the participants reported feeling emotionally upset almost always resulted in overeating.

A study by Ghaderi and Scott (2000) found that current dieters used less avoidance coping that women with a current or past eating disorder, but they used more avoidance coping than a control group. These results suggest that changes in dieting and eating pathology are associated with changes in coping responses. As one moves from no eating disturbance to dieting and eating disorders, use of avoidance coping increases. It is possible that disturbed eating promotes more maladaptive coping, but the opposite may also be true. Individuals who tend to use more maladaptive coping are more apt to develop an eating disorder. Thus, coping behavior may moderate the relationship between restraint and binge eating. Restrained eaters who tend to use more maladaptive

coping, like emotion-focused and avoidance-focused coping may be more likely to binge eat than those who do not.

Confounds and Covariates

It is important to control for factors that may be confounded with affect intensity, body shame, and coping and/or covary with binge eating. Three variables to consider are: body mass, social desirability, and depression. One possible consequence of binge eating without compensatory behavior is obesity. Several studies have reported a relationship between body mass and binge eating (Bruce & Agras, 1992; Kinzl et al., 1999, Spitzer et al., 1992). For example, in a sample of individuals currently involved in a weight control program and in a community-based sample Spitzer et al. (1992) found that individuals who reported problems with binge eating were more likely to also report problems with obesity. Body mass may also be related to level of body shame. Though this relationship has not been investigated in previous research, it is reasonable to hypothesize that in a society that easily and frequently denigrates fat people, having a higher body mass would be associated with experiencing a higher level of body shame. In this study, participants will be asked to provide their height and weight, so that body mass can be computed and controlled.

Social desirability may also covary with binge eating. Social desirability is defined as a tendency to present oneself in a favorable light and to seek approval from others (Crowne & Marlowe, 1960). Binge eating has been described as a secretive behavior, the consequences of which may result in shame, disgust, or guilt (McManus & Waller, 1995; Stickney et al., 1999). Those who desire approval from others and wish to make a positive impression might be less likely to report engaging in a shameful behavior

like binge eating. Indeed, social desirability and binge eating are moderately correlated (r = -.43; Chervinko, 2000). Individuals who tend to present themselves in a positive light are less likely to report problems with binge eating. Social desirability is also confounded with body shame (r = - . 34; Chervinko, 2000). Individuals are often ashamed of feeling shame (Tangney et al., 1995), and individuals who wish to present themselves favorably are less likely to report experiencing body shame. Consequently, a measure of social desirability will be included in this study to control for these effects.

As noted earlier, depression is related to coping style and binge eating, particularly with regard to the use of avoidant coping strategies. Paxton and Diggens (1996) suggested that studies that found a relationship between coping and binge eating did not account for the effect of depression. Depressed individuals tend to use more avoidant coping (e.g., Kuyken & Brewin, 1994). Lifetime prevalence of depression is higher among binge eaters than among non-binge eaters (Grilo, 2002). Thus, depression may be confounded with coping styles and covary with binge eating. A measure of depression is included in this study to control for these possible effects.

Summary

Binge eating is a serious problem among college women. Some estimate that incidents of binge eating among college women may be as high as 56% (Katzman, Wolchik, & Braver, 1984). It is generally agreed that dietary restraint is a significant risk factor for binge eating (McManus & Waller, 1995). Less is known about factors that may moderate the relationship between restraint and binge eating. Three potential moderators are: affect intensity, body shame, and coping.

Affect intensity describes how intensely one experiences emotions (Larsen & Diener, 1987). Negative affect is frequently cited as a trigger for binge eating (McManus & Waller, 1995), and it moderates the restraint-binge eating relationship (Stice et al., 2000). The consequences of dieting include irritability, moodiness (Hagan et al., 2000), anxiety (Rosen et al., 1987), and neuroticism (Ruderman & Grace, 1988). It is possible that dieters who experience these emotions more intensely via higher affect intensity are at greater risk for binge eating.

Body shame refers to feeling shame when one's body does not live up to cultural standards for beauty (McKinley & Hyde, 1996). Body shame is associated with dietary restraint (Fredrickson et al., 1998) and binge eating (Chervinko, 2000). Dieters who experience more body shame may be more likely to employ more rigid and restrictive dieting strategies, which can increase vulnerability to binge eating. Body shame is associated with greater eating pathology (Burney & Irwin, 2000; McKinley & Hyde, 1996) and rigid dieting practices are associated with greater binge eating severity (Westenhoefer et al., 1999).

Coping styles are preferred coping strategies that are consistent and stable over time and across situations. Stress often triggers binge eating, particularly among restrained eaters (Greeno & Wing, 1994). It is generally believed that coping mediates the relationship between stress and well being (Lazarus & Folkman, 1984), suggesting that coping style might affect which dieters are most likely to binge eat. Dieters who use maladaptive coping styles, like avoidance-oriented and emotion-oriented coping may be more likely to binge eat, than those who do not use these strategies.

Finally, Lowe (1992) suggested that dietary restraint is not a homogeneous construct. Restraint may involve a history of weight fluctuation and dieting (chronic dieting) and/or current efforts to restrict caloric intake to reduce or maintain weight (current dieting). There is disagreement about whether chronic and current dieting are differentially related to binge eating. No studies have considered whether moderators of the restraint-binge eating relationship function differently if restraint is defined as chronic or current dieting. Measuring both types of restraint would help clarify the relationship of each type of restraint to binge eating.

Purpose of the Study

The purpose of this study is to contribute to the literature on dietary restraint and binge eating and improve treatment and prevention plans for dieters who may be at risk for binge eating. Because not all dieters binge eat, it is important to know about factors that amplify this relationship. Considerable research confirms that negative affect triggers binge eating. Affect intensity is an emotion-related variable that has not been as fully explored in relation to binge eating and restraint. Similarly, few studies have considered the relationship of body shame to restraint and binge eating, and no study has tested whether the restraint-binge eating relationship varies as a function of body shame. Coping styles are receiving more attention in the literature on binge eating, but no study has considered how coping style affects the relationship between restraint and binge eating. Thus, the primary purpose of this study is to test whether affect intensity, body shame, and coping styles moderate the relationship of dietary restraint and binge eating.

Dietary restraint is a complex construct. The literature is not clear about whether chronic dieting and current dieting differentially affect binge eating. Therefore, another

purpose of this study is to see if potential moderators of the relationship between restraint and binge eating affect both aspects of restraint. By including two measures of dietary restraint (the RRS and the TFEQ-CR, currently called the Eating Inventory-Cognitive Restraint scale [EI-CR]) separate regression equations can be run for each measure to see if potential moderators similarly or differentially affect chronic and current dieting.

Hypotheses

To address the question of which restrained eaters are most likely to binge eat, two models will be tested, and will differ only in regard to the dimension of dietary restraint that is assessed (i.e., chronic dieting or current dieting) (see Figures 1 and 2).

Hypothesis: Affect intensity, body shame, and coping styles (emotion-focused and avoidance-focused) are expected to moderate the relationship between both dimensions of dietary restraint (chronic and current dieting) and binge eating.

a. The relationship between restraint (chronic and current dieting) and binge eating will be stronger for individuals reporting high affect intensity than it will be for those reporting low affect intensity.
b. The relationship between restraint (chronic and current dieting) and binge eating will be stronger for individuals who experience high levels of body shame than it will be for those who experience low levels of body shame.
c. The relationship between restraint (chronic and current dieting) and binge eating will be stronger for individuals who report using more emotion-focused coping than for those who report less emotion-focused coping.

d. The relationship between restraint (chronic and current dieting) and binge eating will be stronger for individuals who report using more avoidance-focused coping than for those who report less avoidance-focused coping.

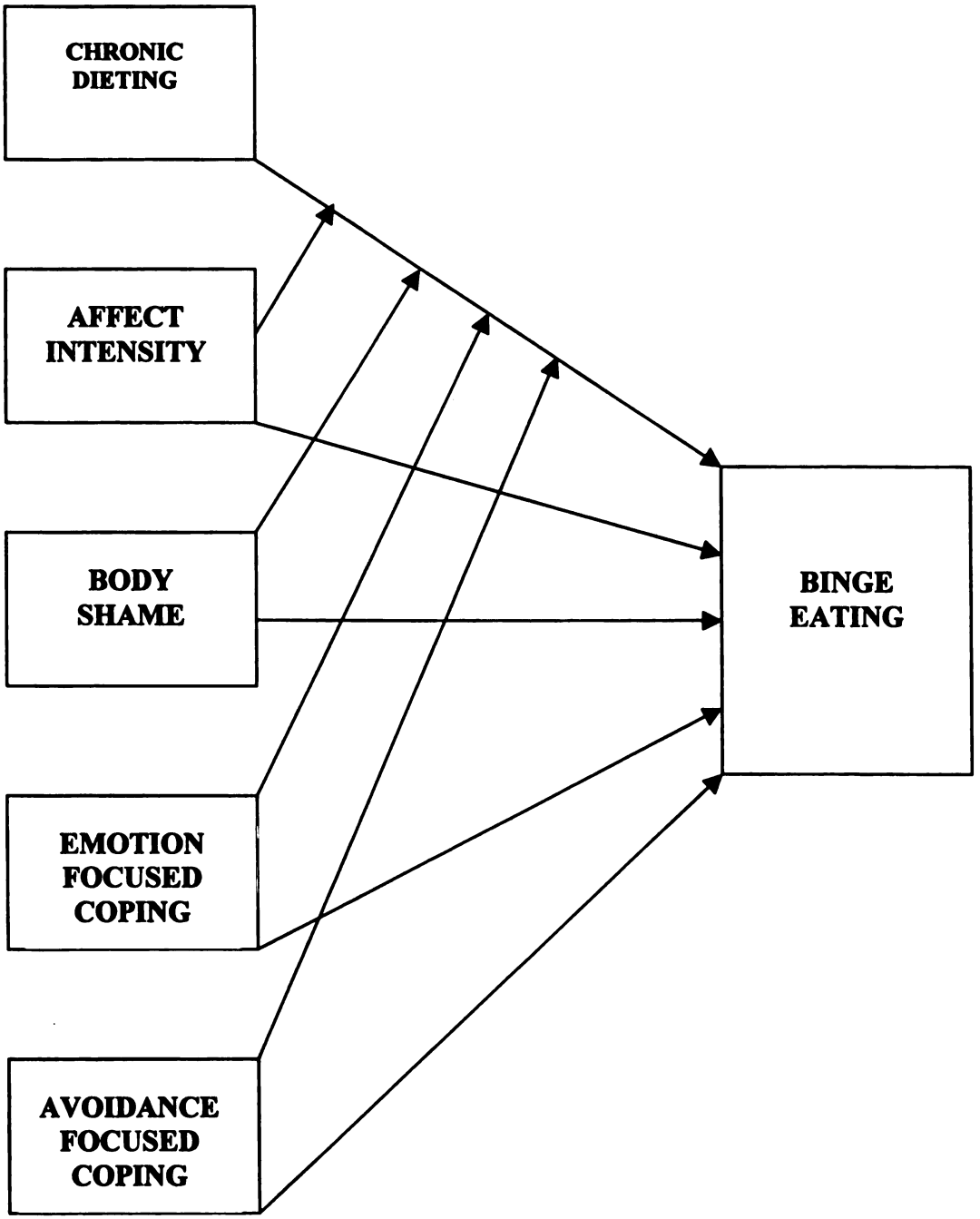

Figure 1. Hypotheses for Chronic Dieting-Binge Eating Relationship. Affect intensity, body shame, emotion-focused coping, and avoidance-focused coping will have main effects on binge eating, and interaction effects with chronic dieting. Chronic dieters with high affect intensity and body shame will report more severe binge eating than chronic dieters who are low on these variables. Chronic dieters who use more emotion-focused and avoidance-focused coping will report more severe binge eating than chronic dieters who use less emotion-focused and avoidance-focused coping.

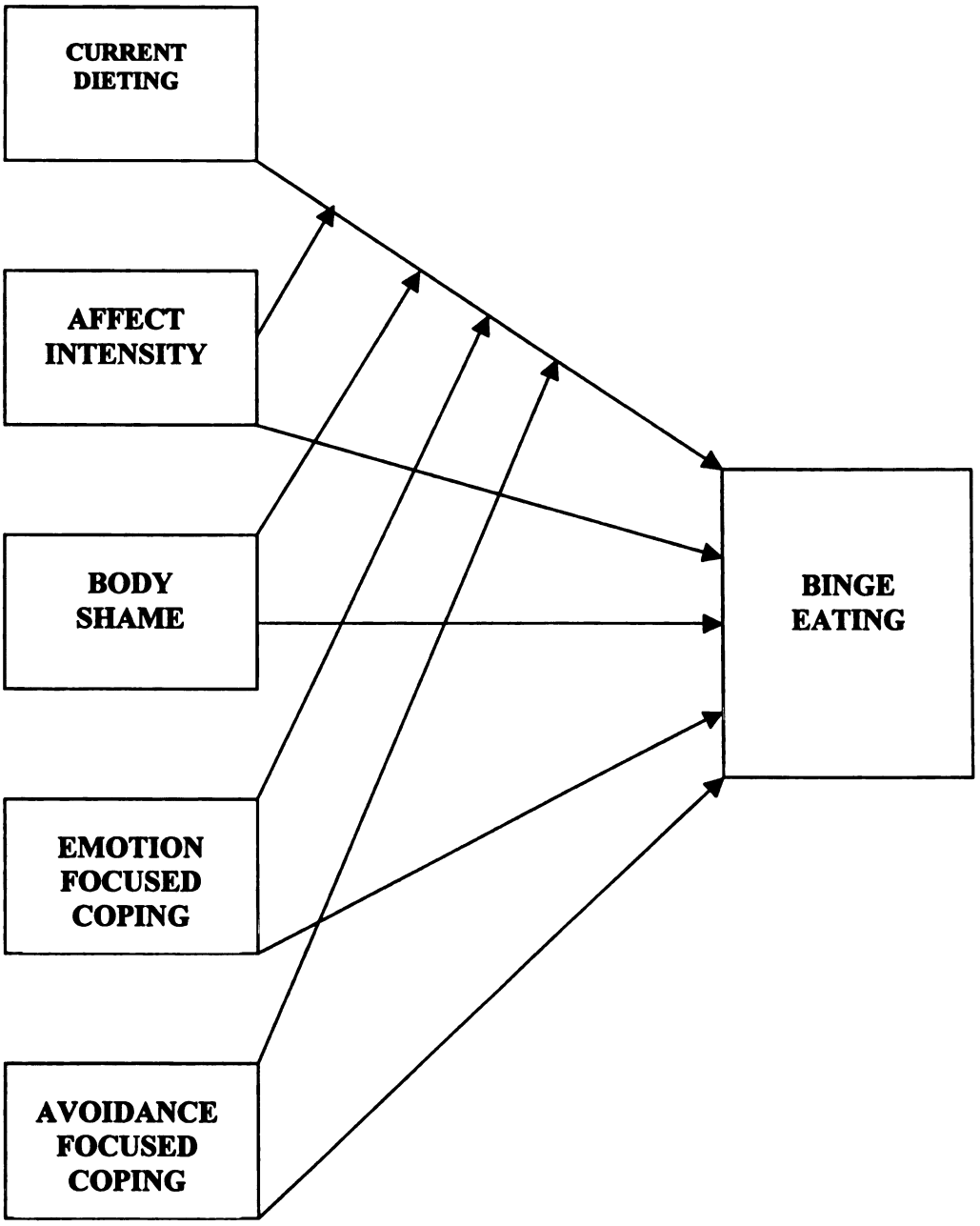

Figure 2. Hypotheses for Current Dieting-Binge Eating Relationship. Affect intensity, body shame, emotion-focused coping, and avoidance-focused coping will have main effects on binge eating, and interaction effects with current dieting. Current dieters with high affect intensity and body shame will report more severe binge eating than current dieters who are low on these variables. Current dieters who use more emotion-focused and avoidance-focused coping will report more severe binge eating than current dieters who use less emotion-focused and avoidance-focused coping.

CHAPTER 2: METHOD

Participants

Female undergraduate students were recruited from classes offered in the College of Education at a large mid-western university. One hundred and thirty nine participants completed the questionnaire packet. Mean substitution was used to replace 6 missing values on the EI-CRS, 4 missing values on the CES-D, and 3 missing values on the RRS, resulting in 139 valid surveys which were included in the data analysis. Only 111 participants were needed to obtain a medium effect at power = .80 for $\alpha = .05$ using multiple regression with nine predictors (Cohen, 1992); therefore, there was sufficient power.

Mean age of the participants was 20.2 years and ranged from 18 to 24 years. The participants were fairly evenly distributed over four undergraduate class levels (freshmen 24.5%, sophomores 23%, juniors 24.5%, and seniors 28%). The participants were predominantly single (98%) and heterosexual (95.7%). Three participants identified as homosexual (2.2%) and 2 participants identified as bisexual (1.4%). Most of the participants were Caucasian (80.6%), though other racial and ethnic groups were represented (African American 12.2%, Hispanic 2.2%, Asian American 0.7%, Arabic 0.7%, and Multiracial 2.2%). Although most participants lived in either a residence hall (46%) or rented off-campus housing (43.2%), other housing options were represented (University owned apartment 4.3%, Greek house 2.2%, Off-campus with parents 2.2%, Own home 1.4%, and Other 0.7%). Approximately one third (32.4%) of the participants reported that they had experienced a significant weight change (i.e. increase or decrease

of at least 10%). Few participants reported ever having been diagnosed with depression (13%), anxiety (4%) or an eating disorder (8%), and few participants reported a history of drug abuse (6%) or alcohol abuse (5%). Finally, mean body mass of the participants was 23.4 and ranged from 16.3 to 43.

Procedures

Data were collected in groups of approximately 20. The study was described as an investigation of factors affecting women's eating habits. Participants completed an informed consent form (see Appendix A) and a packet of self-report questionnaires (described below), which took approximately 40 minutes. To minimize the risk of order effects the questionnaires were counterbalanced by alternating every measure, creating eight versions of the survey. However, because disclosing height and weight might have heightened some participants' feelings of body shame and confounded the results, the demographic questionnaire, which requested height and weight, was always the last item in each packet. All participants received $5 compensation for their time. Additionally, some instructors offered extra credit for participation. In those classes, non-research options for extra credit were offered to students who did not want to participate in this study.

Measures

Demographics

A questionnaire (see Appendix B) was developed to gather background information, such as the participants' age, race, living arrangement, and year in school. Height and weight were also requested.

Bulimia Test-Revised-Binge Control Scale (BULIT-RBC; Thelen, Farmer, Wonderlich, & Smith, 1991; see Appendix C)

Binge eating was assessed using the Binge-Control subscale of the Bulimia Test-Revised. To reduce hypothesis guessing among participants, the full Bulimia Test-Revised (BULIT-R), which consists of 36 self-report items, was administered, however, only the 16-item BULIT-RBC subscale was scored. The BULIT-R was developed to assess DSM-IIIR symptoms of bulimia, and later validated with DSM-IV criteria (Thelen, Minz, & Vander Wal, 1996). The BULIT-RBC subscale specifically measures the hallmark symptom of bulimia, binge eating. Items are scored on a 5-point scale (1 = extreme normal direction; 5 = extreme bulimic direction). Several items are reverse scored to avoid response bias. Answer options vary for each question (e.g. "Would you presently call yourself a binge eater? 1-yes, absolutely, 2-yes, 3-yes, probably, 4-yes, possibly, 5-no, probably not"; "Compared to most people, my ability to control my eating behavior seems to be: 1-greater than others' ability, 2-about the same, 3-less, 4-much less, 5-I have absolutely no control"). Higher scores on the BULIT-RBC subscale are indicative of severe binge eating habits. The BULIT-R has high internal consistency (α = .97) (Thelen et al., 1991) and Stice, Akutagawa, Gaggar, & Agras (2000) reported a Cronbach alpha of .88 on the BULIT-RBC subscale in a sample of 631 male and female high school seniors. Thelen et al. (1991) reported high test-retest reliability for the BULIT-R (r = .95, for two-months). The BULIT-R discriminates well between individuals with and without bulimia, and correlates highly with the Binge Scale (r = .85; Thelen et al., 1991).

Eating Inventory-Cognitive Restraint Scale (EI-CRS; Stunkard & Messick, 1988; see Appendix D)

Current dieting was assessed using the Cognitive Restraint Scale of the Eating Inventory. To reduce hypothesis guessing among participants, the full 51-item Eating Inventory (EI) was administered, however, only Cognitive Restraint Scale was scored. The EI is divided into two parts. The first 36 questions are true false items regarding eating behaviors in a variety of situations; questions 37-50 have four answer options that vary for each question (e.g., 1 = rarely, 2 = sometimes, 3 = usually, 4 = always; 1 = not at all, 2 = slightly, 3 = moderately, 4 = extremely) and ask about various eating and food-related behaviors. The final question (#51) asks the respondent to rate her level of restraint on a 6-point scale with 1 being a very unrestrained eater (i.e. "eat whatever you want, whenever you want it") and 6 being a very restrained eater (i.e., "constantly limiting food intake, never 'giving in'.") A score for the EI-CRS is obtained by summing the 21 items that comprise this scale. High scores on the EI-CRS reflect greater use of conscious mechanisms for restraining food intake. (e.g., "When I have eaten my quota of calories, I am usually good about not eating any more.") Stunkard and Messick (1988) reported internal consistency reliability of .93 for the EI-CRS. The construct validity of the EI-CRS is demonstrated by a moderate correlation of .60 with the Dietary Restraint scale of the Eating Disorders Examination-Questionnaire (Masheb & Grilo, 2002). The EI-CRS also negatively correlates (r = -.46) with mean daily caloric intake (Laessle, Tuschl, Kotthaus, & Pirke, 1989).

Revised Restraint Scale (RRS; Herman & Polivy, 1980; see Appendix E)

Chronic dieting was assessed using the Revised Restraint Scale, a 10-item, self-report instrument designed to measure attitude toward eating, chronic dieting, and weight fluctuations. Answer options vary for each question and are weighted from 0 – 4 (e.g. "How often are you dieting? 0 = never, 1 = rarely, 2 = sometimes, 3 = often, 4 = always"). High scores indicate more concern with dieting and greater weight fluctuation. Internal consistency of the RRS has been reported to be high. Allison, Kalinsky, and Gorman (1992) and Ruderman (1983) reported alpha coefficients of .82 and .86, respectively. Test-retest reliabilities have been reported for intervals of 1-week (r = .93; Polivy, Herman, & Howard, 1988), 2-weeks (r = .95; Allison et al., 1992), and 4-weeks (r = .91; Kickham & Gayton, 1977). Laessle et al. (1989) reported that the RRS correlated moderately with the Restraint Scale of the Dutch Eating Behavior Questionnaire (r = .59), and the RRS has been used to predict eating behavior in several laboratory studies (for review, see Ruderman, 1986).

Affect Intensity Measure (AIM; Larsen & Diener, 1987; Larsen, 1984; see Appendix F)

The Affect Intensity Measure is a 40-item, self-report scale designed to measure the magnitude or intensity with which a person typically experiences positive and negative emotions (e.g., "When I accomplish something difficult I feel delighted or elated." "When I do something wrong I have strong feelings of shame and guilt.") Items are rated on a 6-point scale with 1 meaning the respondent never reacts that way and 6 meaning the respondent always reacts that way. High scores indicate that respondents characteristically experience positive and negative emotions intensely.

Larsen (1984) reported Cronbach alphas that range from .90 to .94 for four separate samples, demonstrating that the AIM is highly reliable. Larsen also reported adequate test-retest reliabilities at 1-, 2-, and 3- month intervals; $\alpha = .80$, $\alpha = .81$, and $\alpha = .81$ respectively. Construct validity is demonstrated by moderate correlations between the AIM and daily assessment of affect intensity in three separate samples; $r = .61$, $r = 52$, $r = .41$. Further construct validity is evident in studies showing that the AIM is related to daily mood variability (Larsen, 1986, 1987), social network complexity (Jolly, 1986), goal complexity (Emmons, 1986), and clinical indicators of mood disorders (Diener, Sandvik, & Larsen, 1985; Larsen, 1984).

Objectified Body Consciousness Scale-Body Shame Scale (OBC-BS; McKinley & Hyde, 1996, see Appendix G)

Body shame was assessed using the Body Shame Scale of the Objectified Body Consciousness Scale. The OBC-BS is an 8-item measure that assesses feeling shame when one's body does not conform to cultural standards. Items are rated on a 7-point Likert-scale (1 = strongly agree; 7 = strongly disagree) with an option to select "NA" if an item does not apply. High scores are associated with the belief that one is a bad person if one does not fulfill cultural body expectations (e.g., "When I can't control my weight, I feel like something must be wrong with me.") McKinley and Hyde (1996) reported a Cronbach alpha of .75 and a 2-week test-retest reliability of .79 on the OBC-BS in a sample of undergraduate college women. McKinley and Hyde also reported that the OBC-BS was positively correlated ($r = .51$) with personal endorsements of cultural body standards, and negatively correlated ($r = -.51$) with a measure of body esteem. The OBC-BS was also positively correlated with several measures of disordered eating behavior,

namely the Eating Attitudes Test (r = .61), the Dieting Scale (r = .68), and the Bulimia Scale (r = .60.)

Coping Inventory for Stressful Situations (CISS; Endler & Parker, 1990, 1999; see Appendix H)

The 48-item Coping Inventory for Stressful Situations is a multidimensional, self-report measure of three coping styles: Task-oriented (16-items), Emotion-oriented (16-items), and Avoidance-oriented (16-items) coping. Although the full CISS scale was administered, only the Emotion-oriented and Avoidance-oriented subscales were scored and used. Using a 5-point, Likert-scale (1 = not at all to 5 = very much) respondents are asked to rate how much they generally engage in various activities when encountering a stressful situation. The Emotion-oriented Coping Scale reflects efforts to regulate the emotional distress associated with a stressful situation (e.g., "Tell myself that it is not really happening.") Avoidance-oriented strategies involve avoiding a stressful situation by either seeking social diversion (e.g., "Phone a friend.") or by engaging in another task (Distraction; e.g., "Go out for a snack or a meal.")

In a sample of 435 undergraduate females the Emotion- and Avoidance-oriented Coping Scales of the CISS demonstrated good reliability (Emotion α = .87; Avoidance α = .83) (Endler & Parker, 1994). Two-week test-retest reliabilities for the subscales were found to be high to moderately high in a sample of 771 undergraduate women (Emotion α = .88; Avoidance α = .83) (Endler & Parker, 1994) Construct validity for the CISS is evident from the theoretically meaningful pattern of correlations between the CISS and three other measures of basic coping styles: Ways of Coping Questionnaire, Coping Strategy Indicator, and Defense Style Questionnaire (Endler & Parker, 1990,1994, 1999).

Further support for the construct validity of the CISS is demonstrated by significant correlations between the Emotion-oriented Coping Scale and various measures of psychopathology (Endler & Parker, 1994; Endler, Parker, & Butcher, 1993).

Center for Epidemiological Studies Depression Scale (CES-D; Radloff, 1977; see Appendix I)

The Center for Epidemologic Studies-Depression Scale is a 20-item, self-report measure of current level of depressive symptomatology, emphasizing depressed mood (e.g., "I had crying spells.") Items are rated on a 4-point scale reflecting how often a person felt depressed during the past week (1 = rarely or none of the time [less than 1 day], 2 = some or a little of the time [1-2 days], 3 = occasionally or a moderate amount of time [3-4 days], 4 = most or all of the time [5-7 days].) For this study, responses were recoded as follows to reflect a 3-point scale: 1 = 0, 2 = 1, 3 = 2, and 4 = 3. Additionally, items 4, 8, 12, and 16 were reversed scored. High scores on the CES-D indicate a greater level of depressive symptomatology. Radloff (1977) reported that the CES-D exhibited high internal consistency with Cronbach alphas ranging from .84 to .90 in three community and one psychiatric sample. The CES-D also demonstrated adequate construct validity by discriminating well between psychiatric inpatient and general population samples. Further evidence of the construct validity of the CES-D was shown by significant positive correlations with other measure of despressive symptoms (i.e., Lubin $r = .51$, Bradburn Negative Affect $r = .60$ and Bradburn Balance $r = .61$) and significant negative correlations with a measure of positive affect (i.e., Bradburn Positive Affect $r = -.21$) (Radloff).

Marlowe-Crowne Social Desirability Scale (MCSD; Crowne & Marlowe, 1960; see Appendix J).

The MCSD is a 33-item measure of socially desirable responding in self-reports (e.g. "I'm always willing to admit it when I make a mistake.") Items are presented in a true/false format, with several items reversed scored. High scores indicate a tendency to present oneself in a favorable light and a desire for approval from others. Cronbach alphas for the MCSD range from .73 to .88, demonstrating acceptable reliability and the authors reported a one-month test-retest correlation of .88 (Crowne & Marlowe, 1960). Compared to low scorers, high scorers on the MCSD respond more to social reinforcement, inhibit aggression, and are more amenable to social influence (Paulhus, 1991). The MCS correlated moderately with the Edwards Social Desirability Scale (r = .35) and the MMPI Lie Scale (r = .54; Crowne & Marlowe, 1960).

Body Mass

Body mass was assessed using the body mass index (BMI). Participants were asked to report their height and weight, and body mass was computed using Quetelet's index: BMI = weight [kg]/height [m^2]. According to current U.S. government guidelines a BMI of 18.5 is considered underweight; a BMI between 18.5 and 24.9 is considered normal; a BMI between 25.0 and 29.9 is considered overweight; a BMI of 30.0 or over is considered obese (National Heart, Lung, and Blood Institute, 1998). Quetelet's index has been validated as an index of adiposity (Garrow & Webster, 1985); however, it may not be an appropriate measure for individuals with a particularly low percentage of body fat (e.g., atheletes).

Data Analysis

Cronbach internal consistency coefficients were computed for all scales and subscales used in this study (see Wilkinson & The APA Task Force on Statistical Inference, 1999). Bivariate statistics were used to assess whether there were significant demographic differences in the independent and dependent variables so background effects could be appropriately controlled. Correlations among all independent and dependent variables were calculated. Hierarchical linear regression was used to test the proposed moderator models (Baron & Kenny, 1986). To show moderation, one must demonstrate that the interaction of the predictor and moderator is significant while holding the predictor and moderator constant (Baron & Kenny). In this analysis the predictor was restraint and the moderators were affect intensity, body shame, emotion-focused coping, and avoidance-focused coping. An alpha level of .05 was set.

To appropriately use multiple regression, five assumptions must be met. First, scatterplots were inspected to verify that the independent variables were linearly related to the dependent variable (Shavelson, 1986). Second, to meet the assumption of independence each participant was asked to report on her own behavior (Shavelson). Third, to check the normality assumption, which assumes that scores on the dependent variable (binge eating) are normally distributed for each possible combination of the levels of each independent variable, a histogram of the distribution of binge eating scores was inspected to see if the scores were normally distributed (Shavelson). Fourth, to meet the assumption of homoscedasticity, the residuals in the final model were plotted against the predicted scores, and the scatterplot was inspected to make sure that the scatter of the residuals about the center of the plot were the same at each value of the predicted Y score

(Shavelson). Finally, bivariate correlations among all independent variables were checked for possible multicollinearity (Lewis-Beck, 1980).

In hierarchical regression the order in which variables are entered into the regression equation is established prior to data analysis (Wampold & Freund, 1987). Continuous variables (restraint, body shame, affect intensity, emotion-focused coping, and avoidance-focused coping) were centered about their respective means in preparation for creating and testing interaction terms (Aiken & West, 1991). In other words, for each variable, the mean for that variable was subtracted from the raw scores comprising that variable. This procedure aids in interpreting interaction terms, because the meaning of the scales comprising an interaction term are preserved. When variables are mean centered a score of zero represents the mean for a particular scale. The control variables (BMI, social desirability, and depression) were entered first in one block. Restraint was entered second. The moderators: affect intensity, body shame, emotion-focused coping, and avoidance-focused coping were entered third. Finally, a block of interaction terms, restraint*affect intensity, restraint*body shame, restraint*emotion-focused coping and restraint*avoidance-focused coping were entered fourth. If there was no main effect for a variable, the corresponding interaction term was dropped from the model. Nonsignificant interaction terms were dropped from the model. The contribution of each variable to explain unique variance in binge eating was considered. Interaction terms were analyzed in terms of moderation (Baron & Kenny, 1986).

CHAPTER 3: RESULTS

Preliminary Analyses

Reliabilities of Measurements

Cronbach internal consistency coefficients were computed for all the scales and subscales used in this study (see Table 1). All of the scales and subscales demonstrated good internal consistency, and Cronbach alpha coefficients for this study were comparable to norms reported by the scale developers.

Demographic Variables

Age was not significantly related to any of the key predictor or outcome variables. Also, there were no significant group differences for class level, local residence, and significant weight change for any of the key predictor or outcome variables. The infrequency of married and non-heterosexual participants precluded analysis of group differences in those areas. In addition, the infrequency of participants who reported a having a history of alcohol or drug abuse or having ever been diagnosed with depression, anxiety, or an eating disorder precluded analysis of group differences in those areas. When grouped into two variables ("white" and "not white") there was a main effect for race on binge eating ($t = 2.6, p < .01$); however, because the "not white" group had a relatively small number of participants (N = 27) race was not controlled in subsequent analyses.

Descriptive Statistics and Bivariate Correlations

Table 2 presents the means, standard deviations, and correlations among the predictor and outcome variables. The two restraint measures (EI-CRS and RRS) were

strongly correlated ($r = .74$; $p < .01$), raising concern that the measures were not measuring different constructs. To see if the items comprising the two restraint measures could be summed to create a single restraint variable, a principle component analysis was run to test for dimensionality. This analysis showed that 20 of the 28 items from the EI-CRS and RRS had moderate to high loadings on the first component, which has an eigenvalue of 10.2. The second component has an eigenvalue of 2.2, with four items loading moderate to high. The content of the eight items that did not load well onto the first component were inspected, and for this sample, there appears to be no substantive explanation for why these eight items were not included in the first component. Consequently, all 28 items from the EI-CRS and RRS were summed to create a single measure of restraint. This measure demonstrated high internal consistency ($\alpha = .91$) Subsequent analyses were run using this single measure of restraint, rather than separate measures for chronic and current restraint.

The moderate correlation between restraint and body shame ($r = .69, p < .01$) raised concern about multicollinearity, which refers to a high correlation among independent variables. To assess for multicollinearity, Lewis-Beck (1980) recommends regressing the variables of concern on each other, and if the R^2 for the equation is near 1.0, then there is high multicollinearity. When body shame was regressed on restraint the two variables significantly predicted each other; however, only moderate overlap was found ($R^2 = .47, p < .01$). Consequently, multicollinearity was ruled out.

As expected, body mass and depression were significantly (positively) related to binge eating ($r = .29$, $r = .43$ respectively), and social desirability had a significant negative relationship with binge eating ($r = -.31$); consequently, these variables were

controlled in subsequent analyses. Binge eating was significantly related to all of the predictor variables except avoidance-oriented coping. As expected, restraint and binge eating were moderately correlated (r = .45). Restraint also correlated moderately with body shame (r = .69) and emotion-oriented coping (r = .28), but not with affect intensity or avoidance-oriented coping. There was a small but significant relationship between affect intensity and body shame (r = .17). Emotion-oriented coping had moderate relationships with depression (r = .56), body shame (r = .40), and affect intensity (r = .37). Finally, avoidance oriented coping correlated moderately with affect intensity (r = .34), and had a small significant correlation with emotion-oriented coping (r = .29).

Hierarchical Linear Regression Analyses

Assumptions

To prepare for hierarchical regression analysis five assumptions were met. First, scatterplots of the relationship between each independent variable and binge eating were inspected, and the relationships were observed to be linear. Thus, the assumption that each independent variable was linearly related to the dependent variable (binge eating) was met. Second, the assumption of independence was met because each participant was asked to report on her own behavior. Third, a histogram of the distribution of scores for the binge eating was inspected and observed to be positively skewed. This raised concern about meeting the assumption of normality, in which it is assumed that scores on the dependent variable (binge eating) are normally distributed for each possible combination of the levels of each independent variable (Shavelson). In this case, because the distribution for binge eating scores was positively skewed, the distributions for each possible combination of the levels of the each independent variable would be positively

skewed as well. This is not surprising given that this is a sample from a normal rather than clinical population. In a normal population, one would expect to see more participants with low to moderate levels of binge eating and few participants with high levels of binge eating. Nevertheless, there was concern about violating the normality assumption.

To correct a positively skewed distribution, Fox (1998) recommends using a log10 transformation. When the binge eating variable was transformed with a log10 function the distribution of binge eating was inspected and found to be closer to normal. To assess whether the analysis was robust to the violation of the normality assumption, hierarchical regression was run using the transformed binge eating variable. The results of the regression analysis for the transformed and untransformed binge eating variable are presented in Tables 3 and 4, respectively. With one exception, the independent variables (i.e., depression, body shame, and affect intensity) that significantly predicted binge eating at each step were the same in both regressions. Although, social desirability significantly predicted the untransformed binge eating variable at all 4 steps, it did not significantly predict the transformed binge eating variable. Consequently, the original analysis was determined to be partially robust to the violation of the normality assumption. Because social desirability did not significantly predict binge eating when binge eating was transformed, it was concluded that social desirability does not predict binge eating. Therefore, the significance of social desirability as a predictor of binge eating is not discussed. The results of the hierarchical regression for the original untransformed binge eating variable are presented and discussed in the following section.

To meet the fourth assumption, homoscedasticity, the residuals in the final model were plotted against the predicted scores. The scatter of the residuals about the center of the plot were reasonably similar at each value of the predicted Y score and the assumption of homoscedasticity was assumed to be met (Shavelson). Finally, bivariate correlations among the independent variables were inspected for possible multicollinearity. With the exception of the relationship between restraint and body shame, which was moderately correlated ($r = .69, p < .01$), none of the independent variables were highly correlated. Regression was used to test for possible multicollinearity between restraint and body shame, and only moderate overlap was found between these two variables ($R^2 = .47, p < .01$). Thus, the assumption of no multicollinearity was met.

Test of Moderation Model for Binge Eating

Hierarchical regression analyses were conducted to test the hypothesis that body shame, affect intensity, emotion-oriented coping, and avoidance-oriented coping would moderate the relationship between restraint and binge eating. Table 4 summarizes the results of the regression. In step 1, body mass and depression were significantly and positively related to binge eating. Greater body mass and higher levels of depression were associated with higher levels of binge eating. At step 1, 27% of the variation in binge eating was explained ($R^2 = .270, p < .001$). In step 2, depression and restraint significantly predicted binge eating. Higher levels of depression and restraint were associated with higher levels of binge eating. Adding restraint to the model explained an additional 11% of the variation in binge eating ($R^2 = .381, p < .001$). In step 3, controlling for body mass, social desirability, and restraint, main effects were found for depression,

body shame, and affect intensity. Higher levels of depression, body shame and affect intensity predicted higher levels of binge eating. There were no main effects for emotion-oriented coping or avoidance-oriented coping. At step 3, 49% of the variation in binge eating was explained ($R^2 = .487, p < .001$).

The interaction terms were entered at step 4, and none were significantly related to binge eating. Consequently, the hypothesis that body shame, affect intensity, and coping styles would moderate the relationship between dietary restraint and binge eating was not supported. Only the main effects for depression, body shame, and affect intensity remained significant. The variation in binge eating explained at step 4 was not significantly different from the variation in binge eating explained at step 3 ($\Delta R^2 = .01, p < .634$). In the final model, body shame ($\beta = .42, p < .001$) had a moderate effect and affect intensity ($\beta = .15, p < .05$) and depression ($\beta = .22, p < .01$) had small effects in significantly predicting binge eating. Higher levels of body shame, affect intensity, and depression predicted higher levels of binge eating.

Because there were no main effects for emotion-oriented coping and avoidance-oriented coping, a second regression was run without these two predictors and their corresponding interaction terms (see Table 5). As in the first regression, controlling for body mass, social desirability, and restraint, main effects were found for depression, body shame, and affect intensity, but body shame and affect intensity did not moderate the relationship between dietary restraint and binge eating.

The results of the regression analyses and the significant correlations between body shame and binge eating, and between body shame and restraint suggested that body shame might mediate the relationship between restraint and binge eating. According to

Baron and Kenny (1986) three things must happen for mediation to occur. First, the predictor (restraint) must predict the mediator (body shame). The correlation between restraint and body shame demonstrates that restraint predicts body shame ($r = .69, p < .01$). Second, the predictor (restraint) must predict the outcome (binge eating). At step 2 in Table 4, after controlling for body mass, depression, and social desirability, restraint significantly predicts binge eating. Finally, when both the predictor (restraint) and mediator (body shame) are regressed on the outcome (binge eating), the mediator must significantly predict the outcome, and the effect of the predictor on the outcome must be reduced. When restraint and body shame were regressed on binge eating at step 3 in Table 4, body shame significantly predicted binge eating, and restraint did not. Consequently, although not originally hypothesized, these results demonstrate that body shame mediates the relationship between restraint and binge eating.

CHAPTER 4: DISCUSSION

This study examined potential moderators of the relationship between dietary restraint and binge eating in an attempt to answer the question: Which restrained eaters are most likely to binge eat? Specifically, affect intensity, body shame, and coping styles (emotion-focused and avoidance-focused) were expected to moderate the relationship between dietary restraint and binge eating. A second purpose of this study was to examine whether moderators of the restraint-binge eating relationship function differently if restraint is defined as chronic or current dieting. Thus, the RRS was used to assess chronic dieting and the EI-CR was used to assess current dieting. Two models were to be tested, differing only in regard to the dimension of dietary restraint that was assessed (chronic or current). College women were studied because they are at a high risk for developing eating disorders. Furthermore, use of a non-clinical sample meant that sub-clinical levels of restraint and binge eating could be examined. Finally, BMI, depression, and social desirability were controlled in this study because prior research suggested that these factors may be confounded with the primary predictors and covary with binge eating.

In this chapter, an overview of significant findings is presented. Second, thoughts about how the measurement of restraint may have impacted the results of this study are presented. Third, specific results and conclusions about the effect of affect intensity, body shame, and coping styles on the relationship between dietary restraint and binge eating are discussed. Fourth, limitations of this study are presented. Finally, the implications this study has for practice and research are discussed.

Overview of Results

Although the original hypotheses called for two models to be tested, the strong correlation between the RRS and EI-CR precluded testing whether the proposed moderators (body shame, affect intensity, and coping styles) would affect the restraint-binge relationship differently depending on how restraint was defined (chronic or current dieting). Consequently, scores on the RRS and EI-CR were combined to yield a single index of restraint, and one model was tested. Using a single measure of restraint, the hypothesis that body shame, affect intensity, and coping styles would moderate the relationship between restraint and binge eating was not supported. In other words, these variables did not help clarify which restrained eaters are most likely to binge eat. However, the results of this study did demonstrate that body shame mediates the relationship between restraint and binge eating. In other words, the experience of feeling ashamed when one's body does not conform to cultural ideals helps explain why there is a relationship between restraint and binge eating. Main effects were found for depression and affect intensity. Greater depression and higher levels of affect intensity were associated with higher levels of binge eating.

Measurement of Restraint

A primary reason why none of the hypotheses about potential moderators (affect intensity, body shame, and coping) of the relationship between restraint and binge eating were supported may be related to how restraint was measured. As noted earlier, this study attempted to capture two types of restraint (chronic and current) to see if potential moderators would have different effects on the restraint-binge relationship when restraint was defined differently. However, a high correlation between the two restraint measures

(RRS and EI-CR) prevented a test of this hypothesis, and the measures were combined to form a single index of restraint that did not distinguish between chronic and current restraint. Although none of the hypotheses about potential moderators of the restraint-binge relationship were supported using this single measure of restraint, it is still possible that affect intensity, body shame, and/or coping affect the restraint-binge relationship when restraint is either chronic or current, but not when these types of restraint are merged.

Affect Intensity

It was expected that the relationship between restraint and binge eating would be stronger for individuals reporting high affect intensity than for individuals reporting low affect intensity. This hypothesis was not supported. Although, affect intensity predicted binge eating, the interaction of restraint and affect intensity did not predict binge eating. Individuals who experience their emotions intensely are more likely to binge eat than individuals who tend not to experience their emotions intensely. This relationship appears to be unaffected by whether or not one restrains their eating. In other words, individuals at any level of restraint who experience high affect intensity are at greater risk for binge eating than those who experience low affect intensity.

These results support the idea that one function of binge eating is to regulate aversive emotions and suggest that not only is binge eating triggered by negative affect, but the intensity with which one experiences emotions (positive and negative) is also an important factor in predicting this behavior. These results make sense given that individuals high on affect intensity report more intense reactions to emotion-provoking stimuli than individuals low on affect intensity (Larson et al., 1986), and binge eating is

hypothesized to be a means of coping with negative emotions (Heatherton & Baumeister, 1991). Furthermore, these results are consistent with research demonstrating that individuals who binge eat tend to experience their stress more intensely than individuals who do not binge eat (Crowther et al., 2001; Hansel & Witrock, 1997; Wolf et al. 2000). If binge eaters are more likely to experience high affect intensity, as indicated by these results, then it makes sense that they would experience stress more intensely. Future research should further explore the relationships between affect intensity and the various negative emotions known to trigger binge eating.

Although affect intensity explains some of the variation in binge eating behavior, the results of this study suggest that individual differences in affect intensity do not help us understand the relationship between restraint and binge eating. Knowing someone's level of affect intensity does not help determine which restrained eaters are most likely to binge eat. This is puzzling given that there is a significant body of research that demonstrates that experiencing negative affect triggers disinhibited eating in restrained eaters, but not in unrestrained eaters (Heatherton et al., 1991; Heatherton et al., 1993; Kisler & Corcoran, 1997; Meyer & Waller, 1999; Waller & Mijatovich, 1998). Furthermore, negative affect has been shown to moderate the relationship between dietary restraint and binge eating (Stice et al., 2000), yet affect intensity does not. Undoubtedly, the role of emotion in explaining the restraint-binge relationship is complex. It would seem that experiencing a certain type of affect (e.g., depression) might predict which restrained eaters are likely to binge, whereas experiencing all emotions intensely does not. It is also possible that other factors more effectively predict which restrained eaters are most vulnerable to binge eating.

Restraint theory (Herman & Polivy 1980, 1984) grew out of set point theory (Nisbett, 1972), which suggested that attempts to restrain one's eating could trigger biologically based defenses associated with binge eating (e.g., increased preferences for sweets). Though restraint theory moved away from a physiological explanation for the relationship between restraint and binge eating (Herman & Polivy, 1984), it is nevertheless possible that biological mechanisms remain salient to understanding the restraint-binge relationship. It may be that variations in individuals' biological make up more effectively predict which restrained eaters are at risk for binge eating. Furthermore, research on the biology of appetite has concluded "the nutrient composition of the food consumed plays a significant role in the activation of mechanisms involved in good appetite control" (Blundell & Hill, 1993, p. 212). Therefore, investigating differences in the nutritional composition of restrained eaters diets (e.g., a low versus high carbohydrate diet) may tell us more about restraint as a risk factor for binge eating.

Another possible explanation for the results of this study may be that affect intensity does not moderate the relationship between restraint and binge eating when these behaviors are at less aberrant levels. This study used a normative sample in order to capture a full range of eating behavior, and few participants reported dieting and bingeing at clinically significant levels. Consequently, it may be that affect intensity predicts which dieters binge when dieting is more severely restrictive.

Finally, there was not much variability in the levels of affect intensity among participants. Although this did not seem to affect the ability of affect intensity to predict binge eating, the narrow range of affect intensity scores may have affected the potential for affect intensity to moderate the restraint-binge relationship. To show moderation the

level of affect intensity (high or low) would need to significantly affect the strength of the relationship between restraint and binge eating (e.g., the relationship between restraint and binge eating would be stronger when affect intensity is high). In this study, there may not have been enough variability in affect intensity scores to detect this effect.

In sum, this study found that the tendency to experience all emotions intensely is a risk factor for binge eating, as high affect intensity was shown to predict binge eating. On the other hand, this tendency does not affect the strength or direction of the relationship between restraint and binge eating. Knowing about variations in level of affect intensity does not help us understand which restrained eaters are most susceptible to problems with binge eating.

Body Shame

The hypothesis that the relationship between dietary restraint and binge eating would be stronger for individuals who experience high levels of body shame than for those who experience low levels of body shame was not supported. High levels of body shame predicted more severe binge eating, but the interaction of restraint and body shame was not a significant predictor of binge eating. Experiencing high levels of shame when one's body does not measure up to cultural ideals puts women at risk for binge eating, regardless of whether or not they restrain their eating.

That body shame significantly predicted binge eating is consistent with previous research linking body shame and disordered eating in general (Irwin, 2000; McKinley & Hyde, 1996; Noll & Fredrickson, 1998), and binge eating in particular (Chervinko, 2002). It also supports the idea that ego threats are particularly salient to understanding bingeing behavior (Heatherton & Baumeister, 1991). Although this study did not address triggers

for binge eating, these results indicate that a more global proneness toward body shame is associated with more severe binge eating. As a self-based emotion, activating shame via awareness that one does not measure up to cultural beauty standards has the potential to pose a serious threat to one's ego, and this ego threat may then lead to binge eating as a way to cope.

Although body shame does not help explain which restrained eaters are likely to binge eat, it does seem to help us understand why this relationship exists. Though not hypothesized, body shame was found to mediate the relationship between restraint and binge eating, suggesting that one of the reasons restrained eaters binge is because they feel ashamed of their body. Binging in response to body shame appears counterintuitive, particularly since shame tends to motivate a person to conform to societal standards (Tangney et al., 1995), and body shame is associated with increased dietary restraint (Fredrickson et al., 1998). One explanation is that the relationship between body shame, restraint, and binge eating is more complicated than the picture captured in this study. It may be that body shame plays a significant role at various points within the restraint-binge cycle. Perhaps body shame that is elicited by dietary failure triggers binge eating, whereas body shame that is elicited by binge eating triggers increased restraint. It may also be true that body shame plays a more significant role in maintaining the restraint-binge cycle than it does in the origin of this relationship.

In sum, this study found that experiencing higher levels of shame when one's body does not meet cultural beauty standards is associated with more severe binge eating. Furthermore, the results of this study indicate that body shame is one reason why increased dietary restraint is associated with more severe binge eating. Restraining one's

eating is associated with higher levels of body shame, which in turn is associated with more severe binge eating.

Coping Styles

Emotion-focused Coping

It was expected that the relationship between restraint and binge eating would be stronger for individuals who reported using more emotion-focused coping than for those who reported using less emotion-focused coping. This hypothesis was not supported. Although, emotion-focused coping and binge eating were positively correlated, in the model tested, emotion-focused coping did not predict binge eating, precluding a test of the interaction of emotion-focused coping and restraint. In other words, emotion-focused coping did not enhance the prediction of binge eating after controlling for depression. That emotion-focused coping did not predict binge eating runs counter to previous research that has demonstrated that emotion-focused coping predicts binge eating (Janzen et al., 1992; Koff & Sangani, 1997; Shatford & Evans, 1986). However, the failure of emotion-focused coping to predict binge eating in this study is likely due to the fact that the effects of depression on binge eating were controlled. Consequently, it appears that depression is a more effective predictor of binge eating than emotion-focused coping is.

Avoidance-focused Coping

The hypothesis that the relationship between restraint and binge eating would be stronger for individuals who reported using more avoidance-focused coping than for those who reported using less avoidance-focused coping was not supported. Avoidance-focused coping did not predict binge eating; therefore the interaction of restraint and avoidance-focused coping could not be tested. These results suggest that variations in

binge eating behavior are not affected by variations in one's use of avoidance-focused coping.

Previous research on the relationship between avoidance-focused coping and binge eating has been mixed. Some researchers have found that women with bulimic symptoms use more escape-avoidance strategies than controls (Neckowitz & Marrison, 1991; Shatford & Evans, 1986; Troop et al., 1994; Wolff, et al, 2000), whereas others have found no relationship between avoidance-focused coping and bulimic symptomatology (Janzen et al., 1992; Mayhew & Endelman, 1989; Paxton & Diggens, 1997). The results of this study are consistent with the former set of studies, and lend support to the conclusion that there is no relationship between avoidance-focused coping and binge eating.

At first glance it might seem that the failure to find a relationship between avoidance-focused coping and binge eating could be attributed to a confounding relationship between avoidance-focused coping and depression. This hypothesis was tested and supported by Paxton and Diggens (1997), and was one of the reasons depression was controlled in this study. However, in this study there was no significant relationship between avoidance-focused coping and depression, which means that including depression in the model cannot explain why avoidance-focused coping did not predict binge eating.

The conclusion that there is no relationship between avoidance-focused coping and bingeing seems to run counter to the escape theory of binge eating (Heatherton & Baumeister, 1991), which maintains that bingeing is a motivated attempt to escape from the negative emotions associated with aversive self-awareness. However, it is still

possible that binge eating is a means of avoiding negative affect. It may be that although binge eaters binge to avoid negative affect, they do not necessarily use other avoidant strategies anymore frequently than non-binge eaters do. This explanation may reflect differences in how avoidance-focused coping was assessed in this and other studies. For example, the Avoidance-Focused Coping subscale of the CISS, which was used in this study, asks respondents to indicate how frequently they use a variety of avoidant strategies, whereas Wolff et al. (2000) measured avoidance-focused coping with one item that listed multiple strategies including eating. Thus, it may be that binge eaters do binge as a means of avoiding or escaping distress, and they limit their avoidance to this particular strategy. A similar explanation is that other forms of avoidance-focused coping may be more pronounced at earlier stages of developing binge eating, and these strategies are used less as more severe binge eating behavior develops.

Finally, it is possible that avoidance-focused coping is more prevalent in binge eaters when they are coping with certain types of stressors, like ego threats. There is debate in the coping literature about whether situational factors are more important then coping styles in determining how a person responds to a stressor (cf Folkman & Lazarus, 1980, 1984). Although recent evidence suggests that a person's coping style is consistent and stable over time and across circumstances (Carver et al., 1989; Endler & Parker, 1990, 1994), it is possible that in the case of the relationship between bingeing and avoidance-focused coping situational factors prevail. Clearly, more research is needed to better understand how binge eating functions as a coping mechanism, and bingeing may be reflect more global problems with coping.

In sum, the results of this study indicate that there is no relationship between avoidance-focused coping and binge eating. Although, binge eating may be used to avoid negative affect, it appears that variations in bingeing behavior are not affected by variations in the use of other avoidance-focused coping methods.

Limitations

This study has certain limitations that warrant discussion. First, because this study used a correlational design, causal inferences about the relationships among the variables cannot be drawn. Conclusions about the causes of binge eating can only be determined from prospective analyses. Second, the sample was non-random and relatively homogeneous with respect to several demographic characteristics (e.g., race/ethnicity and sexual orientation), which limits the generalizability of these results to other samples of undergraduate women. Replication with a more diverse random sample is recommended. Third, all data was gathered from self-report measures. Though effort was made to reduce the effect of self-enhancing bias, confidence in these results could be strengthened through replication using objective measures. Fourth, this study used a normal sample to capture a full range of binge eating behavior. Consequently, these results are not generalizable to a clinical sample, and it is recommended that similar studies be done with clinical populations.

Implications for Practice

The results of this study have several implications for the prevention and treatment of binge eating. First, these results provide further support for the idea that negative affect plays a central role in the maintenance of binge eating. Specifically, the tendency to experience one's emotions intensely was associated with more severe binge

eating. In addition, others have demonstrated that high affect intensity is associated with less effective emotion regulation (Flett et al., 1996). Consequently, it seems important that therapists working with clients who binge eat help these clients gain more effective affect regulation skills. Dialectical behavior therapy (DBT) for binge eating disorder is a promising new treatment that teaches clients adaptive skills for regulating their emotions (Wiser & Telch, 1999). Based on Linehan's (1993a, 1993b) manual for treating clients with borderline personality disorder, DBT for binge eating disorder teaches mindfulness skills, distress tolerance, and emotion regulation, all of which could be useful for binge eaters who tend to react more intensely to emotion provoking stimuli and generally cope by bingeing.

While the association between affect intensity and binge eating suggests affect-oriented treatments, like DBT, might be particularly effective in helping clients with binge eating problems, the findings of this study suggest that treatment should also address the relationship between restraint, body shame, and binge eating. That body shame appears to be one reason for the association between restraint and binge eating suggests that therapists need to attend to how this emotion is experienced by their clients. Interventions aimed at reducing or managing the experience of body shame would be helpful. For example, Cognitive behavioral therapy for binge eating (see Fairburn, Marcus, & Wilson, 1993) could be used to address maladaptive cognitions about weight and shape that contribute to experiencing body shame. Feminist therapies for eating disorders (see Zerbe, 1996) might help clients examine and challenge the underlying assumptions that promote sociocultural ideals for beauty and thinness. Fredrickson and Roberts (1997) assert that self-objectification, the experience of observing oneself from

an outsider or third person perspective, engenders body shame. Therefore, interventions that help women become more in tune with, and accepting of, their bodies could reduce their experience of body shame and subsequently reduce the need to binge eat.

From a prevention standpoint, women and young girls need to be taught about the risks of self-objectification. Images of women in the media must be altered to reflect more realistic and diverse physiques. Continued efforts must be made to separate a woman's appearance from her sense of self and self-worth.

Finally, with regard to obese binge eaters, there is debate regarding whether treatment should focus on weight reduction via low or very low calorie diets in addition to eliminating binge eating. The results of this study suggest that weight loss treatment may be risky, in that restraint seems to amplify body shame rather than attenuate it. Focusing on weight loss leads women to pay more attention to their weight and shape, which increases their awareness that they do not meet physical ideals. Treatments that endorse weight loss, over time, lead to more severe binge eating by increasing body shame. If weight loss treatment is medically necessary (i.e, in the case of someone who is morbidly obese), awareness of the ways in which body shame may be activated is of utmost importance, and care should be taken to reduce or help client's manage this emotion.

Implications for Future Research

It is recommended that future research address the limitations of this study regarding the design and sample. As noted previously, the correlational nature of this study does not allow for causal inferences about the relationships among the variables of interest to be drawn. Prospective studies that track the eating behavior, affective

experience, and coping methods of young girls over time would aid in distinguishing between causal and maintenance risks for binge eating.

Replicating this study with a more diverse sample, particularly with regard to race, ethnicity, and sexual orientation is important. There has been a rise in incidences of eating disorders among women of color, and studies have found that Hispanic women (Cachelin, Veisel, Barzegarnazari, & Striegel-Moore, 2000; Chamorro & Flores-Ortiz, 2000) and African American women (Striegel-Moore, Wilfley, Pike, Dohm, & Fairburn, 2000) are as likely as White women to engage in binge eating. However, there is debate about whether drive for thinness is the primary sociocultural factor responsible for eating disorders among women of color. Some have suggested that negative affect associated with racism may be a more salient risk factor for women of color (Thompson, 1994). Others point out that although a larger body size may be more accepted in some non-White cultures, women of color are still exposed to and influenced by the beauty ideal set by the dominant White culture (Root, 1990; Williamson, 1998). With regard to sexual orientation, several studies have reported comparable rates of eating disorders, including binge eating, among lesbian and heterosexual women (French, Story, Remafedi, Resnick, & Bloom, 1996; Heffernan, 1996; Striegel-Moore, Tucker, & Hsu, 1990; Strong, Williamson, Netemeyer, & Geer, 2000). However, these studies also reported that lesbians were more satisfied with their bodies and less focused on physical appearance than heterosexual women. Consequently, the degree to which body shame, which focuses on the beauty ideal of White Western culture, namely a thin physique, contributes to binge eating and helps explain the relationship between restraint and binge eating for women of color and lesbians is unknown and additional research is needed.

The results of this study are generalizable to normal populations of college women, and more research needs to be done to test their generalizability to clinical samples and other normal populations. In addition to improving the generalizability of these results, replication with clinical samples might also help explain why some expected relationships were not found. For example, it is possible that a significant relationship between avoidance-focused coping and binge eating exists only for individuals with more severe disordered eating. Likewise, affect intensity may only affect the relationship between restraint and binge eating when these behaviors are more severe. Studies that compare control groups and samples of women with various degrees of restraint and binge eating are needed.

Finally additional research regarding the complex nature of restraint is needed. Some researchers have found a difference between chronic and current dieting (see Lowe, 1993), whereas this study did not. Better measures for detecting differences in cognitions and behaviors used to restrain one's eating are needed. Interviews and qualitative methodology could be used to capture a richer sense of women's dieting attitudes and behaviors. A distinction between types of restraint that was not addressed by this study is the difference between flexible and rigid control over eating (Westenhoefer, 1991). Rigid control is characterized by dichotomized "all or none" thinking about dieting, whereas flexible control is associated with a more graduated approach to restraint. It has been demonstrated that individuals who employ flexible control over their eating have fewer problems with bingeing and are not as susceptible to counter-regulation (Westenhoefer et al., 1999). On the other hand, individuals who exert rigid control over their eating are more prone to bingeing and are more likely to counter-regulate

(Westenhoefer, et al., 1999). Consequently, it may be that affect intensity, body shame, and/or coping moderate restraint and binge eating only when restraint is rigid. Additional research examining how potential moderators affect the restraint-binge relationship when restraint is rigid versus flexible is needed.

Conclusions

Binge eating is a significant problem for many women. Research suggests that there are two primary pathways to the development and maintenance of binge eating. Dietary restraint, which refers to intentional efforts to lose or maintain weight, is one pathway, and affect regulation is the other. The results of this study suggest that both pathways are important to consider when investigating binge eating. The findings also suggest that it is important to consider how restraint and variables associated with affect regulation may or may not interact to amplify one's risk of binge eating.

This study demonstrated that the tendency to experience one's emotions with high intensity is a risk factor for binge eating. Although, the results of this study suggest that affect intensity, body shame, and coping styles do not moderate the restraint-binge relationship, the finding that body shame mediates this relationship suggests that it is important to continue to conduct research that considers how restraint and negative affect work together to amplify one's risk for binge eating.

Given the complex nature of binge eating behavior, knowledge about individual risk factors is of limited practical use unless these factors can be integrated into a model that has greater power to explain binge eating. Taken together, the results of this study support continued inquiry into the relationships among known risks of binge eating and

may be used to develop a model of binge eating that considers dietary and affect oriented risks.

APPENDICES

APPENDIX A

Potential Moderators of the Relationship Between Dietary Restraint and Binge Eating: Affect Intensity, Body Shame, and Coping Styles

INFORMED CONSENT

Thank you for your interest in this research project. *Please read this form all the way through before signing below.* This project is being conducted by Stephanie Chervinko, a doctoral candidate in Counseling Psychology, under the supervision of Dr. Joan Pfaller, adjunct professor in the Department of Counseling, Educational Psychology, and Special Education and Psychologist for the College of Veterinary Medicine, G – 115 Veterinary Medical Center, Michigan State University, East Lansing Michigan, MI 48824.

The purpose of this study is to learn more about factors affecting women's eating habits. If you choose to participate in this study, you will be given a packet of self-report questionnaires to complete. The questionnaires will ask you about how you feel about your body, your eating habits, your emotions, and how you cope with problems in your life. It will take approximately 40 minutes to complete the survey packet. There are no right or wrong answers. If answering the questions makes you feel uncomfortable, you may consider speaking with the researchers about your reactions. If you identify personal concerns while answering these questions you may want to contact the Counseling Center at 335 Olin Student Health, (517) 355-2310 or 353-7278 (TDD). There is no charge for students carrying one or more credits.

Your responses will be confidential. Your name will not at anytime be attached to the answers you provide to the questions. Your name will not be on the survey packet you complete, nor will the number of the packet be attached to your name. This Informed Consent form will be kept separate from your survey packet. At no time will your name be released in association with this study unless your instructor requires notification of your participation for course credit. Your privacy will be protected to the maximum extent allowable by law. DO NOT put your name on the questionnaires.

Your participation in this study is completely voluntary. You may refuse to participate at all, refuse to answer certain questions on the measures, or discontinue your participation at any point with no penalty or loss of benefits to which you are otherwise entitled. If you complete the study you will receive $5 compensation for your time. You will be asked to sign a form verifying receipt of $5. This verification form will be kept separate from your survey packet. Also, some students are participating to receive extra credit. Your instructor should have informed you prior to your participation whether s/he is offering extra credit and how much extra credit students will receive for participating in this study.

If you would like to participate read the brief statement below and print and sign your name and enter today's date on the lines below. If you have any questions about the study, please ask the person administering the survey or call Stephanie Chervinko at 517-347-3652 (chervink@msu.edu) or Dr. Joan Pfaller at 517-432-7772 (pfaller@cvm.msu.edu). Any concerns about your rights as a participant may be directed to UCRIHS Chair Dr. Kumar, 202 Olds Hall, Michigan State University, 517-355-2180 (ucrihs@msu.edu). In the future, if you would like to know the results of this study, please contact Stephanie Chervinko at the phone number or email address given above.

My signature below indicates that I agree to participate in this study as described above:

PRINT your name here	SIGN your name here	Today's date

APPENDIX B

DEMOGRAPHICS

Instructions: Please circle the number or fill in the blank to describe yourself.

A. Age _____

B. Class level

1. freshman
2. sophomore
3. junior
4. senior
5. other _____

C. Major _____

D. Marital status

1. single, never married
2. married or partnered
3. divorced, widowed, or separated

E. Sexual orientation

1. heterosexual
2. homosexual
3. bisexual

F. Race/Ethnicity

1. African American
2. Asian American
3. Caucasian/White
4. Hispanic/Latina
5. Native/Indian/Alaskan
6. Multiracial/Biracial
7. International student (specify country) _____
8. Other _____

G. Local residence

1. Residence hall
2. University owned apartment
3. Greek house
4. Off campus – renting apartment/house
5. Off campus – with parents
6. Own home
7. Other _____

H. Have you ever experienced a significant change in your weight (i.e. increase or decrease of at least 10%) for one of the following reasons (circle all that apply):

1. illness or health concern (specify) _____
2. pregnancy (specify number of pregnancies) _____
3. other (please specify) _____

I. Have you ever been diagnosed with (circle all that apply):

1. depression
2. an eating disorder (please specify) _____
3. an anxiety disorder

J. Have you ever had a drug abuse problem?

1. yes
2. no

K. Have you ever had an alcohol abuse problem?

1. yes
2. no

J. Height _____ ft. _____ in.

H. Weight _____ lbs.

APPENDIX C

THE BULIMIA TEST REVISED

Instructions: Answer each question by circling the appropriate response. Please respond to each item as honestly as possible; remember all of the information your provide will be kept strictly confidential.

1. I am satisfied with my eating patterns.

    1. agree
    2. neutral
    3. disagree a little
    4. disagree
    5. disagree strongly

2. Would you presently call yourself a "binge eater"?

    1. yes, absolutely
    2. yes
    3. yes, probably
    4. yes, possibly
    5. no, probably not

3. Do you feel you have control over the amount of food you consume?

    1. most or all of the time
    2. a lot of the time
    3. occasionally
    4. rarely
    5. never

4. I am satisfied with the shape and size of my body.

    1. frequently or always
    2. sometimes
    3. occasionally
    4. rarely
    5. seldom or never

5. When I feel that my eating behavior is out of control, I try to take rather extreme measures to get back on course (strict dieting, fasting, laxatives, diuretics, self-induced vomiting, or vigorous exercise).

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. never or my eating behavior is never out of control

6. I use laxatives or suppositories to help control my weight.

    1. once a day or more
    2. 3-6 times a week
    3. once or twice a week
    4. 2-3 times a month
    5. once a month or less (or never)

7. I am obsessed about the size and shape of my body.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

8. There are times when I rapidly eat a very large amount of food.

    1. more than twice a week
    2. twice a week
    3. once a week
    4. 2-3 times a month
    5. once a month or less (or never)

9. How long have you been binge eating (eating uncontrollably to the point of stuffing yourself)?

    1. not applicable; I don't binge eat
    2. less than 3 months
    3. 3 months – 1 year
    4. 1 – 3 years
    5. 3 or more years

10. Most people I know would be amazed if they knew how much food I can consume at one sitting.

    1. without a doubt
    2. very probably
    3. probably
    4. possibly
    5. no

11. I exercise in order to burn calories.

    1. more than 2 hours per day
    2. about 2 hours per day
    3. more than 1 but less than 2 hours per day
    4. one hour or less per day
    5. I exercise but not to burn calories or I don't exercise

12. Compared with women your age, how preoccupied are you about your weight and body shape?

    1. a great deal more than average
    2. much more than average
    3. more than average
    4. a little more than average
    5. average or less than average

13. I am afraid to eat anything for fear that I won't be able to stop.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

14. I feel tormented by the idea that I am fat or might gain weight.

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

15. How often do you intentionally vomit after eating?

    1. 2 or more times a week
    2. once a week
    3. 2-3 times a month
    4. once a month
    5. less than once a month or never

16. I eat a lot of food when I'm not even hungry.

    1. very frequently
    2. frequently
    3. occasionally
    4. sometimes
    5. seldom or never

17. My eating patterns are different from the eating patterns of most people

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom or never

18. After I binge eat I turn to one of several strict methods to try to keep from gaining weight (vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics).

    1. never or I don't binge eat
    2. rarely
    3. occasionally
    4. a lot of the time
    5. most or all of the time

19. I have tried to lose weight by fasting or going on a strict diet.

    1. not in the past year
    2. once in the past year
    3. 2-3 times in the past year
    4. 4-5 times in the past year
    5. more than 5 times in the past year

20. I exercise vigorously and for long periods of time in order to burn calories.

    1. average or less than average
    2. a little more than average
    3. more than average
    4. much more than average
    5. a great deal more than average

21. When engaged in an eating binge, I tend to eat foods that are high in carbohydrates (sweets and starches).

    1. always
    2. almost always
    3. frequently
    4. sometimes
    5. seldom, or I don't binge

22. Compared to most people, my ability to control my eating behavior seems to be:

    1. greater than others' ability
    2. about the same
    3. less
    4. much less
    5. I have absolutely no control

23. I would presently label myself a "compulsive eater", (one who engages in episodes of uncontrolled eating).

    1. absolutely
    2. yes
    3. yes, probably
    4. yes, possibly
    5. no, probably not

24. I hate the way my body looks after I eat too much.

1. seldom or never
2. sometimes
3. frequently
4. almost always
5. always

25. When I am trying to keep from gaining weight, I feel that I have to resort to vigorous exercise, strict dieting, fasting, self-induced vomiting, laxatives, or diuretics.

1. never
2. rarely
3. occasionally
4. a lot of the time
5. most or all of the time

26. Do you believe that it is easier for you to vomit than it is for most people?

1. yes, it's no problem at all for me
2. yes, it's easier
3. yes, it's a little easier
4. about the same
5. no, it's less easy

27. I use diuretics (water pills) to help control my weight.

1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

28. I feel that food controls my life.

1. always
2. almost always
3. frequently
4. sometimes
5. seldom or never

29. I try to control my weight by eating little or no food for a day or longer.

1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

30. When consuming a large quantity of food, at what rate of speed do you usually eat?

1. more rapidly than most people have ever eaten in their lives
2. a lot more rapidly than most people
3. a little more rapidly than most people
4. about the same rate as most people
5. more slowly than most people (or not applicable)

31. I use laxatives or suppositories to help control my weight.

1. never
2. seldom
3. sometimes
4. frequently
5. very frequently

32. Right after I binge eat I feel:

1. so fat and bloated I can't stand it
2. extremely fat
3. fat
4. a little fat
5. OK about how my body looks or I never binge eat

33. Compared to other people of my sex, my ability to always feel in control of how much I eat is

1. about the same or greater
2. a little less
3. less
4. much less
5. a great deal less

34. In the last 3 months, on the average how often did you binge eat (eat uncontrollably to the point of stuffing yourself)?

1. once a month or less (or never)
2. 2-3 times a month
3. once a week
4. twice a week
5. more than twice a week

35. Most people I know would be surprised at how fat I look after I eat a lot of food.

1. yes, definitely
2. yes
3. yes, probably
4. yes, possibly
5. no, probably not or I never eat a lot of food

36. I use diuretics (water pills) to help control my weight.

1. 3 times a week or more
2. once or twice a week
3. 2-3 times a month
4. once a month
5. never

APPENDIX D

EATING INVENTORY

Part I Instructions: Read each of the following 36 statements carefully. If you agree with the statement, or feel that it is true as applied to you, circle "T." If you disagree with the statement or feel that it is false as applied to you, circle "F."

T F 1. When I smell a sizzling steak or see a juicy piece of meat, I find it very difficult to keep from eating, even if I have just finished a meal.

T F 2. I usually eat too much at social occasions, like parties and picnics.

T F 3. I am usually so hungry that I eat more than three times a day.

T F 4. When I have eaten my quota of calories, I am usually good about not eating any more.

T F 5. Dieting is so hard for me because I just get too hungry.

T F 6. I deliberately take small helpings as a means of controlling my weight.

T F 7. Sometimes things just taste so good that I keep on eating even when I am no longer hungry.

T F 8. Since I am often hungry, I sometimes wish that while I am eating, an expert would tell me that I have had enough or that I can have something more to eat.

T F 9. When I feel anxious, I find myself eating.

T F 10. Life is too short to worry about dieting.

T F 11. Since my weight goes up and down, I have gone on reducing diets more than once.

T F 12. I often feel so hungry that I just have to eat something.

T F 13. When I am with someone who is overeating, I usually overeat too.

T F 14. I have a pretty good idea of the number of calories in common foods.

T F 15. Sometimes when I start eating, I just can't seem to stop.

T F 16. It is not difficult for me to leave something on my plate.

T F 17. At certain times of the day, I get hungry because I have gotten used to eating then.

T F 18. While on a diet, if I eat a food that is not allowed, I consciously eat less for a period of time to make up for it.

T F 19. Being with someone who is eating often makes me hungry enough to eat also.

T F 20. When I feel blue, I often overeat.

T F 21. I enjoy eating too much to spoil it by counting calories or watching my weight.

T F 22. When I see a real delicacy, I often get so hungry that I have to eat right away.

T F 23. I often stop eating when I am not really full as a conscious means of limiting the amount that I eat.

T F 24. I get so hungry that my stomach often seems like a bottomless pit.

T F 25. My weight has hardly changed at all in the last ten years.

T F 26. I am always hungry so it is hard for me to stop eating before I finish the food on my plate.

T F 27. When I feel lonely, I console myself by eating.

T F 28. I consciously hold back at meals in order not to gain weight.

T F 29. I sometimes get very hungry late in the evening or at night.

T F 30. I eat anything I want, anytime I want.

T F 31. Without even thinking about it, I take a long time to eat.

T F 32. I count calories as a conscious means of controlling my weight.

T F 33. I do not eat some foods because they make me feel fat.

T F 34. I am always hungry enough to eat at any time.

T F 35. I pay a great deal of attention to changes in my figure.

T F 36. While on a diet, if I eat a food that is not allowed, I often then splurge and eat other high calorie foods.

Part II Instructions: Each question in this section is followed by a number of answer options. After reading each question carefully, choose the one option which most applies to you, and circle the appropriate number.

37. How often are you dieting in a conscious effort to control your weight?

1 - rarely 2 - sometimes 3 - usually 4 - always

38. Would a weight fluctuation of 5 lbs affect the way you live your life?

1 – not at all 2 – slightly 3 – moderately 4 - very much

39. How often do you feel hungry?

1 – only at mealtimes 2 – sometimes between meals 3 – often between meals 4 – almost always

40. Do your feelings of guilt about over eating help you to control your food intake?

1 – never 2 – rarely 3 – often 4 – always

41. How difficult would it be for you to stop eating halfway through dinner and not eat for the next four hours?

1 – easy 2 – slightly difficult 3 – moderately difficult 4 – very difficult

42. How conscious are you of what you are eating?

1 – not at all 2 – slightly 3 – moderately 4 – extremely

43. How frequently do you *avoid* "stocking up" on tempting foods?

1 – almost never 2 – seldom 3 – usually 4 – almost always

44. How likely are you to shop for low calorie foods?

1 – unlikely 2 – slightly likely 3 – moderately likely 4 – very likely

45. Do you eat sensibly in front of others and splurge alone?

1 – never 2 – rarely 3 – often 4 – always

46. How likely are you to consciously eat slowly in order to cut down on how much you eat?

1 – unlikely 2 – slightly likely 3 – moderately likely 4 – very likely

47. How frequently do you skip dessert because you are no longer hungry?

1 – almost never 2 – seldom 3 – at least once a week 4 – almost every day

48. How likely are you to consciously eat less than you want?

1 – unlikely 2 – slightly likely 3 – moderately likely 4 – very likely

49. Do you go on eating binges even though you are not hungry?

1 – never 2 – rarely 3 – sometimes 4 – at least once a week

50. To what extent does this statement describe your eating behavior?

"I start dieting in the morning, but because of any number of things that happen during the day, by evening I have given up and eat what I want, promising myself to start dieting again tomorrow."

1 – not like me 2 – a little like me 3 – pretty good description of me 4 – describes me perfectly

51. On a scale of 1 to 6, where 1 means no restraint on eating (eating what ever you want, whenever you want it) and 6 means total restraint (constantly limiting food intake and never "giving in"), what number would you give yourself?

1 – eat whatever you want, whenever you want it

2 – usually eat whatever you want, when every you want it

3 – often eat whatever you want, whenever you want it

4 – often limit food intake but often "give in"

5 – usually limit food intake, rarely "give in"

6 – constantly limiting food intake, never "giving in"

APPENDIX E

REVISED RESTRAINT SCALE

Instructions: Answer each question by circling the appropriate response. Please respond to each item as honestly as possible; remember all of the information your provide will be kept strictly confidential.

1. How often are you dieting?

   a – never b – rarely c – sometimes d – often e - always

2. What is the maximum amount of weight (in pounds) that you have ever lost within one month?

   a – 0 - 4 lbs. b – 5 - 9 lbs. c – 10 - 14 lbs. d – 15 - 19 lbs. e – 20+ lbs.

3. What is your maximum weight gain within a week?

   a – 0 - 1 lb. b – 1.1 - 2 lbs. c – 2.1 - 3 lbs. d – 3.1 - 5 lbs. e – 5.1+ lbs

4. In a typical week, how much does your weight fluctuate?

   a – 0 - 1 lb. b – 1.1 - 2 lbs. c – 2.1 - 3 lbs. d – 3.1 - 5 lbs. e – 5.1+ lbs

5. Would a weight fluctuation of 5 lb affect the way you live your life?

   a – not at all b – slightly c – moderately d – very much

6. Do you eat sensibly in front of others and splurge alone?

   a – never b – rarely c – often d – always

7. Do you give too much time and thought to food?

   a – never b – rarely c – often d – always

8. Do you have feelings of guilt after overeating?

   a – never b – rarely c – often d – always

9. How conscious are you of what you are eating?

   a – not at all b – slightly c – moderately d – extremely

10. How many pounds over your desired weight were you at your maximum weight?

    a – 0 - 1 lbs. b – 1 - 5 lbs. c – 6 - 10 lbs. d – 11 - 20 lbs. e – 21+ lbs.

APPENDIX F

THE AFFECT INTENSITY MEASURE

Instructions: The following questions refer to the emotional reactions of typical life-events. Please indicate how YOU react to these events by placing a number from the following scale in the blank space preceding each item. Please base your answers on how YOU react, *not* on how you think others react or how you think a person should react.

Never	Almost Never	Occasionally	Usually	Almost Always	Always
1	2	3	4	5	6

_____ 1. When I accomplish something difficult I feel delighted or elated.

_____ 2. When I feel happy it is a strong type of exuberance.

_____ 3. I enjoy being with other people very much.

_____ 4. I feel pretty bad when I tell a lie.

_____ 5. When I solve a small personal problem, I feel euphoric.

_____ 6. My emotions tend to be more intense than those of most people.

_____ 7. My happy moods are so strong that I feel like I'm "in heaven."

_____ 8. I get overly enthusiastic.

_____ 9. If I complete a task I thought was impossible, I am ecstatic.

_____ 10. My heart races at the anticipation of some exciting event.

_____ 11. Sad movies deeply touch me.

_____ 12. When I'm happy it's a feeling of being untroubled and content rather than being zestful and aroused.

_____ 13. When I talk in front of a group for the first time my voice gets shaky and my heart races.

_____ 14. When something good happens, I am usually much more jubilant than others.

_____ 15. My friends might say I'm emotional.

_____ 16. The memories I like the most are of times when I felt content and peaceful rather than zestful and enthusiastic.

_____ 17. The sight of someone who is hurt badly affects me strongly.

_____ 18. When I'm feeling well it's easy for me to go from being in a good mood to being really joyful.

Never	Almost Never	Occasionally	Usually	Almost Always	Always
1	2	3	4	5	6

_____ 19. "Calm and cool" could easily describe me.

_____ 20. When I'm happy I feel like I'm bursting with joy.

_____ 21. Seeing a picture of some violent car accident in a newspaper makes me feel sick to my stomach.

_____ 22. When I'm happy I feel very energetic.

_____ 23. When I receive an award I become overjoyed.

_____ 24. When I succeed at something, my reaction is calm contentment.

_____ 25. When I do something wrong I have strong feelings of shame and guilt.

_____ 26. I can remain calm even on the most trying days.

_____ 27. When things are going good I feel "on top of the world."

_____ 28. When I get angry it's easy for me to still be rational and not overreact.

_____ 29. When I know I have done something very well, I feel relaxed and content rather than excited and elated.

_____ 30. When I do feel anxiety it is normally very strong.

_____ 31. My negative moods are mild in intensity.

_____ 32. When I am excited over something I want to share my feelings with everyone.

_____ 33. When I feel happiness, it is a quiet type of contentment.

_____ 34. My friends would probably say I'm a tense or "high-strung" person.

_____ 35. When I'm happy I bubble with energy.

_____ 36. When I feel guilty, this emotion is quite strong.

_____ 37. I would characterize my happy moods as closer to contentment than joy.

_____ 38. When someone compliments me, I get so happy I could "burst."

_____ 39. When I am nervous I get shaky all over.

_____ 40. When I am happy the feeling is much more like contentment and inner calm than one of exhilaration and excitement.

APPENDIX G

OBJECTIFIED BODY CONSCIOUSNESS SCALE-BODY SHAME SCALE

Instructions: Write the number in the space provided that corresponds to how much you agree with each of the statements. Write NA only if the statement does not apply to you. Do not write NA if you don't agree with a statement. For example, if the statement says "When I am happy, I feel like singing" and you don't feel like singing when you are happy, then you would write one of the disagree choices. You would only write NA if you were never happy.

Strongly disagree			Neither agree nor disagree			Strongly agree	Does not apply
1	2	3	4	5	6	7	NA

_____ 1. When I can't control my weight, I feel like something must be wrong with me.

_____ 2. I feel ashamed of myself when I haven't made the effort to look my best.

_____ 3. I feel like I must be a bad person when I don't look as good as I could.

_____ 4. I would be ashamed for people to know what I really weigh.

_____ 5. Even when I can't control my weight, I think I'm an okay person.

_____ 6. I never worry that something is wrong with me when I am not exercising as much as I should.

_____ 7. When I am not exercising enough, I question whether I am a good enough person.

_____ 8. When I'm not the size I think I should be, I feel ashamed.

APPENDIX H

COPING INVENTORY FOR STRESSFUL SITUATIONS

Instructions: The following are ways people react to various difficult, stressful, or upsetting situations. Indicate how much you engage in these types of activities when you encounter a difficult, stressful, or upsetting situation. Write the number in the space provided, using the following rating scale:

Not at all				Very Much
1	2	3	4	5

_____ 1. Schedule my time better.

_____ 2. Focus on the problem and see how I can solve it.

_____ 3. Think about the good times I've had.

_____ 4. Try to be with other people.

_____ 5. Blame myself for procrastinating.

_____ 6. Do what I think is best.

_____ 7. Become preoccupied with aches and pains.

_____ 8. Blame myself for having gotten into the situation.

_____ 9. Window shop.

_____ 10. Outline my priorities

_____ 11. Try to go to sleep.

_____ 12. Treat myself to a favorite food or snack.

_____ 13. Feel anxious about not being able to cope.

_____ 14. Become very tense.

_____ 15. Think about how I solved similar problems.

_____ 16. Tell myself that it is really not happening to me.

_____ 17. Blame myself for being too emotional about the situation.

_____ 18. Go out for a snack or a meal.

_____ 19. Become very upset.

_____ 20. Buy myself something.

Not at all				Very Much
1	2	3	4	5

_____ 21. Determine a course of action and follow it.

_____ 22. Blame myself for not knowing what to do.

_____ 23. Go to a party.

_____ 24. Work to understand the situation.

_____ 25. "Freeze" and not know what to do.

_____ 26. Take corrective action immediately.

_____ 27. Think about the event and learn from my mistakes.

_____ 28. Wish that I could change what had happened or how I felt.

_____ 29. Visit a friend.

_____ 30. Worry about what I am going to do.

_____ 31. Spend time with a special person.

_____ 32. Go for a walk.

_____ 33. Tell myself that it will never happen again.

_____ 34. Focus on my general inadequacies.

_____ 35. Talk to someone whose advice I value.

_____ 36. Analyze the problem before reacting.

_____ 37. Phone a friend.

_____ 38. Get angry.

_____ 39. Adjust my priorities.

_____ 40. See a movie.

_____ 41. Get control of the situation.

_____ 42. Make an extra effort to get things done.

_____ 43. Come up with several different solutions to the problem.

_____ 44. Take some time off and get away from the situation.

Not at all				Very Much
1	2	3	4	5

_____ 45. Take it out on other people.

_____ 46. Use the situation to prove that I can do it.

_____ 47. Try to be organized so I can be on top of the situation.

_____ 48. Watch TV.

APPENDIX I

CENTER FOR EPIDEMIOLOGIC STUDIES-DEPRESSION SCALE

Instructions: Below is a list of ways you might have felt or behaved. Indicate how often you have felt this way during the ***past week***. Write the number in the space below using the following scale.

Rarely or none of the time (less than 1 day)	Some of a little of the time (1-2 days)	Occasionally or a moderate amount of time (3-4 days)	Most or all of the time (5-7 days)
1	2	3	4

During the past week:

_____ 1. I was bothered by things that usually don't bother me.

_____ 2. I did not feel like eating; my appetite was poor.

_____ 3. I felt that I could not shake off the blues even with help from my family or friends.

_____ 4. I felt that I was just as good as other people.

_____ 5. I had trouble keeping my mind on what I was doing.

_____ 6. I felt depressed.

_____ 7. I felt that everything I did was an effort.

_____ 8. I felt hopeful about the future.

_____ 9. I thought my life had been a failure.

_____ 10. I felt fearful.

_____ 11. My sleep was restless.

_____ 12. I was happy.

_____ 13. I talked less than usual.

_____ 14. I felt lonely.

_____ 15. People were unfriendly.

_____ 16. I enjoyed life.

_____ 17. I had crying spells.

_____ 18. I felt sad.

_____ 19. I felt that people disliked me.

_____ 20. I could not get "going."

APPENDIX J

MARLOWE-CROWNE SOCIAL DESIRABILITY SCALE

Instructions: Listed below are a number of statements concerning personal attitudes and traits. Read each item and decide whether the statement is true or false as it pertains to you.

T F 1. Before voting I thoroughly investigate the qualifications of all the candidates.

T F 2. I never hesitate to go out of my way to help someone in trouble.

T F 3. It is sometimes hard for me to go on with my work if I am not encouraged.

T F 4. I have never intensely disliked someone.

T F 5. On occasions I have had doubts about my ability to succeed in life.

T F 6. I sometimes feel resentful when I don't get my own way.

T F 7. I am always careful about my manner of dress.

T F 8. My table manners at home are as good as when I eat out in a restaurant.

T F 9. If I could get into a movie without paying and be sure I was not seen, I would probably do it.

T F 10. On a few occasions, I have given up doing something because I thought too little of my ability.

T F 11. I like to gossip at times.

T F 12. There have been times when I felt like rebelling against people in authority even though I knew they were right.

T F 13. No matter who I'm talking to, I'm always a good listener.

T F 14. I can remember "playing sick" to get out of something.

T F 15. There have been occasions when I took advantage of someone.

T F 16. I'm always willing to admit it when I make a mistake.

T F 17. I always try to practice when I preach.

T F 18. I don't find it particularly difficult to get along with loudmouthed, obnoxious people.

T F 19. I sometimes try to get even, rather than forgive and forget.

T F 20. When I don't know something I don't at all mind admitting it.

T F 21. I am always courteous, even to people who are disagreeable.

T F 22. At times I have really insisted on having things my own way.

T F 23. There have been occasions when I felt like smashing things.

T F 24. I would never think of letting someone else be punished for my wrongdoings.

T F 25. I never resent being asked to return a favor.

T F 26. I have never been irked when people expressed ideas very different from my own.

T F 27. I never make a long trip without checking the safety of my car.

T F 28. There have been times when I was quite jealous of the good fortune of others.

T F 29. I have almost never felt the urge to tell someone off.

T F 30. I am sometimes irritated by people who ask favors of me.

T F 31. I have never felt that I was punished without cause.

T F 32. I sometimes think when people have a misfortune they only got what they deserved.

T F 33. I have never deliberately said something that hurt someone's feelings.

APPENDIX K

Table 1

Cronbach Alpha Coefficients Measuring Internal Reliability of Measures (N = 139)

Instrument	Prior α	α
Bulimia Test-Revised-Binge Control Scale	.97	.94
Eating Inventory-Cognitive Restraint Scale	.93	.89
Revised Restraint Scale	.82-.86	.86
Affect Intensity Measure	.90 - .94	.89
Objectified Body Consciousness Scale-Body Shame Scale	.75	.87
Coping Inventory for Stressful Situations-Emotion-oriented Subscale	.87	.90
Coping Inventory for Stressful Situations-Avoidance-oriented Subscale	.83	.79
Center for Epidemiological Studies Depression Scale	.84-.90	.90
Marlowe-Crowne Social Desirability Scale	.73-.88	.76

Note. Prior α refers to the Cronbach alpha reported by the instrument's authors (see Measures, pp. 41 – 48).

Table 2

Means, Standard Deviations, and Correlations of Predictors and Outcome Variables (N = 139)

	M	SD	1	2	3	4	5	6	7	8	9
1. BMI	23.36	4.37	--	.23**	-.15	.23**	-.09	.29**	.08	-.03	.29**
2. Depression	14.72	10.25		--	-.16	.17	.13	.35**	.56**	-.01	.43**
3. Social Desirability	14.45	5.38			--	-.16**	-.05	-.24**	-.32**	-.07	-.31**
4. Restraint	22.78	11.26				--	.11	.69**	.28**	-.01	.45**
5. Affect Intensity	3.95	.50					--	.17*	.37**	.34**	.24**
6. Body Shame	3.58	1.37						--	.40**	-.05	.63**
7. Emotion-Oriented Coping	44.73	11.48							--	.29**	.40**
8. Avoidance-Oriented Coping	49.45	9.16								--	.03
9. Binge Eating	33.50	13.87									--

Note. Restraint = EI-RC + RRS
*$p < .05$, **$p < .01$

Table 3

Summary of Hierarchical Regression Analysis for Variables Predicting Log10 Transformation of Binge Eating (N = 139)

	Variable	B	SE B	β
Step 1				
	Body mass	.006	.003	.168*
	Depression	.006	.001	.341***
	Social desirability	-.006	.002	-.208**
Step 2				
	Body mass	.004	.003	.093
	Depression	.005	.001	.300***
	Social desirability	-.005	.002	-.161
	Restraint	.006	.001	.395***
Step 3				
	Body mass	.003	.003	.084
	Depression	.003	.001	.184*
	Social desirability	-.004	.002	-.116
	Restraint	.002	.001	.108
	Body shame	.005	.012	.425***
	Affect intensity	.005	.023	.154*
	Emotion-oriented Coping	.008	.001	.005
	Avoidance-oriented Coping	.002	.001	.008

Note. Table 3 continued on next page.

Table 3 (cont'd)

	Variable	B	SE B	β
Step 4				
	Body mass	.003	.003	.068
	Depression	.003	.001	.195*
	Social desirability	-.004	.002	-.122
	Restraint	.002	.001	.110
	Body shame	.005	.012	.430***
	Affect intensity	.005	.023	.156*
	Emotion-oriented coping	.001	.001	.007
	Avoidance-oriented coping	.002	.001	.013
	Restraint * Body shame	.003	.001	.024
	Restraint * Affect intensity	-.004	.002	-.119
	Restraint * Emotion-oriented coping	-.004	.000	-.036
	Restraint * Avoidance-oriented coping	.010	.000	.060

Note. $R^2 = .25$ for step 1; $\Delta R^2 = .14$ for step 2 ($p < .001$); $\Delta R^2 = .11$ for step 3 ($p < .001$); $\Delta R^2 = .01$ for step 4 (n.s.)
*$p < .05$, **$p < .05$, ***$p < .001$

Table 4

Summary of Hierarchical Regression Analysis for Variables Predicting Binge Eating (N = 139)

	Variable	B	SE B	β
Step 1				
	Body mass	.547	.242	.172*
	Depression	.477	.103	.352***
	Social desirability	-.582	.193	-.226**
Step 2				
	Body mass	.336	.228	.105
	Depression	.429	.096	.317***
	Social desirability	-.476	.180	-.185**
	Restraint	.428	.087	.347***
Step 3				
	Body mass	.302	.217	.095
	Depression	.278	.108	.206*
	Social desirability	-.368	.174	-.143*
	Restraint	.008	.109	.006
	Body shame	4.253	.976	.421***
	Affect intensity	3.939	1.959	.143*
	Emotion-oriented Coping	-.009	.108	-.001
	Avoidance-oriented Coping	-.008	.107	-.006

Note. Table 4 continued on next page.

Table 4 (cont'd)

	Variable	B	SE B	β
Step 4				
	Body mass	.265	.222	.083
	Depression	.290	.109	.215**
	Social desirability	-.379	.175	-.147*
	Restraint	.008	.110	.067
	Body shame	4.279	1.013	.424***
	Affect intensity	4.020	1.980	.146*
	Emotion-oriented coping	-.004	.110	-.003
	Avoidance-oriented coping	.010	.111	.006
	Restraint * Body shame	.005	.069	.052
	Restraint * Affect intensity	-.243	.183	-.096
	Restraint * Emotion-oriented coping	-.004	.008	-.036
	Restraint * Avoidance-oriented coping	.007	.010	.052

Note. $R^2 = .27$ for step 1; $\Delta R^2 = .11$ for step 2 ($p < .001$); $\Delta R^2 = .11$ for step 3 ($p < .001$); $\Delta R^2 = .01$ for step 4 (n.s.)
*$p < .05$, **$p < .05$, ***$p < .001$

Table 5

Summary of Hierarchical Regression Analysis for Body Shame and Affect Intensity Predicting Binge Eating

	Variable	B	SE B	β
Step 1				
	Body mass	.548	.243	.172*
	Depression	.464	.104	.342***
	Social desirability	-.614	.196	-.236**
Step 2				
	Body mass	.339	.229	.107
	Depression	.424	.097	.312***
	Social desirability	-.492	.184	-.189**
	Restraint	.423	.088	.342***
Step 3				
	Body mass	.302	.214	.095
	Depression	.271	.094	.200**
	Social desirability	-.385	.169	-.148*
	Restraint	.071	.109	.058
	Body shame	4.301	.957	.427***
	Affect intensity	3.796	1.778	.138*

Note. Table 5 continued on next page.

Table 5 (cont'd)

	Variable	B	SE B	β
Step 4				
	Body mass	.292	.216	.092
	Depression	.282	.094	.208**
	Social desirability	-.390	.170	-.150*
	Restraint	.080	.110	.065
	Body shame	4.147	.967	.411***
	Affect intensity	3.981	1.788	.144*
	Restraint * Body shame	.028	.060	.030
	Restraint * Affect intensity	-.209	.160	-.083

Note. $R^2 = .15$ for step 1; $\Delta R^2 = .14$ for step 2 ($p < .001$); $\Delta R^2 = .12$ for step 3 ($p < .001$); $\Delta R^2 = .01$ for step 4 (n.s.)
*$p < .05$, **$p < .05$, ***$p < .001$

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